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**TRENDS AND PATTERNS  
IN WORKING TIME ACROSS  
EURO AREA COUNTRIES  
1970-2004**

**CAUSES AND  
CONSEQUENCES**

by N. Leiner-Killinger,  
C. Madaschi  
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## ABSTRACT

This paper analyses trends in working time in the euro area, in comparison with the US, over the period 1970 to 2004 and examines the causes and consequences of the observed changes. Between 1970 and 2004, a downward trend in average annual hours worked per worker can be observed for the euro area as a whole, all individual euro area countries and the United States. In contrast to the US, the euro area and a number of euro area countries also experienced a significant decline in annual hours worked per capita (“labour utilisation”) over the last three decades. Data reveal important disparities across countries – both in trends and levels. While some countries managed to reverse their downward trends in labour utilisation in the 1980s and 1990s, the level of average hours worked per capita in 2004 remained significantly below their 1970 levels for all euro area countries for which data are available. From a policy perspective, falling annual average hours worked per worker or per capita are not a problem per se, if they reflect preferences. For example, increasing shares of voluntary part-time employment across many euro area countries, whilst increasing European employment rates, have contributed to the downward trend in average annual hours per worker. However, to the extent that low working hours are due to institutional features which create disincentives to work, such as high tax wedges and high unemployment benefits, or enforced reductions in working hours, these factors should be addressed.

JEL codes: J13, J22, J24, E24, D02

Key words: Annual hours of work, working time, labour utilisation, productivity, per capita income, institutions, working time legislation, Europe and US, part-time work, preferences, labour costs, employment.



## I EXECUTIVE SUMMARY

This occasional paper analyses the trends in working time in the euro area and individual euro area countries over the period 1970 to 2004, drawing a comparison with the United States. A consideration of the developments in average annual hours worked per worker shows that a downward trend can be observed in this period for the euro area as a whole, all individual euro area countries (particularly Germany, France and Ireland) and the United States, although this trend is on average significantly steeper for the euro area. In addition, data reveal important disparities across countries, in both trends and levels.

The euro area and a number of euro area countries (particularly Germany and France) also experienced a significant decline in annual hours worked per capita (otherwise known as labour utilisation) over the last three decades, while this measure increased in the United States. Again, there are considerable differences across the euro area countries. Although some (such as Spain, Ireland, Italy, the Netherlands and Finland) managed to reverse their downward trends in labour utilisation in the course of the 1980s and 1990s, average hours worked per capita in 2004 for all euro area countries for which data are available remained significantly below their 1970 levels.

Overall, it appears that the diverging trend in labour utilisation in the United States relative to the euro area average is explained by a smaller decline in average annual hours worked per worker in the United States combined with a stronger rise in the employment rate.

The paper then turns to a consideration of whether preferences or institutional design explain the observed gap between US and euro area labour utilisation developments. Falling average annual hours worked per worker or per capita are not a problem per se, if they reflect preferences. For example, increasing shares of voluntary part-time employment across many euro area countries, while increasing

employment rates, have contributed to the downward trend in average annual hours per worker. However, to the extent that short working hours are due to institutional features which create disincentives to work, such as tax wedges and high unemployment benefits, or laws which enforce a general reduction in working hours, these factors should be addressed.

The steady decline in annual hours worked per worker over the last three decades was accompanied by a significant increase in real labour costs per hour worked in all euro area countries (in the euro area between 1970 and 2004, the real cost of labour per hour worked increased by six times as much as employment) and may well have contributed to an increase in the unemployment rate, in particular for unskilled workers. This may reflect both a reallocation of employment in favour of more highly skilled workers and a higher level of capital-labour substitution. Indeed, the high real total labour costs per hour worked observed in euro area countries over the entire period 1970-2004 encouraged capital-intensive production in those areas where employment remained profitable. This led to capital-labour ratios rising faster in all euro area countries than in the United States, which resulted in stronger labour productivity growth per hour worked and a decline in firms' demand for labour.

In the late 1980s and the 1990s, growth in hourly real labour costs slowed significantly in the euro area countries, as a result of labour market reforms which lowered the cost of hiring young and unskilled workers, and of wage moderation. This induced firms to shift to more labour-intensive production, reversing earlier substitution policies in favour of capital. The corollary of these labour market developments was a significant slowdown in labour productivity growth. In the same period, the United States managed to maintain a high level of labour utilisation, which was accompanied in the 1990s by a strong acceleration in labour productivity growth,

partly thanks to a significant technological boom. This marked an end to the period in which the euro area countries narrowed the gap with the United States in per capita income. In fact, the gap started to widen.

Looking ahead, policies to increase labour utilisation in euro area countries should be further developed in order to accelerate employment growth and reduce unemployment in the euro area. On the labour supply side, this will necessitate reforms to the institutional framework to avoid discouraging individuals from working, for example through the interplay of tax and benefit systems. On the demand side, there is a need to address the high total real labour costs per hour worked, particularly for the low-skilled, for example by reducing employers' taxes and social security contributions. One side effect of policies to increase employment may be the dampening of labour productivity growth, as has been seen in some euro area countries, such as Spain, Italy and the Netherlands, from the 1990s. This apparent trade-off between labour utilisation and labour productivity should be a temporary phenomenon and may fade away when the economy reaches a new equilibrium unemployment rate. Other euro area countries such as Ireland and Finland have managed to increase both labour utilisation and labour productivity growth, partly thanks to innovation and technological progress. This suggests that euro area countries should promote employment but at the same time also innovation and the diffusion of new technologies, for instance by encouraging business research, enhancing competition and improving human capital.

## 2 INTRODUCTION

In 2004 the debate on the need to increase working time in Europe intensified. Following a period of squeezed profit margins, euro area firms felt the need to reduce real labour costs per hour worked, in particular for low-skilled workers. In June 2004, for example, Siemens

and the IG Metall union agreed on a rise in the average working week from 38.5 to 40 hours at two German production sites, without a corresponding increase in wage compensation. In a similar case at a French factory owned by Bosch, workers agreed to a rise in their average working hours from 35 to 36 hours per week, undermining the French 35-hour (average) week law. This has given rise to demands for working time increases in other firms and euro area countries such as the Netherlands.

Working time has also recently been discussed with regard to its impact on labour productivity and economic growth, often in relation to developments in the United States (see Gordon 2004a, 2004b, European Commission 2004 and, for a euro area perspective, ECB 2004a).<sup>1</sup> Answering the question "How could Europe be so productive, yet so poor?", Gordon (2004b) suggests that in Europe "hours per person have fallen drastically in the past 40 years" reflecting long vacations, high unemployment and low labour force participation. Making "a wild guess", he sees one-third of the European/US gap in output per capita representing voluntarily chosen leisure and two-thirds representing the lack of employment opportunities. The fact that European employees work on average fewer hours than US workers has also led Blanchard (2004)<sup>2</sup> to conclude that Europeans simply have a higher preference for leisure. In contrast, others such as the IMF (2004)<sup>3</sup> argue that "disincentives to work" related to labour market regulation and

1 See Robert J. Gordon (2004a) "Why was Europe left at the station when America's productivity locomotive departed?" NBER Working Paper No 10661 and Robert J. Gordon (2004b) "Two centuries of economic growth: Europe chasing the American frontier", NBER Working Paper No 10662, European Commission (2004) "The Lisbon strategy and the EU's structural productivity problem" in "The EU economy: 2004 review" focusing in particular on the role of information and communication technology in explaining the diverging pattern in labour productivity, and ECB (2004a) "Labour productivity developments in the euro area: aggregate trends and sectoral patterns", Monthly Bulletin, July and ECB (2005) "Developments in Euro Area labour productivity", Monthly Bulletin, March.

2 See O. Blanchard (2004) "The economic future of Europe", NBER Working Paper No 10310.

3 See IMF (2004a) "Euro area Article IV consultations", Washington DC.

tax incentives impede the supply of labour and thus hours worked. There is broad agreement, however, that increased labour utilisation is necessary for Europe, inter alia to dampen the negative effects of demographic change, namely the decline in the working-age population.

In light of all these discussions, the aim of this Occasional Paper is to analyse the trends in two measures of working time across euro area countries over the period 1970 to 2004 and to identify and examine the causes and consequences of these changes. The two measures are average annual hours worked per worker (defined as total annual hours worked divided by total employment) and average annual hours worked per capita (defined as total annual hours worked divided by the total population). Section 3 begins with a survey of the developments in average annual hours worked per worker and per capita across euro area countries and the United States. Section 4 then decomposes the trend in annual hours worked per capita into its main components, attempting to identify the particular impact of, for example, changes in employment rates and changes in average annual hours worked per worker. Section 4 also considers how preferences, institutional factors and working time regulations have affected changes in annual hours worked. Section 5 analyses the interaction between the changes in working time and the changes in labour costs, employment and labour productivity, and consequently their impact on GDP per capita. Section 6 concludes.

### 3 TRENDS IN WORKING TIME IN EURO AREA COUNTRIES AND THE UNITED STATES: 1970-2004

This section provides an overview of the trends in average annual hours worked per worker as well as per capita for the euro area countries and the United States over the period 1970 to 2004. It uses the most harmonised *whole economy data* on total hours worked available

to date, as compiled by the OECD, including data on hours worked by *employees* as well as by the *self-employed*. Some problems remain concerning the cross-country comparability of the hours-worked estimates. In particular, caution is required when interpreting small level differences in hours worked per worker or per capita across countries, since they may mainly reflect the still imperfect harmonisation of annual working-hour data. Comparing the trends over time across countries and large cross-country differences in hours worked can nevertheless be particularly instructive.<sup>4</sup> Furthermore, we consider hours worked *annually* rather than over any other period for three main reasons. First, working time reductions/increases in some countries have been introduced through changes in annual leave or annual hours, leaving normal weekly hours worked unchanged. Second, weekly working hours tend to vary quite considerably around an average over a reference period. Estimates of working hours over a one-year period are therefore likely to be more accurate. Finally, annual hours worked is a relevant aggregate measure of labour input in the context of a growth accounting exercise.

#### 3.1 TRENDS IN AVERAGE ANNUAL HOURS WORKED PER WORKER

Chart 1 presents the average annual hours worked *per worker*, defined as total annual hours worked per person in employment, over the last three decades. As the top left-hand graph shows, between 1970 and 2004, a downward trend in annual hours worked per worker can be observed for both the euro area and the United States, although this trend is on average significantly steeper for the euro area. From the early 1980s to 1997, the downward trend slowed down slightly in the euro area and even came to a standstill in the United States, before accelerating in both areas in recent years.

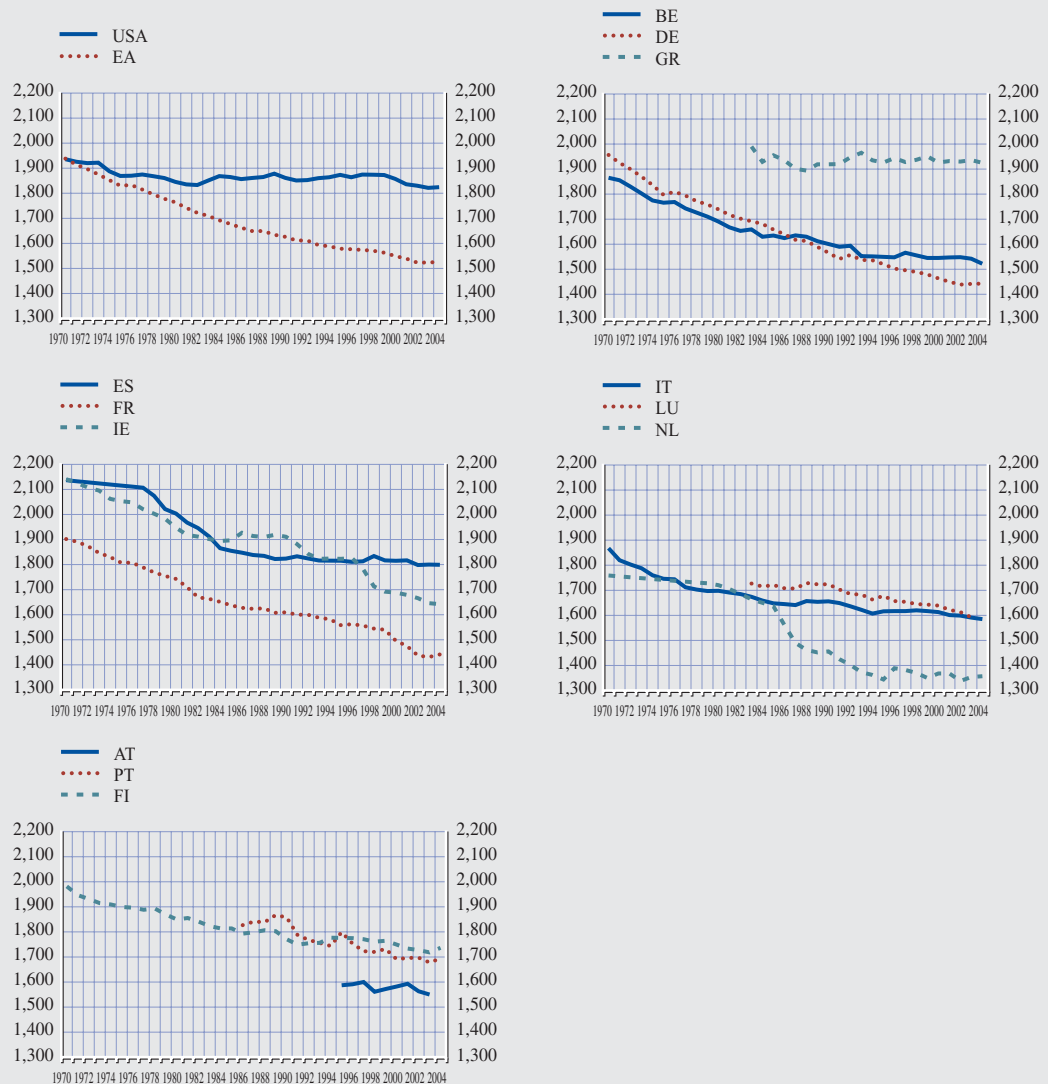
<sup>4</sup> See for more details the annex 1.A1 of OECD employment outlook 2004 "Data sources, definitions and cross-country comparability for the analysis of working time from the economy-wide perspective".



The aggregate picture for the euro area masks important disparities in average annual hours worked per worker across countries, in both trends and levels. The remaining graphs in Chart 1 show that Belgium, Germany, France, Ireland, Luxembourg, Portugal and Finland experienced a steady downward trend in average annual hours of work per worker over the whole period considered, whereas in Spain

and Italy the downward trend significantly slowed from the mid- to late 1980s, and in Greece average hours of work remained stable over the whole period for which data is available. In the Netherlands, average hours began to fall steeply around the mid-1980s, which coincided with a marked increase in part-time work. In the case of France and Ireland, the decline in annual hours worked per

Chart 1 Average annual hours worked per person in employment, 1970-2004



Sources: OECD and ECB calculations.  
 Note: Due to the unavailability of certain data, the euro area aggregate includes only Belgium, Germany, Spain, France, Ireland, Italy, the Netherlands and Finland, which represent more than 90% of euro area GDP. Data for Germany prior to 1991 refer to West Germany. Data refer to the whole economy.

Table 1 Average annual hours worked per worker

	1970	1980	1991	2004
BE	1,865	1,690	1,590	1,522
DE	1,956	1,739	1,541	1,443
GR	-	-	1,920	1,925
ES	2,137	2,003	1,833	1,799
FR	1,902	1,743	1,600	1,441
IE	2,141	1,947	1,882	1,642
IT	1,868	1,698	1,649	1,585
LU	-	-	1,703	1,592
NL	1,759	1,720	1,425	1,357
AT	-	-	-	1,550
PT	-	-	1,787	1,694
FI	1,982	1,850	1,749	1,736
EA	1,938	1,764	1,612	1,526
US	1,936	1,846	1,851	1,825

Source: OECD, Employment Outlook (2004).

Note: Data for Germany prior to 1991 refer to West Germany. Data refer to the whole economy.

worker even accelerated towards the end of the 1990s. As Table 1 shows, by 2004 the level of average annual hours worked per worker ranged from lows of 1,357, 1,441 and 1,443 hours in the Netherlands, France and Germany respectively to highs of 1,925, 1,799 and 1,736 hours in Greece, Spain and Finland. In the case of Greece, the level of annual hours worked per worker was higher than in the United States (1,825 hours).

### 3.2 TRENDS IN AVERAGE ANNUAL HOURS WORKED PER CAPITA

Chart 2 plots the average annual hours worked *per capita* from 1970 to 2004. This indicator is also referred to as *labour utilisation*, defined as total annual hours worked divided by the total population. It captures the extent to which potential labour resources in an economy are actually utilised and therefore has a direct influence on economic growth. In addition, looking at trends in annual hours worked *per capita* avoids, at least in some cases, the mechanical decline in average annual working hours which occurs with the average annual hours worked per worker indicator when the share of part-time work in total employment increases.<sup>5</sup> Finally, as a component of material living standards, labour utilisation is a useful concept for a growth accounting exercise.

As indicated by Chart 2, the euro area also experienced a significant decline in annual hours worked per capita. In the United States, by contrast, annual hours worked per capita increased, rising from 743 hours in 1970 to 867 hours in 2004. Again, there are considerable differences in the average annual hours worked per capita, in both trends and levels, across euro area countries. Only Spain and Ireland from the mid-1980s onwards, and Italy, Finland<sup>6</sup> and the Netherlands from early to mid-1990s onwards, managed to reverse their originally downward trends in this measure. In Belgium, labour utilisation stabilised from the early 1980s, and in Germany and France it declined over the whole period 1970-2004. For all euro area countries for which data for the period 1970 to 2004 are available, average hours worked per capita in 2004 were significantly below 1970s levels.

5 This depends on the impact of part-time work on employment growth and by extension on the growth in total hours worked.

6 Data for Finland are affected by the exceptionally severe recessions in the early 1990s.

Chart 2 Average annual hours worked per capita, 1970-2004



Sources: OECD and ECB calculations.  
 Note: Due to the unavailability of certain data, the euro area aggregate includes only Belgium, Germany, Spain, France, Ireland, Italy, the Netherlands and Finland, which represent more than 90% of euro area GDP. Data for Germany prior to 1991 refer to West Germany. Data refer to the whole economy.

#### 4 FACTORS EXPLAINING TRENDS IN WORKING TIME IN EURO AREA COUNTRIES

This section first decomposes the changes in average annual hours worked per capita into three underlying determinants. It then considers how preferences and institutional factors, including the increase in the rate of

part-time work across euro area countries, may have contributed to the observed downward trends in average annual working time. Finally, the section considers how working time regulations, including those governing annual leave, temporary jobs and overtime, may also have played a role in the decrease in average hours per worker in the euro area.

#### 4.1 DECOMPOSITION OF THE TREND GROWTH IN HOURS WORKED PER CAPITA

In order to determine what has driven the change in the level of average hours worked per capita ( $\Delta HCAP$ ), or labour utilisation, over time, Chart 3 presents its decomposition into three components over the whole period (1970-2004), as well as in the 1990s (1991-2004 and 1996-2004), a period of relatively major structural changes in the labour market in the EU. These components are the change in average annual hours worked per worker, the change in the employment rate and the change in the share of the working-age population in the total population.

$$\Delta HCAP = \Delta \left( \frac{\text{hours worked}}{\text{population}} \right) = \Delta \left( \frac{\text{hours worked}}{\text{employment}} \right) + \Delta \left( \frac{\text{employment}}{\text{working age population}} \right) + \Delta \left( \frac{\text{working age population}}{\text{population}} \right)$$

In order to correct for cyclical effects, trends were calculated using a band pass filter. Looking at the figures for the whole period 1970-2004 (for the countries for which data is available) in Chart 3a, it emerges that the 0.6% p.a. decline in average annual hours worked per capita in the euro area was mainly due to the fall in the average annual hours worked per worker, which declined by an average rate of 0.7% p.a. The contribution from employment growth was basically zero over this period, and the share of the working-age population in the total population even contributed positively to labour utilisation (growing on average by 0.1% p.a.). In the United States, by contrast, the average annual increase of 0.4% in average hours worked per capita masks a 0.2% average annual drop in average annual hours worked per worker on the one hand, and average annual increases of 0.4% for the employment rate and 0.2% for the share of the population of working age on the other. Overall, it appears that the diverging trend in labour utilisation in the United States relative to the euro area average is explained by a smaller decline in average annual hours worked per worker combined with a stronger rise in the employment rate in the United States.

With regard to average annual hours worked per capita in individual euro area countries, for all countries for which data is available the trend over the last three decades was driven by the strong negative impact of the declining average annual hours worked per worker, as well as by relatively poor employment growth performances (see Chart 3a). Employment rates increased only in Spain, Ireland, Italy and the Netherlands, while they declined in the remaining euro area countries. By contrast, the increase in the working-age population as a proportion of the total population over the last three decades had a significantly positive effect on labour utilisation in almost all euro area countries for which data is available, especially Ireland.

As Chart 3b shows, the combination of positive employment growth and the slowdown in the decline in average annual hours worked per worker since the beginning of the 1990s results in a narrowing of the gap between the euro area and the United States in the increase in labour utilisation from 1.1 percentage point over the whole period 1970-2004 to 0.1 percentage point over the period 1991-2004. The growth in average annual hours worked per capita in the euro area even overtook that in the United States from the mid-1990s onwards (see Chart 3c), mainly thanks to a significant acceleration in employment growth and despite population ageing, which from 1991 onwards started to contribute negatively to the increase in the working age population relative to the total population.

Turning to individual euro area countries, from the beginning of the 1990s, in Spain, Ireland and the Netherlands the relatively strong positive contribution from employment growth more than outweighed the negative contribution from average annual hours worked per worker, resulting in the observed increase in average annual hours worked per capita. From the mid-1990s a similar trend was also observed in Belgium, Greece, Italy, Portugal and Finland. In the remaining euro area countries, by contrast, the contribution from a rising

employment rate was positive but was not sufficient to outweigh the negative contribution from declining average annual hours worked per worker. This was the case particularly in Germany, France and Luxembourg, which experienced negative growth in average annual hours worked per capita.

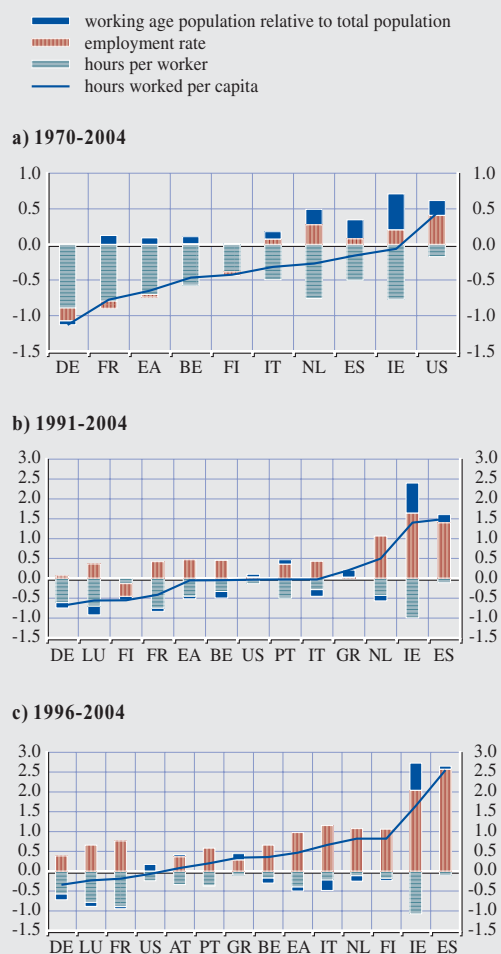
#### 4.2 THE ROLE OF PREFERENCES VERSUS INSTITUTIONS

The observed downward trends in average annual hours worked per worker and per capita (identified in Section 3) have prompted a discussion as to whether preferences and/or the rigidity of labour market institutions have contributed to these developments. Recent literature finds that institutional factors play a significant role in explaining differential employment rates, and therefore total hours worked, across OECD countries (e.g. Nicoletti et al. (2000) and Nickell and Nunziata (2001)<sup>7</sup>). The IMF (2004) argues that “the decline in annual hours worked per employee seems most pronounced in euro area countries with highly regulated labour markets”. On the other hand, others such as Blanchard (2004) have argued that the decline in annual hours worked per worker in many European countries is to an important extent driven by an increased demand for leisure. This section turns to a consideration of the role of preferences and institutions in the decline in euro area average annual hours of work. Section 4.1 has highlighted that the greater decline in average annual hours worked per worker and slower employment growth in the euro area countries relative to the United States have been key components in explaining the lower labour utilisation in the euro area countries over the last three decades. Since the start of the 1990s, however, positive employment growth has helped to compensate for the decline in annual hours per worker in some euro area countries – the result of successful structural reforms undertaken in the late 1980s and the 1990s.

One factor playing a significant role in the level and trend of average annual hours worked per

**Chart 3 Decomposition of the trend growth in average annual hours worked per capita**

(average annual percentage changes)



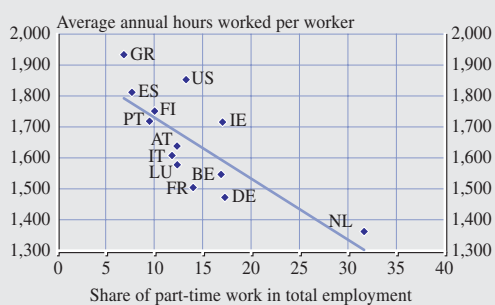
Sources: OECD and ECB calculations.  
Note: The trends were calculated by using a band pass filter to correct for cyclical effects. Data for Germany prior to 1991 refer to West Germany. Due to the unavailability of certain data, the euro area aggregate includes only Belgium, Germany, Spain, France, Ireland, Italy, the Netherlands and Finland, which represent more than 90% of the euro area GDP.

<sup>7</sup> G. Nicoletti, R. Haffner, S. Nickell, S. Scarpetta and G. Zoega (2000), “European Integration, Liberalisation and Labor Market Performance”, in G. Bertola, T. Boeri and G. Nicoletti (eds), *Welfare and Employment in a United Europe*, Harvard MIT Press; and S. Nickell and L. Nunziata (2001), “Employment Patterns in OECD Countries”, Centre for Economic Performance, Discussion Paper No 448.



**Chart 4** The average level of average annual hours worked per worker and the average part-time rate in euro area countries and the United States, 1995-2004

(Correlation coefficient = -0.76; t-statistic = 3.9)



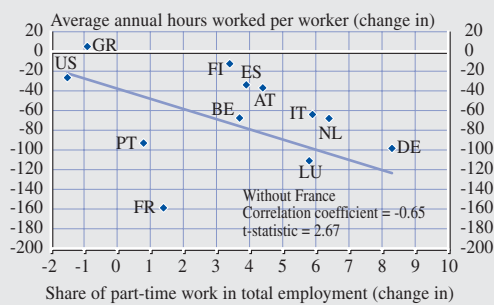
Source: OECD.

worker across euro area countries is the development in the rate of part-time work, which may be linked to both institutional and preference factors. For example, Greece and Spain, which had the highest levels of average hours worked per worker in 2004 (1,925 and 1,799 hours respectively), also have the lowest rates of part-time work among the euro area countries (around 5% and 9%). The Netherlands, at the other extreme, has both the lowest average annual hours worked per worker (1,357 hours in 2004) and the highest rate of part-time work (just over 45%). Furthermore, the sharp decrease in the average annual hours worked per worker in the Netherlands during the 1980s (see Section 3.1) coincided with changes in part-time legislation, introduced in 1982.<sup>8</sup>

Chart 4 presents a scatter plot of the average part-time rate against the average level of average annual hours worked per worker in the euro area countries over the period 1995 to 2004. Chart 5 presents the scatter plot for the change in the part-time rate and the level of average annual hours worked per worker over the period 1991 to 2004. The significantly negative correlations shown by both charts (-0.8 and -0.6 respectively) indicate the strong mechanical effect of a high or increasing rate of part-time work on the level and rate of change in average annual hours worked per worker. Given that the rate of part-time work has increased dramatically in the EU15 over the

**Chart 5** Changes in annual hours worked per worker and the part-time rate in the euro area countries and the United States, 1991-2004

(Correlation coefficient = -0.5; t-statistic = 1.9)



Source: OECD.

last 20 years and has decreased in the United States,<sup>9</sup> this may offer an important explanation for the greater trend decline in average hours worked per worker in the euro area relative to the United States. Furthermore, given that only around 15% of part-time work is involuntary (Eurostat 2004), and that rates of involuntary part-time work are particularly low in countries which also exhibit relatively low levels of average hours per worker (such as Germany and the Netherlands), the decline in average annual hours worked per worker could also indicate a role for preferences.

However, one should not conclude that the negative relationship between the rate of part-time work and average annual hours worked per worker indicates an undesirable by-product of policies to encourage part-time work. The increase in part-time work contributed strongly and positively to employment growth in the EU15 over the 1990s.<sup>10</sup> It is clear that a non-negligible proportion of part-time workers

8 For a summary of regulations on part-time work in EU countries see, for example, H. Buddelmeyer, G. Mourre and M. Ward-Warmedinger (2004) "Recent developments in Part-time work in EU-15 Countries: Trends and Policy", IZA Discussion Paper No 1415.

9 In the EU15, the part-time rate increased by 5 percentage points in the period 1982-2001, from 13% to 18%. Over the same period it decreased in the United States by 2 percentage points, from just over 15% to 13%.

10 See for example, ECB (2002) "The composition of employment growth in the euro area in recent years", Monthly Bulletin, November 2002.

would not be in the labour market at all were it not for the opportunity that part-time work offers them to combine work with family responsibilities or study. This holds particularly for groups at the margin of the labour force, such as low-skilled, female and young workers.<sup>11</sup> Hence the preference effect linked to part-time work is likely to have increased labour utilisation in the euro area, rather reduced it, through its positive contribution to employment growth outweighing the negative effect on average hours of work per worker.

Other possible preference effects have been identified with regard to individuals' labour market participation decisions (affecting average annual hours per capita through employment). In particular, early retirement may have a significant negative effect on lifetime hours of work, related to both a country's institutional framework and – to the extent that early retirement may be voluntary – preferences. Although the legal retirement age in most EU countries is 65, the actual average age of retirement is far lower (around 60 for the EU15). This compares with an estimated effective retirement age of 63 in the United States.<sup>12</sup> Furthermore, the EU average retirement age has declined over the past decades. Work by the OECD has found a significant and strong correlation between retirement incentives and labour participation among older workers.<sup>13</sup> Their analysis shows that public pension systems and other social transfer programmes, such as early retirement schemes, provide significant early retirement incentives and that such schemes have played a major role in reducing the employment of older age groups in a number of EU15 countries. They conclude that reforming old age pension schemes must be accompanied by changes in the access to early retirement schemes for people without special needs, if labour utilisation in the 55-64 age group is to be increased.

Finally, the non-participation in the labour market of other groups, such as the low-skilled, the young and women, also negatively affect

the average annual hours worked per capita in the euro area through both preferences and institutions. For instance, an increase in inactivity among young workers may be generally be explained by high levels of youth unemployment and/or the expansion of higher education in the EU15, which has increased dramatically over the last 20 years. Among the prime age population (aged 25 to 55), non-participation is highest among women, which may affect the level of average hours worked per capita. A high proportion of female labour has been found to remain out of the labour force for an extended period in many EU countries – representing a vast reserve of untapped labour resources<sup>14</sup> – and a significantly higher proportion of female workers have been found to prefer inactivity relative to the United States. Again, the lower participation rate of women in the euro area might be linked both to preferences and disincentives to work created by the institutional framework. For some women, the value of home time or home production may always outweigh that of working in the labour market. This could be seen as the pure preference effect. For other women, however, particularly women with children, the design of tax and benefit systems, and/or the lack of provision of quality childcare facilities, may decrease the benefits of market work and deter them from entering the labour market.

The considerable cross-country variation in rates of labour market participation across Europe suggest that institutional factors, rather than preference effects, may play the stronger role in explaining lower hours per capita in the

11 Studies have found, for example, that policies removing barriers to part-time work increase female participation. See for example OECD (2005) "Going for growth" Chapter 6.

12 See for example OECD (2005) "Going for growth" Chapter 5.

13 See for example OECD (2005) "Going for growth" Chapter 5.

14 For details, see for example H. Buddelmeyer, G. Mourre and M. Ward-Warmedinger (2005) "Part-time work in EU countries: labour market mobility, entry and exit", No. 460 ECB Working Paper Series, March.

euro area.<sup>15</sup> For example, high average and marginal tax rates and unemployment benefits may impact negatively on the incentives to engage in paid employment and/or, following a decision to work, on the choice of the number of hours to work in euro area countries, thus potentially reducing officially recorded working time. Countries with a relatively high tax wedge (which captures the amount of social security contributions, payroll taxes, personal income tax and consumer taxes that create a wedge between real labour costs for employers and the real take-home pay of employees) tend to record a lower level of annual hours worked per capita. Belgium, France, Italy and the Netherlands, for example, which were at the low end of the annual hours worked per capita scale in the euro area in 2004, have particularly high tax wedges.<sup>16</sup> Countries with high marginal tax rates, for example Belgium, Germany and the Netherlands, also show some tendency towards shorter average annual hours per worker, particularly among women.<sup>17</sup> Reductions in labour taxes probably contributed to the increases in average annual hours worked per capita in some countries, such as Ireland, in the second half of the 1990s. Furthermore other institutional arrangements, such as flexibility options in the arrangement of working hours and standard school hours, also impact on the length of working hours, particularly for women.

### 4.3 THE ROLE OF LAWS GOVERNING WORKING TIME

An additional explanation for the downward trend in average annual working hours per worker in euro area countries may be that changes in working time regulations in Europe have enforced this reduction. Working time in Europe is governed by legislation creating a framework within which the details are often set at a company level through collective agreements. Laws governing working time therefore provide a further example of where both preferences and institutions play a role in determining hours of work. Such regulations generally allow employees' working time to be

organised and calculated over a reference period, which is typically longer than one week. Thus almost all of the legislative limits on working hours – usually relating to daily and/or weekly hours – can be exceeded, as long as the maximum limits are not exceeded on average over the given reference period.<sup>18</sup> This approach to regulating average working hours was supported by the 1993 EU Directive on working time. It stated that the average working time for each seven-day period, including overtime, must not exceed 48 hours over a reference period not exceeding four months.<sup>19</sup>

Annex Table A1, a shortened version of the table in Kouzis and Kretsos (2003), provides a summary of the key features of the legislative framework for hours of work in the euro area countries.<sup>20</sup> It shows that the maximum daily hours that can be worked are specified, at 9 or 10 hours, in Belgium, Germany, Greece, Spain, France, Luxembourg and the Netherlands, although longer hours are permitted under certain circumstances in some cases on the basis of a collective agreement (Belgium, the Netherlands). The maximum weekly hours

15 See also H. Buddelmeyer, G. Mourre and M. Ward-Warmedinger (2004) "The determinants of part-time work in EU countries: empirical investigations with macro panel data", European Commission, Economic Paper No 213. V. Genre, R. Gomez-Salvador and A. Lamo (2005) "European Women, Why do(n't) they work?", No. 454 ECB Working Paper Series, March.

16 See for example OECD (2004) "Benefits and Wages".

17 De Nederlandsche Bank (2005) "Obstacles to increasing Dutch working hours", Quarterly Bulletin, March.

18 For more details see G. Kouzis and L. Kretsos (2003) "Annualised hours in Europe", EIRO. A reference period of 12 months is the maximum in most countries considered, although a collective agreement is required to cover this period in Ireland, Italy, Luxembourg and Portugal. Exceptions include Germany (24 weeks) and the Netherlands (13 weeks).

19 Council Directive 93/104/EC of 23 November 1993. This directive also stated that all workers are entitled to: a minimum daily rest period of 11 consecutive hours per 24 hour period; in each seven-day period, a minimum uninterrupted rest period of 24 hours plus the latter 11 hours daily rest; and where the working day is longer than six hours, a rest break. The normal hours of work for night workers must not exceed an average of eight hours in any 24-hour period.

20 Most of this legislation was introduced during the 1990s, in many cases following the 1993 EU directive.

during the reference period are specified in Belgium, Germany, Spain, France, Luxembourg, the Netherlands and Austria – commonly at 45, 48 or 50 hours – and in some cases a collective agreement is required (Belgium, France and the Netherlands). The maximum *average* weekly hours over a reference period are stipulated at 35 in France (or 1,600 per year); 38 in Belgium; 40 in Austria (or collectively agreed weekly hours, if shorter), Finland, Greece (or 38 using one year as the reference period), Luxembourg (and 10 hours per day), the Netherlands (can be longer in special circumstances or by collective agreement) and Spain; and 48 in Ireland, Italy and Portugal. In Germany, the average to be maintained relates to daily hours (eight). Generally, those countries with the least detailed legislative frameworks, such as Germany, Ireland and Italy, have collective agreements on hours of work, which have often developed independently of the statutory provisions.

Although the precise effect of such legislation is difficult to quantify, the implementation of the 35-hour week in France certainly coincides with the decline in and continued low level of annual hours worked per worker. Similarly, enforced shorter working hours in Germany in the 1980s seems to reduce the average level of annual hours worked per worker and was not accompanied by employment creation. In the Netherlands, the adoption of a tripartite agreement in 1982, which resulted in legislation to reduce working time, overlapped with a decline in average annual hours per worker.

Over and above the regulations described above, other regulations and changes in regulations affect the level and change in annual hours worked per worker, including regulations governing sick leave, annual holidays and other forms of leave entitlements, and overtime. Some general trends in these variables can be identified for the euro area countries. First, some countries have adjusted annual holidays as a tool to regulate working

hours since the early 1980s, which has contributed to the downward trend and/or the low level of average annual hours worked per worker.<sup>21</sup> Second, a strengthening of regulations to protect the health and safety rights of workers over this period may have also contributed to the decrease in observed annual average hours of work, for example through an increase in parental leave, maternity leave and sick leave rights and usage. Third, some countries and/or firms increasingly regulate overtime hours, which normally entail a higher unit labour cost per hour worked than regular hours, as a means to adjust average working hours and/or labour costs<sup>22</sup>. Differences in regulations are, however, so diverse across euro area countries that although they contribute to explaining cross-country differences, clearly identifying the impact of each factor is difficult. Furthermore, whether regulations are entirely independent from preferences is also not entirely clear, given that governments may respond to the wishes of their electorate.

## 5 MACROECONOMIC CONSEQUENCES OF CHANGES IN WORKING TIME

In a discussion linked to the preferences versus regulation debate, changes in working time trends have also been examined in relation to labour productivity and per capita income developments in Europe and the United States. To provide some insight to this discussion, this section looks at how the changes in working time have interacted with other

21 For example, in Germany, Italy and the Netherlands, relatively long annual leave and/or a relatively high number of public holidays tend to reduce the average number of annual hours worked per worker. Conversely, the effect of relatively short annual leave in Spain contributes to relatively high average annual hours of work. The total of agreed annual leave and public holidays varies in the EU15 from 44 days in Sweden to 29 days in Ireland (See EIRO (2003) “Working time Developments”). The introduction of additional days of holiday has typically followed the introduction of working week restrictions.

22 For example, France has considered a reform of its 35-hour working week through provisions to increase the statutory overtime quota.

macroeconomic variables: first, labour costs, employment and labour productivity growth rates and, second, per capita income growth.

### 5.1 WORKING TIME AND LABOUR COSTS PER HOUR WORKED

Supporters of working time reductions argue that less work for some must create more work for those that are unemployed. However, what is ignored in this statement and commonly suggested in the literature is that the impact of a working time reduction on employment crucially depends on its effect on labour costs. The large-scale reductions in working hours in the euro area countries over the last three decades have usually not been accompanied by corresponding wage cuts, implying an increase in total labour costs per hour worked.

Chart 6 shows that in the euro area, between 1970 and 2004, real labour costs per hour worked (defined as total real compensation relative to total annual hours worked) increased by six times as much as employment. In the United States, by contrast, real labour costs per hour worked increased in the same period by 57% compared with 77% for employment. Data for individual euro area countries confirm that for all countries for which data is available the increase in real total labour costs per hour worked from 1970 to 2004 was often considerably greater than the increase in employment. However, the difference between these two growth rates varies considerably from country to country. For example, in Belgium, the Netherlands and Ireland employment grew by 12%, 47% and 74% respectively, while real labour costs increased by 158%, 91% and 163%.

The trend of rising real total labour costs per hour worked observed in the euro area countries over the period 1970-2004 has probably played a significant role in explaining its relatively poor employment performance and is likely to have contributed to high unemployment rates, in particular for unskilled workers. This may reflect both a reallocation of

labour in favour of more highly skilled workers<sup>23</sup> and a higher level of capital-labour substitution. Indeed, the rising levels of real total labour costs per hour worked observed in euro area countries over the period 1970-2004 encouraged capital-intensive production in those areas where employment remained profitable.<sup>24</sup> This led to a faster rise in capital-labour ratios in the euro area than in the United States,<sup>25</sup> resulting in a rise in labour productivity growth per hour worked and a decline in firms' demand for labour.<sup>26, 27</sup> The gap in labour productivity growth between the euro area and the United States was particularly marked in the 1970s (see Table 2b), and consideration of figures for the whole period 1970-2004 shows that labour productivity per hour worked in the euro area grew on average by 2.8%, compared with 1.6% in the United States. The same pattern can be observed when

23 Reductions in hours worked might perhaps result in a bias in favour of more highly skilled workers, reducing the chances of employment for the unskilled unemployed (see OECD (1998) "Working hours: latest trends and policy initiatives", Employment Outlook, Paris).

24 In the long run, given continued growth in average real earnings, it is generally considered that working hour reductions are constrained by long-term trends in hourly productivity growth. In the short run, however, it is not clear which way the causality runs – from productivity gains to hours reductions, or the other way round (see OECD Employment Outlook 1998, Chapter V).

25 See IMF (1999) World Economic Outlook, Chapter IV, Washington D.C.

26 In addition, M. White (1987) "Working hours: assessing the potential for reduction", ILO, Geneva, presents evidence for a small number of countries showing that rapid productivity gains tend to occur after a reduction in hours, rather than before. This does not imply that reductions in hours are the primary cause of increases in hourly labour productivity over the long term. However, it is possible that following a technological advance a reorganisation of working arrangements may help potential productivity gains to be realised, see OECD (1996) "Technology, productivity and job creation" Vol. 2, Analytical Report, Paris, and G. Betcherman (1997) "Changing workplace strategies: achieving better outcomes for enterprises, workers and society", Human Resources Development Canada and OECD. It is frequently argued that such reorganisations can be facilitated by reductions in average working time, see G. Cette and D. Taddei (1997), "Réduire la durée du travail: de la théorie à la pratique", Livres de poche, Paris.

27 In addition, looking at the sectoral level, these patterns may have tended to impede the further development of "less capital-intensive" sectors, such as the business service sector, which have the highest growth potential. See P. Cahuc and M. Debonneuil (2004) "Productivité et emploi dans le tertiaire", Documentation Française.

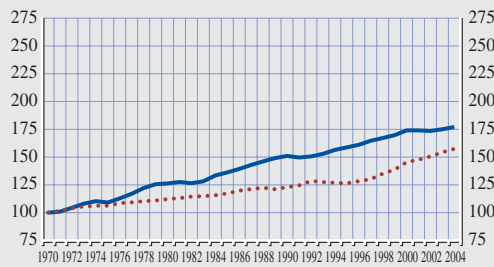


**Chart 6 Real labour costs per hour worked and total employment**

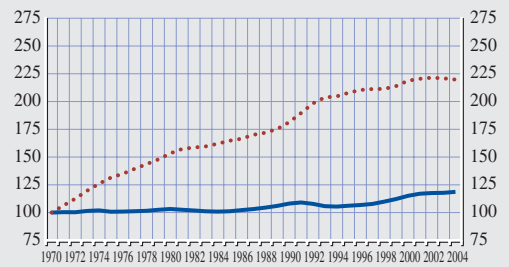
(Index 1970 = 100)

— employment  
 ..... real labour costs

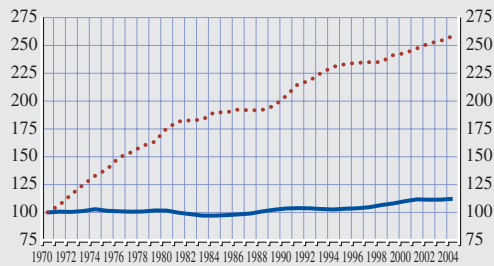
**United States**



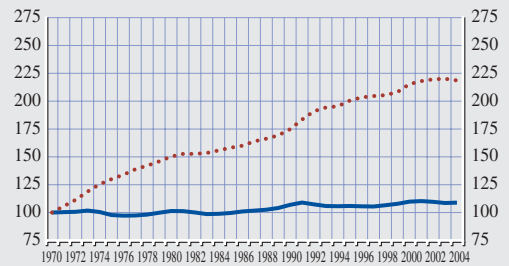
**Euro area**



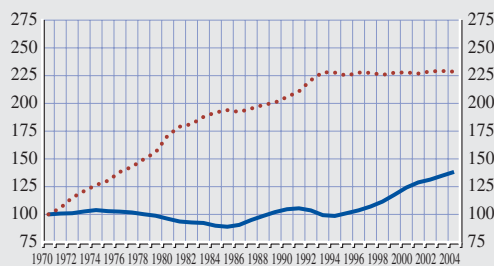
**Belgium**



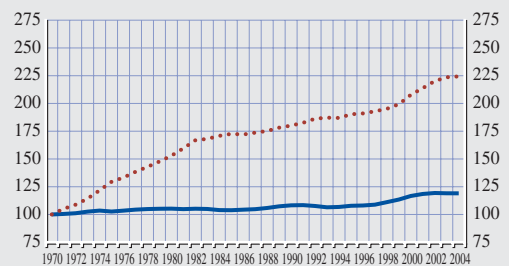
**Germany**



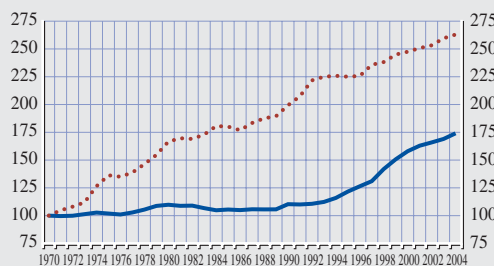
**Spain**



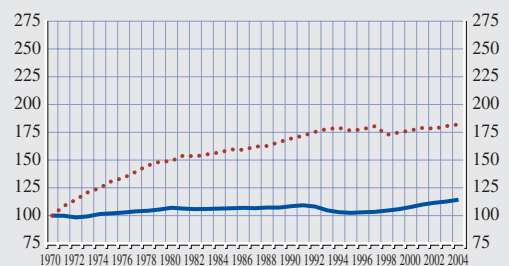
**France**



**Ireland**



**Italy**



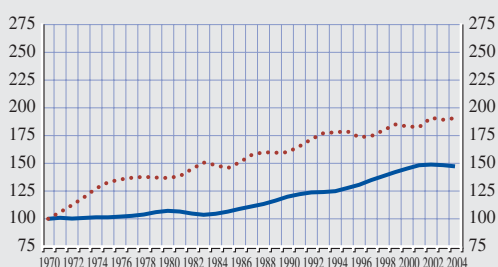
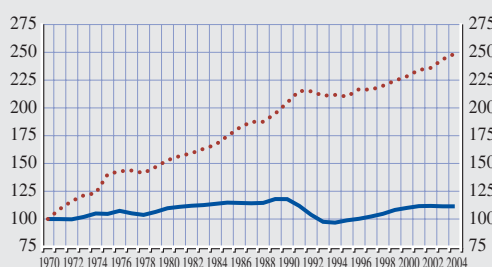
Sources: OECD and ECB calculations.

Note: Data for Germany prior to 1991 refer to West Germany. Data were deflated by using the GDP deflator. Real total labour costs per hour worked are defined as total real compensation relative to total annual hours worked. Total employment includes employees and the self-employed. Due to the unavailability of certain data, the euro area aggregate includes only Belgium, Germany, Spain, France, Ireland, Italy, the Netherlands and Finland, which represent more than 90% of euro area GDP in purchasing power parity terms.

Chart 6 Real labour costs per hour worked and total employment (cont'd)

(Index 1970 = 100)

— employment  
 ..... real labour costs

**Netherlands****Finland**

Sources: OECD and ECB calculations.

Note: Data for Germany prior to 1991 refer to West Germany. Data were deflated by using the GDP deflator. Real total labour costs per hour worked are defined as total real compensation relative to total annual hours worked. Total employment includes employees and the self-employed. Due to the unavailability of certain data, the euro area aggregate includes only Belgium, Germany, Spain, France, Ireland, Italy, the Netherlands and Finland, which represent more than 90% of euro area GDP in purchasing power parity terms.

looking at the performance of the individual euro area countries. Over the period 1970-2004, all the euro area countries for which data is available recorded stronger labour productivity growth per hour worked than in the United States.

All in all, it seems that over the long run and due to labour market settings and institutions as well as preferences, the benefits from rising labour productivity in the euro area countries have been used to raise real wages per hour worked through reductions in hours worked per worker – which have contributed to the persistence of high or even rising unemployment rates. In the United States, by contrast, the gains from productivity growth have been translated primarily into rising employment, with only a modest increase in the real wage<sup>28</sup>.

Breaking down this 30-year period and focusing on the more recent developments, we see that growth in real labour costs per hour worked accelerated in the United States from the 1990s, while in the euro area they slowed significantly in the 1980s and 1990s (see Table 2a). From the 1990s onwards, the growth in real total labour costs per hour worked in the

euro area was actually below the US rate. Overall, apart from moderate real wage increases in some periods, the slowdown in the growth of costs in the euro area mainly reflected the slowing of the decline in average annual hours per worker in most euro area countries (see Section 3) as well as institutional changes and structural labour market reforms implemented in some countries, which in part targeted young and unskilled workers and lowered the cost of their labour.

A slowdown in the growth of real total labour costs per hour worked was observed in all euro area countries during the 1980s and 1990s. It was particularly marked in Spain and Italy. The slowdown in labour costs induced firms to shift to more labour-intensive production, reversing earlier substitution policies in favour of capital. This process resulted in both an acceleration in employment growth and a significant slowdown in productivity growth in the euro area – in the mid-1990s the latter to rates below the US – where labour productivity growth had significantly accelerated. The deceleration in labour productivity was

28 See IMF (1999) World Economic Outlook, Chapter IV, Washington D.C.

**Table 2 Average annual growth rates of real labour costs, labour productivity and unit labour costs per hour worked in euro area countries and the United States, 1970-2004**

a) Real labour costs					
	1970-2004	1970-1979	1980-1990	1991-2004	1998-2004
BE	2.9	3.6	2.1	1.7	1.4
DE	2.3	2.8	1.7	1.6	1.0
GR	-	-	-	-	-
ES	2.5	3.8	2.6	0.8	0.1
FR	2.4	3.1	1.8	1.6	2.2
IE	2.9	3.5	2.4	2.0	1.6
IT	1.8	2.7	1.2	0.5	0.1
LU	-	-	-	-	-
NL	1.9	2.5	1.4	1.3	1.3
AT	-	-	-	-	-
PT	-	-	-	-	-
FI	2.8	3.6	3.1	1.4	2.0
EA	2.4	3.0	1.9	1.4	0.6
US	1.4	1.0	0.9	1.8	2.8
b) Labour productivity per hour worked					
	1970-2004	1970-1979	1980-1990	1991-2004	1998-2004
BE	2.7	3.4	2.7	1.7	1.5
DE	2.8	3.3	2.6	2.0	1.3
GR	-	-	-	2.2	2.9
ES	2.6	4.0	3.2	0.7	-0.3
FR	2.7	3.4	2.8	1.9	2.2
IE	4.3	4.3	3.8	4.3	4.1
IT	2.4	3.3	2.3	1.3	0.3
LU	-	-	-	4.1	3.9
NL	2.1	2.7	2.6	1.3	1.0
AT	-	-	-	-	1.9
PT	-	-	-	2.0	1.0
FI	2.8	3.1	2.8	2.5	2.3
EA	2.8	3.6	2.9	1.8	1.1
US	1.6	1.3	1.2	2.0	2.5
c) Real unit labour costs					
	1970-2004	1970-1979	1980-1990	1991-2004	1998-2004
BE	0.2	0.3	-0.7	0.0	-0.1
DE	-0.4	-0.5	-1.0	-0.3	-0.3
GR	-	-	-	-	-
ES	-0.1	-0.2	-0.6	0.0	0.3
FR	-0.3	-0.3	-1.0	-0.3	-0.1
IE	-1.4	-0.8	-1.4	-2.3	-2.6
IT	-0.6	-0.6	-1.1	-0.8	-0.1
LU	-	-	-	-	-
NL	-0.1	-0.2	-1.2	0.0	0.2
AT	-	-	-	-	-
PT	-	-	-	-	-
FI	-0.1	0.5	0.3	-1.1	-0.2
EA	-0.5	-0.6	-1.1	-0.4	-0.5
US	-0.3	-0.3	-0.3	-0.2	0.2

Sources: OECD and ECB calculations.

Note: Data were deflated by using the GDP deflator. Data for Germany prior to 1991 refer to West Germany.

broadly shared among euro area countries, with the exception of Ireland, and was particularly marked in Spain and Italy.

These real labour cost and productivity developments affected the growth in real *unit* labour costs per hour worked which broadly equate to firm's profit margins. In the 1980s and the beginning of the 1990s most euro area countries managed to offset the increases in real labour costs per hour worked by significantly increasing labour productivity. This resulted in a fall in real unit labour costs per hour worked and an increase in firms' profit margins<sup>29</sup>. Since the late 1990s, however, these developments in real *unit* labour costs per hour worked slowed in all euro area countries, with the exception of Ireland. The growth rate of real *unit* labour costs per hour worked even turned positive in most euro area countries between 1998 and 2002, reflecting a deterioration of firms' profitability in the euro area. During this period, deteriorating profit margins were mainly due to accelerating growth in real labour costs per hour in France and Finland and due to decelerating labour productivity growth in the remaining countries.

## 5.2 WORKING TIME AND PER CAPITA INCOME GROWTH

The working time, employment and labour productivity growth developments described above had clear implications for the path of per capita income. In the context of an accounting framework, per capita income growth ( $\Delta CAPI$ ) can be decomposed into the rate of labour productivity growth and the growth of average hours worked per capita (which in turn includes the growth in working time per worker and employment).

$$\Delta CAPI = \Delta \left( \frac{\text{real GDP}}{\text{population}} \right) = \Delta \left( \frac{\text{real GDP}}{\text{hours worked}} \right) + \Delta \left( \frac{\text{hours worked}}{\text{population}} \right)$$

The figures for these components are reported in Table 3, for the euro area countries, the euro area aggregate and the United States for three different periods: 1970-2004, 1991-2004 and

1996-2004. In order to correct for cyclical effects, trends were calculated by using a band pass filter.

Over the whole period 1970-2004, the per capita income growth performance in the euro area (1.9%) was very similar to the US performance (2.1%). However, while in the euro area the labour productivity growth per hour worked offset the negative contribution from average annual hours worked per capita, in the United States the latter contributed positively to per capita income growth. Data reported in Table 3 show a common profile of a zero or negative contribution from annual hours worked per capita, offset by growth in labour productivity per hour, across all euro area countries for which data are available. However, the magnitude of the contributions to per capita income vary considerably from country to country, giving rise to significant disparities in per capita income performances across countries. Some euro area countries managed to record a similar or even higher per capita income growth performance than the United States, due to much stronger growth in labour productivity per hour worked. At the top of the scale, Ireland enjoyed a per capita income growth performance which was double that of both the euro area as a whole and the United States. France, Germany and the Netherlands found themselves at the bottom end of the per capita income growth spectrum.

Data for the 1990s provide a very different picture. Progress in increasing average annual hours worked per capita, or labour utilisation, in the euro area, especially from the mid-1990s, was not sufficient to outweigh the significant slowdown in labour productivity. As a result, per capita income growth decelerated, widening the gap with the United States. US per capita income growth remained stable, thanks to an acceleration in labour productivity

<sup>29</sup> Given that real unit labour costs were deflated by using the GDP deflator, this indicator approximates the inverse of firms' profit margins. Therefore a fall in real unit labour costs implies an increase in firms' profitability.

**Table 3 Decomposition of the per capita income trend in euro area countries and the United States**

(average annual percentage changes)

	1970-2004			1991-2004			1996-2004		
	Real GDP per capita	Labour productivity per hour worked	Average annual hour worked per capita	Real GDP per capita	Labour productivity per hour worked	Average annual hour worked per capita	Real GDP per capita	Labour productivity per hour worked	Average annual hour worked per capita
BE	2.1	2.7	-0.5	1.7	1.8	-0.1	1.8	1.6	0.3
DE	1.6	2.8	-1.2	1.3	2.0	-0.7	1.2	1.5	-0.3
GR	2.0	-	-	2.2	2.0	0.2	3.1	2.9	0.3
ES	2.3	2.5	-0.2	2.2	0.7	1.5	2.5	-0.1	2.6
FR	1.9	2.7	-0.8	1.5	1.9	-0.5	1.8	2.1	-0.3
IE	4.2	4.2	0.0	5.8	4.3	1.5	6.3	4.5	1.7
IT	2.0	2.4	-0.3	1.2	1.3	-0.1	1.2	0.6	0.6
LU	3.2	-	-	3.4	4.1	-0.6	3.7	4.1	-0.3
NL	1.8	2.1	-0.3	1.7	1.3	0.5	1.7	0.9	0.8
AT	2.4	-	-	1.9	-	-	1.9	1.7	0.2
PT	2.6	-	-	1.8	1.9	0.0	1.8	1.6	0.2
FI	2.3	2.8	-0.5	1.9	2.6	-0.6	3.2	2.4	0.8
EA	1.9	2.8	-0.9	1.5	1.8	-0.3	1.7	1.3	0.3
US	2.1	1.6	0.4	2.0	2.0	-0.1	2.2	2.4	-0.1

Sources: OECD and ECB calculation.

Note: The trends were calculated using a pass band filter. The euro area aggregate was calculated using GDP in purchasing power parity terms. Due to the unavailability of certain data, the euro area includes only Belgium, Germany, Spain, France, Ireland, Italy, the Netherlands and Finland, which represent more than 90% of euro area GDP. Data for Germany prior to 1991 refer to West Germany.

growth and a constant and high level of labour utilisation.

The picture for the individual euro area countries is more varied. Some countries – such as Germany and Italy – experienced less favourable per capita income growth performances than both the euro area and the United States. Others, such as Greece, Spain, Ireland, Luxembourg and Finland, experienced a significant acceleration in per capita income growth to a level higher than in the euro area as a whole and even in the United States. In Greece and Luxembourg, this was due to a strong labour productivity growth performance. In Spain, the growth in average annual hours worked per capita significantly offset a deceleration in labour productivity growth. In Ireland, and to a lesser extent, Finland, both labour productivity growth per hour worked and annual average hours worked per capita accelerated<sup>30</sup>, partly thanks to a significant technological boom in the 1990s.<sup>31</sup>

## 6 CONCLUDING REMARKS

Between 1970 and 2004, average annual hours worked per worker followed a downward trend in the euro area as a whole, as well as in all individual euro area countries and the United States, although this trend is found to be on average significantly steeper in the euro area than in the United States. Furthermore, the euro area and a number of euro area countries experienced a significant decline in annual hours worked per capita (otherwise known as labour utilisation) over the last three decades,

30 According to Scarpetta et al. (2000) significant growth in total factor productivity has occurred in most of the OECD countries with a record of reforms and a higher employment content of growth than in the past. In other words, structural changes seem to have led to higher utilisation of labour in a context of a more productive use of factor inputs (or greater factor productivity if quality changes in factor inputs are taken into account). See S. Scarpetta, A. Bassanini, D. Pilat and P. Schreyer (2000), “Economic growth in the OECD area: recent trends at the aggregate and sectoral level”, OECD Economic Department Working Paper No 248.

31 See ECB (2004b), “Sectoral specialisation in the EU: a macroeconomic perspective”, Occasional Paper Series No. 19, Frankfurt.



while in the United States this measure increased. The paper has found that while some countries managed to reverse their downward trends in labour utilisation in the course of the 1980s and 1990s, for all euro area countries (for which data are available) average hours worked per capita in 2004 were significantly below their 1970 levels. Overall, it appears that the diverging trend in labour utilisation in the US relative to the euro area average is explained by a smaller decline in average annual hours worked per worker, combined with a stronger rise in the employment rate in the United States.

The significant decline in average annual hours worked per worker in euro area countries over the last three decades can be linked to preferences, institutions and to changes in working time regulations. Falling average annual hours worked per worker or per capita are not a problem per se, if they reflect preferences. For example, increasing shares of voluntary part-time employment across many euro area countries, while increasing employment rates, have contributed to the downward trend in average annual hours per worker. However, to the extent that short working hours are due to institutional features which create disincentives to work, such as tax wedges and high unemployment benefits, these factors should be addressed. On the labour supply side, this will necessitate reforms to the institutional framework to avoid discouraging individuals from working, for example through the interplay of tax and benefit systems. On the demand side, there is a need to address the high total real labour costs per hour worked, particularly for the low-skilled, for example by reducing employers' taxes and social security contributions.

The steady decline in annual hours worked per worker over the last three decades was accompanied by a significant increase in real labour costs per hour worked in the euro area countries and may be identified as one of the major causes of relatively low employment growth and high unemployment in the euro

area. All in all, it seems that over the long run and due to labour market settings and institutions, as well as preferences, the benefit from rising labour productivity in the euro area countries has been used to raise real wages per hour worked through reductions in hours worked per worker – which contributed to the persistence of high or even rising unemployment rates. In the United States, by contrast, the gains from productivity growth were translated primarily into rising employment, with only a modest increase in the real wage.

In conclusion, policies to increase labour utilisation in euro area countries should be further developed in order to accelerate employment growth and reduce unemployment in the euro area. One side effect of policies to increase employment may be the dampening of labour productivity growth. However, this apparent trade-off between labour utilisation and labour productivity should only be a temporary phenomenon that may fade away when the economy reaches a new equilibrium unemployment rate. However, experiences in some countries, such as Ireland and Finland, have shown that it is possible to increase *both* labour utilisation and labour productivity growth. Such successes may be partly linked to successful innovation and the diffusion of new technologies.

## 7 APPENDIX

Table A1 Legislative framework for working time

Country	Main legislation	Reference period	Maximum daily hours	Maximum weekly hours	Maximum average weekly hours (or annual maximum)	Conditions and exceptions
Belgium	Laws of 16 March 1971 (as amended), 10 August 2001 and 17 March 1987 and National Collective Agreements No 42 of 2 June 1987 and No 42 of 10 November 1987.	Between 3 and 12 months	9 under flexible working week schemes; 11 or 12 for specific reasons	45 under flexible working week schemes; 50 or 56 for specific reasons	38	Flexible working week schemes: normally require a sectoral collective agreement. Specific reasons: annualised hours permitted for technical or practical reasons or to cope with an exceptional surge in work; agreement of the sectoral joint committee generally required. Throughout the reference period, the number of hours worked may not exceed normal limits by more than 65 hours without immediate compensatory rest being granted.
Germany	Working Time Act (Arbeitszeitgesetz) 1994.	24 weeks	10	48	8 per day	Collective or works agreements may establish a different reference period or extend hours beyond 10 a day in certain circumstances.
Greece	Laws 2639/1998 and 2874/2000.	Up to 12 months	12	-	40 (38 or 1,748 per year if reference period is 12 months)	-
Spain	Royal Decrees 1/1995 and 1561/1995, Laws 39/1999 and 12/2001.	Up to 12 months	9	50	40	Collective agreement required for the introduction of a collective annual reference period (although some individual employment contracts may allow an annual reference period).
France	June 1996 "Robien law" on working time reduction, and June 1998 and January 2002 "Aubry laws" on working time reduction.	Up to 12 months	10	48 or 60 in special cases	35 (maximum of 1,600 per year)	Sectoral or company collective agreement required for the introduction of an annual reference period.
Ireland	Organisation of Working Time Act 1997.	Up to 4 months, or up to 12 by agreement	-	-	48	Collective or individual agreement required to extend reference period from 4 to a maximum of 12 months.

Table A1 Legislative framework for working time

Country	Main legislation	Reference period	Maximum daily hours	Maximum weekly hours	Maximum average weekly hours (or annual maximum)	Conditions and exceptions
Italy	Law 196/1997 (Article 13), Ministerial Circular 10/2000 and Legislative Decree 66/2003.	Up to 4 months, or up to 12 by agreement	-	-	48	Collective agreement required to extend reference period from 4 to a maximum of 12 months.
Luxembourg	Laws of 9 December 1970 and 12 November 1971 as most recently amended by Laws of 12 February 1999, 8 March 2002 and 20 December 2002.	1 month/4 weeks, or up to 1 year by agreement	10	48	40 (10 per day)	Collective agreement (or ministerial authorisation in the absence of an agreement) required to extend the reference period from 1 month/4 weeks to 1 year or more.
Netherlands	Working Time Act (Arbeidstijdenwet) 1995.	13 weeks	Standard 9; by agreement 10; special circumstances 12	Standard 45; by agreement 50 (over 4 weeks); special circumstances 60	Standard 40; by agreement 45; special circumstances 48	Collective agreement or an agreement with the works council required to exceed standard rules in all cases.
Austria	Working Time Act (Arbeitszeitgesetz, AZG) 1997 (plus additional decrees in the case of public services).	Up to 12 months	-	48	40 (or collectively agreed week, if shorter)	Collective agreement required for the introduction of an annual reference period (or works agreement if there is an "opening clause" in the relevant collective agreement).
Portugal	Law 73/98 of 10 November 1998 on general organisation of working time.	Up to 4 months or up to 12 by agreement	-	-	48	Collective agreement required to extend reference period from 4 to a maximum of 12 months.
Finland	Working Hours Act (605/1996).	Up to 52 weeks	-	-	40	Sectoral collective agreement (or local agreement if permitted) usually required to exceed statutory working time limits of 8 hours a day and 40 hours a week.

Source: EIRO, 2003.

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