Part II - Pressure on Public Sectors in Europe

European leaders have expressed the ambition at the Lisbon summit of March 2000 "to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion". The question is, however, whether this ambition is feasible. In particular, is it possible to reconcile an efficient and competitive economy with ecological sustainability and social cohesion?

Various developments in European societies make the Lisbon ambitions more difficult to realise. Some of these developments push up public expenditures, such as ageing, a rising demand for publicly provided services, and increasing wage inequality between high-skilled and low-skilled workers. Further growth in public expenditures is problematic for at least two reasons. First, increasing factor mobility and individual flexibility increase the social costs of taxation, making it more difficult for governments to raise revenues. Second, societies are becoming increasingly heterogeneous, which is at odds with the uniform character of many public arrangements and calls for more diversity in the supply of goods and services.

The developments put therefore pressure on the public sector. They typically make it more difficult to reconcile equity and efficiency. Does this force Europe to move towards an Anglo-Saxon type of institutions with fewer public responsibilities? Or can Europe develop institutions that improve the trade-off between equity and efficiency? The response in the form of policy and institutional changes is a key uncertainty, and forms the second dimension of our scenarios in part III of this study.

At the end of part II, we discuss opportunities for innovations in policies and institutions so as to improve the trade-off between equity and efficiency. Our conjecture is that information is the key to innovation in the public sector. In particular, governments may better exploit information to develop more targeted policies, provide better private incentives and provide services more efficiently.

8 Lisbon: The American dream of Europe?

European leaders want to raise productivity and employment to an American level while maintaining social cohesion. But these twin goals of efficiency and equality are typically in conflict with each other. In looking for ways to escape the trade-off between efficiency and equity, the experiences in Europe are more interesting than Anglo-Saxon experiences.

8.1 Competing models: Europe versus America

"*France had the seventeenth century, Britain the nineteenth, and America the twentieth. It will also have the twenty-first.*" This was predicted by Mortimer B. Zuckerman (1998). He was jubilant about the American economic performance and saw a happy marriage of the new economy and the older American culture. Indeed, in the second half of the nineties the US productivity growth accelerated and employment expanded. The contrast with Europe was sharp. Most European countries saw sluggish growth in productivity and struggled with high unemployment rates.

This led to calls for reform in Europe. In Lisbon, European leaders drew up an agenda to make their economy the most competitive and dynamic in the world in 2010.[20] Nobel Prize winner Gary Becker sees a watershed in European economic policies: "*Until recent years, most continental European politicians and intellectuals dismissed what they derisively called the British and American "Anglo-Saxon" model of competition and price flexibility. Yet a quiet but enormous change may be taking place in European attitudes toward competition in labour and other markets*" (Becker, 2002).

The emphasis on the Anglo-Saxon model has raised the concern that Europe will not only become more 'competitive' and richer but also more unequal. Indeed, introducing competition and flexibility through deregulation and privatisation could introduce an Anglo-Saxon society in which the winners are well-off but the losers pay a high price. The European Union acknowledges this concern. The Lisbon agenda includes social cohesion as a complementary goal.

But raising competitiveness while maintaining social cohesion may neglect a fundamental trade-off between efficiency and equity. Reconciling the two objectives may turn out to be difficult, so that Europe faces a dilemma: either maintaining equity via the welfare state, or encouraging competitiveness and participation.

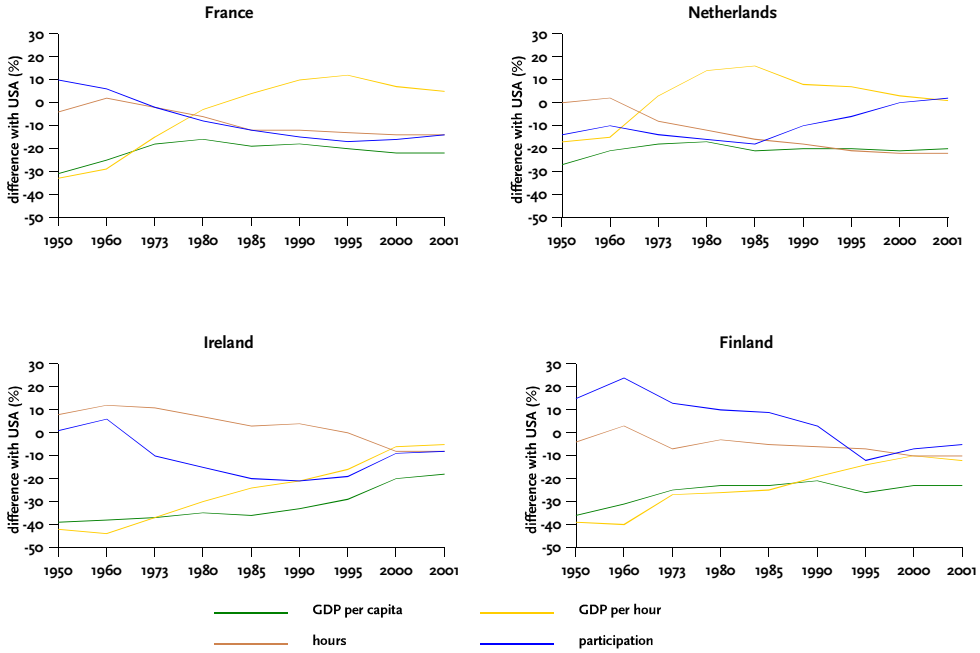
[20] Competitiveness is a somewhat elusive concept. Here 'more competitive' is taken to mean more productive and a higher income per capita.

This chapter briefly compares the United States and the European Union and describes the trade-off between efficiency and equity.[21]

8.2 The income gap between America and Europe

The United States is by far the richest economy in the world. Its production and income per capita are unrivalled. For this advantage are various explanations. One is that the United States has both a superior production technology, based on investment in R&D and ICT, and a better skilled labour force than other countries. Another explanation is that Americans work with many (number of persons) and longer (number of hours). To see to what extent each of these explanations holds ground, we have decomposed for various countries the development in production per capita into three factors: production per hour worked, the number of hours per worker, and the number of workers relative to the total population. Figure 8.1 shows for four European countries – France, the Netherlands, Ireland and Finland – how these factors contribute to the difference in GDP per head relative to the United States.

Figure 8.1 The income gap of four European countries explained, 1950-2001
percentage difference with the United States



Source: GGDC Total Economy Database, July 2003

[21] De Groot, Nahuis and Tang (2003) provide a more detailed analysis of topics in this chapter. See also CPB/SCP (2003).

Figure 8.1 reveals that, in 1950, the gap in production per capita between the European Union and the United States was a difference in productivity per hour. For each of the four countries, hours worked and participation did not deviate much from the United States. Hence, it was not the effective size of the labour force but its productivity which made the United States much richer than any of the four European countries. The reason is that Europe had just started its reconstruction, which required huge investments in private and public capital, while the United States had already made the change toward mass production.

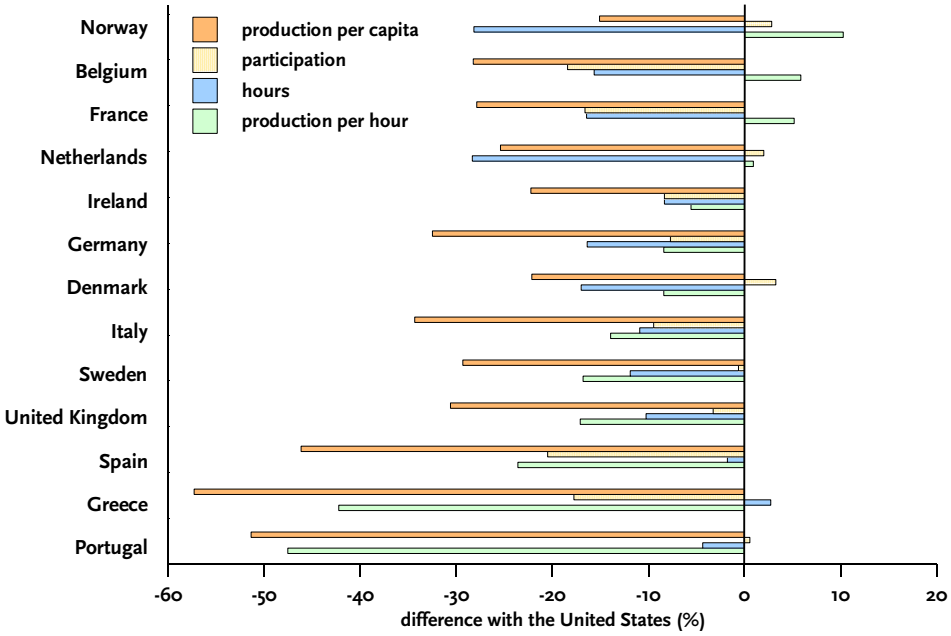
From the sixties onwards, productivity in Europe caught up quickly. Countries invested on a large scale and had the advantage that they could learn to apply the new production techniques that had been developed in the United States. As a result, the four countries outpaced the United States in growth of productivity per hour, although not to the same degree. Catching up in Ireland and Finland has continued up to now, while in France and the Netherlands it stopped in the early nineties. Since the second half of the nineties, the latter two countries saw their productivity per hour decline relative to the United States.

Despite the acceleration in productivity per hour, the gap in production per capita did not close. The reason was that the rate of participation and the number of hours worked started to fall relative to the United States. With the exception of France, the downward trend in participation was reversed later on.

In the late nineties, the Netherlands, Ireland and Finland were among the fastest growing countries in the European Union. Measured by production per capita, they kept up with the growth performance of the United States. This was, however, for different reasons. The Netherlands was able to improve participation on the labour market; Finland saw its productivity per hour increase; and in Ireland both factors contributed to a fast growth in production per capita.

The conclusion from figure 8.1 is that European workers are often (almost) as productive as their American colleagues, but that Americans are richer because they work more in terms of persons and hours. Figure 8.2 illustrates this for a broader sample of European countries. It decomposes the income gap with the United States in 2001 into the same components as in figure 8.1 (i.e. production per hour, hours worked and participation). The countries are ranked from left to right according to their relative productivity per hour. With the exception of Norway, the difference in production per capita with the United States exceeds 20%. Figure 8.2 reveals that a low level of productivity per hour still explains the income gap between America and the Southern European countries. The first eight countries on the left, however, feature a productivity per hour that is less than 10% smaller than in the United States. For them, it is primarily the number of hours worked that is lower than in the United States. For some countries, also a low participation rate contributes to this, although Norway, the Netherlands and Denmark feature an even higher rate of participation than the United States.

Figure 8.2 The income gap of various European countries explained, 2001
percentage difference with the United States



Source: GGDC Total Economy Database, July 2003

8.3 Different ways to close the income gap

The contrast between the two economic superpowers has led to a call for reform in Europe. Barriers to competition – the result of too many and too different regulations – in goods, capital and labour markets are thought to stifle growth and to be one of the reasons behind the persistent problem of unemployment. The European Council has backed this call for reform. In 2000, it drew up in Lisbon an agenda for reform that should make the European economy in 2010 the most competitive in the world. If the European Union has the ambition to become the most competitive economy in the world and to close the income gap with the United States, on what should it focus? We discuss three ways: increasing the number of hours worked, increasing participation and raising productivity per hour.

Increasing the number of hours worked

For the richest members of the European Union, the income gap with the United States originates in a lower number of hours worked per employee. Increasing this number could contribute to a catching up with the American level of income. Doing so, however, has two drawbacks. First, an increase in the number of hours worked may decrease productivity per hour. Indeed, it is an empirical regularity, sometimes dubbed Verdoorn's Law, that an extra

hour spent working is less than an hour effectively worked (i.e. the marginal productivity of an extra hour is relatively low). A second drawback is that more hours worked does not unequivocally improve overall welfare because it reduces leisure. Indeed, arguing that an extra hour of work is socially more valuable than an extra hour of leisure requires that the individual choice between consumption and leisure is distorted. This is true, as taxes (including indirect taxes) drive a wedge between the before-tax and after-tax income. Accordingly, individuals base their consumption/leisure choice on the after-tax financial revenue of extra work, while the social value of an additional hour worked is reflected in extra production, the value of which is measured by the before-tax wage. Hence, the social value of an extra hour worked exceeds the social costs due to the tax wedge. The welfare gain of an extra hour worked is, however, smaller than the production statistics suggest, as these do not take account of the social costs of foregone leisure.

Increase participation

Many European countries face high unemployment rates and low rates of participation, especially among the low skilled and the elderly. This is another reason for the difference in welfare level with the United States. True, when low-productive workers would be employed, this would reduce the average labour productivity per hour. However, stronger than with the choice between consumption and leisure, one can argue that unemployment is an important distortion in European economies. Indeed, unemployment is typically involuntary and causes social exclusion, with adverse consequences for the well-being of people. Reducing unemployment would kill two birds with one stone: it increases production per capita and it reduces (before-tax) inequality. Also, the participation of workers older than 55 is strikingly low in many European countries. The reason lies primarily in schemes for early retirement, which give little incentive to keep working. People who retire early hardly experience an income loss, while the close link between the last earned wage and old-age benefits makes elderly workers reluctant to accept lower wages when getting older – even though they are not as productive as they used to be.

Increase productivity

A third way to raise income and production per capita is to increase the production per hour worked. Figures 8.1 and 8.2 reveal that a number of European countries do not lag (far) behind the United States in terms of productivity: the gap in skills and technology seems to be small. European workers are usually well-trained and firm-specific training is typically more advanced than in the United States. Many European firms operate at the technological frontier. Only Southern-European countries like Greece and Portugal, and *a fortiori* the accession countries from Eastern Europe can still improve their productivity by learning to adapt existing technologies from abroad. Despite the small gap in the level of technology and skills between

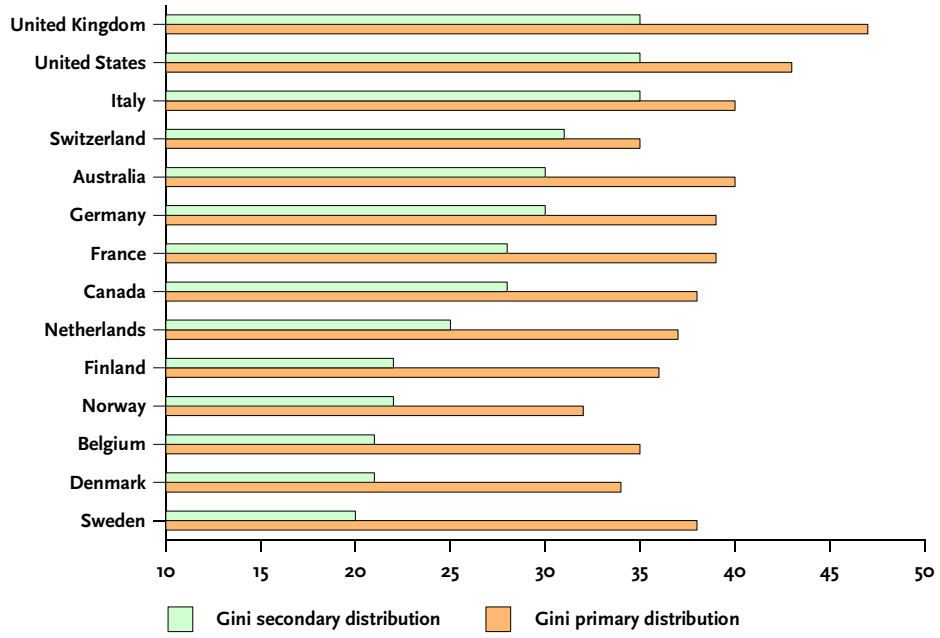
many European countries and the United States, Europe can catch up in the field of information and communication technologies (ICT). As we will show in section 11.4, Europe is especially lagging in the application of ICT in (domestic) service sectors.

8.4 Innovation, participation and concern for equity

To close the income gap with the United States, Europe should increase the rate of participation and invest in new technologies and skills. However, with the emphasis on competitiveness and with the references to the Anglo-Saxon model comes the concern that Europe will also become more unequal. The income differences in the United States and the United Kingdom are generally greater than in continental Europe. This is illustrated in figure 8.3, which shows the relative income difference between the ninth and the first decile of the income distribution in 1995 for a number of countries. At one end of the spectrum, we see Sweden; at the other end of the spectrum are the United States and United Kingdom. The relatively large inequality in the Anglo-Saxon countries does not fit well with European traditions. The European Union has therefore stressed in the Lisbon agreement that competitiveness should come along with social cohesion, which includes limited income differentials in society.[22] The twin goals of raising competitiveness (and thus income) and maintaining social cohesion is noble as well as perhaps somewhat naive. It neglects the fact that a fundamental trade-off between efficiency and equality may exist. For instance, to encourage participation of low-productive workers, one could trim the social security systems (restricting eligibility, limiting the duration or reducing the level of benefits), but this comes at the expense of larger income differentials. Similarly, encouraging ICT could raise the relative wages of high-skilled workers because these technologies are skill-biassed. Thus, the twin goals may be hard to reconcile. Let us see what the evidence reveals about the trade-off.

[22] A third component of the Lisbon agenda concerns sustainable development, referring to the quality of the environment. We do not explore the trade-off between a clean environment and economic growth.

Figure 8.3 Country ranking according to after-tax income inequality in mid-nineties
Gini-coefficients for primary and secondary income distribution



Source: Bradley et al. (2001)

Innovation and equality

Table 8.1 provides a starting point for discussing the trade-off between innovation and equality. It shows for a cross-section of countries a matrix of simple correlations. In the columns are two measures for the distribution of net disposable income: the Gini-coefficient and the income ratio between the ninth and the first deciles.[23] For both measures, a higher value means more inequality. In the rows are measures for investment in, or the level of, technology: the number of patents per capita, the ratio of R&D expenditure to gross domestic product, average productivity per hour worked, and that same measure for productivity corrected for cross-country differences in participation.[24]

[23] The Gini-coefficient is a measure for income inequality. It is 100 when income is equally distributed, and zero when all income accrues to just one person. See for example Deininger and Squire (1996).

[24] The reason for the correction is that participation may affect both productivity per hour (-) and inequality (+).

Table 8.1 Correlations with inequality for a cross-section of 12 countries, 1989-1994

	Gini-coefficient	Income ratio of 9th and 1st deciles
Number of patents per capita	-0.70	-0.60
R&D expenditure as fraction of GDP	-0.23	-0.06
Productivity per hour	0.14	0.05
Productivity per hour, corrected for participation	0.08	0.10

More details can be found in De Groot, Nahuis and Tang (2003).

If there would be a trade-off between innovation and equality, countries that innovate should display a more unequal distribution of income (i.e. there should be a positive coefficient in table 8.1). The correlations in table 8.1 do not support this claim, however. There is no strong relationship between inequality and the level of productivity, while the inequality measures are even negatively correlated with the R&D variable and the number of patents. Although one should interpret these results with caution, they suggest that a negative relationship between innovation and inequality is not self-evident, let alone robust.[25] The results are consistent with empirical literature on the relationship between economic growth and personal income distribution. Aghion et al. (1999) provide an overview of the literature, which tends to suggest that an equal distribution is conducive to economic growth. [26] This raises doubts about a trade-off between productivity and equality.

Participation and equality

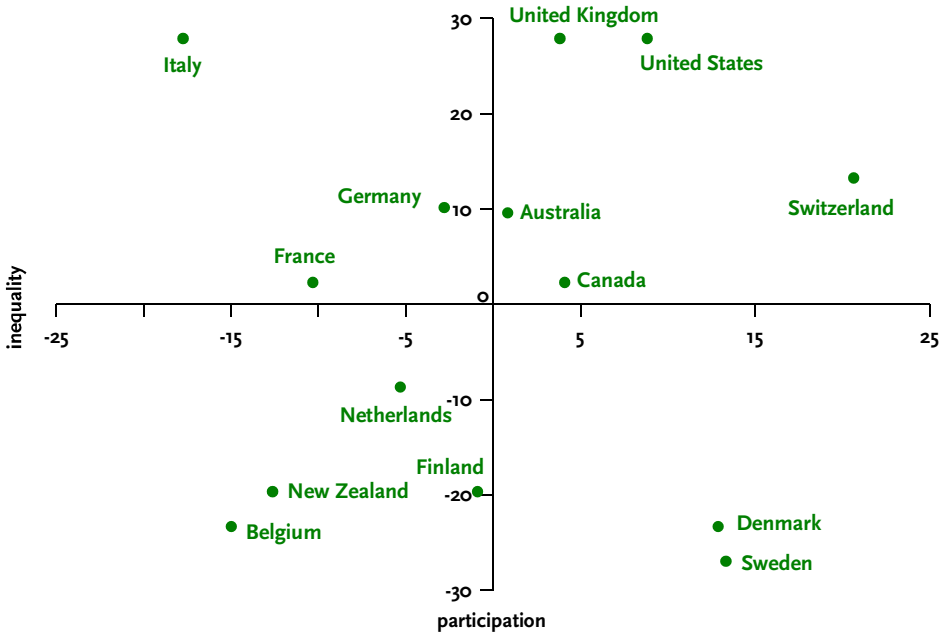
The trade-off between participation and equality would seem obvious when we simply compare the participation rates in continental Europe with those in the Anglo-Saxon countries. The run-of-the-mill explanation is that social benefits and minimum wages in Europe compress the income distribution by putting a floor on wages. At the same time, this raises unemployment among low-skilled workers and reduces the incentives for participation. Yet, the trade-off is less clear-cut than often believed. Figure 8.4 illustrates this. It plots for 12 countries the Gini-coefficient for the distribution of disposable income against the rate of participation in the mid-nineties. For both variables, we present the percentage deviation from the sample mean.

[25] Since other factors are disregarded, the impact of inequality on innovation may be obscured. Besides, cross-country comparisons suffer from problems related to differences in definitions and survey methods.

[26] Later work casts doubt on this finding. Lundberg and Squire (2003) find that different estimation techniques lead to different outcomes. More importantly they argue that economic growth and the distribution of income are interdependent. This implies that any causal link from inequality to growth or the other way around is potentially misleading. Moreover, empirical results are typically derived from observations on a very heterogenous group of countries; the relation between growth and inequality is likely to depend on the phase of development and to be different for developing and developed countries.

Whereas Belgium and the Netherlands combine a below average rate of participation with a below average degree of inequality, the United Kingdom and the United States match high participation with high income inequality. This would suggest a trade-off. However, three large European countries, France, Italy and Germany, combine a relatively low participation with a relatively high degree of inequality. In contrast, Denmark and Sweden demonstrate that it is possible to have a relatively equal income distribution and at the same time a high participation rate.[27] Hence, increasing the participation rate in European countries does not necessarily require a move towards Anglo-Saxon type institutions. Again, the trade-off is not clear cut.

Figure 8.4 Participation versus income inequality in 12 countries, mid-nineties



Source: Bradley at al. (2001); GGDC Total Economy Database, July 2003
The Gini-coefficient measures income inequality, whereas participation is equal to ratio of employed persons to the total population.

[27] The data in figure 8.4 for approximately 1994 may not adequately characterise the situation today, especially for the Netherlands and Finland, which have seen increases in the participation rates in the late nineties (see figure 8.1).

8.5 The role of European labour market institutions

A trade-off between equality and innovation or between equality and participation does not appear from a cursory inspection of the data. It could become apparent from a more specific, detailed analysis of institutions. This section focuses on labour market institutions, since these are usually thought to have an important impact on participation and inequality. High unemployment rates and/or low participation rates in Europe are, for example, often ascribed to high replacement rates (the benefit level as a ratio of the wage rate), long benefit duration, tight employment protection legislation and a strong role of trade unions. But these are the same institutions that are thought to bring about an equitable distribution of income.

We analyse whether such a trade-off exists by regressing the participation rate, the unemployment rate and the degree of primary income inequality to various institutional characteristics of national labour markets.[28] We use data for 18 OECD countries and use averages for 7 five-year periods, starting in 1960.

A complication in the regressions is multicollinearity. We therefore first include variables for which the mutual correlation is relatively low: namely, the replacement rate, benefit duration, a measure for employment protection and a measure for active labour market policies. In a second regression, we also include variables that are highly correlated to these variables: namely, union coverage (measuring the strength of unions' bargaining position) and the level at which wage bargaining takes place (measuring whether employees internalise the adverse effect of higher wages on total unemployment and production).

Table 8.2 reports the estimation results. The first step confirms the common expectation that the poor performance of European labour markets follows from generous social protection. The benefit duration and employment protection have a statistically significant large and negative effect on participation (first column), whereas the replacement rate and benefit duration contribute to unemployment (third column).[29] Intuitively, a high replacement rate and long benefit duration impose a poverty trap: they increase the reservation wage and discourage people from accepting a job offer. Moreover, they improve the bargaining position of workers and thus raise the wage rate, thereby reducing employment. The latter argument also holds for employment protection.

The estimation results point to trade-off, however. A high replacement rate, long benefit duration and employment protection produce also a more equitable distribution of income (column 5). Apparently they do not raise wages indiscriminately, but at the bottom end of the

[28] This approach extends work of Nickell and Layard (1999).

[29] The effect of the replacement rate on participation is not statistically significant and small in the first regression. Nickell (1997) gives the explanation that a higher replacement not only raises unemployment but may also provide better insurance against income risks, thereby increasing the incentive to participate.

income distribution. Interestingly, active labour market policies escape the trade-off, at least to some extent. These policies comprise, among other things, assistance with job search and schooling of unemployed and (temporarily or partially) disabled workers. They boost participation rates, reduce unemployment rates and concurrently mitigate income inequality. Active labour market policies thus seem effective instruments, particularly in the Scandinavian countries, to maintain a relatively generous level of social security and a relatively high level of participation at the same time.

Table 8.2 The effect of different labour market characteristics on participation, unemployment and inequality

	Participation rate		Unemployment rate		Inequality (gini-coefficient)	
Replacement rate	0.029	0.031	1.230*	1.319**	-0.074**	-0.089***
	0.460	0.510	1.930	2.160	-2.220	-2.660
Benefit duration	-0.102***	-0.115***	0.495*	0.397	-0.032*	0.009
	-4.560	-4.210	1.940	1.390	-1.760	0.340
Employment protection	-0.048***	-0.057***	-0.072	-0.039	-0.016	0.002
	-2.800	-2.960	-0.380	-0.180	-1.350	0.130
Active labour market policies	0.003***	0.003***	-0.018***	-0.018***	-0.003***	-0.002***
	3.580	2.980	-2.830	-2.850	-6.920	-4.020
Union - coverage		0.010		0.197*		-0.034***
		0.670		1.780		-3.280
Union - level of bargaining		0.009		-0.257***		-0.001
		0.640		-2.250		-0.110
Time trend	0.001	0.001	0.053***	0.053***	0.003***	0.003***
	-0.510	0.620	6.860	6.670	5.300	5.180
number of observations	126	126	95	95	126	126
R^2	0.43	0.66	0.08	0.68	0.74	0.88

The coefficients are in the first row, White's t-statistics in the second row. *, ** and *** indicate statical significance of 1%, 5% and 10% respectively.
More details can be found in de Groot, Nahuis and Tang (2003).

In the second step, two union variables, coverage and coordination, are introduced. A stronger position of unions leads to both more unemployment and less inequality (columns 4 and 6). Again a trade-off emerges. Centralised unions, on the other hand, lead to less unemployment, probably because they incorporate the effect of their demands on the entire economy. Note that including these two variables also changes other coefficients. Most notably, benefit duration and employment protection still have a clear, negative effect on participation, but no longer on income differentials.

Summing up, to increase the participation rate (for example through a reduction in unemployment and keeping more elderly people employed), governments face a trade-off. Most institutions in table 8.2 indeed confirm the trade-off between participation and equality. Not surprisingly, reforming these institutions often meets fierce social and political resistance. They fuel the fear for an American-style society in which everyone works but where social-economic distinctions are sharp.

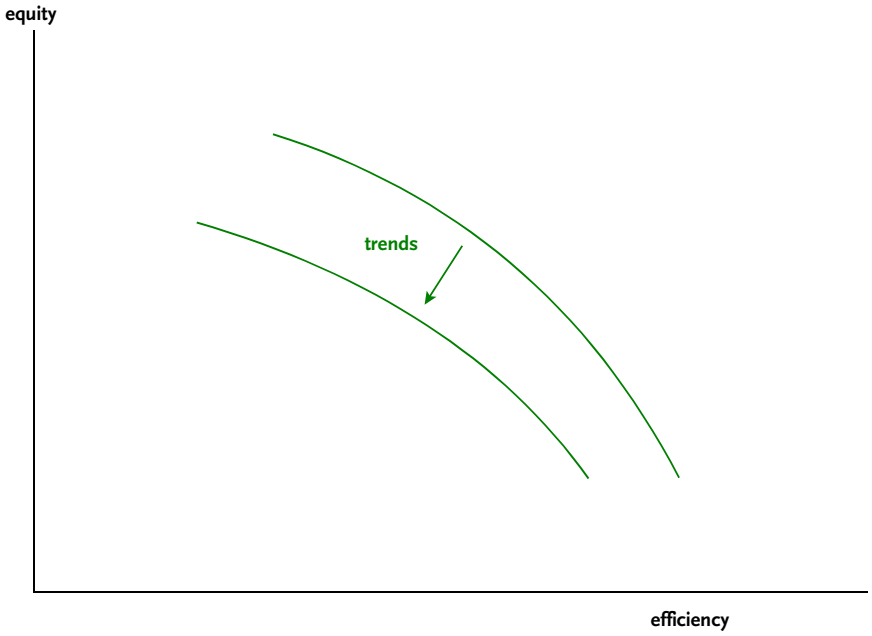
8.6 A key uncertainty: how European governments respond

The United States has a higher income per capita and is ahead in the application of ICT (more on that in chapter 10). Yet, the productivity difference between America and Europe is smaller than the data on income per capita suggest. More important is the difference in the number of hours worked. To put it simply: the American is overworked whereas the European has plenty of time to pursue leisure activities. The prediction that America will 'have' the twenty-first century as was claimed by Mortimer B. Zuckerman thus seems somewhat haphazard, especially since he based it on the ideas that "*accounting systems in the United States strive for clear corporate information*" and that "*the United States is enjoying a [budget] surplus that looks likely to continue as fas as the eye can see*".

High labour market participation in the United States is accompanied by large (after-tax) income disparities. With regard to equality, Europe scores on average much better, but at the expense of lower participation. This suggests a trade-off between efficiency and equality, which is illustrated in figure 8.5. Interestingly, however, some countries that successful in combining a high level of productivity, high participation and an equitable income distribution. These countries are found in Europe. This suggests that it is possible to improve the trade-off between equity and efficiency. This is exactly the ambition of the Lisbon agenda.

Future trends will probably complicate the reconciliation of objectives regarding equity and efficiency, however. Indeed, the next four chapters will discuss four trends – aging, a deeper divide between skills, increasing cost of taxation and increased social heterogeneity – that all point in the same direction: the trade-off between equity and efficiency is likely to worsen in the coming decades. Figure 8.5 illustrates this, demonstrating that the trade-off between equity and efficiency will be shifted towards the origin. This will put pressure on the public sector and collective arrangements. The response of governments is a key uncertainty. Part III of this study discusses alternative scenarios.

Figure 8.5 Trends move the trade-off between equity and efficiency



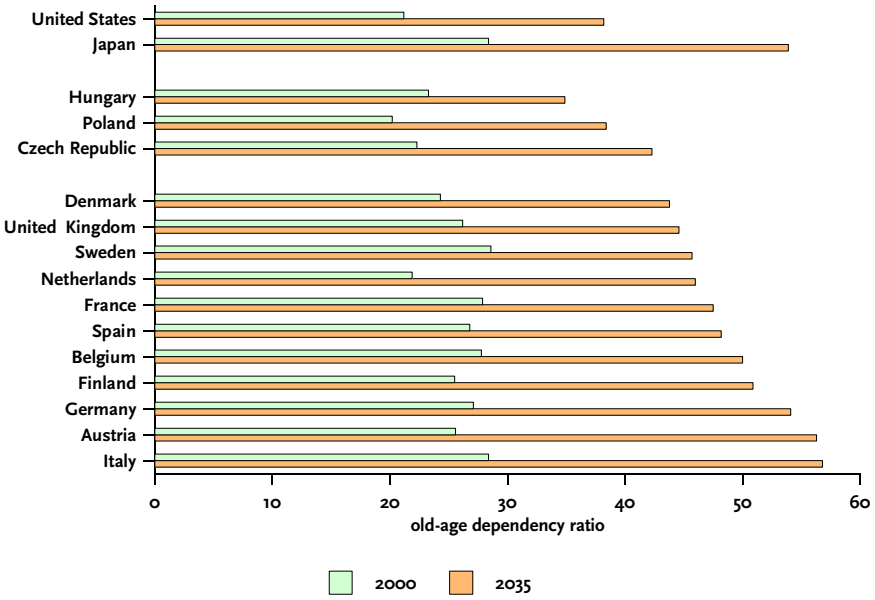
9 A conflict between generations

Ageing will increase public expenditures on health care and old-age pensions, especially for European countries with largely publicly financed old-age benefits. This raises two problems. First, this hurts efficiency since financing additional public expenditures via higher taxes will exacerbate preexisting distortions on the labour market. Second, it puts a strain on the solidarity between older and younger generations because the higher tax burden will fall disproportionately on the young. To cope with these problems, European countries have to invest more in physical and human capital.

9.1 Rising dependency ratios

Ageing is related to the temporary hiccup in European birth rates after the Second World War and a structural decline in fertility rates thereafter. When the baby boom generation retires in the next ten to twenty years, the share of the population above the age of 65 will be much higher than it is today. Figure 9.1 shows this with the old-age dependency ratio (i.e. the ratio between the size of the old, inactive generation and that of the young, working generation) for both 2000 and 2035. The figure reveals that this ratio is expected to increase in all industrialised countries. In particular, whereas for every pensioner there are roughly four workers in 2000, there are only two workers in 2035. Hence, the old-age dependency ratio will more or less double in this period.

Figure 9.1 Old-age dependency ratio in 2000 and 2035 for various OECD countries

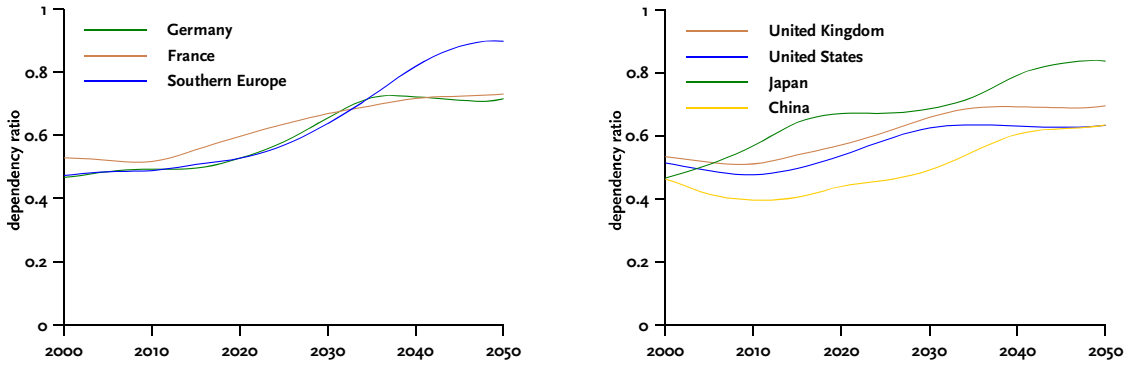


Source: OECD (2001b)

The old-age dependency ratio is defined as the population aged 65 or over as a percentage of the population between 20 and 64.

Even though it occurs in all rich countries, there are significant differences in pace and degree of ageing. Figure 9.2 shows for various countries the development in the overall dependency ratio (i.e. the number of the young (0-15) and the elderly (65 and older) relative to the working force (15-65)). It covers a period until 2050. The first panel of figure 9.2 shows that Southern Europe (Italy, Spain, Portugal and Greece) will age faster and ends up with a higher dependency ratio in 2050 than France and Germany. In the latter countries the dependency ratio stabilises around 2035. For Southern Europe, this takes ten years longer. The second panel of figure 9.2 shows that the dependency ratio in other regions in the world increases as well. In Japan, it rises rapidly and to a relatively high level. In the United States, fertility rates are projected to fall less than in other developed countries. Accordingly, the dependency ratio rises less sharply than elsewhere, especially after 2030. In China, the dependency ratio falls initially and reaches its lowest level by around 2010. Between 2020 and 2040, there is a sharp increase. In 2050, the dependency ratio will have caught up with other regions.

Figure 9.2 Dependency ratios in various countries from 2000 to 2050
ratio of the young (15-65) and the elderly (65 and over) to the working force (15-65)



Source: CPB based on Eurostat-projections
Note: Southern Europe comprises Greece, Italy, Portugal and Spain

9.2 Towards an intergenerational conflict

In a society where being young is a value in itself, it should not come as a surprise that ageing is seen as problematic. Even The Economist, which has a rather old tradition and does not really aim at a young audience, does not hide that it sees ageing as a problem: 'A younger population is likely to mean lower labour costs (...) and, most likely, a more entrepreneurial culture.' For this reason it predicts that the United States may become more powerful: '... demography will offer a fine basis for future growth, and strength.' [30]

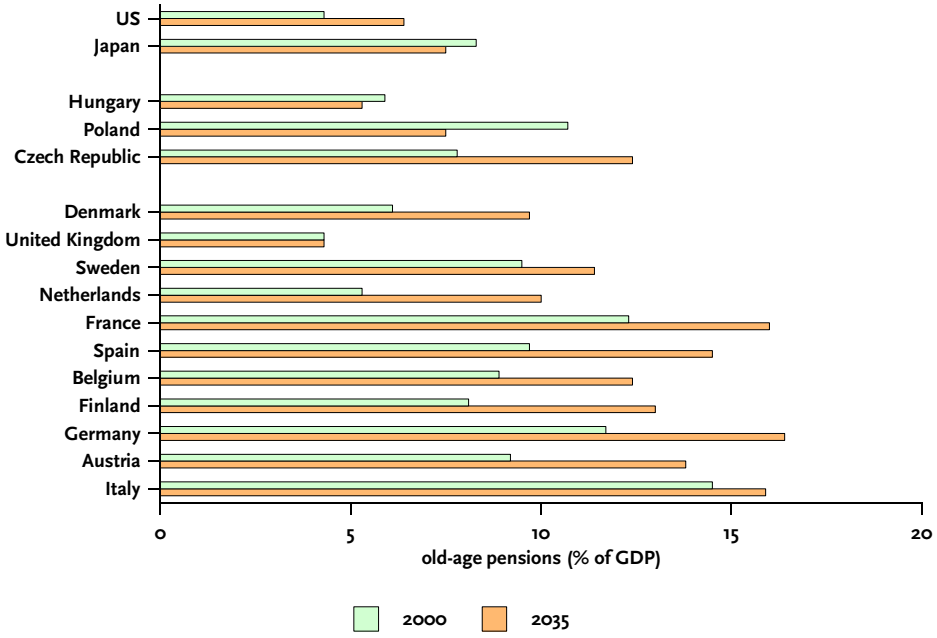
[30] The Economist, 'A tale of two bellies', August 24th 2002, page 11.

But for an economist, ageing is first and foremost a problem of distribution, namely between young and old generations. It has arisen with the introduction of Pay-As-You-Go systems (PAYG). In such a system the working generations pay taxes to finance the old-age benefits of the retired generations. The PAYG systems were introduced in many countries to give older generations a decent income. It was part of a broader programme to provide assistance to those who saw their income decline and to provide insurance against labour market risks such as disability and unemployment. Public pension systems can also be seen as a form of insurance, namely against longevity. In particular, the period during which elderly people are retired (and are presumably unable to work) is uncertain. Pensions ensure the income stream of people who run the risk of becoming old.

A PAYG system is a social contract between young and old generations: the young generations support the old generations in the expectation that once they retire themselves, they will also receive income support. If the age structure of the population were stable, neither party would have an incentive to break the social contract. The root of the problem is, however, that the age structure of the population does change during the coming decades. The baby boom, fewer children, and longevity will raise the dependency ratios and put the social contract between generations under pressure: the tax burden on young working generations will rise, sometimes dramatically. To illustrate, figure 9.3 shows the expected increase in the expenditures on old-age pensions in a number of countries. It reveals that the increase is significant for the majority of countries and falls in the range of 3 to 5% of GDP. There are substantial differences between countries, however. In the Netherlands, Denmark and Finland, expenditures increase substantially. In Japan and Poland, they actually decline as a share of GDP, in part because old-age pensions are not indexed to wages.[31]

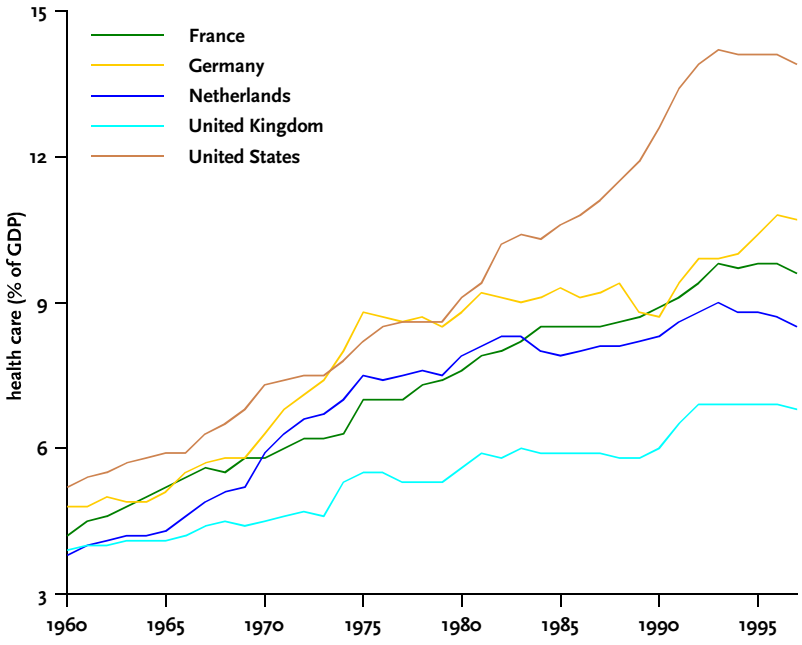
[31] The differences originate partly in different assumptions in the projections. For instance, Spain assumes that its unemployment rate falls from 14% in 2000 to 4% in 2035. Italy assumes an increase in the participation rate of women from 55% in 2000 to 77% in 2050. Whether such assumptions are plausible is somewhat doubtful. It typically calls for reforms to reduce unemployment or increase participation. It is not clear whether countries are able to do that.

Figure 9.3 Public expenditure on old-age pensions in 2000 and 2035 for various OECD countries



Source: OECD (2001b)

Figure 9.4 Health care expenditure in five OECD countries, 1960-1997



Source: OECD, taken from CPB Memorandum, Uitgavenontwikkeling in de gezondheidszorg, July 2001

Baumol' s 'disease' and the size of the public sector

Every economist knows that rising prices go along with falling demand. But is that always so? Baumol (1967) observed that consumers spend ever-larger shares of their income on services, but the amount of services they receive in return has stayed constant. Baumol's famous example concerns the Mozart string quartet. In 1793, it took four musicians, four stringed instruments and about thirty minutes to perform this piece, just as in 1893, 1993 and probably also in 2093. The tickets have become more expensive, however, even in real terms.

While the economic relevance of this example is limited, its conclusion also pertains to some very large sectors such as the health care sector and personal services in general. In these sectors, the so-called 'stagnant services', productivity has not increased, and will not increase. A common feature is the handicraft or the personal nature of the services, so that they are impervious to standardisation. Labour productivity therefore cannot increase considerably in these sectors.

However, if present-day musicians are to make a living, the relative costs of their services will have to be much greater than in Mozart's era. As productivity in other sectors has increased – and hence the wages in these sectors – the wages in the stagnant services also have to rise, even if not accompanied by an increase in productivity. Moreover, the demand for many of these services appears to be rather insensitive to the price or even rises owing to shifts in preferences.

Baumol shows that a growing share of the population will be employed in the stagnant services and that these sectors constitute an increasing share of GDP. The macroeconomic effects of this more than proportionate growth of the service sectors are considerable. The structural economic growth declines since a growing share of the labour force is employed in sectors with few prospects for advancement.

In addition, there is also a more social and political side to Baumol's 'disease'. Rising costs consume an ever-growing part of public and private spending. Especially in the case of essential public goods such as education and health care, this is alarming: can we afford to preserve public provision of health care and education?

Fortunately, there is some ground for optimism. First of all, in some of the 'stagnant' sectors the quality of the services steadily improves, but this is poorly captured in national accounts. Secondly, productivity growth in other sectors can result in some productivity growth in the stagnant services. When performing his quartet in 1790, Mozart had to travel six days from Vienna to Frankfurt. Nowadays, this takes only a few hours. This means that the number of hours of labour to produce this service has effectively been reduced. Especially developments in information and communication technologies offer new possibilities. Finally, as productivity does rise in other sectors in the economy, we can afford more of everything, including these expensive services.

However, problems and solutions seem to be very specific. What is problematic in the health care sector, might not be a problem at all for restaurants; conversely, the solutions are never panaceas. Especially the strong growth in the public sector expenditures is worrisome. Baumol's 'disease' might not be lethal, but a doctor's attention is warranted.

This problem of an increasing tax burden on young generations is reinforced by another effect of ageing: namely, increasing public expenditures on health care. Historical data, presented in figure 9.4, shows that health care expenditures have increased significantly during the past decades. The pattern is, however, again diverse. Between 1960 and 1995, health care expenditures in the United States increased from 5% to 14% of GDP, in the Netherlands from 4% to 8% and in the United Kingdom from 4% to 6%.

Demographic changes in this period just explain part of the historical increase in health care expenditures. Baumol's law is at work as well. This law says that a sector with relatively slow productivity growth must raise its relative price and will see its share in income and production rise (when price elasticities are low). For a further explanation, refer to the text box *Baumol's disease and the size of the public sector*.

The upward trend in health care expenditure is not likely to reverse, if only because the populations are ageing. The OECD (2001b) has collected projections for a number of countries. Between 2000 and 2035 the increase in expenditures as a result of ageing only is predicted to lie between roughly 1% of GDP for the Czech Republic, Denmark and Finland, to more than 4% of GDP in Australia, New Zealand and the Netherlands.

The increasing public expenditures on old-age benefits and health care put pressure on society. First, the increasing tax burden on workers puts a strain on the social contract between young and old generations. Second, the higher tax burden on the young exacerbates distortions in the economy. Indeed, taxes induce behavioural responses because private agents will try to avoid them, e.g. by working fewer hours, investing less and consuming untaxed products. These responses erode the tax base, thereby reducing tax revenue. To avoid efficiency losses and an intergenerational conflict, reforms are necessary.

9.3 Options for reform

Most countries have anticipated the consequences of ageing. They are considering measures to arrive at a 'fair' distribution that is acceptable for young and old and to avoid a too high tax burden. We discuss three options to prevent an increase in the tax burden on younger generations: lower benefits, more investment in human capital, or more investment in physical capital.

Lower old-age benefits

A straightforward manner to reduce the tax burden on younger generations is by reducing the net income support to retired generations. Engineering a relative decline in (real) old-age benefits does not always involve a drastic action or decision. To the extent that old-age pensions are not indexed to wages, the average old-age benefit grows slower than the wage rate. The tax burden will then increase less than the old-age dependency ratio.

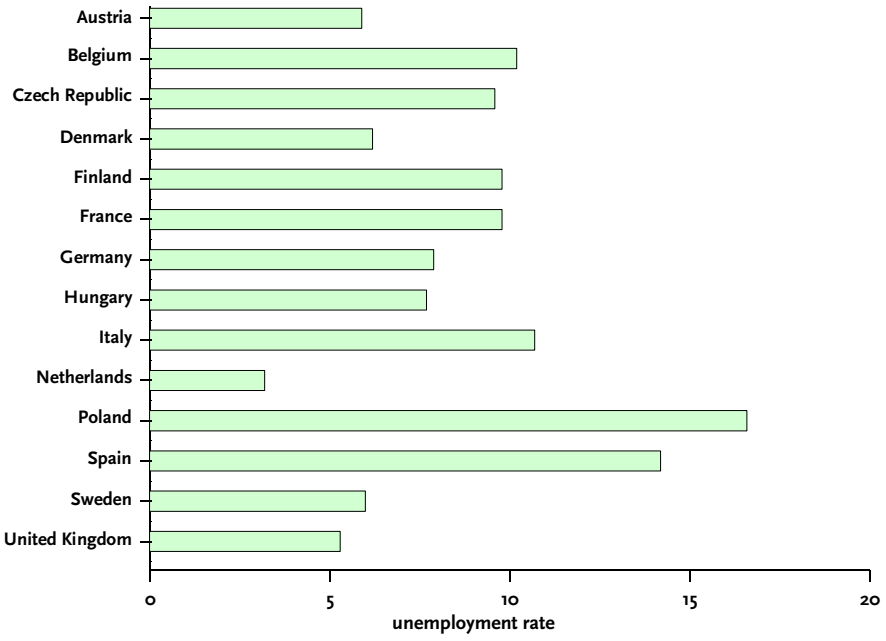
Investment in human capital

The problems arising from ageing are partly the result of longevity. When people grow older and the retirement age does not change, a falling share of workers needs to carry the financial burden of a rising share of retired people. The most straightforward response to this would be

an increase in the retirement age. Sweden, Norway and the United States have already made steps in this direction: the retirement age in these countries is or will be increased to 67. Thus, the financial burden of longevity is shared between younger and older generations. Since the number of healthy years has increased and will increase further, sharing the risk is not impossible or unreasonable. It may be imposed gradually (e.g. by linking the official retirement age to life expectancy).

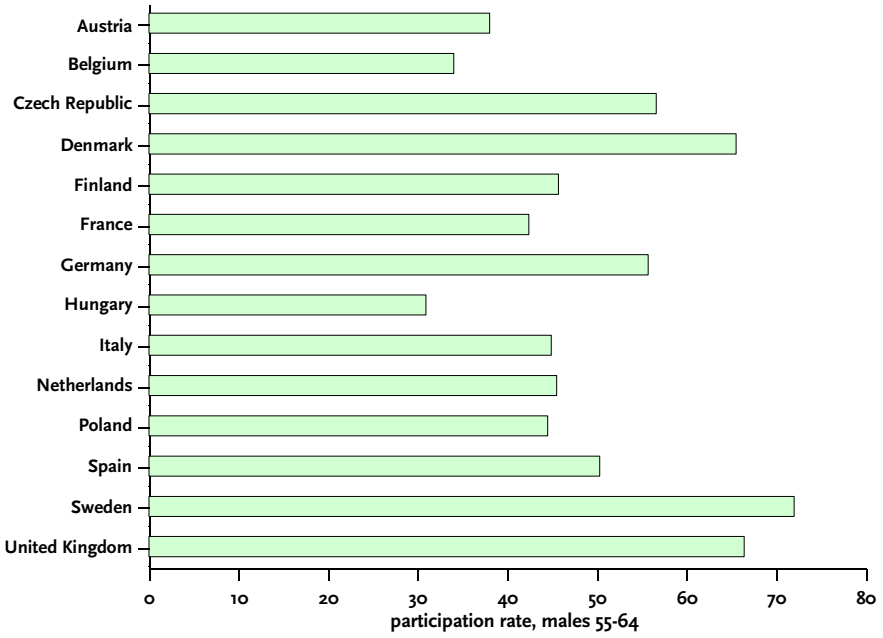
An alternative investment in human capital is increasing the participation rate of those younger than 65. In Europe, there seem ample opportunities for this. First, some European countries such as Belgium, Poland, Italy and Spain feature high unemployment rates (figure 9.5). Secondly, the participation of older workers is low in most countries. For instance, in Austria, Belgium and Hungary less than one-third of the male population between the ages of 55 - 64 are working (figure 9.6). Finally, the female participation rate is below the male participation rate in all European countries. On average, this difference amounts to 15 percentage points. Female participation is high in Scandinavian countries, but particularly low compared to males in Italy, the Netherlands and Spain (figure 9.7).

Figure 9.5 Standardised unemployment rates in 2000 for various countries



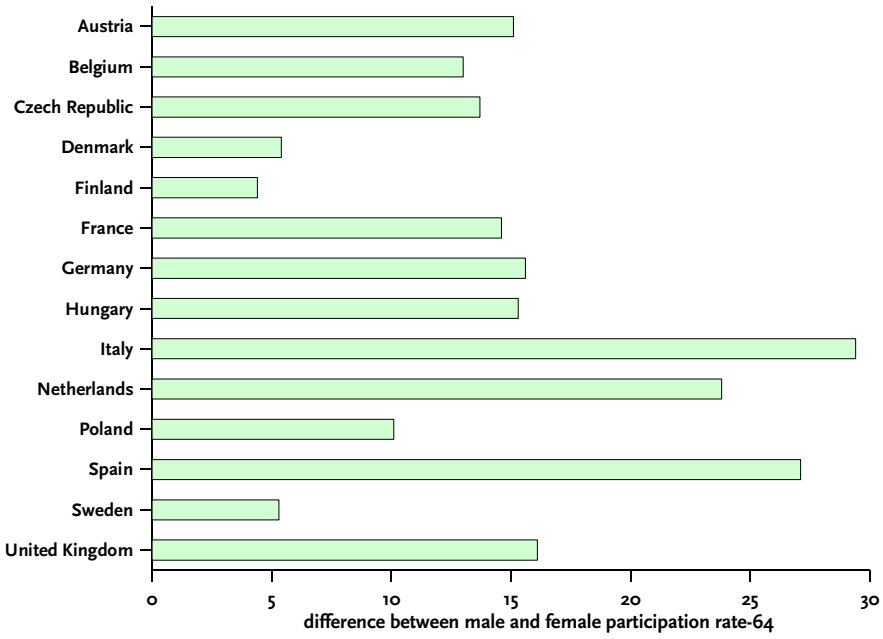
Source: OECD (2002)

Figure 9.6 Male participation rates in the age 55-64 in 2000 for various countries



Source: OECD (2002)

Figure 9.7 Difference between male and female participation rates in 2000 for various countries



Source: OECD (2002)

An alternative way to broaden the tax base is to let more immigrants enter. This assumes that immigrants will make a net contribution to public finances. A number of studies suggests, however, that the fiscal impact of immigration is not necessarily positive (see for example Roodenburg et al., 2003). Even if the net contribution would be positive, very high levels of immigration are necessary for immigration to make a difference. This would make it unlikely that such a policy finds broad political support.

Investing in physical capital

The problem of ageing is partly temporary: it is associated with a large income redistribution from the future young generation to the baby-boom generation. To relax this problem, the baby-boomers could share the temporary burden with future generations and partly pay for their own old-age pensions.[32] The government can encourage financial investments by the baby-boom generation in two ways. First, it can create a budget surplus so as to reduce public debt (e.g. by raising current taxes or cutting current public spending). Alternatively, it can switch from a PAYG system towards a funded system. In the latter system individuals invest in funds now from which they draw their old-age income later. A regime switch is, however, difficult to accomplish. This is because current generations tend to lose since they have to pay twice: for the currently old (via the PAYG system) and for themselves (via the funded system).

9.4 Uncertainties of investment in human and physical capital

Moving towards a funded system is sometimes defended on efficiency grounds. The main advantage is that the returns on contributions in a funded system are generally higher than the returns in a PAYG system. In particular, the rate of return in a funded system is equal to the real interest rate (on government bonds) and perhaps the excess return on investment if capital is invested in equity. In a PAYG system the rate of return depends on the real growth rate of labour income, which equals the sum of employment and productivity growth. Table 9.1 shows the real rates of return on both funded and PAYG systems during the second half of the twentieth century. It reveals that the return to funded systems exceeds the return to PAYG

[32] Referring to intergenerational fairness, Hans Werner Sinn (2000) points out that the baby-boom generations have failed to invest in 'human capital'. They have chosen to spend less time and effort in raising children. Families have become smaller, and some people have opted for lives without children. In Europe, fertility rates fell in the second half of the 20th century, and are often below 2.1, the value that is needed for mere reproduction. This has put the PAYG-system under pressure. Sinn finds it fair that these generations invest in real capital to save for their own old-age pensions. This argument also implies that current tax rates for households without children should rise more than tax rates for households with children.

systems, at least for investment in equity. Hence, switching from a PAYG scheme to a funded scheme will increase the rate of return. [33]

Table 9.1 reveals also that the rate of return on physical capital is more volatile than the rate of return on human capital. This may even hold for long periods. During the sixties and seventies, the return on investment was close to zero or even negative. The eighties and nineties brought investors large gains. These huge swings warn us that the rate of return in a funded pension system is not always higher than in a PAYG scheme.

Table 9.1 Real rates of return for the Dutch economy 1950-2000

	Return on stock	Return on government bonds	Labour productivity growth
1951-1960	14.7	-2.4	3.6
1961-1970	2.0	-2.8	4.0
1971-1980	0.3	-1.3	2.8
1981-1990	13.8	6.5	1.6
1991-2000	19.0	6.5	1.2
average 1950-2000	9.7	1.2	2.6

Source: CBS, Eichholz, et al. (2000)

Moreover, if a group of rich countries move towards funded pension systems, saving rates would rise. Accordingly, pension funds may run into the problem that real interest rates fall in response. Hence, the policy strategy to jointly move towards a funded system may backfire. Individual pension funds are already concerned about the risk of a falling return on their portfolio investments. Their worst-case scenario is that, once they try to liquidate their assets to pay the old-age pensions, the price of their assets will fall dramatically. Such a scenario does not seem to be far-fetched or implausible.

[33] Another advantage of funded systems derives from distortionary effects of taxation. Taxes change the behaviour of economic agents and impose costs on society. These costs vary more than proportionally with the rate of taxation. Therefore, it is efficient to smooth the rate of taxation over time; with a constant rate, the costs of taxation are minimised. Of course, smoothing over time affects the distribution of income across generations.

9.5 Policy responses to ageing

Ageing increases the size of the public sector. The associated rise in the tax burden on young generations exacerbates preexisting tax distortions and harms welfare. This reinforces the conflict between generations. To avoid it, governments can reduce old-age benefits or stimulate investments in human or physical capital. Investment in human capital can take the form of increasing the effective retirement age (so that human capital lasts longer) and stimulating participation of younger generations (so that the utilisation of human capital increases). Investment in physical capital can take the form of a decline in public debt or a move towards a funded pension system. The latter runs the risk that the returns on investment turn out to be disappointingly low. This risk becomes more real when a number of countries move simultaneously towards a funded system.

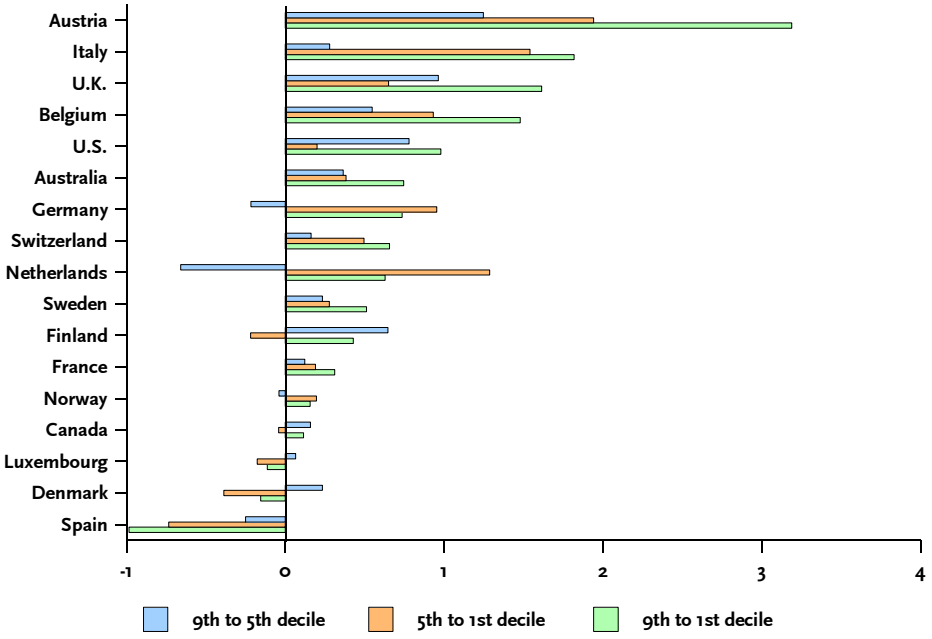
10 Technology and opening wage gaps

During recent decades low-skilled wages have lagged behind high-skilled wages in a number of countries, while the unemployment rate among the low-skilled has risen more sharply. This divide between skill levels may intensify in the coming decades. Changes in technology – especially the widespread application of ICT – could raise the demand for skilled workers while the supply of skills will be flattening. Together, this would raise the skill premium, thereby increasing income inequality.

10.1 Rising inequality

During the 1980s and 1990s, the United Kingdom and the United States experienced a notable increase in income inequality. One could see this as a typical phenomenon of the Anglo-Saxon culture, where a relatively large divide between rich and poor is socially accepted. However, not only in these two countries do we observe that high-income groups saw their income increase faster than low-income groups.

Figure 10.1 Inequality 1980 - 1995 for various countries: average yearly change in income ratios



Source: Luxembourg Income Study (www.lisproject.org)

Figure 10.1 shows the annual change in the after-tax income ratio between the ninth and the first deciles (green bars), between the ninth and the fifth deciles (blue bars) and between the

fifth and the first deciles (orange bars) of the income distribution between 1980 and 1995.[34] In many countries the income ratios increased. The ratio between the ninth and first decile typically increased more substantially (i.e. the green bars are broader than the other bars), implying that the highest income groups experienced the fastest income growth.[35] The middle income groups also saw a larger growth in their incomes than the lowest income groups (orange bars are broader than the blue bars). Income inequality did not increase in every European country. For Luxemburg, Denmark and most notably Spain, figure 10.1 shows that the ratio of the ninth and first deciles actually decreased.

Inequality dynamics

The income distribution provides a static view on inequality. It thus ignores the social-economic dynamics related to the changing positions of individuals in the income distribution over their life cycles. The pattern of social-economic changes is often hard to capture in a single number. Still, it is vital for one's view on inequality. To understand this, consider the following society. People earn 5,000 euro per year in the first half of their life and 30.000 euro in the second half. When considering the static income distribution, society might be viewed as very unequal. However, lifetime earnings are the same for all individuals. If it is possible to borrow against future earnings, the level of consumption would be same as well and the society would be completely egalitarian.

The distinction between a static and a dynamic view is not just a theoretical quirk, but is also practically important. Using individual data for Italy and the United States, Flinn (2002) finds that the cross-sectional wage distribution for young Italian males is more compressed than for their American counterparts. However, he also estimates a dynamic model, which reveals that the distribution of lifetime income is not more dispersed in the United States than in Italy. The explanation is that the relatively high frequency of movements between different labour market states (e.g. employed or unemployed) in the United States leads to a relatively equitable distribution of lifetime income. In Europe, where job finding probabilities for large groups of individuals is low, income dispersion is much more persistent.

One important factor behind the changes in income inequality is the skill premium.[36] Over the years, the average time spent on education has increased substantially and the labour force has become much better skilled. As a result, the supply of high-skilled workers shows a secular increase relative to the supply of low-skilled workers. Table 10.1 illustrates this for the United States and the Netherlands.[37] In both countries, the relative supply of high-skilled workers has

[34] Static pictures of the income distribution do not tell the whole story of inequality, however. The box *Inequality dynamics* explains this.

[35] Davis (1992) also finds for a number of countries that, within groups of similar age and educational attainment, income inequality has increased. This suggest that income inequality, and more specifically increases therein, are fractal in nature: at whatever level of detail one looks, income inequality increases.

[36] Nahuis and de Groot (2003) give a more detailed analysis of demand and supply trends.

[37] Even though the definition of high-skilled and low-skilled workers is different for the two countries, the pattern is similar.

risen at a rather brisk pace. One expects that this would have improved the position of low-skilled workers. Plumbers, mechanics, waiters, cleaners and so on become scarcer, which should drive up their wages. At the same time, one would expect a relative deterioration of the position of high-skilled workers. This, however, we do not observe. In the Netherlands, the relative wage rate of skilled workers has fallen only slightly, whereas in the United States it increased in four out of six decades. An explanation for this is that the demand for high-skilled workers has increased as well. Indeed, while a higher supply of skills has pushed wages downward, higher demand has pulled the relative wage of the high-skilled upward. The increase in the relative wage for low-skilled workers in the United States in table 10.1 suggests that the demand effect has even dominated the supply effect.

Table 10.1 **Annual change in relative wage and supply of high-skilled workers, United States and the Netherlands**[a]

	United States			Netherlands		
	Relative wage	Relative supply	Wage with constant supply[b]	Relative wage	Relative supply	Wage with constant supply[b]
1940-1949	-1.9	1.5	-0.8			
1950-1959	0.8	2.9	2.9			
1960-1969	0.7	2.7	2.6			
1970-1979	-0.7	4.3	2.3	-0.5	5.5	3.4
1980-1989	1.5	2.5	3.3	-1.5	4.0	1.4
1990-1996	0.4	2.4	2.1	-0.4	3.5	2.1

[a] Source Autor et al (1998) for the US and Jacobs (2004) for the Netherlands. For US the data represent college graduates (those with sixteen or more years of schooling) and high school graduates (those with exactly twelve years of schooling). For the Netherlands the high-skilled are workers with higher education (HBO/WO) and the low-skilled are the other workers.
[b] The wage with a constant relative supply is not observed but is derived under the assumption that elasticity of substitution is constant and is equal to 1.4.

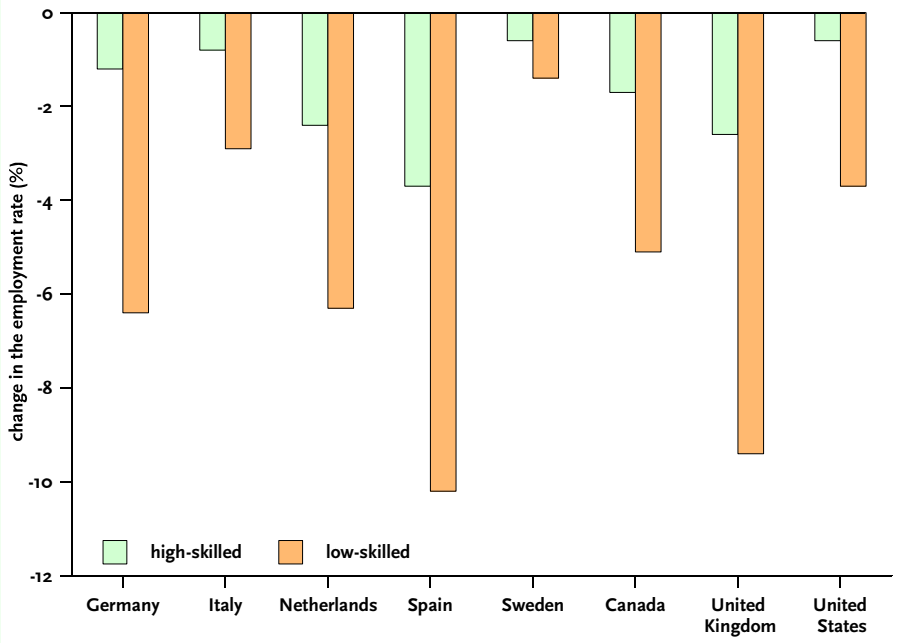
Wage inequality could have been even worse if the supply of low-skilled and high-skilled workers had remained constant during the past decades. Table 10.1 shows the counterfactual change in the relative wage rate, assuming that the relative supply had remained constant. The elasticity of substitution between the two types of workers is assumed to be 1.4. Without the increase in the supply of high-skilled workers, we see that their wages would have grown by roughly two percentage points faster than wages of low-skilled workers, even in the Netherlands.[38]

[38] That the relative position of low-skilled workers has been deteriorating is also illustrated by their unemployment record. The box *Unemployment and skill level* discusses this further.

Unemployment and skill level

The poor social-economic position of the low skilled is also reflected in the relatively high unemployment rate among them. Among low-skilled workers, this rate by far exceeds that of high-skilled workers. The figure below compares for the two groups the average employment rate (not the unemployment rate) in the period 1983-1993 with that in the period 1971-1982. It shows that job opportunities for the low-skilled have declined faster than for the high-skilled in all countries. This confirms the deteriorating position of the low-skilled. It not only holds for European countries, where various labour market institutions (minimum wages, trade unions, generous social security) are often held responsible for the high unemployment rate among the low skilled, but also applies to the Anglo-Saxon countries. In the United Kingdom, the employment rate for low-skilled workers fell from 92.5% in the first period to 83.8% in the second period, whereas the employment rate for high-skilled workers fell from 97.6% to 95.1%.

Change in employment rate for high skilled and low skilled, 1971-1982 versus 1983-1993



10.2 Understanding the increasing demand for skill

What explains the increasing demand for high-skilled workers during the past decades? Two broad arguments have been put forward in the economic literature: internationalisation and skill-biassed technical change.

International economic integration has led to increasing flows of goods, capital and labour across the globe. This allows developing countries, which are relatively abundant in low-skilled

labour, to specialise in industries where manual labour is the dominant factor of production. Developed regions, in contrast, are relatively abundant in skill and capital so that they specialise more in skill- and capital-intensive industries. When specialisation occurs, the demand for low-skilled labour in developed regions declines, while it increases in developing countries.[39] Although intuitively appealing, in the economic literature the consensus has emerged that international trade is not a convincing explanation for increasing wage inequality in developed countries (and decreasing inequality in developing countries). The empirical evidence suggests that trade has only a mild impact on wage inequality. Moreover, in some developing countries the skill premium has actually increased. The empirical results may be understood by the small size of the trade flows between developing and developed countries: international trade takes place mainly among developed countries. Moreover, large economies like the European Union and United States are relatively closed: domestic trade is far more important than international trade.

A second explanation for the increasing demand for high-skilled workers is skill-biassed technical change. The basic idea is that skills are essential for learning and adapting new production techniques. This makes it attractive for firms to employ more high-skilled workers. The fast introduction of information and communication technologies (ICT) and, more generally, the development towards a knowledge-based economy give this idea credibility. Besides, the same techniques often make low-skilled jobs redundant. The automation and computerisation of production processes destroy low-skilled jobs, not only in manufacturing but also in services.

Direct empirical evidence to support the idea of skill-biassed technical changes is still rather scarce. Two studies find that the wage premium for working with computers indeed exists and has increased during the 1984-1993 period (Krueger, 1993; Autor, et al., 1998). Others report that a positive correlation exists between the rate of skill upgrading in many sectors and indicators for technology intensity like computer usage, computer investment and R&D investment (Berman et al., 1994; Autor et al., 1998; Machin and Van Reenen, 1998).

The literature on skill-biassed technical change does not explain why technical change is biassed in favour of high-skilled workers. One view is that a major technological breakthrough – the invention of microprocessors – temporarily accelerated the demand for skills in order to learn and to adapt the new technology (see Bartel and Lichtenberg, 1987 and Bartel and Sicherman, 1999). An alternative view is that the bias is not inherent in technical change, but follows from incentives to create it. Technology is subject to important economies of scale: once a technology is developed, it can be applied with no or little additional cost. The larger the scale

[39] In a sense, migration of low-skilled workers from developing countries towards developed countries has the same effect on the low-skilled wage rate. In particular, it increases the supply of low-skilled labour in developed countries, thereby depressing low-skilled wages relative to high-skilled wages. Empirical evidence tends to support this claim, see chapter 11.

at which a technology is applied, the more the fixed costs of development are spread and the cheaper a technology becomes. Accordingly, the large increase in the supply of skilled workers may have stimulated the development of technologies that are complementary to skills. According to this view it is not surprising to see a strong bias in technical change since demand is not independent of supply (see Acemoglu, 1998; Nahuis and Smulders, 2002).

The evidence on skill-biassed technical change also does not explain what type of investment is actually driving the increasing demand for high-skilled workers. It is sometimes argued that it is investment in general that increases the demand for skill, since skills and capital are complements in production (whereas raw labour and capital are substitutes).[40] For instance, Krussel et al. (2000) show that observable factors such as the capital price and the relative supply of skilled and unskilled workers explain the entire skill premium in the United States for the last 30 years. The findings by Arranz (2001), however, suggest that only 44% is explained by capital-skill complementarity, while 56% of the increasing demand for high-skilled labour is explained by skill-biassed technological change. Although the evidence is mixed, it nevertheless seems plausible that especially developments in ICT are behind increasing inequality. Skills are essential to master the new techniques and to find ways to make them productive. We therefore take a closer look at the recent developments in ICT and the prospects for the future.

10.3 The prospects for ICT in Europe

In the second half of the nineties the economy of the United States showed a prolonged boom. Growth in labour productivity was historically high, unemployment was low and inflation remained modest, although share and housing prices shot through the roof. The prolonged boom gave rise to visions about a so-called “new economy”. In this new economy, ICT would transform economic and social life drastically: the trade-off between unemployment and inflation would disappear and the traditional cycle of boom and bust seemed to have come to an end. This was symbolised when a young new-economy firm, America Online, took over a traditional old-economy firm, Time Warner.

At the same time, the distribution of income and wealth became more uneven. Young entrepreneurs became millionaires almost overnight, with Bill Gates as the most prominent example. ICT seemed to have changed the rules of game: the winner takes all. The reason is that knowledge as marketable product is characterised by important economies of scale: the development costs are high, but marginal costs of reproduction are low. A (slightly) superior product may take almost entire markets, national and international, and deliver high profits. To further develop and apply new techniques requires skills, leading to higher demand for high-

[40] This would imply that an increase in the capital-labour ratio (perhaps as the result of ageing) could further increase the demand for high-skilled labour relative to low-skilled labour in the future.

skilled workers. This makes ICT a logical (although not undisputed) explanation for the rising skill premium.[41]

When Wall Street and NASDAQ took a severe dive and American unemployment crept up again, the visions of a new economy faded away. Yet, the spurt in productivity was real. In this respect, the United States outperformed the European Union. This had not gone unnoticed in Brussels and other European capitals. With the formulation of the Lisbon Agenda, especially the 'transition toward a knowledge-based society' was given priority. But to what extent can the differences in ICT between Europe and the United States explain the different developments in labour productivity (growth)? Potentially, ICT augments overall labour productivity in the economy through the following three channels:

A higher productivity in the domestic ICT sector

Productivity growth in the ICT sector, which includes both hardware and software, will contribute to overall productivity growth, depending on the relative size of the ICT-producing sector.[42] Van Ark et al. (2000) estimate the share of the ICT sector in 2000 at 5.8% in European Union and 8.0% in the United States. The differences among the European countries are rather large, ranging from 4.7% in Denmark to 10.1% in Finland.

Lower prices of ICT products as inputs in the production process

Higher efficiency in the ICT sector normally leads to lower prices of their goods and services. Lower prices stimulate users to invest in ICT. This means capital deepening and thus higher productivity. In this view, ICT is just an ordinary investment good among many others. This channel does not require a domestic ICT-producing sector, since the goods and services from this sector are tradeable and can be imported.

Technological spillovers

Using ICT could generate increases in productivity elsewhere in the economy that are not taken into account by firms in ICT-producing and/or ICT-using sectors. These technological spillovers include network externalities. When one investor buys communication equipment or software (a mobile phone or an email programme), other investors benefit as well. ICT can also reduce search cost in the economy. This could make markets more transparent, foster competition, stimulate innovation and raise productivity. Especially this last channel has been subject to much speculation, often leading to high expectations about the ICT revolution.

[41] One reason for doubt is that the rise in the skill premium predates the introduction of the personal computer.

[42] For a definition of the ICT sector, see Nahuis and Van der Wiel (2003). Different sectoral definitions in national statistics make the comparison across countries somewhat problematic.

Table 10.2 Labour productivity growth according to industries, 1991-2000

	European Union		United States	
	1991-1995	1996-2000	1991-1995	1996-2000
	annual percentage changes			
ICT-producing sectors	6.0	8.5	7.0	7.0
manufacturing	7.8	14.0	13.5	20.3
services	5.3	6.0	3.8	0.8
ICT-using sectors	1.9	1.3	1.3	4.2
manufacturing	3.3	2.0	0.5	2.1
services	1.7	1.1	1.6	4.6
Non-ICT sectors	2.4	1.0	0.4	0.4
manufacturing	3.7	1.2	3.0	1.3
services	1.6	0.7	–0.2	0.3
others	3.6	1.6	0.1	0.4

Source: Van Ark et al. (2002)

Table 10.2 shows the productivity growth in the ICT-producing sector for the periods 1991-1995 and 1996-2000 in both the European Union and the United States. The annual growth rates are high compared to other sectors, especially in the manufacturing part. The breakdown between manufacturing (computer hardware, communication equipment) and services (software, communication services) unveils an important difference between the European Union and the United States: European countries have seen a surge in (telecommunication) services, whereas America has seen a surge in (computer and communication) equipment.

Table 10.2 also presents separate data for sectors that use ICT intensively and sectors that do not. The ICT-intensive sectors do not clearly show a higher productivity growth than the sectors that are not intensive ICT users. However, when we split these sectors into manufacturing and services, we arrive at an interesting pattern. While using ICT does not deliver higher productivity growth for manufacturing firms, it does so for services. Indeed, both in the European Union and in the United States, productivity growth in services is higher when expenditures on ICT are higher. The difference is, however, much larger in the American economy, especially in the second half of the nineties. This points to an important difference between the United States and Europe. The United States have advanced much further than the European Union in applying ICT in services industries.[43]

[43] The information in table 10.2 does not tell us anything about the distinction between benefits of lower ICT prices (the second channel) and the benefits of technological spillovers (the third channel). Evidence on this is rather scarce and circumstantial.

ICT has penetrated economic and social life in the United States more than it has in Europe. Several key indicators in Table 10.3 confirm this observation. In Germany, France and Italy access to a personal computer and Internet was in 2000 (much) lower than in the United States. The differences in Europe were large, as the case of Sweden illustrates.[44] The number of secure servers is an indication of the scale of commercial transactions through the Internet. These were much more common in the United States than in any of the other European countries.

Table 10.3 The penetration of ICT in several OECD countries

	Access to home computer	Access to internet	Secure servers
	% of households, 2000	% of households, 2000	per mln of inhabitants, 2001
Sweden	69	49	144
United States	51	42	313
Germany	47	16	79
Italy	29	19	25
France	27	12	42

Source: OECD (2003b)

Observations on the diffusion of ICT suggest that there are still ample opportunities for the European economy to benefit from further productivity growth through the adoption of the ICT, especially in the services sectors. The question is whether this will also increase the demand for high-skilled labour and thus drive up the skill premium in Europe.

10.4 Towards a deep divide?

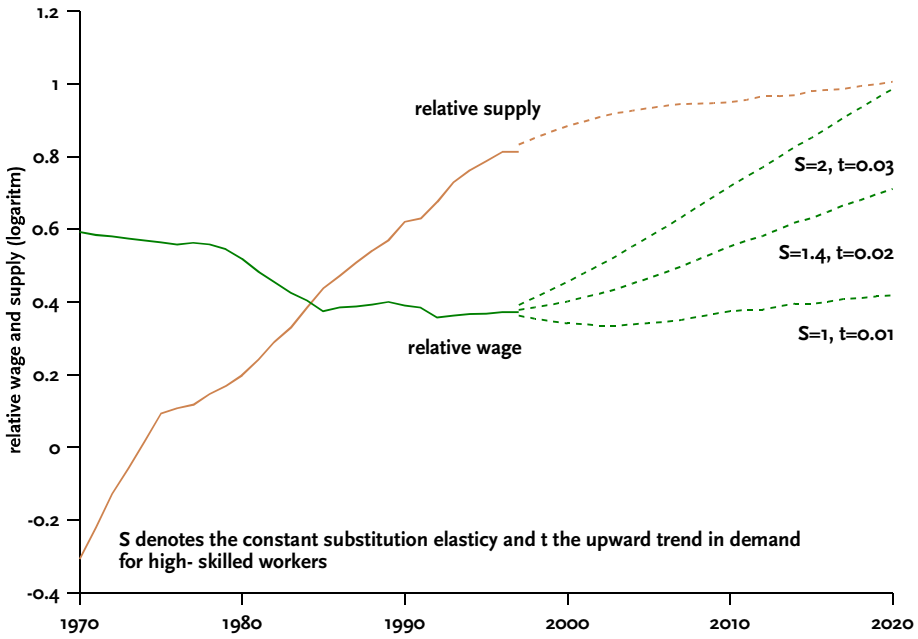
Since our understanding of skill-biassed technical change is only limited, it is hazardous to extrapolate the trend of a rising relative demand for high-skilled workers to the future. What is clear, though, is that if the relative demand for high-skilled workers does continue to rise, the consequences for wage inequality will become more apparent than in the past. The reason is that the supply of skilled labour is not likely to keep growing in the coming decades as it did in the recent past. A few decades ago, social class or parental income were serious obstacles for children to take part in higher education. Since these barriers have been broken down, the number of years in schooling has risen sharply. Indeed, figure 10.2 shows that the supply of high-skilled workers relative to low-skilled workers in the Netherlands between 1970 and 2000

[44] Not shown is that home access to internet is very different for different income groups. In the United States in the 25% richest households 77% had internet access at home in 2000, where the comparable figure for the 25% poorest households was 14%.

has increased enormously. For the next 20 years, however, the growth rate of the supply of high-skilled labour is expected to fall. The simple reason is that there are boundaries in the ability to learn. Many individuals find that it makes no sense to follow a prolonged educational programme since they are better off working with their hands. This eventually puts an upper bound on the relative supply of high-skilled workers; it will grow at a slower rate than in the past. Combining the slower growth in the supply for high-skilled workers with continued growth in their relative demand, the danger of a deep divide appears. Paraphrasing Jan Tinbergen (1975), education will lose the race with technological development. Figure 10.2 illustrates this for the Netherlands, showing three different projections for the wage ratio between high-skilled and low-skilled labour between 2000 - 2020.[45] The baseline projection (with a substitution elasticity of 1.4 and trend increase in the demand for high-skilled labour of 2 percentage points per year) suggests that the wage of high-skilled workers will grow by roughly 30% more than the wage of low-skilled workers over the period 2000-2020. If the substitution elasticity between low and high-skilled labour is set at a lower rate, the wage differentials become more compressed. Therefore, the combination of a low substitution elasticity and a smaller increase in the demand for high-skilled labour implies that the wage ratio changes substantially less. In contrast, a combination of a higher substitution elasticity and a larger increase in the demand for high-skilled labour leads to an explosion of the wage differences.

[45] We need to make assumptions about the trends in relative demand and the elasticity of substitution between the two types of workers. For an explanation, see Jacobs (2004).

Figure 10.2 The relative wage and supply in the Netherlands: historical data and projections



Source: Jacobs (2004)

Note: A person is classified as high skilled when he or she has followed higher education (HBO or university). The relative supply has been rescaled to fit the graph.

10.5 Policy response to opening wage gaps

How technology will affect the demand for high-skilled labour in the future is uncertain. However, the possibility that the demand for skills will continue to rise is real. If it does, then inequality will grow significantly because possibilities for further increases in the supply of high-skilled workers become exhausted. Hence, skill-biassed technical change could materialise in increasing wage inequality and, thereby, rising inequality in society. Only by engaging in more redistribution via the tax-benefit system could the government prevent this from happening.

11 A more heterogeneous society

European society is becoming more heterogeneous. Individualisation leads to a greater variety in life styles and household types; differences in labour contracts grow; and immigration of non-western people makes society more diverse in terms of culture, habits and preferences. More heterogeneity increases the demand for diversity in supply of goods and services, including those that are publicly provided. Moreover, heterogeneity makes it more difficult for governments to apply uniform criteria to welfare state provisions.

11.1 More need for diversity

At the end of nineteenth and the beginning of the twentieth century, workers became better organised in trade unions. They fought for better wages, for better working conditions and against 'capitalists'. The power of trade unions grew; they became accepted bargaining parties and were incorporated in formal bargaining structures, especially after the Second World War and in Europe.

Where the twentieth century saw the rise of trade unions, will the twenty-first century see their demise? The social-economic role of trade unions is changing, if not eroding. One reason is that firms press for more flexibility and diversity in labour contracts.
Firms have become increasingly complex organisations that operate on more markets and demand more heterogeneous labour skills than before. They want labour contracts to reflect heterogeneity in local conditions and individual characteristics. During the past few decades, this has led to a gradual decentralisation in wage formation in Europe. For the coming years, the forces behind decentralisation remain strong (Visser, 2002). Another reason is individualisation. Class struggle no longer defines societies. Workers have become autonomous individuals. They still belong to groups, but by their own choice. They are more concerned with their individual interests and less with a collective interest. The result is that union membership in Europe has declined, from an average of 51% of total employment in 1980 to 44% in 1994. In an effort to reverse this trend, trade unions shift their emphasis from collective action towards individual representation.

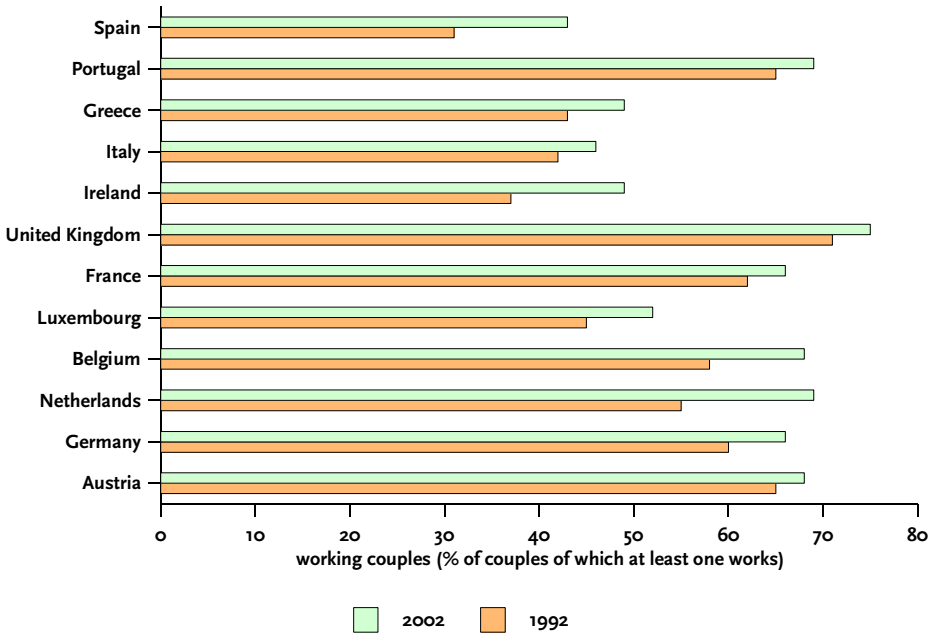
Individualisation and migration have led to more heterogeneity in society. Not only trade unions feel the implications of this, but also organisations in the public sector. How does this challenge these organisations? Do they have to make a similar transition as trade unions?

11.2 Individualisation

Today, individuals depend to a lesser degree on their social-economic background than they did in the past. They have more freedom in making choices about the course of their life, their life style and their personal relationships. With the process of individualisation, the traditional

family model – a married couple with children in which the female partner is dependent on the income of the male breadwinner – has become less prevalent. In the Netherlands the share of singles in the total number of households has risen from almost 30% in 1990 to 34% in 2000, and is projected to rise further to 39% in 2020. Figure 11.1 shows, furthermore, that European countries have without exception seen a relative increase in couples of which both partners work.

Figure 11.1 Growing number of working couples, 1992 versus 2000



Source: Eurostat (2002)

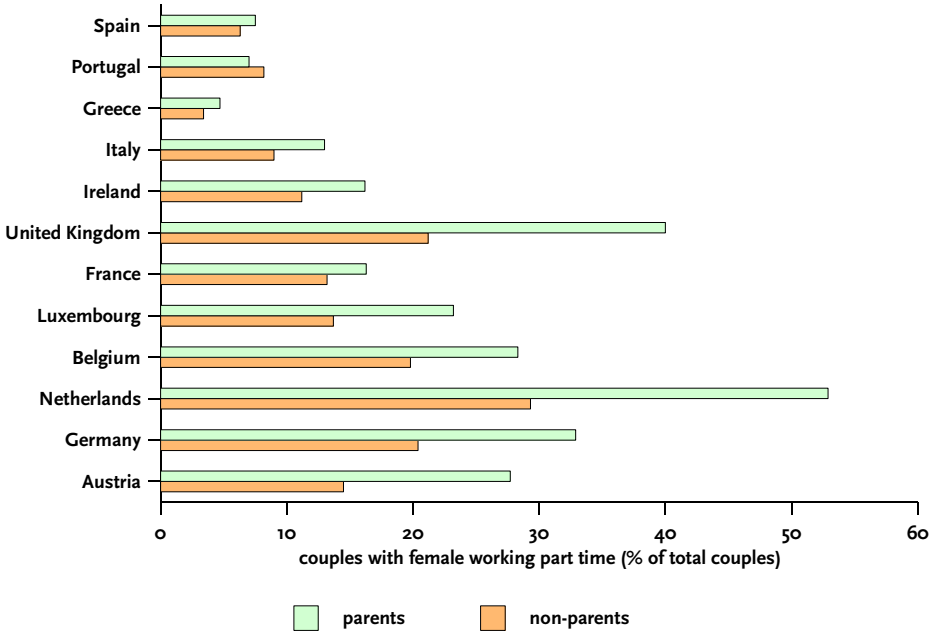
Female participation and life-cycle patterns

The developments in the composition and size of households largely reflect changes in the social and economic position of women. The participation rate of women in the formal labour market has increased throughout Europe. The process of emancipation is not yet complete. The aim of the European Union is, for example, to increase the female participation rate from 54.1% in 2000 to 60% in 2010.

The increase in female participation has led sometimes difficult choices for couples, namely between work and other activities. Especially couples with children face a dilemma between work and care for children. To reconcile these conflicting demands for time, women more often decide to work part time. Figure 11.2 shows this, and reveals that females are more likely to work in a part-time job when they have children.

In addition to the increasing demand for part-time work, people increasingly feel the need to take temporary (unpaid) leave from their job (e.g. to care for ill relatives or to follow an education). An increasing number of labour contracts provide the opportunity to combine job obligations with more flexibility in the number of hours worked, periods for sabbatical leave, care for relatives, and education.

Figure 11.2 Females working part-time in 2000: parents versus non-parents



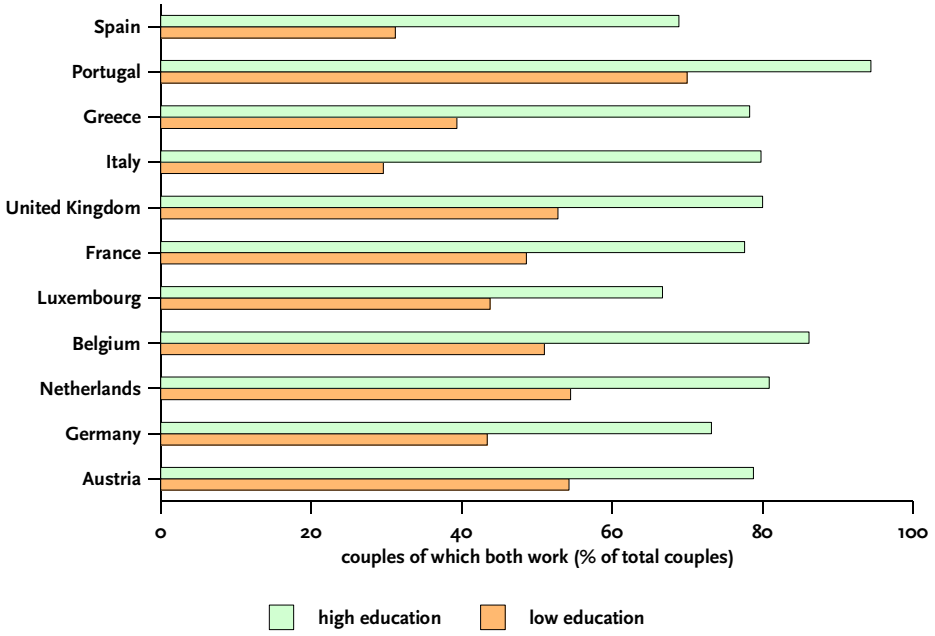
Source: Eurostat (2002)

Governments may want to contribute to the growing need for flexibility. For instance, a government may see a role for itself in the provision or subsidisation of child care. Alternatively, it may provide special tax credits for particular forms of leisure activities, such as care for relatives or education. Such proposals are, however, complicated by the increasing heterogeneity in society. Indeed, these measures require that governments are able to make an objective distinction between those eligible for subsidies or tax credits and those that are not Heterogeneity complicates differentiation of policies according to personal characteristics that are difficult to verify. These policies become more vulnerable to improper use and fraud. Moreover, it complicates other public objectives, e.g. income redistribution and female participation. In particular, subsidies for child care may end up primarily with the rich. Figure 11.3 makes this clear, showing that participation of female partners depends strongly on their

level of education. Hence, subsidising child care tends to benefit primarily highly educated parents with a high level of income[46].

A similar dilemma appears in other policies to encourage female participation. For example, tax incentives aimed at stimulating labour-market participation of partners tend to increase the income differentials between rich and poor households, because poorly educated partners usually do not work. Public policy thus faces a trade-off between facilitating developments that are in themselves desirable, and targeting subsidies to groups that are in need of public support.

Figure 11.3 Working couples according to educational attainment of female partner, 2000



Source: Eurostat (2002)

Public provision of private goods: equal opportunities versus differentiation

Individualisation manifests itself also in other ways. People feel more responsible for their own lives, which may call for less public responsibility. Besides, more heterogeneity creates a demand for more diversity in private goods that are currently provided publicly. To illustrate, working couples that are able pool their labour market risks may need less income insurance. White-collar workers are perhaps more inclined and better able to work at a high age than blue-collar

[46] A similar dilemma appears in policies to encourage female participation. For example, tax incentives aimed to stimulate the labour-market participation of partners tend to increase the income differentials between rich and poor households, because poorly educated partners usually do not work.

workers, requiring differentiated pension schemes. The box *Public provision of private goods* goes into more detail on the trade-off between private and public production.

An important motive for providing private goods publicly is to give everyone equal opportunities, independent of social-economic background. This motive is relevant for, among others, education, health care and social insurance. Universal access has, however, a strong effect on demand: it tends to cause overconsumption. Rationing devices are not always easy to implement, or may meet strong resistance. This makes it difficult to control public expenditure on these goods. A typical example is disability insurance. In many OECD countries the inflow into disability schemes is rising steadily whereas the outflow is low see OECD, 2003a). Tightening eligibility criteria or lowering the benefit level across the board would probably be effective in reducing the inflow. However, it comes at the expense of low-skilled workers, older workers and the severely disabled, for which the disability benefit is often the only possible source of income. Clearly, heterogeneity within the group of disabled workers is a complicating factor when trying to reform disability schemes. Targeting measures at specific groups may attenuate this problem, to some extent.

Public provision of private goods

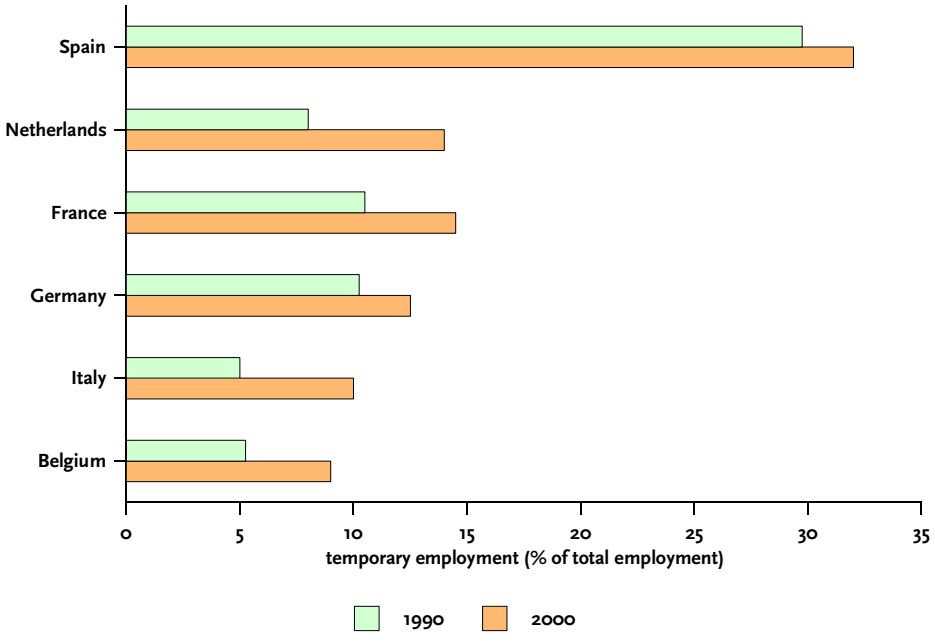
A number of private goods and services in our society are supplied publicly, such as education, health care services, pensions, insurance against labour-income risk, utilities or transport. The public provision of these private goods and services has some distinct advantages. First of all, it often serves distributional objectives. For instance, public education ensures that young people all have the same opportunities on the labour market, independent of the income and wealth of their parents. Similarly, publicly provided health care services prevent an unacceptable distinction in access and quality between the rich and the poor. Second, public provision is a response to market failures. For example, the market cannot provide every form of insurance, because individual risks are correlated (unemployment insurance) or because a process of self-selection would lead to prohibitive insurance premiums for some groups (disability insurance). Finally, the production of some goods involves natural monopolies (e.g. water distribution, train infrastructure and electricity network). Public provision is then a way to avoid excessive monopoly power to the detriment of consumers.

Yet, the public provision of private goods and services also has a number of drawbacks. First of all, public production is often less cost-efficient than private production. Several factors are responsible: weak, unclear or even perverse incentives, a dominance of political concerns, soft budget constraints or a combination of these factors. In light of this, many European countries have started to privatise production that used to be in the public domain, such as energy supply, public transport and telecommunications. To keep an eye on the public interest, a regulator is usually created. Another drawback of public provision is that the supply of goods and services is typically homogeneous: we usually have a uniform provision of pension schemes, public health insurance, insurance against labour-income risks, and so on. Thus, public supply usually does not deliver diversity. This disadvantage becomes more important in a more heterogeneous society.

A more heterogeneous labour market

With the process of individualisation, internationalisation, and technical change, labour markets have become more heterogeneous. For instance, the increase in part-time work applies not only to women, but also to men. In Germany and Spain the share of male part-timers (in total employment) doubled between 1990 and 2000, to 4.8% and 2.7% respectively. In the Netherlands it is already approximately 13%. Another trend is the increasing importance of temporary labour contracts, often via temporary work agencies. Figure 11.4 shows that the share of temporary employment in a number of EU countries has doubled between 1990 and 2000. This reflects a growing taste for diversity and flexibility. Especially young workers, often high-skilled, like job-hopping at some stage of their career, thereby gaining experience in a variety of jobs and so broadening their general skills. It also gives them the opportunity to take longer breaks between jobs and to enjoy leisure or follow education. Moreover, temporary work is also a response to the rigidities in European labour markets. Indeed, to obtain flexibility in hiring and firing, firms prefer to hire workers temporarily rather than permanently so as to escape different labour-market regulations. Often these workers are low skilled, and their only alternative for a temporary job is unemployment.

Figure 11.4 Temporary employment



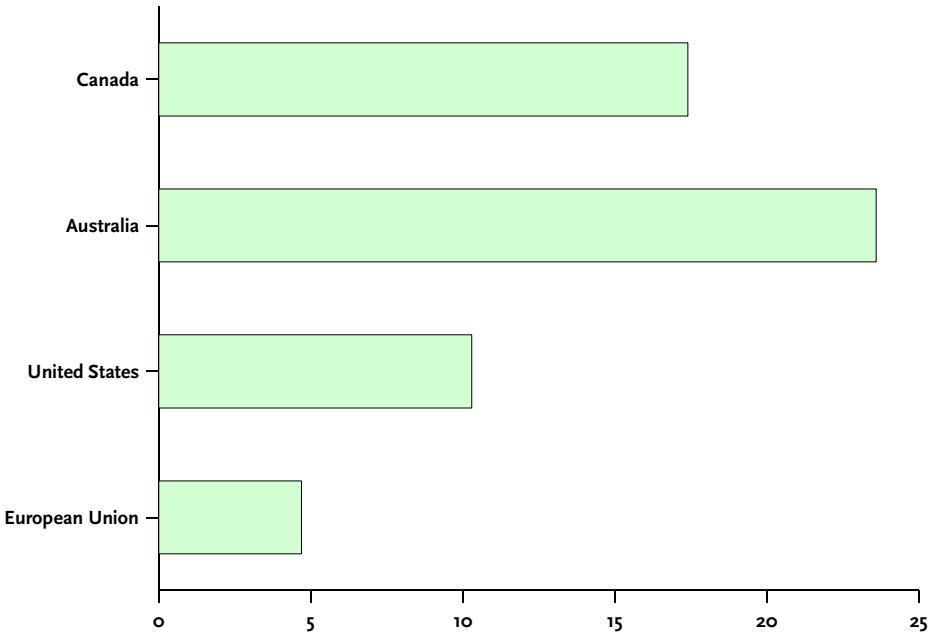
Source: OECD (2002)

Governments may strive to allay the difference between similar workers with well-paid, permanent jobs and with low-paid, temporary jobs. However, heterogeneity makes this more difficult to achieve. Indeed, simply putting restrictions on temporary jobs will not only increase unemployment among low-skilled workers, but will also hinder workers that voluntarily choose these temporary jobs. Heterogeneity therefore makes it difficult for governments to develop effective, uniform rules.

11.3 Immigration

Europe is not a continent of immigrants. The stock of foreign population in EU countries in 1999 was around 18 million, i.e. 4.7% of the EU population. This share is small when compared to other industrialised countries. Figure 11.5 shows that Australia, Canada and the United States host much higher shares of foreign-born populations.[47]

Figure 11.5 Stock of immigrants in various countries (% of population)



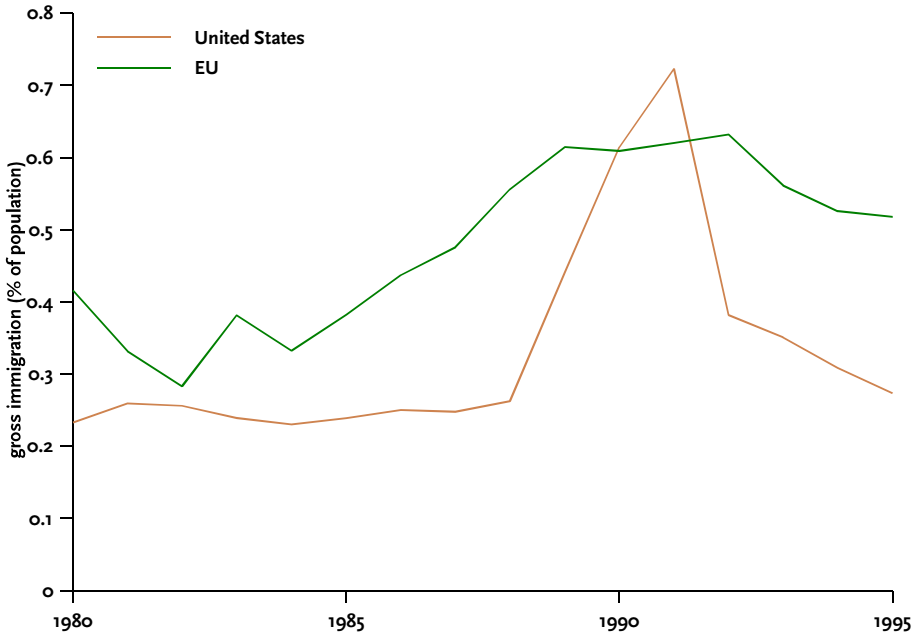
Source: Trends in international migration, OECD, Sopemi 2002

Yet, during the past decades, the share of foreigners in the EU population has been rising steadily. In the sixties, a number of European countries such as Belgium, France, Germany and the Netherlands allowed an influx of guest workers in order to relax tensions on their labour

[47] The stock of *foreign-born* population is typically larger than that of the *foreign* population because the former includes neutralised citizens.

markets. These countries attracted some ten million workers from Southern European countries, Turkey, Morocco and Tunisia. During the 1970s and 1980s, the flow of guest workers dried up. Immigration continued, however, primarily because family reunion became an important motive and the number of asylum seekers increased. In the late 1980s and early 1990s, immigration peaked with the fall of the iron curtain and the ethnic conflicts in the Balkan. Figure 11.6 shows that immigration declined somewhat in the late 1990s. In 1999 around 1.5 million foreigners entered the European Union, amounting to 0.4% of the EU population. This share is larger than that for the United States and of similar magnitude as in Australia.[48]

Figure 11.6 Immigration 1980 - 1995 in the European Union and the United States (% of population)



Source: Trends in international migration, OECD, SOPEMI 2002

Immigration and its effects on European economies

Natives do not always applaud the arrival of new immigrants. Opposition to immigration, extending sometimes into outright xenophobia, has various reasons. Some of these reasons are economic: the fear of losing a job to an immigrant and the fear for the erosion of public sector services. To explore whether these economic reasons have a firm empirical basis, we briefly review the main findings in the economic literature on immigration (see also Roodenburg et al., 2003).

[48] Note that net immigration in Europe is smaller than these gross figures due to substantial outflows.

The immigration literature, which has extensively analysed the characteristics of immigrants that have entered the industrialised countries in the past decades, yields a number of robust findings (Borjas, 1999; Bauer and Zimmermann, 1999). For example, the level of education exhibits a positive correlation with the probability of migration. Indeed, the educational attainment is high according to the standards in the country of origin. It is, at the same time, low according to the standards in countries of destination. Table 11.1 shows that the educational attainment of foreign workers in some European countries is on average lower than that of natives. This provides a starting point for understanding the effects of immigration on labour markets in the countries of destination.[49]

Table 11.1 Educational level of non-EU immigrants versus nationals in selected EU countries, 1999

	Lower secondary		Upper secondary		Tertiary	
	Foreigners	Natives	Foreigners	Natives	Foreigners	Natives
Netherlands	50.2	33.8	28.2	42.3	21.6	23.9
France	66.4	36.2	19.7	42.0	13.9	21.8
Germany	49.4	16.5	35.4	59.3	15.2	24.2
United Kingdom	30.3	19.4	30.5	53.3	39.3	27.3

Source: Coppel et al. (2001)

The empirical evidence provides little support for any relationship between immigration and general levels of wages or unemployment (Leibfritz et al., 2002). A more robust finding in the literature is, however, that immigration reduces low-skilled wages relative to high-skilled wages. Immigrants primarily compete for low-skilled jobs in the countries of destination.

The skill level of immigrants also explains partly their relatively poor position on the labour market in the countries of destination. Table 11.2 shows that the participation rate of foreign men and women in the Netherlands and the United Kingdom is substantially lower than for natives. In France and Germany, foreign women exhibit a lower participation rate, compared to natives. Similarly, the unemployment record for foreigners in the European Union is substantially worse than for the native population, especially in France and Germany.

[49] It also matters for the countries of origin. Migration amounts for these countries to a so-called brain drain, i.e. relatively skilled workers move abroad, with possibly negative consequences for the workers that stay behind. The adverse effects of a brain drain remain limited in the case of temporary migration or as the result of remittances.

Table 11.2 Participation and unemployment rates of foreigners in selected EU countries, 1999

	Participation rate				Unemployment rate			
	Men		Women		Men		Women	
	Natives	Foreigners	Natives	Foreigners	Natives	Foreigners	Natives	Foreigners
France	75.6	76.4	63.5	48.5	8.7	19.7	12.5	25.7
Germany	80.1	77.9	64.8	49.9	7.3	14.9	8.4	13.2
Netherlands	84.8	67.2	66.4	44.6	2.2	7.7	3.9	10.5
United Kingdom	84.9	76.2	69.2	56.0	6.3	10.9	4.9	8.3

Source: Coppel et al. (2001)

The poor labour-market position of foreigners is only partly explained by their lower educational attainment, however. OECD (2001d) indicates that, even if one controls for the lower average education of immigrants, foreign nationality exerts a positive impact on the probability of being unemployed. These relatively poor prospects for immigrants on finding a job are probably related to the labour-market institutions in European countries, such as tight employment protection and the strong position of trade unions. These institutions tend to protect the position of insiders at the expense of the opportunities for outsiders, including immigrants. Indeed, when the counterparts in Canada and the United States, where there are less institutionalised and more flexible labour markets, immigrants in Europe are worse off.

Figure 11.7 shows that in many European countries in the mid-nineties, the unemployment rate for immigrants is a factor two or more higher than the total rate. In fact, the relatively high incidence of unemployment among non-EU immigrants is strongly correlated with the generosity of unemployment benefits. One of the explanations offered by Sapir (2000) is that countries with generous welfare states attract more family members of guest workers than countries with less generous benefits. Whereas unemployment rates among guest workers are not necessarily higher than the unemployment rates among native workers, the prospects for a job for these family members are worse than average.

Figure 11.7 Generosity of unemployment benefits and unemployment among non-EU foreigners

Source: Sapir (2000)

The weak position on the labour market implies that immigration is often found to have a negative effect on the fiscal balance of European countries (see e.g. Roodenburg et al., 2003).[50] This implies that immigration is unlikely to be a solution to the ageing problem. This negative effect contrasts with the findings for countries that select immigrants on the basis of various characteristics. For instance, Australia, Canada and New Zealand adopt point systems to select immigrants. Applicants receive points for various qualifications and only those who reach the minimum number of points are admitted. The United States uses priority lists, admitting applicants with the highest qualifications in the ranking of desirable skills. Studies for these countries typically suggest that an average immigrant contributes positively to the government budget (Leibfritz et al., 2002).

The economic literature thus provides some economic grounds for natives to fear immigration. For low-skilled workers, immigration does not necessarily raise the probability of unemployment, but tends to reduce their wages relative to skilled wages. Besides, immigrants are likely to weaken the financial position of the public sector. These effects are probably not large. They add, however, to negative existing social-political sentiments about immigration. The latter originate in the different social-economic characteristics (including skills) between natives and immigrants. For instance, immigrants are among the main beneficiaries of the welfare

[50] This does not necessarily imply that the welfare effect of immigrants is negative, since immigration may create a so-called immigration surplus.

state, which may diminish the political support for the European-style welfare systems. Indeed, Alesina et al. (2001c) conclude: 'Racial fragmentation (...) and the disproportionate representation of minorities among the poor has clearly played a major role in stopping rich-poor redistribution in the United States ...'. To avoid this, social-economic opportunities for the foreign-born population must improve in Europe. There are various options to achieve that. This section explained that selection on the basis of appropriate criteria and more flexibility on the labour market are among these options. They would make it more likely that immigration has a positive impact on the government budget and that the labour-market position of immigrants improves.

11.4 How will institutions respond?

Individuals have become more independent from their social background: the single-earner household has lost ground, part-time and temporary labour contacts have gained importance, and a growing number of non-western immigrants populates Europe. These developments increase the demand for diversity. This also applies to publicly provided goods and services and government regulations. Indeed, it affects almost every area of the public sector: education, health care, pension schemes, child care, housing, labour-market regulation, and so on. The demand for diversity may call for a different approach from governments, allowing more flexibility, and perhaps even a less prominent role for the government in the economy.

Society faces trade-offs when trying to fulfill the demand for diversity. In particular, the uniform public provision of private goods contributes to the equal access for individuals, irrespective of background or income. This protects those who could not afford to buy these private goods if provided on the market. But uniform provision by the state introduces a distortion since it does not satisfy the different needs of different people. More heterogeneity implies more distortion, and calls for a more diverse supply.

The question is whether government are able and willing to provide a more heterogeneous, individualised provision of various private goods, such as education, labour-market insurance, pensions and health care. And, if they are, does more variety in supply crowd out solidarity, or can the government maintain this through supplementary, targeted policies?

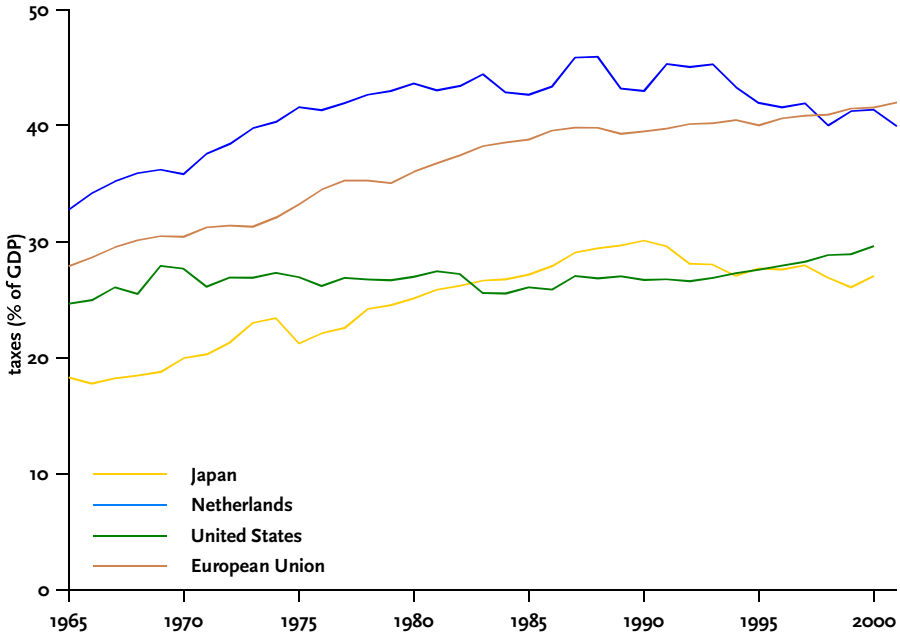
12 Increasing social costs of taxation

Increasing factor mobility raises the social costs of taxation. Capital is indeed becoming increasingly mobile internationally, although impediments to cross-border capital movements remain. Labour mobility is low in Europe and there are no immediate signs that point to a substantial increase. The expanding choice set of individuals nevertheless increases the individual response to income taxes and transfers, thereby adding to the increasing social cost of taxation. This puts a strain on public sectors in Europe.

12.1 Rising tax burdens

The size of the public sector in European countries has been growing ever since the 1960s. This has induced a steady increase in the overall tax burden. Figure 12.1 illustrates that in 1965 the average tax-to-GDP ratio in the European Union was below 28%. Subsequently, it increased sharply to 40% in the mid eighties, reflecting the expansion of the welfare states in Europe. In 2000, the tax burden increased further to around 42% of GDP on average. This development contrasts sharply with the United States where the tax-to-GDP ratio rose only mildly from 25% in the sixties to 29% at the end of the century.

Figure 12.1 Increasing tax burdens in Europe



Source: OECD Revenue Statistics

Rising tax burdens may be accompanied by substantial welfare costs. In particular, taxes usually not only involve a transfer of funds from the private to the public sector; they also change behaviour. Indeed, by changing relative prices, taxes induce people to escape taxes by altering their consumption, labour supply or saving decisions. In this way, taxes distort the allocation of goods and factors. The costs of taxation for the private sector therefore exceed the revenue that accrues to the government. This is the so-called deadweight loss of distortionary taxes. It measures the net welfare costs for society. An increase in these costs raises ceteris paribus the required return on public goods; these goods should compensate the private sector not only for their income loss, but also for the deadweight loss.

The deadweight loss increases in three variables: the tax rate, the elasticity of demand and the elasticity of supply. The elasticities measure the behavioural response to taxes. Hence, they determine by how much an increase in the tax rate erodes the tax base. A large elasticity implies a substantial erosion of the tax base and, therefore, a relatively small tax revenue and a high deadweight loss. The tax rate measures by how much a given erosion of the tax base reduces tax revenue. At a certain rate of tax, higher rates may even reduce overall revenue because the eroding tax base reduces tax revenue by more than the higher tax rate increases it. Important here is the fact that the deadweight loss rises more than proportionally (namely quadratically) in the tax rate. Hence, the increasing tax burden over the last decades has considerably pushed up the deadweight loss (or social costs) of taxation.

This section concentrates on developments in the supply elasticities of capital and labour. These supply elasticities, being components of the deadweight loss of taxation, are closely related to the international mobility of capital and labour. In particular, the easier it is for suppliers to allocate their capital or labour across borders, the higher is their supply response to a higher tax rate. As factor mobility may be increasing in light of the internationalisation of markets and the process of European integration, supply elasticities may increase as well. By increasing the social costs of taxation, this makes it more difficult for countries to raise revenue and, therefore, to maintain a high level of public expenditures. Especially public expenditures that benefit immobile factors (such as low-skilled workers) come under pressure. The reason is that increasing factor mobility provides an incentive for governments to reduce taxes on them in order not to lose these factors to other countries. Tax competition will therefore benefit mobile factors (capital and skilled labour) and comes at the expense of immobile factors.

12.2 An increasing elasticity of capital?

In principle, capital mobility is attractive for the economy. It leads to an efficient allocation of funds across space and across time. Funds flow to those places where investment yields the highest rate of return; and countries can borrow or lend to absorb transitory changes in income so as to avoid abrupt changes in consumption. Capital mobility, moreover, allows investors to diversify portfolios and to share risks.

At the same time, however, capital mobility increases the social costs of taxation. Indeed, the international mobility of capital determines the responsiveness of capital supply to taxes. Perfect capital mobility, for instance, corresponds to an infinite elasticity of supply. By raising the social costs of taxation, capital mobility tends to reduce the possibilities for income redistribution.

The European Union is committed to factor mobility according to the Single European Act of 1986, which ensures the free movement of capital. During the past decades, capital controls have been abolished, and the EMU has been completed. These and other steps, in combination with new (information) technologies, have led to a surge in capital flows. For example, worldwide foreign direct investment has increased from 47 billion US$ in 1982 to 1.2 trillion in 2000 (in current prices). To put this into perspective: in 1982 FDI constituted a mere 0.4 percent of worldwide production; in 2000 it has increased to 3.8 percent.

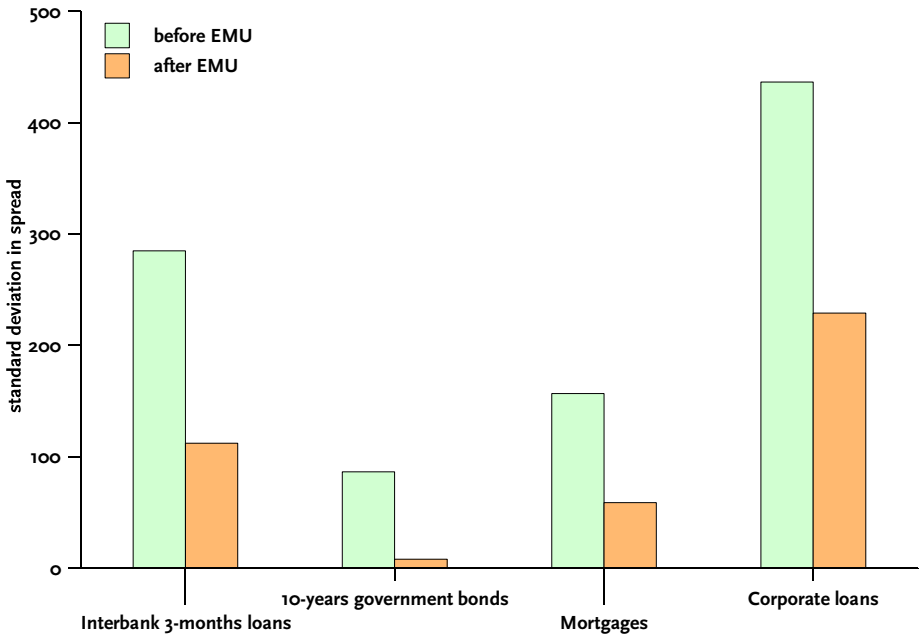
But is this sufficient to conclude that capital is highly mobile? What is the scope for further increases in capital mobility? This section addresses these questions by reviewing the empirical evidence on the basis of several indicators.

How mobile is capital today?

The EMU is generally believed to facilitate the mobility of capital in Europe, especially since it eliminates exchange rate uncertainty. An indicator to assess the impact of EMU is the gap between rates of return on similar assets in different countries. The more mobile capital is, the more investors take advantage of arbitrage opportunities, and the smaller this gap should be. Its limit is zero as mobility goes to infinity. Figure 12.2 displays the standard deviation of four rates of return in the European Union, both before and after 1999, i.e. the pre- and post- EMU period.[51] We see that the variation of interest rates is substantially lower across the board in the post-EMU period. This hints at an increased degree of capital mobility after 1999. In fact, the standard deviation for government bonds is close to zero, implying that governments borrow more or less at the same rate. The standard deviations for the other assets are substantially higher. This partly reflects exchange rate risk, since not every country in the sample has joined the EMU (yet). For example, within the EMU-area the rate for interbank 3-month loans is the same.

[51] The underlying interest rates are mean differentials calculated for the periods 1995 - 1999 and 2000 - 2001.

Figure 12.2 Spread in rate of return for four assets between several European countries and Germany



Source: Adam et al. (2001)

The high standard deviations in figure 12.1 for some assets may partly reflect that arbitrage opportunities are not fully exploited and that impediments to capital mobility have remained important. This is consistent with direct evidence. For instance, the standard deviation of charges for cross-border bank credit transfers, and – equally important – the standard deviation of the delays in these transfers have remained high in the post-EMU period. In an integrated capital market, one would expect that these charges and delays should fall. But, charges have remained on persistently high levels of around €17 on average, and the delays remained at around three days on average.

Feldstein and Horioka (1980, p. 317) provide further evidence for the imperfect mobility of capital. They write: "With perfect capital mobility, there should be no relation between domestic saving and domestic investment: saving in each country corresponds to the worldwide opportunities for investment while investment in that country is financed by the worldwide pool of capital. Conversely, if incremental saving tends to be invested in the country of origin, differences among countries in investment rates should correspond closely to differences in saving rates." They estimate the correlation between national savings and national investment and find a value of 0.90. This suggests that real capital is highly immobile across countries. As Feldstein and Horioka use rather old data from 1960 - 1974, Obstfeld and Rogoff (2000) run a similar regression by using more recent data from 1990 - 1997. Their results imply a coefficient

of 0.64, which is much lower than that found by Feldstein and Horioka. This suggests that capital markets have become more integrated during the past decades. It also indicates, however, that international capital mobility is still far from perfect and that the allocation of capital across space and time is still suboptimal.

Another indicator for capital mobility utilises the idea of international risk-sharing. Internationally diversifying a portfolio brings the advantage that the return on this portfolio becomes less volatile: the total risk becomes lower because unexpected gains and losses cancel out. With mobility of assets, one would expect that investors in different countries hold portfolios that are more or less similar in their composition. This would imply that changes in capital incomes are similar across countries, so that the correlation of consumption would be stronger than the correlation of production. Table 12.1 shows the average coefficient of correlation between the United States and 20 other rich countries for the growth rates of gross domestic product (GDP) and consumption per capita for three 15-year periods. The table reveals that the coefficient for GDP in the last period is substantially higher than in the first period. This might reflect a better integration and more synchronisation of economies.[52] The correlation coefficient for consumption per capita has hardly increased, however. Moreover, the correlation of consumption per capita is smaller than that of GDP, in both the second and third periods. This suggests that international capital markets perform the function of risk sharing rather poorly.

Table 12.1 Risk sharing? Average coefficients of correlation between the United States and 20 other OECD countries

	Gross Domestic Production	Consumption per capita
1956-1970	0.24	0.30
	(0.25)	(0.25)
1971-1985	0.44	0.05
	(0.25)	(0.27)
1986-2000	0.41	0.31
	(0.34)	(0.33)

[1] The results are based on two-year averages of annual growth rates. Between brackets is the standard deviation around the mean.
Source: own calculations based on Heston, et al. (2002)

[52] Note that the correlation coefficient is the highest in the second 15-year period, when countries faced important common supply and demand shocks (the oil crises in 1973 and 1979 and the tight monetary policies in the early eighties).

This latter finding is consistent with the observation that portfolios of investors still show a strong 'home bias' (i.e. an overrepresentation of national assets relative to foreign assets). This home bias has decreased somewhat since the start of the EMU. For example, pension funds as well as insurance companies hold a higher percentage of foreign equity in virtually all member states since the late 1990s. Yet, the home bias in asset portfolios is still important (see Adam et al., 2002).

Why is capital so immobile?

One explanation for imperfect capital mobility is asymmetric information between domestic and foreign investors (Gordon and Bovenberg, 1996). Indeed, although some information in capital markets can be transmitted digitally, a lot still requires face-to-face contact. To illustrate this, Table 12.2 shows some estimates presented in CEPR (2002) on the impact of distance on economic interactions in capital markets. The estimates express equity flows and foreign direct investment at different distances, relative to the flows at a distance of 1000 km. We see that distance substantially reduces equity transactions and, to a lesser extend, FDI. Apparently, distance matters for capital mobility.

Table 12.2 The impact of distance on cross-border capital flows

	Equity flows	Foreign direct investment
1000 km	1.00	1.00
2000 km	0.55	0.75
4000 km	0.31	0.56
8000 km	0.17	0.42

Source: CEPR (2002)

Another explanation for limited capital mobility is imperfect substitutability of assets. Gordon and Varian (1989) argue that investors will allocate their funds in various countries in order to diversify the risk in their portfolio. This is especially important if countries are highly specialised, which exposes them to different risks. Hence, increasing specialisation may actually reduce the substitutability of assets from different regions and thus reduce the mobility of capital.

Obstfeld and Rogoff (2000) put forward yet another explanation. Instead of focussing on frictions in international asset markets, they claim that transaction costs in international goods markets explain both the Feldstein-Horiaka puzzle and the home bias in portfolios. In particular, OECD countries do not show large fluctuations in current account surpluses (or deficits), even though the international trade in financial assets is relatively free. The reason is that high transport and transaction costs limit the potential increases in exports or imports. As a

result, the mobility of (real) capital depends on barriers to international trade in goods and services.

Prospects for the future

That capital mobility is still imperfect is partly the result of frictions in asset markets and of transport and transaction costs in goods markets. It implies, however, that there is a potential for capital mobility to increase further in the future. The European Union has the ambition to obtain that. For instance, the persistently high charges and delays in international bank transfers have attracted the attention of the European Commissioner Frits Bolkestein, who has urged banks to bring rates more in line with costs. Moreover, the European Commission has launched an action plan to stimulate the integration of European capital markets by removing technical and regulatory barriers to financial trade.

The potential for increasing capital mobility in the European Union also emerges from studies measuring the responsiveness of capital flows to tax rate differentials. Altshuler et al. (1998) take two snapshots of this responsiveness for United States outward investment. They find that a 1%-point increase in the effective tax rate in a foreign location causes a decline in FDI of 1.5% in 1984 and 2.7% in 1992. As they note, this is consistent with increasing capital mobility. De Mooij and Ederveen (2003) explore a similar question in a meta-analysis on the tax rate elasticity of FDI. They find that the responsiveness of FDI to taxes is indeed higher for studies using more recent data. Moreover, the study reveals that there is substantial scope for higher capital mobility in the European Union. In particular, studies dealing exclusively with the location of investment in US states report elasticities that are more than three times higher than studies that focus on international locations, including locations in EU states.

12.3 An increasing elasticity of labour supply?

As with capital, the elasticity of labour supply depends on the international mobility of labour. A high elasticity is associated with high welfare costs of taxation and, therefore, less redistribution. However, the free movement of workers may be attractive. It contributes to an efficient allocation of labour across regions and countries. Within and among (European) countries are important wage differences. If workers were to exploit these differences, this would increase flexibility and, more generally, add considerably to economic efficiency. Moreover, migrating workers may contribute to the economic dynamics of innovation and technical change since they bring new skills, ideas and contacts. Moving to a different town or country also entails costs. These are less visible than the economic gains of higher income and increased productivity. Leaving friends and family and adapting to a new environment are not taken lightly by everyone.

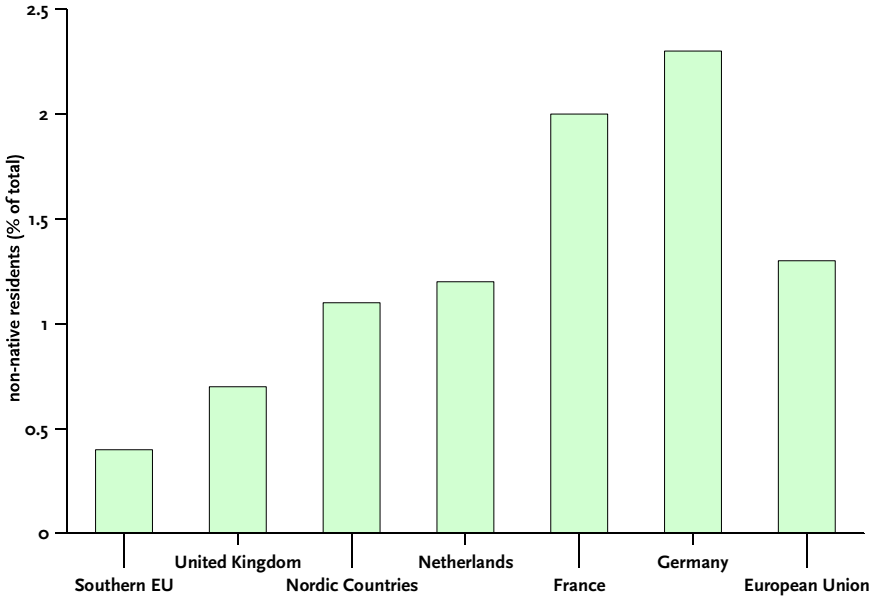
How mobile is labour in the European Union?

In 1999 some 2.5 million European citizens resided in a foreign EU member state. This is around 1.7% of the working population. Each year, 0.2% of the working population moves towards another country within the Union. These figures are low compared to other industrial countries. For instance, migration across US regions of similar size is more than five times greater than in the European Union (European Commission, 1997). Also compared to previous periods, labour mobility in Europe is low. For instance, during the 1950s and 1960s more than 12 million people moved from Southern Europe to Northern European countries.

Not only international labour flows across the member states of the European Union, but also regional migration flows within the member states are lower than in the United States. Indeed, whereas migration across similarly sized American states accounts for about 4% of the population, interregional migration within the five largest EU members is only 1%. This is of the same order of magnitude as international migration in the European Union.

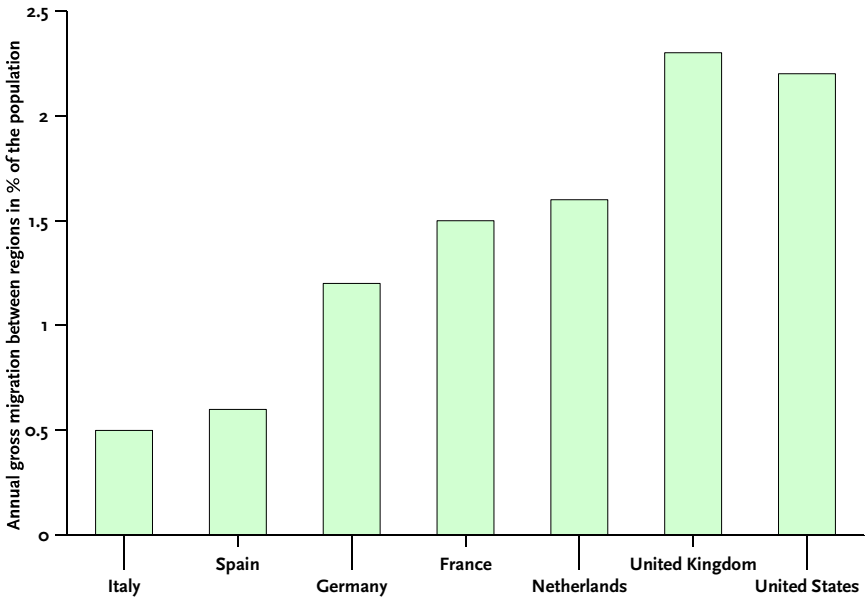
Immigration rates differ markedly, however, among European member states. This is illustrated in figures 12.3 and 12.4. Figure 12.3 shows the total number of non-native residents in a country as a percentage of the total population in 1998. It reveals that the number of immigrants from other EU countries is especially low in the Southern member states, while it is relatively large in France and Germany. Figure 12.4 shows that interregional immigration in Southern countries (Italy, Spain) is less than half as large as in Northern countries (Germany, France, Netherlands, United Kingdom).

Figure 12.3 Non-native EU citizens in various countries in 1998



Source: Trends in international migration, OECD, SOPEMI 2002

Figure 12.4 Interregional labour mobility in a selection of EU countries in 1999



Source: Trends in international migration, OECD, SOPEMI 2002

Modern theory of migration explains flows of labour between regions from the difference in expected income between the home region and the destination region. Accordingly, a measure for labour mobility is the elasticity of labour flows with respect to wage and unemployment differentials in Europe. Numerous empirical studies have estimated these elasticities. Ederveen and Bardsley (2002) reviewed these studies and performed a meta analysis using 23 of them. They find that the majority of studies report positive but small migration elasticities for wage differentials. The median elasticity is 0.33; that is a 1% higher wage in the receiving country compared to the sending country raises gross migration by 0.33%. Most studies report negative but small elasticities for unemployment differentials. Ederveen and Bardsley report a median elasticity of -0.09; that is, a 10% higher unemployment rate (e.g. from 10% to 11%) in the receiving country compared to the sending country reduces gross migration by 0.9%. These findings confirm that the responsiveness of labour in the European Union to economic incentives is low, compared, for example, to the United States. To illustrate, the elasticity of immigration with respect to wage differentials in Eichengreen (1993) is about 25 times larger in the United States than it is in the United Kingdom, and even more compared to Italy. With respect to unemployment differentials, Bentivogli and Pagano (1999) report that US immigration is more than ten times as responsive as European immigration.

Why is labour so immobile?

Low labour mobility may originate in declining incentives to migrate (i.e. smaller wage and unemployment differentials). The data, however, reveal that unemployment differentials are highly persistent across regions while regional income disparities have only fallen to a small extent. Hence, declining incentives seem to offer an insufficient explanation for the low migration rates.

An alternative explanation for low labour mobility is the cultural and linguistic difference between European countries. Again, this is not entirely convincing. It does not explain why labour mobility is much lower than it was during the 1960s. Furthermore, the study by Ederveen and Bardsley (2002) shows that interregional labour mobility in Europe is not significantly more responsive to wage and unemployment differentials than is international labour mobility. Hence, borders do not provide a satisfactory answer to the question either.

Braunerhjelm et al. (2000) point to three other possible explanations for the low mobility of labour in the European Union. First, it may be due to policy differences, especially in regional, housing and labour market policies. For instance, unemployment protection legislation in Southern European countries may prevent a worker from moving into another job in a different region. Similarly, high transaction costs in housing may prevent people from moving to another place of residence (Van Ommeren and Van Leuvenstein, 2002). A second explanation for low labour mobility is high unemployment *levels*. Indeed, some empirical studies find that the high and persistent levels of aggregate unemployment in many European countries have reduced the willingness of Europeans to look for jobs elsewhere. A final explanation for the low mobility of labour in Europe has to do with the preference for home amenities. Indeed, migration involves substantial non-monetary costs. When deciding about migration, people trade off the expected monetary benefits of migration against the monetary and non-monetary costs of moving. The non-monetary costs of moving may have gained importance, since the overall level of welfare has increased. Hence, the home country's amenities can be seen as a luxury good: its demand increases with income. If migration in the European Union is low because of preferences, the prospects for increasing mobility are small.

Prospects for the future

Low labour mobility in Europe is of great concern to European policy makers for a number of reasons. First, increasing labour mobility would contribute to declining regional income disparities, which is an important objective of the European Union. Second, free labour movements would imply a more efficient allocation of labour across space, with associated welfare gains. Indeed, labour mobility could be part of the solution to reduce the persistently high unemployment level in the European Union, and especially the concentration of unemployment in some regions. Finally, inspired by Mundell's theory on optimal currency areas, the completion of EMU has put labour mobility high on Europe's agenda. In the EMU,

countries can no longer absorb asymmetric shocks by means of decentralised monetary policy. Mundell therefore argues that labour mobility should substitute for this as an alternative adjustment mechanism. Decressin and Fatas (1995) have shown, however, that labour mobility does not function as such in the European Union: an adverse labour-market shock in EU countries is typically not absorbed through emigration of people to other regions, as it is in the United States, but through a decline in participation. Thus, asymmetric shocks in Europe have adverse consequences for EMU countries.

For these reasons, the European Union aims to increase labour mobility across countries. This will be a difficult task. A necessary (but not sufficient) condition for labour mobility to rise seems a policy of three components. First, an elimination of the barriers to cross-border labour mobility (e.g. in pension systems, mutual recognition of qualifications, and the like (see SER, 2001)). Second, national institutions that form impediments to mobility should be reformed (e.g. in housing, regional policy and the labour-market institutions). Finally, a policy to reduce the overall unemployment rate is likely to encourage labour mobility.

A boost for migration follows from the next enlargement of the European Union. Regional income disparities will increase substantially in the enlarged European Union. This will induce an inflow of immigrants to Western European countries. Furthermore, it is conceivable that an international market for higher education may emerge, which could provide an impetus for the migration of high-skilled workers.

Other effects on the elasticity of labour supply

The elasticity of labour supply depends on more than international labour mobility; also other social-economic factors are important. In particular, the growing importance of part-time work, temporary contracts, and more flexibility regarding labour relations has increased the choice set of workers. Indeed, their choice is no longer between inactivity and a permanent full-time job. Instead, workers can decide to work shorter or longer hours, opt for a sequence of temporary jobs with different employers, or take temporary leave. Accordingly, the number of hours worked by individuals is becoming more responsive to after-tax rewards and, therefore, to marginal tax rates. This holds especially for (low-skilled) females. Labour supply has thus become more sensitive to income tax rates, increasing the costs of taxation. Similarly, income transfers may have larger effect on individuals than before. A common trend in OECD countries is, for example, that an increasing share of disability benefits goes to young females. Understandably, a disability benefit is a better option for them than it was and is for a male breadwinner. Individualisation may thus have raised the costs of income taxes and income transfers. This makes it harder for governments to levy income taxes and give income transfers to support the relatively poor.

12.4 How will governments respond?

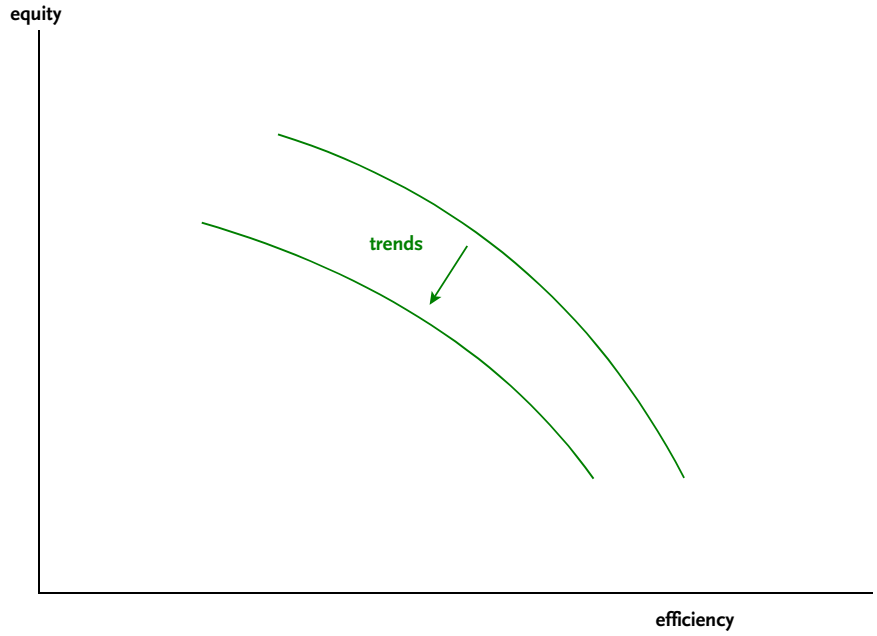
For capital mobility to increase, barriers to trade in assets and good markets must be torn down further. An increase in labour mobility also requires that cross-border barriers fall. The impact of this on the mobility of labour is probably small, however. Low migration flows in Europe largely reflect strong preferences for home amenities. Even though little is known about the mobility of high-skilled workers (versus low-skilled workers), it seems likely that in a more integrated world these workers will become more mobile, especially when an international market for higher education emerges. Higher mobility of capital and perhaps (high-skilled) workers will increase the social costs of taxation. This reinforces the increase in the cost of taxation that results from individualisation as well as increasing tax rates associated with higher public spending. Higher costs of taxation make it more difficult for governments to provide income support to those that are relatively poor and immobile.

13 Public sectors in Europe: a key uncertainty for the future

In response to the growing pressure on the public sector, governments may take alternative routes. The choices will depend on social preferences and the functioning of alternative institutional frameworks. Governments are challenged to develop institutions that yield the best combination of equity and efficiency. Whether they will obtain this remains a key uncertainty.

The four trends, that have partly materialised already, will put pressure on public sectors in the coming decades. Ageing and Baumol's law will increase public expenditures. This is reinforced by the deeper divide between skills if society will not accept increasing inequality. At the same time, increasing factor mobility and labour supply flexibility will make it more difficult for governments to raise enough revenue to finance these expenditures. Moreover, increased social heterogeneity exacerbates the mismatch between supply and demand for publicly provided goods. Figure 13.1 illustrates the increasing difficulty for governments by means of a shift in the equity-efficiency trade-off. As a result of this, governments face a difficult choice: retreat or reform.

Figure 13.1 Four trends shift the trade-off between equity and efficiency inwards

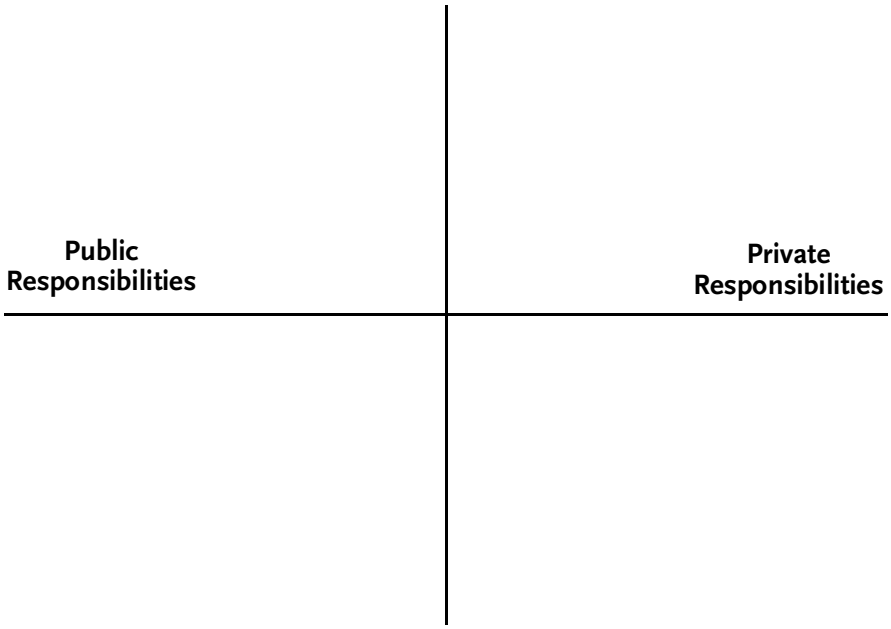


Moving along the trade-off: uncertainty in preferences

How do governments deal with this increasingly difficult dilemma? Future preferences with respect to equity and efficiency are hard to predict and form a key uncertainty for our scenarios. Figure 13.2 illustrates two extreme positions. On the left-hand side are societies that aim to

maintain an equitable distribution of resources, with an important role for public sector. The inevitable rise in the level of public expenditures to maintain equality comes at the expense of less efficiency. On the right-hand side are societies that put a strong emphasis on individual autonomy and delegate many responsibilities to the private sector. By trimming the public sector, such a society tends to reduce social cohesion.

Figure 13.2 Choosing between public intervention and private incentives



Moving the trade-off: uncertainty with respect to institutions

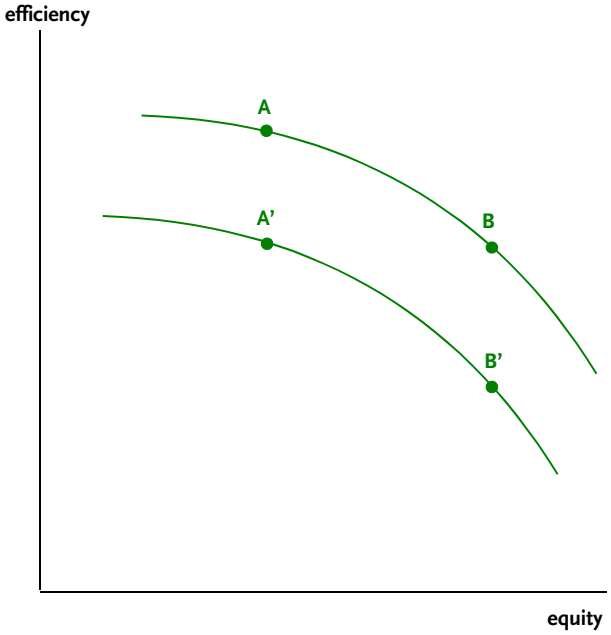
The choice between public intervention and private initiatives is not sufficient to assess, however, the combinations of equity and efficiency. There is also genuine uncertainty about the performance of different institutional designs. Indeed, both markets and governments fail. Assessing the optimal mix between private and public responsibilities is a difficult task and depends on the uncertain magnitude of the market failures and government failures, respectively.

Figure 13.3 illustrates this uncertainty. It reveals that the trade-off between equity and efficiency can have different positions. A society that assigns a high value to equity may leave many responsibilities with the government. This tends to hurt efficiency, especially if government failures are large. However, different public policies have different costs in terms of efficiency. Some welfare state provisions provide important economic functions, e.g. coping with market failures in insurance markets, alleviating hold-up problems, and removing

distortions in capital markets (see e.g. CPB, 1997a). Other policies are less efficient in their aim to reduce inequality, but nevertheless are difficult to reform due to vested interests. Hence, the same level of equality may be achieved at different costs in terms of efficiency (compare points A and A' in figure 13.3). The challenge for societies is to arrive at point A.

Similarly, if the government retreats, then society is likely to become less equitable. But the absence of appropriate government intervention (e.g. in insurance markets or education) may hurt welfare due to market failures. With more public responsibility, the same level of equality can be combined with a higher level of efficiency (compare points B and B' in figure 13.3).

Figure 13.3 The performance of institutions



How will European governments respond to the growing pressure on the public sector and succeed in achieving their ambition of Lisbon? Will they be able to improve the trade-off by increasing the effectiveness of public policies and raising the productivity of the public sector (i.e. arrive at the frontier on the line AB)? Or will they respond by moving along the trade-off, from equity towards efficiency (i.e. move from A or A' towards B or B')? Part III discusses alternative scenarios in which alternative routes are explored.

14 Policy options: retreat or reform?

The pressure on the public sector will grow. Governments must choose: just a retreat or an innovative reform. An orderly retreat is not easy; a fundamental reform is difficult as well. What are the options for reform? We discuss a number of alternatives. A case study on disability insurance makes the ideas more concrete.

14.1 Retreat

Retreat of the government typically involves a move along the existing trade-off between equity and efficiency. For instance, a lower tax burden calls for lower public expenditures, which are often (but not always) intended to help the poor, especially when they refer to welfare state provisions. Hence, cutting expenditures is likely to raise income inequality. Similarly, increasing labour market participation among younger and older generations can be obtained through reforms of labour market institutions. Such reforms, however, face a trade-off between equality and participation, as we illustrated in chapter 8.

Retreat not only will entail more income inequality, but also runs the risk of reducing economic efficiency. One reason is that the system of social security plays a role in insuring income risks that cannot be provided by the market. It allows people to undertake risky investments with a potentially high rate of return, such as education, starting a business, or buying a house. If the government would only retreat, the development of private markets will not always materialise or will suffer from market failures. Therefore, governments that choose to retreat should think about a different role to deal with market failures and maintain an eye on the public interest. For example, regulations may be necessary to avoid the misuse of excessive market power, to remove entry barriers, or to increase transparency for consumers. It may not always be easy to master this new role and adequately deal with market failures when leaving supply of services to the market.

Hence, a simple retreat by the government is probably not only difficult to achieve in light of equity concerns, but may also hurt efficiency by exacerbating market failures. Therefore, more challenging is probably to think of reforming institutions that combine equity and efficiency. Thereby, partial retreat of government responsibilities may be part of a reform.

14.2 Reform

Improving the trade-off between equity and efficiency requires innovative policy reforms. Below, we give a non-exhaustive list of reforms that may relieve the burden on the public sector, without reducing equality. In many cases, there is a key role for information (see the Box *The crucial role of information in economic policies*); governments need to refine their current

instruments. In discussing the options for reform, we remain brief and refer, where possible, to other research for more in-depth analysis.

The crucial role of information in economic policies

A strong feature of markets is their efficient information-revealing mechanism. By their market behaviour, producers and consumers reveal information about their marginal rates of transformation and marginal rates of substitution. Markets are thus able to produce prices that reflect relative scarcities in the economy. This information-revealing mechanism is the key to the efficiency of markets.

When governments intervene in a market (e.g. to correct for market failures or out of concern for equity), they have to obtain information themselves. This can be problematic as private agents may lack an incentive to provide necessary and adequate information.

Information problems are behind many problems with public sector involvement in the economy. Take distortionary taxation. A non-distortionary tax would be a tax on talent, which is exogenous to individual. The problem for the government is that it does not observe talent. Therefore, it is forced to use a proxy for that, such as current income. But income is not exogenous, but endogenous: individuals can decide not to participate or reduce the number of hours worked. From this derives the distortionary effect of income taxes and income transfers (see Mirrlees, 1971).

Information is also at the heart of principal-agent problems, which often render public administrations inefficient. Governments are unable to get the necessary information about production efficiency. Bankruptcy is usually impossible for public organisations, even if they produce inefficiently. Governments thus need to find other, non-price measures, often proxies, to judge the efficiency of organisations in the public sector.

Governments try to limit the informational deficit by using various sources of information. Collecting information is costly, however. For instance, to collect and use information more effectively, governments may have to delegate responsibilities to decentralised levels of the administration, that are closer to the clients, or independent, specialised public bodies. However, agents at decentralised levels may have few incentives to perform their tasks efficiently, especially in light of the information asymmetries with their principals. In addition, collecting information may meet opposition. This may originate from concerns for privacy, which will inevitably be impaired (see also Bovenberg and Teulings, 1996).

Efficient tax systems

Taxes become more distortionary. There are two directions for policy reform that may reduce the distortionary impact of the tax system. The first way is tax coordination. This may help to avoid the downward pressure on taxes from competition among governments. In particular, increasing capital mobility may intensify tax competition, thereby putting pressure on governments to reduce corporate income taxes. Tax harmonisation, perhaps through a minimum rate, would be an effective way to avoid downward pressure on corporate taxes. Similarly, exchange of information among countries may help to tax the return on capital at the level of the receiver of this capital income. In this way, the European Union could support the efficiency of tax systems in its member states (see also chapter 7).

A second way to improve the efficiency of taxation is by broadening the tax base. Leaving part of income untaxed or taxed at a relatively low rate is one reason for the distortionary effects of taxation. For example, pension savings and investments in owner-occupied housing are often implicitly subsidised, which distorts the composition of savings as well as the decision to invest in either physical or human capital. Similarly, the deductibility of interest expenses by corporations distorts the financial structure of companies and erodes the base of the corporate income tax. In broadening the tax base, governments can also rely more on the benefit principle of taxation, which entails that the prices for public services reflect their relative scarcity. An appropriate application of the benefit principle is desirable from an efficiency point of view because it does not impose distortions in the economy. Road pricing is one viable option, where the benefit principle has not yet been applied. Its implementation is nowadays technically feasible. Also, opportunities to tax rents can be exploited better. For instance, when governments regulate a particular industry, e.g. because of environmental concerns, this tends to create scarcity rents. Without taxation, these scarcity rents are left in the private sector. It would be more efficient to tax away these scarcity rents and reduce taxes elsewhere. In this sense, revenue-raising instruments to regulate industries yield important benefits compared to non-revenue-raising instruments (Goulder et al., 1997).

Alleviating the burden of ageing

Redistribution from young to old, as part of a pay-as-you-go system, may crowd out redistribution between rich and poor. Without policy changes, ageing is expected to raise the tax burden on the young generations, thereby exacerbating already existing tax distortions. Chapter 9 discussed some options. One is to encourage savings. For instance, countries can move away from public pay-as-you-go systems towards funded systems, or governments may create a prolonged surplus on their budget. Another option is to exploit human capital better by increasing labour-market participation of the elderly. For example, countries may raise the retirement age. This would increase contributions and decrease expenditures on old-age pensions, thereby relieving the burden on the young.

In most options, people who retire see their income decline. They have to contribute more to (their own) old-age pensions. One can argue that this is fair for two reasons. First, the burden associated with the temporary ageing of the population is better shared across generations, rather than primarily borne by the young. Second, after the Second World War public systems were introduced to support the elderly, who most often lacked resources for a secure and decent old-age. Hence, age used to be a good indicator for poverty. Nowadays, being old is no longer the same as being poor. Governments can thus try to increase contributions from rich (soon to be) retirees so as to maintain support for elderly with low incomes.

Targeted policies and stronger private incentives

One system for income redistribution would be to provide a basic income to all individuals above a certain age, without any supplementary provisions. A flat tax on each euro earned could be used to finance the basic income. This system has a certain appeal: it is simple and avoids all the informational problems for the government. Indeed, it makes no distinction among people when providing income support.

A basic income, however, has one major problem: if it maintains high enough to sustain the income level of current benefit recipients, it is extremely expensive. The marginal tax rate on every euro earned should therefore be high in order to finance a basic income (Gelauff and Graafland, 1994). Therefore, governments *have to* rely on more targeted measures to provide income support. They require information on verifiable indicators which reflect the need for income support. Examples are current income, the position on the labour market, the living conditions, and the number of children. Targeting income support to those in need substantially reduces the costs and thus allows for lower taxes.

Governments do not always exploit information fully to target their policies. With health care, education, pensions and many areas of social security, governments often deliberately do not differentiate among individuals. The reason is that they aim for equal access to public services, irrespective of individual characteristics. Thereby, governments run the risk of a bloated level of public expenditures and, accordingly, a high tax burden. The equity-efficiency trade-off thus takes the form of a dilemma between equal access and a low tax burden. More targeted policies in combination with more private incentives may allow for better combinations of equity and efficiency. Introducing prices to regulate demand for scarce public services helps to improve efficiency, whereas targeting policies to those in need for support helps to maintain equity.[53] To reconcile conflicting objectives, governments must extend their set of instruments. Particularly, stronger private incentives and targeted income support – in one form or another – allow a reduction in public expenditure without reducing real income of the poor and needy.

Let us consider a few examples. Housing policy in the Netherlands aims to supply housing to people with low incomes at an acceptable price. To that end, the Dutch government regulates housing rents. These rents are substantially below market prices (Ter Rele and Van Steen, 2001). A number of subsidised houses are, however, occupied by people who earn a medium or high income. Hence, the regulation of housing rents is a poorly targeted instrument to meet the public goal of providing housing support to people with low incomes.

By extending own-risk in social insurance (for some groups), the government could increase private incentives to reduce moral hazard. To illustrate, unemployment insurance may partly rely on individual compulsory saving accounts, based on a funded system, rather than rely on near-full insurance. An individual saving account (which can be linked to old-age pensions)

[53] This point is closely linked to and extends the earlier discussion of the benefit principle in taxation.

introduces more incentives for unemployed individuals to search for a new job. Solidarity in the system can be maintained with those who become long-term unemployed and who do not have a positive account on which to rely.[54] A system with individual accounts would make lifetime income, instead of annual income, the relevant indicator for determining the need for public support.

In the same spirit, subsidies for higher education can be replaced by insured loans (CPB, 2003b). The primary aim of these loans is to alleviate the problems with capital-market imperfections, not with the low income of students at a young age. Subsidies to higher education can be limited to those individuals who are unable to benefit from their education in terms of higher future income. Such a system would better correspond to the idea of targeting support to those with a low lifetime income. Loans are primarily used to solve capital-market imperfections.

Targeted income support combined with activating policies

When considering more targeted income support in order to prevent too high a tax burden, one should care about exacerbating the problem of the poverty trap. The existing cumulation of measures targeted at low incomes already imposes a high marginal tax rate on work for many people with low incomes. Hence, they have few incentives to escape from their current position. More targeted income support can make things worse by further contributing to the poverty trap. High marginal tax burdens on low incomes appear in most European countries.

Combining targeted income support with active labour-market policies (for those with poor labour market perspectives) may confine the poverty trap at the lower end of the income distribution. Also here, the government needs to extend the set of instruments. Active labour-market policies, such as efforts to reintegrate the unemployed into the labour market via job search assistance and schooling, are found to raise participation without introducing more inequality (see chapter 8). Since not every type of active labour market policy is effective, this calls for careful design and systematic evaluation.[55]

Incentives in the public sector

The government (being the principal) often relies on decentralised public administrations (being the agents) to implement its policies. For instance, local governments generally implement policies in social assistance or housing subsidies. Separate public institutions are usually involved in the implementation of social insurance. Decentralisation is important because it allows for a better use of information about diverse local needs and circumstances.

[54] For those with good labour market perspectives own-risk is extended, but not for those with poor perspectives.

[55] See also OECD (2001d). They conclude from the few available evaluations that some inexpensive policies, like job-search assistance, are among the most cost-effective for a substantial number of unemployed.

In implementing its policy, the central government often prescribes various rules and interferes with the decentralised administrations. Still, decentralised administrations have considerable discretion in fulfilling their tasks. The central government often suffers from a lack of information to adequately monitor these administrations. Thus, some public organisations can produce inefficiently or engage in activities that lie outside their core business. To better monitor public administrations, the government may adopt certain alternative instruments.

First, instead of interfering with the administrations' implementation, it could shift (financial) responsibilities towards them. Accordingly, it could steer on the basis of output performance indicators. By making the budget of administrations dependent on their output performance, public bodies gain better incentives to perform well. Vollaard (2003) for instance discusses the ins and outs of using performance indicators in case of the police services in the Netherlands.

An alternative is to use benchmark studies to monitor the performance of administrations. By using the best-performing organisation as an example for the others, the central government may improve the incentives for administrations to work efficiently. The government may engage in naming and shaming when performance is good or bad, may fine a bad-performing public administration, or may invoke some sort of penalty on its management.

A third option to improve the efficiency of public bodies is to introduce competition. In education, for example, the government may provide vouchers to parents instead of directly financing schools. Parents can use the vouchers to select the school they prefer. Schools then have to compete for children, which provides incentives to perform according to demand. Competition may also be introduced by switching from public production towards outsourcing of public tasks to private companies. For instance, public transport, waste disposal, energy supply and so on, can be provided by private companies. Competition or potential competition can provide incentives for these companies to perform efficiently. The government should remain responsible, however, to safeguard the public interest.

Note that improving the efficiency of public organisations will not always reduce the budget. It can alternatively raise output at the same or an even higher budget. The public, however, will get more value for its money.

Support innovation

Compared to the United States, the member states in the European Union lag behind in the application of ICT in services sectors (see chapter 10). Hence, the potential to improve productivity is available. Unleashing this potential would not only raise overall economic growth, but could also help to reduce the pressure on the public sector, especially in public services. In fact, productivity in private and public services has progressed rather slowly in recent decades. For some of these services, applying ICT could potentially change that and break with Baumol's law. Productivity increases give governments the possibility to reduce the number of workers in

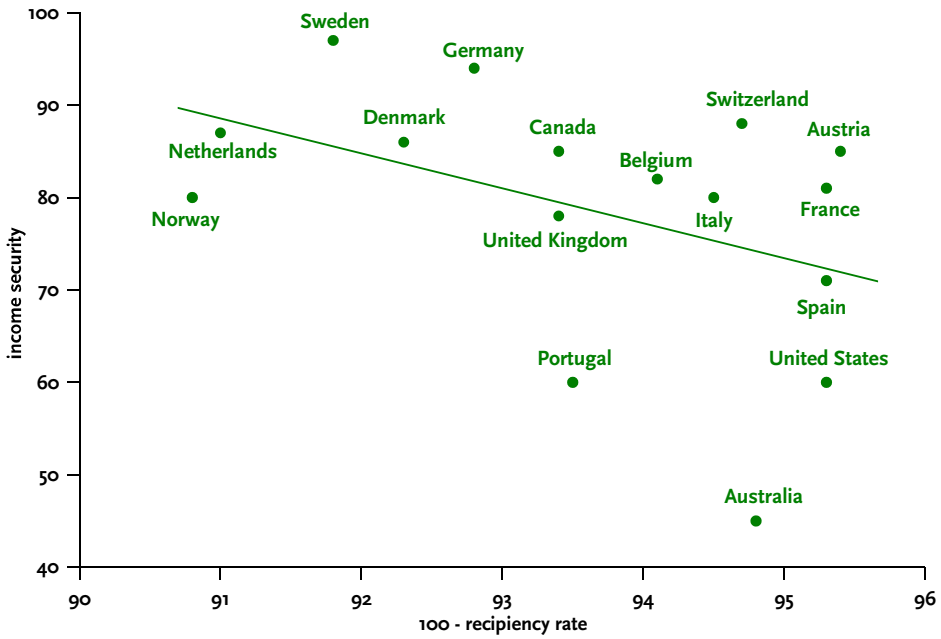
(parts of) the public sector, while maintaining the quality and quantity of publicly produced services. There is a role for public policies to support innovation to the extent that it creates positive externalities.

14.3 Reform: A case study on disability insurance

In many OECD countries, expenditure on disability benefits as a fraction of GDP rose in the nineties. In all countries, it is a factor two or more larger than expenditure on unemployment benefits. The increase in expenditures is related to developments that have been discussed in previous chapters. *Ageing* is a contributor, since older workers are more likely to become (partially or fully) disabled than younger workers. Moreover, more claims on the disability insurance involve mental and psychological problems, while the inflow rates for women under the age of 45 are significantly higher than for men in the same age group. Finally, the incidence of disability is relatively high among low-skilled workers. This reflects partly the nature of their work and their position on the labour market, which tends to deteriorate as a result of *technical change*.

Disability schemes have two objectives. First, they aim to ensure that the disabled take part in social and economic life. Accordingly, disabled people should be encouraged to participate on the labour market, if possible, with or without income support. Second, they aim to provide income security to those that have no capacity to work. Reconciling these two objectives is not easy. Figure 14.1 shows for various OECD countries the combination of income security and participation, where the latter is defined as the share of the labour force that does *not* receive a disability benefit. Figure 14.1 suggests a specific form of the trade-off between equity and efficiency. Countries that offer a relatively high income security tend to pay relatively more disability benefits and have relatively low rates of participation. Hence, high disability benefits go hand in hand with a high number of beneficiaries. Figure 14.1 also shows important differences across countries. The Netherlands, Denmark, Switzerland and Austria offer a similar degree of income security but differ significantly in the benefit recipient rates. Figure 14.2 shows that countries with a generous disability scheme also feature high spending. Indeed, Norway, the Netherlands, Sweden and Denmark spend more than 3% of GDP on disability benefits, whereas countries like Australia, the United States, France and Portugal spend 1.5% or less.

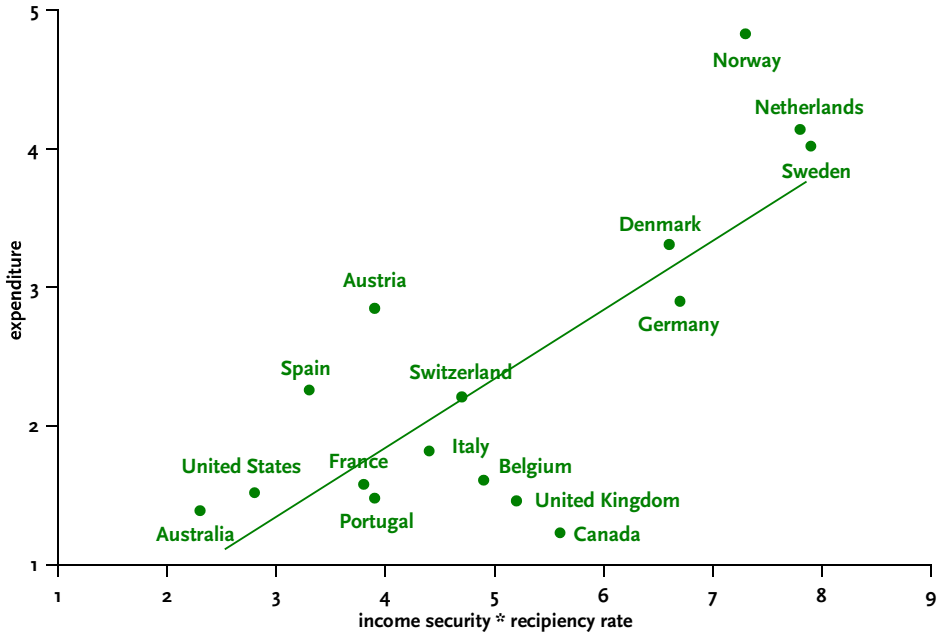
Figure 14.1 Disability insurance: Income security versus participation on the labour market



Source: OECD (2003a)

Income security is measured by the relative personal income of disabled over non-disabled. The recipiency rate is the number of people that receive a disability benefit relative the potential labour force.

Figure 14.2 Disability insurance: generosity and expenditure



Source: OECD (2003a)

Expenditures include disability benefits, sickness cash benefits and work injury benefits.

Expenditure on disability can be kept under control by means of an across-the-board reduction in disability benefits. This, however, effectively eliminates insurance against the risk of becoming disabled. Is there an alternative, more innovative policy to reduce expenditure on disability benefits, without abolishing the insurance altogether.

Better targeting ....

Every insurance has to deal the problem of moral hazard. The better income losses are insured, the higher is the probability that losses (are claimed to) occur. More specifically, one form of moral hazard derives from the fact that employers and employees can affect the probability of becoming disabled. When the income loss of disability is fully insured, both employers and employees will act more carelessly; their *efforts* to minimise the probability of becoming disabled are not optimal. Another form of moral hazard is that *claims* are awarded that should not have been. With disability insurance this is an important concern; survey data shows that one in three benefit recipients does not classify himself as disabled (OECD, 2003a).

A standard response to moral hazard is to introduce own-risk. In that case, the government insures only part of the income loss. This gives employers and employees a direct incentive to control the probability on disability, e.g. by improving safety and health conditions at work. Besides, it reduces the incentive to file dubious claims. Only if more, better information about claims and efforts becomes available, can governments reduce the problem of moral hazard and, thus, recipient rates without diminishing income security.

.... on observable characteristics

One way to reduce moral hazard is to differentiate contributions between employers. If working at a firm or in a sector has an above average probability of becoming disabled, contributions should be higher. This removes cross-subsidisation from low-risk firms to high-risk firms, thereby enhancing the efficient allocation of goods and factors. Moreover, it gives employers a more direct incentive to invest in working conditions. When differences in probabilities across jobs are not known to public insurers, experience rating is an option. In that case, premiums are linked to the actual rather than to the expected incidence of disability. A potential problem is that it gives firms an incentive to screen workers before they are hired.

Another way to reduce moral hazard is to distinguish among (medical) reasons for disability. Some reasons are easier to verify than others: a hart disease is easier to diagnose than a mental problem. Differentiation would imply that disability insurance would be limited to those cases in which the reason for disability is verifiable.[56] This would leave those with non-verifiable reasons for disability worse off, although they may be eligible for alternative public funds, such as social

[56] Differentiation according to medical reason does not work, however, when persons with identical medical problems have different capabilities to work.

assistance. Such an approach does allow, however, for better insurance of verifiable sources of disability and a higher benefit level for those eligible on the basis of these criteria. Differentiation according to medical reasons seems therefore preferable to an across-the-broad reduction of benefit levels.

.... or on unobservable characteristics

Government do not always have to obtain more, better information; they can also use information that is hidden for them but not for employers and employees. An information-revealing mechanism is a waiting period before verification. It may reduce the problem of dubious claims. During this period, applicants receive a minimum benefit and are not allowed to work. This contrasts with a situation in which sickness benefits are (almost) equal to the last earned wage. A waiting period provides a form of self-selection, as applying for a benefit becomes an investment on which the expected return is higher for those with a genuine claim.

An different mechanism is a system of an individual welfare account. In that case, individuals are obliged to draw partly from a personal account when they become disabled (or unemployed). Individuals who end up with a positive welfare account at the end of their working life, receive an extra old-age pension.[57] Hence, the individual welfare account gives an incentive for people who are temporarily disabled to quickly find a new job. This helps to distinguish between temporary and permanent disabilities.

Incentives for public administrations

In most European countries disability insurance is mandatory and organised as a public monopoly. This ensures coverage of all disability risks, as well as solidarity between people with low risks and high risks. Public administration, however, may exacerbate the problem of moral hazard. Given a coverage against a broad set of medical contingencies, there is a potentially sizeable amount of screening error in disability assessments. Two types of errors may occur: erroneous denials and erroneous admissions. A balanced disability benefit scheme minimises the (weighted) sum of these two, mutually exclusive, types of error. Public monopoly insurance probably minimises exclusion because its incentives to limit the use of disability insurance are weak. These weak incentives for the public administration refer to both eligibility assessment and vocational rehabilitation and reintegration. The government must monitor the public administration on these activities: but how?

The public administration – in particular the gatekeepers of disability insurance – has considerable discretion in fulfilling its tasks. Eligibility is formalised in a number of rules, but there remains ample room for discretion. The optimal route to reintegration is even harder to

[57] A system of welfare accounts has to be an integral part of the pension system.

capture in rules. Often, this decision is handed over to individual case managers. This has important implications for the role of government: it cannot rely on rules, but must steer on the basis of outcomes. Hence, the government has to judge the public administrators on their performance and, in particular, on their success in preventing erroneous admissions.

Steering on the basis of outcomes involves a different role, requiring competence and creativity in several respects. First, it needs useful reference indicators for a sound evaluation and/or assessment by external experts. This calls for the use of more information. Benchmark studies – for example between regional administration offices – can be helpful in this respect. Second, the government must judge administrators on the basis of the output indicators, particularly with respect to the assessment of new claimants. A bad score must have consequences in order to offer appropriate incentives. For instance, the government may rely on naming and shaming when performance is below par, may fine a bad-performing public administration, or may invoke some sort of penalty on its management. Finally, the government will have to accept that it has less power to decide. In its new role, the government has to set goals and evaluate the public administration over longer periods of time; it cannot set new goals or interfere with the administration midstream. These steps towards steering on output indicators would break with the way in which governments are used to operate. But it may be a reform that delivers higher participation, while it maintains income security for those who are really unable to work. Thus, it potentially improves the trade-off between equity and efficiency.