

Reforming the public sector in Europe: reconciling equity and efficiency

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1 Introduction

“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 United States productivity growth accelerated and employment expanded. The contrast with Europe was sharp. Most of the European countries saw a sluggish growth in productivity and struggled with high unemployment rates.

This has led to calls for reform in Europe. In Lisbon, European leaders have drawn up an agenda to make their economy the most competitive and dynamic in the world in 2010. 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).

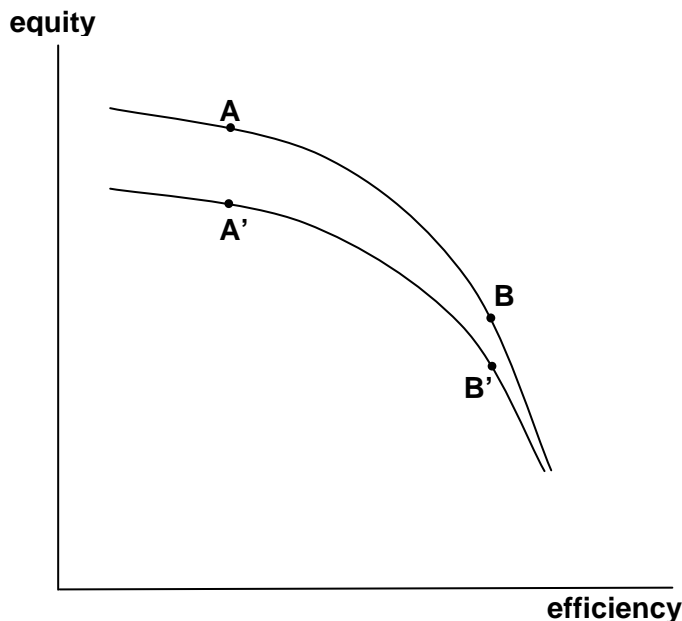
The emphasis on the Anglo-Saxon model has raised the concern that Europe will not only become more competitive and richer, but also more unequal. Indeed, introducing competition and flexibility through deregulation and privatisation could introduce an Anglo-Saxon society in which the winners are well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

Raising competitiveness and at the same time maintaining social cohesion may neglect, however, a trade-off between efficiency and equity. This trade-off is perceived wisdom in the

economic literature, and illustrated in figure 1.1. The AB locus in this figure reflects this trade-off. Hence, policies that reduce income inequality may harm the incentives to work and invest and, therefore, reduce efficiency. European societies typically feature a large public sector that plays a pivotal role in reducing income inequality – at the expense economic efficiency. Hence, European societies are better characterized by A than by B.

In de Mooij and Tang (2003), we argue that the trends of aging, skill-biased technological change, internationalisation and increasing social heterogeneity make it more difficult to maintain equity and efficiency at the current locus. This is also illustrated in figure 1.1. It suggests that trends shift the trade-off downwards and to the left. Hence, they tend to deteriorate the feasible combinations of equity and efficiency (i.e. we move from A to A'). The price of maintaining equity in terms of the cost to efficiency also becomes larger. In other words, the public sector in European societies will come under growing pressure to retreat (i.e. to move from A' towards B').

Figure Error! Style not defined..1 The efficiency-equity trade-off



Europe thus faces a dilemma of either maintaining equity via the public sector or encouraging competitiveness and efficiency. Yet, reconciling competitiveness with social cohesion is exactly the challenge imposed by the Lisbon agenda. The trends make that challenge only larger. Institutional reform is both necessary to meet this Lisbon ambition and inevitable to prevent a worsening of the trade-off between equity and efficiency. Indeed, the aim is to change the location of the trade-off (i.e. to move from A' back to A in figure 1.1). Besides, countries not

located on the frontier may see an improvement in both equity and efficiency by reforming suboptimal policies.

This paper contributes to the debate on making Lisbon a success. It starts by discussing how various trends in society complicate the achievement of the goal to reconcile efficiency with equity. We then empirically explore which typical European institutions face an inevitable dilemma between equity and efficiency, and which institutions can escape the trade-off. This provides information on how to achieve the Lisbon objectives. Finally, we provide a broader discussion on how institutional reform may help to reconcile different objectives in the future.

2 Trends

Rising age-related public expenditure

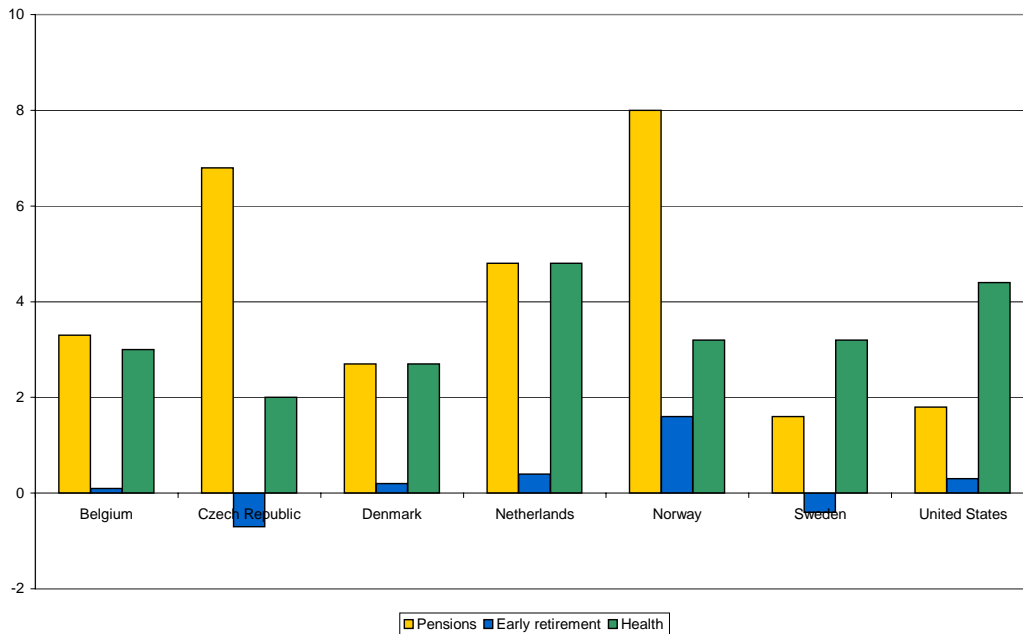
Ageing is related to the temporary hiccup in European birth rates after the Second World War, a structural decline in fertility rates thereafter, and an increase in life expectancy. When the baby boom generation will retire in a couple of decades from now, the share of the population above the age of 65 will be much higher than it is today. The old-age dependency ratio, i.e. the ratio between the size of the old, inactive generation and that of the young, working generation, 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. Even though this occurs in all rich countries, there are significant differences in the pace and degree of ageing. Southern Europe 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 10 years longer (OECD, 2001a).

Ageing is first and foremost a problem of distribution between young and old generations. It has arisen with the introduction of Pay-As-You-Go (PAYG) systems. These systems involve 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 from new generations. 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, declining fertility, and longevity will raise the dependency ratios and put the social contract between generations under pressure.

The problem of intergenerational distribution translates into a financial problem for European governments. This is illustrated in figure 2.1. It shows the projected increase in age-related public expenditures (pensions, early retirement benefits and expenditures on health care) in % of GDP in a number of OECD countries in 2050 (relative to 2000). The figure reveals that the increase in old-age pensions is significant for the majority of countries. It runs up to 7 to 8% of GDP for the Czech

Republic and Norway. This increase is reinforced by increasing public expenditures on health care.¹ The projections in figure 2.1 suggest that health care expenditures may well increase by 3 to 4% of GDP in 2050 for the Netherlands, Belgium and Sweden.

Figure Error! Style not defined..1 Projected increase in age-related public expenditures in a selection of OECD countries in % of GDP, projections in 2050 compared to realisations in 2000.



Source: OECD (2001a)

Overall, the projected rise in age-related public expenditures is quite dramatic for most countries. For France, Belgium, Germany, the Netherlands, Denmark and Finland, the OECD projects an increase by more than 5% of GDP. Governments have two ways for keeping their fiscal balances sustainable: raising taxes or reducing other public expenditures. Both options raise their own problems.

Less opportunities to raise taxes

An increasing tax burden on young generations puts a severe strain on the intergenerational contract. Indeed, a shrinking working generation has to meet the costs of public provisions for a steadily growing retired generation. It is doubtful whether the young are willing and able to meet these obligations. This renders the future of welfare-indexed pensions uncertain. The question is how this potential conflict can be prevented. One way is by raising the tax burden today rather than tomorrow

¹ This is not only due to ageing, but also the result of Baumol's law. 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. Rising costs of health care thus consume an ever-growing part of (public) spending.

when the baby-boom generation actually retires. By creating a surplus on the government budget, the baby-boom generation can partly pay for its own pensions via savings on the government budget. This will reduce the need for future tax increases imposed upon the young.

Yet, the question is whether substantial tax increases in Europe are a feasible way to respond to the growing need for future public funds. The problem of a rising tax burden is that it will exacerbate distortions in the economy. In particular, taxes not only involve a transfer of funds from the private to the public sector, but also change behaviour. Indeed, they induce people to escape taxes by altering their consumption, labour supply or investments. In this way, taxes distort the allocation of goods and factors. The costs of taxation for the private sector therefore exceed the revenues that accrue to the government. This deadweight loss measures the welfare cost of taxation for society at large. It increases with the tax rate and with the (compensated) elasticities of demand and supply. The latter determine by how much an increase in the tax rate erodes the tax base. The former by how much a given erosion of the tax base reduces tax revenue. Trends like internationalisation and a growing flexibility of (labour) markets increase the magnitude of elasticities for capital and labour. With high tax rates and large elasticities, it may well be that tax increases will not raise any extra revenue. Thus, the trends render it increasingly difficult for governments to raise additional public funds by increasing taxes either now or in the future.

Capital mobility increases as a result of internationalisation. This not only concerns financial capital, but also real investments. Indeed, De Mooij and Ederveen (2003) find that foreign direct investment has become more responsive to taxes during the last three decades. Moreover, multinational companies have ample opportunities to shift their profits across countries in order to minimize their tax liability. Governments respond by lowering tax rates. In this way, they aim to broaden their own tax base by attracting mobile factors. This process of tax competition, however, does not benefit any government. It only causes a coordination problem which imposes a serious threat to the opportunities for countries to raise revenue from taxes on capital income, especially via the corporate income tax. As long as international tax coordination is absent, raising taxes from capital will therefore become increasingly difficult for European governments.

Labour mobility is rather low in Europe, e.g. compared to the US. However, the most talented people and a growing number of students are becoming increasingly mobile. If labour mobility among the high-skilled would level off, this will raise the aggregate elasticity of labour supply for individual countries. It implies that high income tax rates will induce highly talented people to reside elsewhere. Thus, it would become more difficult to levy high taxes on labour income as well. Moreover, the elasticity of labour supply not only depends on international labour mobility, but also on other social-economic factors. In particular, the growing importance of part-time work, temporary contracts, and the flexibility in labour relations increases the choice set of workers. People 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. Labour supply

thus becomes more sensitive to income tax rates, thereby increasing the social costs of taxation. Again, this reduces the scope for raising tax burdens.

Summing up: a substantial rise in the tax burden is a hazardous option to cover the growth of public spending. In fact, internationalization and increasing flexibility of labour markets call for a lower, rather than a higher tax burden, at least as long as tax coordination is absent.

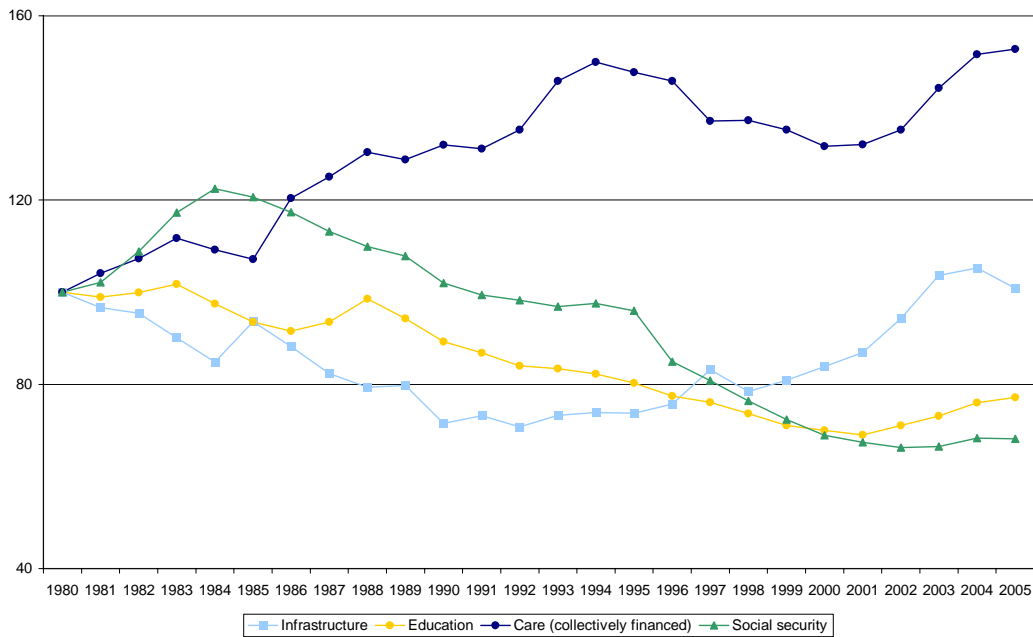
The risk of reducing other public expenditures

The second option to accommodate the increase in age-related public expenditures is cutting back other public spending. In that case, ageing will crowd out public expenditures that either benefit the population at large or the younger generations in particular. Accordingly, it has the same impact on the intergenerational distribution of welfare as the increase in taxes. Moreover, with the reduction of other public expenditure comes the risk that the growth potential is hollowed out and/or that income inequality rises sharply, making the twin objective of 'competitiveness' and social cohesion unfeasible. As one of the few countries in Europe, the Netherlands have reduced the public spending considerably. The Dutch experience from the last two decades learns that this risk is real.

In the beginning of the 1980s, the Dutch fiscal deficit had widened to record levels, while more than 60% of GDP was spent or redistributed by the government. Taxation and social security contributions accounted for about half of GDP. In light of severe problems on the labour market and sluggish economic growth, there was a need for drastic measures. How did the Dutch government, faced with a need for spending cuts, respond?

During the 1980s and 1990s, the public spending to GDP ratio fell considerably from 62% in 1982 (which exceeded the EU average by 10 percentage points) to 47% today (which is slightly below the EU average). Initially, cuts in public expenditures were difficult in light of the sharp increase in interest payments, associated with the large public debt. Indeed, interest payments rose from 3.8% of GDP in 1980 to 6.3% in the late eighties and early nineties. In 2004, this share has fallen to 2.9% of GDP. Figure 2.2 reveals which expenditures were cut most. Investments in education and, initially, infrastructure were cut back. Expenditures on health care, however, continued to grow. High rates of unemployment in the early eighties and large inflows into disability lead to rising social expenditures (comprising one quarter of total expenditures). During the mid 1980s, however, social spending started to decline. Hence, the composition of public expenditures changed substantially during this period of restructuring.

Figure Error! Style not defined..2 Development of 4 categories of public expenditures in the Netherlands in % of GDP (1980 = 100)



Source: <http://www.cpb.nl/nl/data/mev2005/>

Public expenditure on education

The Dutch case illustrates what might happen if there is a need for expenditure cuts. Especially the crowding out of public expenditures on education is a cause of concern. As part of the Lisbon agenda the European government leaders have suggested that countries should aim to achieve a substantial increase in per capita spending on human resources. In this connection, targets have been agreed on the number of dropouts from schools (from 18% today to 10% in 2010) and the number of adults that engages in education and training (from 8.5% today to 12.5% in 2010). Also trends call for investment in education. In particular, internationalisation will lead countries to specialise more and more in the activities where they have a comparative advantage. For the wealthy EU countries these are generally knowledge-intensive economic activities. Specialization will therefore increase the demand for skilled employees relative to low-skilled workers. This increasing demand for skill is reinforced by technological developments. Indeed, ICT raises the demand for skilled workers as it requires adequate knowledge and skills from people to work with these new technologies. The rising demand for skills is not problematic as long as it is accommodated by an increasing supply of skilled workers. For instance, during the past three decades, the demand for skilled labour in the Netherlands increased enormously. At the same time, the skill level of the workforce rose as well. This enabled the growing demand for skilled labour to be accommodated by a growing supply. Accordingly, the growing demand for skills has had a limited impact on wage inequality between high-skilled and low-skilled workers.

During the coming decades, however, the increase in the supply of skills is expected to level off (CPB, 2002). If the demand for skilled workers continues to grow, we will observe a growing wage differential between high-skilled and low-skilled workers.

Hence, while internationalisation and ICT will raise productivity, they tend to increase inequality in the income distribution. Typical European institutions may prevent this from happening. For instance, minimum wages and social benefits are often indexed to the average wage in the economy. In that case, the increasing skill premium will exacerbate the problems of high unemployment among the low-skilled by increasing reservation wages. The potential way out of rising wage inequality is increasing human capital. A crowding out of educational expenditures will not help to achieve this. Instead, blunt cuts in educational expenses run the risk of not only reducing productivity, but also to exacerbate trends that cause a widening of the wage gap between skills.

Social spending

Another spending category that is under attack is social spending geared to the working population, such as disability benefits, unemployment benefits, family support and active labour market policies. Indeed, age-related public expenditures may crowd out social expenditures geared to younger generations. Some may argue that this is exactly what is needed in Europe. In particular, the large European welfare state is often held responsible for high unemployment, low rates of participation and short working hours. Indeed, high taxes and generous social benefits typically hurt the incentives to work and cause important moral hazard problems. Yet, bluntly cutting back the welfare state may hurt not only equity, but also efficiency. In particular, although many welfare state provisions aim to reduce income inequality by redistributing income from people with abundant human and financial capital to people with little of these assets, there is also an efficiency aspect related to social security. Indeed, social insurance is meant to cope with market failures in insurance and capital markets. Risk aversion implies that people prefer a certain over an uncertain income, even if the expected value of the uncertain income is higher than that under certainty. Hence, individuals assign a positive value to certainty, a value that rises with the degree of risk aversion. Private markets typically fail to supply various types of insurances due to adverse selection or social risks. In these circumstances, social insurance raises welfare by filling a missing market.

Apart from these direct welfare gains from social insurance, it can also yield indirect social benefits by reducing other distortions in the economy. For instance, Acemoglu and Shimer (1999) show that heterogeneous unemployed individuals searching for work may accept an unsuitable (low-productive) job if unemployment is accompanied by a large private cost. This will induce the unemployed to accept an early job offer that comes available, even if it involves a poor match. Unemployment benefits will then alleviate these inefficiencies. By reducing the private cost of unemployment, they give the unemployed more time to search for a better job-worker match. This

improves the quality of job matching. In turn, it encourages firms to create more productive jobs as the search costs for finding an appropriate employee decline. As a result, it raises production. More generally, reduced uncertainty may raise productivity by stimulating risk taking, e.g. by encouraging entrepreneurship, innovation and the flexibility of workers (Sinn, 1996).

Summing up

Age-related public expenditures will rise considerably in light of ageing. This complicates the Lisbon objective to combine the goals of equity and efficiency. The opportunities to accommodate the increasing need for public funds by raising taxes are limited. Rather, the burden of high taxes only becomes larger with the trends of internationalization and a growing flexibility of labour markets. The alternative is lower public expenditures elsewhere. Like higher taxes, this may come at the expense of the younger, working generations. Moreover, a crowding out of productive public expenditures, such as educational expenses, is unattractive as it may hurt both equity and efficiency. Cutting back the welfare state may be necessary. However, if reforms are not carefully designed, this may not only hurt equity but also efficiency. An analysis of how to combine equity and efficiency is therefore necessary. The next section provides some elements for this analysis.

3 Improving the trade-off²

Many European countries suffer from high unemployment rates and low rates of labour-market participation. Many believe that this is the result of the generous welfare state arrangements in these countries. In particular, high social benefits and minimum wages provide a floor on market wages, thus causing job destruction at the bottom end of the wage distribution. Therefore, reforming welfare state arrangements are proposed as the panacea to raise participation and production and also to broaden the tax base so as to accommodate the rising burden of age-related public expenditures. Rearranging European welfare states, however, meets fierce resistance. The reason is that the arrangements which are held responsible for high unemployment and low participation – employment protection, generous social security benefits, high and progressive taxes – are essential for obtaining an equal distribution of income and to insure people against human capital risk.

Although it may seem that the Lisbon objective of raising efficiency while maintaining equity is impossible in light of the trade-off between these objectives, the performance of some European countries suggests that it is not a *fata morgana*. Indeed, countries like Denmark, the Netherlands and Sweden combine high productivity per hour worked and low unemployment rates with a relatively equal income distribution. For other countries, this suggests that there is

² The authors are much obliged to Henry de Groot for his support in doing the regression analysis.

scope for improvement. They may not have found a position on the trade-off between equity and efficiency yet, but find themselves on a point away from the frontier.

This section shows regressions that explain the variation in three measures for performance – the rate of participation, the rate unemployment, and the degree of disposable income inequality – by the variation in a number of institutional characteristics of national labour markets. In the regressions, we use data for 18 OECD-countries³ and averages for seven five-year periods from 1960 to 1995.⁴ We thus obtain (at most) 126 observations. We do not systematically analyze the impact of institutions on productivity per hour or on the number of hours worked. Productivity is typically not related to labour market institutions, but instead is explained by investments in physical and human capital and R&D. With respect to hours worked, we discuss the potential effects of institutions when appropriate (i.e. in discussing the impact of income taxes). We also take these effects into account when drawing conclusions about reforms of labour market institutions.

One complication in our regression analysis is that labour market institutions can be mutually correlated (i.e. it induces a problem of multicollinearity). As a result, it is difficult to identify the impact of a single institution, since it affects not only the performance indicator in a direct way, but also indirectly via other factors. For instance, countries with a high level of unemployment benefits also feature a high tax burden, which renders it difficult to identify the impact of these benefits. To cope with this problem, we present the regression results in two steps. In the first step, we regress the performance measures on four institutions that feature low mutual correlation coefficients. These are: the level of unemployment benefits; the duration of unemployment benefits; expenditures on active labour market policies per unemployed; and employment protection. In the second step, we add two tax variables that show a high correlation with some of the labour market institutions: direct taxes (including employer taxes) and indirect taxes. By comparing the two regressions, we can analyze whether the coefficients for the four labour market institutions indeed differ significantly if we incorporate the tax variables. To illustrate, we will find that the introduction of the two has a notable impact on the coefficients for the unemployment benefit replacement rate, its duration and employment protection.

Table 3.1 shows the regression results. The first column under each performance indicator reflects the regression without tax variables, while the second column shows the results with the tax variables. Below, we discuss the impact of each explanatory variable separately.

³ These countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom and United States.

⁴ The analysis builds on work by de Groot, Nahuis and Tang (2004), who also provide more details about the data.

Table Error! Style not defined..1

Regression results: the effects of labour market characteristics

	participation rate (log)		unemployment rate (log)		inequality (Gini coefficient, log)	
Constant	4.209	4.222	-4.715	-5.474	3.496	3.605
	154.5	82.9	-9.9	-8.2	204.4	186.2
Benefit replacement rate	0.012	0.010	1.281 [*]	0.371	-0.080 ^{***}	-0.044 ^{**}
	0.2	0.2	1.9	0.6	-3.7	-2.2
Benefit duration	-0.06 ^{**}	-0.054 [*]	0.456	0.668 [*]	-0.051 ^{***}	-0.115 ^{***}
	-2.1	-1.6	1.3	1.7	-3.1	-6.9
Employment protection	-0.042 ^{**}	-0.009	-0.12	-0.092	-0.006	0.022 ^{***}
	-2.6	-0.5	-0.6	-0.6	-0.7	2.7
Active labour market policy	0.003 ^{***}	0.004 ^{***}	-0.012 ^{**}	-0.018 ^{***}	-0.003 ^{***}	-0.003 ^{***}
	4.8	5.5	-2.0	-3.0	-13.8	-10.7
Direct taxes		-0.283 ^{**}		2.136 ^{**}		-0.279 ^{***}
		-2.0		2.5		-5.0
Indirect taxes		0.226 [*]		4.13 ^{***}		-0.272 ^{***}
		1.7		3.2		-4.8
Time trend	0.000	0.001	0.055 ^{***}	0.047 ^{***}	0.003 ^{***}	0.004 ^{***}
	0.1	0.8	7.2	5.7	5.5	6.3
R ²	0.20	0.30	0.37	0.40	0.51	0.68
number of observations	126	113	126	113	95	84
F-statistic	6.11	6.35	14.07	9.83	18.61	23.49

White t-statistics are reported in the line below the parameter estimates. Statistical significance at 10%, 5% and 1% level is indicated by **, * and .

3.1 Taxes

Table 3.1 shows that the direct and indirect tax burdens cause higher unemployment and less inequality. Direct taxes are found to have a negative impact on participation, whereas for indirect taxes we do not find a clear impact.

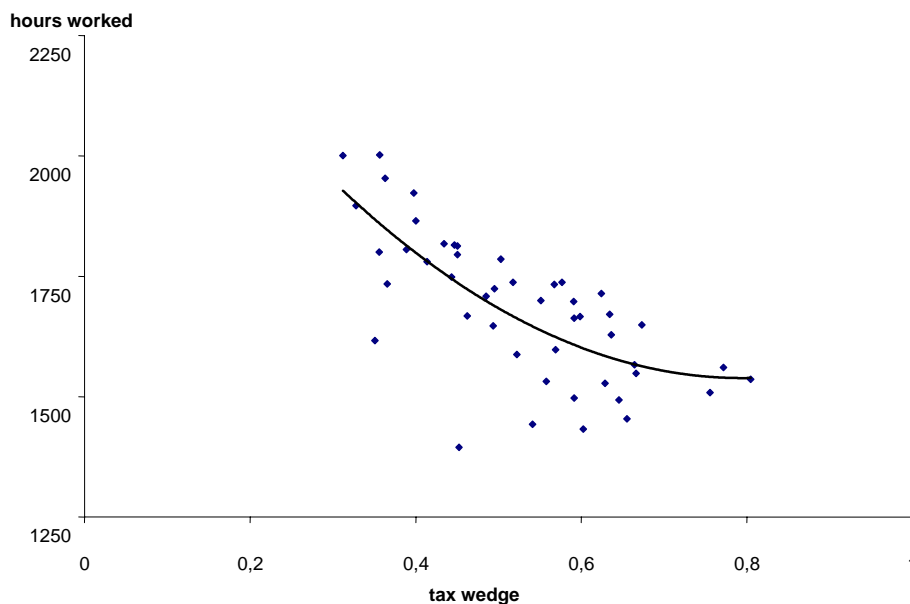
The impact on participation seems consistent with economic theory: high taxes reduce the net income differential between participation and non-participation, which discourages people with a high preference for leisure to enter the labour market. The differential impact of direct and indirect taxes may be explained by direct taxes having the effect of shifting work and workers from the formal to the informal economy.

The adverse impact of the average tax on unemployment is not obvious. In particular, a number of theoretical models suggest that the average tax has no impact on the rate of unemployment as long as (after-tax) social benefits are indexed to the (after-tax) wage. Yet, empirical evidence for a number of countries reveals that taxes do raise wages and, thus, the rate of unemployment. Our findings are consistent with this latter view.

Direct and indirect taxes can also have an impact on hours worked. Europeans work less and enjoy more leisure than Americans. These cross-country differences could follow from differences in preferences for leisure, but also from differences in institutions. Figure 3.1 suggests that the total tax wedge, i.e. the sum of direct and indirect taxes, is important determinant in the choice between work and leisure. It plots for three five-year periods between 1980-1995 hours worked against the measure for the total tax wedge. There is a strong negative correlation between the two. With a simple quadratic specification more than half the variance in hours worked is explained.

Overall, the results suggest that taxes create an important social cost: they diminish participation, increase unemployment and reduce the number of hours worked. Yet, taxes are also instrumental for income redistribution. The results in Table 3.1 show that direct and indirect taxes are effective in achieving a more equal distribution of income. Taxes therefore meet the trade-off between efficiency and equity.

Figure Error! Style not defined..1 Hours worked and the tax wedge



The direct and indirect tax variables are correlated with the other labour market institutions in table 3.1. For example, more generous unemployment benefits are typically correlated with high taxes. The regressions without the tax variables can be interpreted as the reduced-form effect of more generous unemployment benefits, i.e. the combined impact of higher benefit levels and higher taxes. The regressions with the tax variables reflect only the partial effects. They decompose the overall impact into a direct effect of higher benefits and an indirect effect through the higher tax rates. In the discussion on the institutional variables below, we focus on the total effects, i.e. the regressions where tax variables are excluded. Where it matters significantly, we also discuss the impact of the indirect consequences, i.e. the regressions with the tax variables.

3.2 Unemployment insurance

Benefit level

Table 3.1 shows that the level of unemployment benefits does not escape the trade-off between equity and efficiency. Indeed, we find that a higher replacement rate is accompanied by less inequality, but at the same time also by a higher unemployment rate. That unemployment benefits raise the equilibrium unemployment rate derives from models of imperfect labour markets. In particular, a higher replacement rate strengthens the bargaining position of employees in negotiations about the wage, thus raising wages and inducing lower demand for labour. Accordingly,

unemployment increases. This result is consistent with other available empirical evidence. For instance, using a panel of countries between 1983 and 1989, Layard et al. (1991) report that a 1%-point higher replacement rate raises the unemployment rate by 0.17%-point. Using a slightly longer time frame, Scarpetta et al. (1996) find a smaller coefficient of 0.13. Our specification is slightly different as we allow the effect of the replacement rate to be smaller when unemployment is low. Intuitively, if the unemployment rate is low, the level of unemployment benefits is unimportant for wages since workers face only a small chance of being laid off. If the unemployment rate is high, wages respond more strongly to changes in the replacement rate. Despite this non-linearity, our estimates suggest a quantitative impact that is similar to the above results. The semi-elasticity of 1.28 suggests that a 1%-point higher replacement rate leads to 1.28% increase in the unemployment rate. With an unemployment rate of 10% (7.5%), this amounts to an increase of 0.13%-point (0.17%-point).

The regression with the tax variable provides an important qualification to the above results. It shows that the introduction of the tax variables halves the magnitude of the semi-elasticity, while it renders the coefficient statistically insignificant. It suggests that it is the combined effect of a higher replacement rate and higher taxes that raises unemployment significantly, but that the partial effect of a higher benefit level yields no significant impact.

The effect of the unemployment benefit level on the participation rate is positive, although small and statistically insignificant. Nickell (1997) comes up with a similar result. One explanation is that the replacement rate has two opposing effects on participation. On the one hand, higher unemployment benefits tend to raise the reservation wage of the unemployed, thereby reducing search and thus reducing effective labour supply. On the other hand, there may be an entitlement effect (Mortenson, 1977). In particular, higher unemployment benefits will encourage those unemployed who are not entitled to unemployment insurance to search for work and to accept jobs because employment would make them entitled to such benefits in case of a future job layoff. In a sense, entitlement to (high) unemployment benefits increases the value of being employed. Increased search will increase effective labour supply. Accordingly, the net effect of the replacement rate on participation is ambiguous. Our results suggest that the effects cancel out.

Benefit duration

Table 3.1 reports that unemployment benefit duration also reduces income inequality. It causes, however, higher unemployment and less labour-market participation. Hence, also benefit duration encounters the trade-off between labour-market performance and income equality. That benefit duration is important for labour-market incentives is consistent with economic theory. In particular, Shavell and Weiss (1979) show that it is optimal for unemployment benefits to decline over the spell of unemployment as declining benefits provide better incentives for the unemployed to increase their search effort and to reduce their reservation wage. That reservation wages fall and

exit rates rise when unemployment benefits approach their expiry date is supported by ample empirical studies using micro data (for a review of the international literature, see Holmlund, 1998). Recently, Lalive and Zweimuller (2004) find that the increase in unemployment benefit duration in Austria from 30 to 209 weeks has reduced the transition rate into work by 17%, and increased unemployment duration by 9 weeks. Also other cross-country studies find that benefit duration raises the rate of unemployment (Layard et al., 1991; Nickel and Layard, 1999; Nickel et al., 2002).

3.3 Active labour market policies

Expenditure on active labour market policy is the first variable that escapes the trade-off between equity and efficiency. Indeed, whereas (passive) unemployment insurance causes higher unemployment and/or lower participation, this does not carry over to public spending on active labour market policies per unemployed. Table 3.1 shows that this type of expenditure raises labour-market participation, reduces the rate of unemployment, and reduces income inequality. This conclusion is unaffected by the introduction of tax variables.

The results suggest that active labour market policies are effective in helping people with a relatively bad labour market position and a relatively low income. Yet, not every form of active labour market policies is found to be effective (see, for example, Koning and Vollaard, 2000, and Martin, 2000). To illustrate, OECD (2001b) concludes from the few available evaluations that some inexpensive policies, like job-search assistance, are among the most cost-effective ones for a substantial number of unemployed. Regressions by de Groot, Nahuis and Tang (2004) yield a similar conclusion. They find that especially employment services, like job search assistance and career counselling, are effective in improving labour-market performance. The reduction in unemployment due to employment services is found to be three times larger as for other types of spending, while the impact on participation is two times larger.

3.4 Employment protection

For the indicator of employment protection legislation (EPL), we find a statistically significant impact for neither inequality nor unemployment. The impact on participation, however, is negative. These results of EPL are consistent with the economic literature. On the one hand, by increasing firing costs, EPL reduces inflows into unemployment and *ceteris paribus* raises aggregate employment. On the other hand, increased firing costs make firms more reluctant to hire new workers since it makes an eventual dismissal more costly. This reduces the job-finding probabilities for the unemployed. On balance, the empirical literature reveals ambiguous results on the impact of EPL on the level of unemployment (Boeri and Jimeno-Serrano, 2003).⁵ Empirical studies do,

⁵ This impact is not neutral with respect to different groups. Indeed, OECD (2004) finds that EPL increases employment among prime-age men and low-skilled workers, but reduces employment among prime-age women and youth employment.

however, unambiguously show that EPL reduces flows on the labour market. By reducing both inflows and outflows from unemployment, it increases unemployment duration. In this way, it tends to reduce labour supply through the discouraged worker effect, especially of young workers and women who want to (re)enter the labour market. Our estimates confirm this latter effect.⁶

3.5 Education

We also empirically explore the impact of (different types of) education on the trade-off between labour-market performance and income equality. In Europe, people with low education have a very different labour-market position compared to high-skilled workers. For instance, the incidence of unemployment among the low-skilled is relatively high. At the same time, their income position is worsening compared to the high skilled. In particular, even though the relative supply of high-skilled worker has increased rapidly in past decades, their relative wages have not fallen or have even increased. The reason for this is that the demand for labour has shifted in favour of high-skilled workers. Technological developments, such as ICT seem responsible for this. Moreover, the process of internationalisation reinforces the increasing scarcity of skilled workers. Indeed, low-skilled workers are the first to feel the growing competition from China and India. The rise of these economies is commonly expected to lead to a restructuring in developed countries, towards knowledge-intensive sectors. High-skilled workers are likely to benefit from this restructuring while the low-skilled suffer.

Skill-biased technical change and internationalization may therefore worsen the trade-off between labour-market performance by raising unemployment among the low-skilled and increasing the income differentials between low-skilled and high-skilled workers. One response to this is investing more in education. With more skills, people are better able to adapt to changes in technologies and international competition. The type of education may also matter. Is it more effective to invest in otherwise low-skilled workers? Or can we better invest more in high-skilled workers?

To explore these issues, we have estimated the systematic impact of educational variables on our performance indicators. In particular, in addition to the variables in table 3.1 (including the tax variables), we have considered two alternative types of educational variables. The first derives from De la Fuente and Domenech (2002), who provide input measures for education, namely the share of workers in the total population that has followed lower secondary and upper secondary education.⁷ The second set of variables is due to Coulombe et al. (2004), who provide output measures based on International Adult Literacy Surveys. More specifically, they

⁶ The strong interaction between taxes and EPL is somewhat surprising. In any case, introducing the tax variables affects the coefficients for EPL significantly. This makes it hazardous to draw firm conclusions on the effects of EPL on equity and efficiency.

⁷ We do not present the results on tertiary education, which has no noticeable effect on participation, unemployment and inequality.

provide percentages of individuals that attained level 3 or at least level 4 (on a scale of 5) on tests for document literacy. The input and output measures are correlated. The shares of lower secondary education correlate strongly with the percentages of level 3 test results, and shares of the upper secondary education are correlated with the percentages of level 4 or 5 results.

The data set from De la Fuente and Domenech has one important advantage: it allows a distinction between investment in secondary education (by the young) and the total supply of workers with secondary education. This distinction is important to identify the relation between education and (the three measures for) performance. The causal relation may run in either direction. For example, a higher supply of workers with secondary education may result in more participation. One reason is that the wage of these workers is clearly above the minimum wage. The other way around, when participation is more likely, investment in secondary education may become more lucrative, and may increase. When the increase in investment is large or sustained for a considerable period, the supply of workers with secondary education will show an increase as well. Therefore, we need to distinguish between the supply of skilled workers and the investment in skills (i.e. the share of workers with secondary education and the change in this share) For the regression analysis we rely on the data from De la Fuente and Domenech. To crosscheck the results with this data, we use the data from Coulombe et al.

The regression results are presented in table 3.2. We find that education indeed seems to escape the trade-off between equity and efficiency. In particular, the supply of workers with lower and upper secondary education has a negative impact on unemployment. Moreover, a higher share of people with upper secondary education leads to a higher participation rate and less inequality. It is not likely that causality runs the other way, since the coefficients for investment in education are close to zero or have the opposite sign.⁸

The results with the literacy test (not shown) yield a similar picture. Document literacy at level 4 or more is positively related to participation, and negatively related to income inequality. Unemployment is affected by document literacy at level 3 and by document literacy at level 4 or more.

⁸ Simple, bi-variate regressions give a similar outcome.

Table Error! Style not defined..2

Regression results: the impacts of education

	participation rate (log)		unemployment rate (log)		inequality (Gini coefficient, log)	
Constant	4.057	4.223	-4.162	-5.607	3.646	3.604
	71.2	76.9	-9.7	-8.3	164.3	185.9
Replacement rate	-0.003	-0.027	0.661	0.630	-0.039*	-0.018
	-0.1	-0.4	1.4	0.9	-1.9	-0.8
Benefit duration	-0.02	-0.039	0.642*	0.546	-0.119***	-0.118***
	-0.6	-0.9	1.9	1.3	-5.8	-6.5
Employment protection	0.013	-0.008	-0.194	-0.118	0.014*	0.020**
	0.8	-0.4	-1.4	-0.6	1.7	2.1
Active labour market policy	0.004***	0.004***	-0.026**	-0.024***	-0.003***	-0.003***
	5.0	5.6	-3.9	-3.7	-7.2	-11.3
Direct taxes	-0.175	-0.239	2.014**	2.336**	-0.302***	-0.295***
	-1.3	-1.4	2.5	2.4	-5.8	-5.5
Indirect taxes	0.236**	0.197	5.149***	4.142***	-0.250***	-0.257***
	1.8	1.4	4.6	3.2	-3.5	-4.5
Stock: lower secondary	0.001		-0.026***		-0.000	
	0.9		-3.1		-0.2	
Stock: upper secondary	0.004***		-0.028***		-0.001***	
	4.0		-3.4		-4.8	
Investment: lower secondary		-0.009*		0.053		0.004**
		-1.8		1.5		2.5
Investment: upper secondary		-0.003		-0.011		-0.001
		-0.6		-0.2		-0.5
Time trend	-0.002	0.000	0.063***	0.056***	0.005***	0.004***
	-1.2	0.2	5.8	5.3	7.0	6.9
R2	0.48	0.35	0.55	0.43	0.74	0.7
number of observations	113	97	113	97	84	84
F-statistic	10.42	5.17	13.81	7.31	23.8	19.62

White t-statistics are reported in the line below the parameter estimates. Statistical significance at 10%, 5% and 1% level is indicated by ***, ** and *.

3.6 Summing up

The regression analysis suggests that carefully designed public sector reform is needed to improve the trade-off between equity and efficiency. To illustrate, higher average tax rates (to cover the increase in age-related expenditures) will lead to higher unemployment and

discourages participation. Hence, they give rise a vicious circle of higher wages, more unemployment, less employment and in turn even higher taxes. Lower and shorter unemployment benefits, and less employment protection may help to improve labour-market performance by reducing unemployment and/or increasing participation. However, it comes at a cost of more income inequality. Two instruments seem to escape the trade-off between equity and efficiency: active labour market policy and investment in secondary education. Both variables score well on labour-market performance and income equality. Hence, although cutting back public expenditures is necessary to accommodate the rise in age-related public expenditure and to achieve the Lisbon objectives, cutting back expenditure on active labour market policy and secondary education seems to put the cart before the horse.

4 The need for efficiency-enhancing reform

To prevent a future intergenerational conflict and to deal with the rise in age-related public expenditures, governments cannot rely on general increases in taxation or blunt cuts in public expenditures. Indeed, these measures may not solve the intergenerational conflict if they increase the burden on young generations, e.g. in the case of cuts in educational expenditures or increasing taxes on working generations. Moreover, they may conflict with the aims of the Lisbon process, which is to combine a more dynamic and competitive economy with social cohesion. This section provides a broad discussion on how reforms in the European public sectors may help to achieve the Lisbon targets, at the background of the various trends that Europe will face during the coming decades. Thereby, we distinguish three types of reform: (i) reforms that reduce the amount of intergenerational redistribution; (ii) reforms in tax structures; and (iii) reforms in public expenditures, in particular in the welfare state.

Reducing the financial burden on young generations

There are three ways to shift the burden of ageing from young to old generations. A first and straightforward manner is by reducing the net income support to pensioners. A relative decline in (real) old-age benefits does not always involve a drastic reform. If old-age pensions were not indexed to wages, the average old-age benefit would grow slower than the wage rate. The tax burden will then increase less than the old-age dependency ratio. Alternatively, governments may introduce a higher tax burden on wealthy elderly to finance a basic pension. More solidarity between wealthy and poor elderly allows for a lower burden on young generations. In this way, the level of basic pensions for the poor elderly can be ensured in an ageing society. Although politically difficult, raising the tax burden on wealthy elderly seems a logical option. After the Second World War, public systems were introduced to support 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 may thus increase contributions from rich (soon to be) retirees so as to maintain support for elderly with low incomes.

A second solution is to increase the retirement age. The problem of ageing is partly the result of increasing longevity. When people grow older and the retirement age does not change, a falling share of workers will need to provide for the income of a rising share of retired people. A 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 from 65 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, risk sharing seems a reasonable strategy. It may be imposed gradually, e.g. by linking the official retirement age to life expectancy.

The final way to relax the future financial burden of ageing on young generations is by increasing savings by the baby-boom generation. This calls for a shift from a PAYG system towards a funded system. Alternatively, the government may create a surplus on its budget so as to let current working generations save for their own old-age pensions via the state budget. As discussed before, it is risky to obtain a fiscal surplus by lowering investments in the human capital of young generations or by raising tax burdens which create high social costs. Indeed, the fiscal surplus can better be obtained by reducing public expenditures on early retirement benefit schemes or other schemes that are used for that purpose (such as disability schemes and unemployment schemes). Moreover, increasing the effective retirement age among workers would broaden the tax base, thereby creating more room for manoeuvre to finance pensions for those above the retirement age.

More efficient tax systems

To encourage labor supply in hours and broaden the tax base, a reduction in the marginal tax rates would be welcome. Lower marginal tax rates could also help to facilitate a further expansion of female labor supply. There still is substantial room to raise the female participation rate, especially in number of hours. Survey information does indeed indicate that many women would like to work longer hours. Also better childcare facilities would facilitate this process.

To be able to reduce marginal tax rates and, more generally, improve the efficiency of taxation in the future, the government may broaden the tax base further. For instance, it may rely more on the benefit principle of taxation by charging a (higher) price for the use of public services. Examples are road pricing, lower subsidies for public transport, housing and health care services, etc. Charging a price that corresponds to the relative scarcity of public services will lead to a more efficient allocation as people incorporate the costs of its provision in their demand behaviour. Thus, it reduces overconsumption of publicly provided private goods. Another way to broaden the tax base is by removing various tax deductions. For example, many countries allow for a deduction of pension premiums or interest payments on mortgage loans for owner-occupied housing. Hence, these forms of

savings are implicitly subsidised by the government. This distorts the composition of savings, the decision to invest in physical or human capital, and erodes the tax base. Governments may also tax rents more effectively. For instance, when governments regulate a particular industry, e.g. because of environmental concerns, this creates scarcity rents. Without taxation, these scarcity rents are left in the private sector. For the government, it would be more efficient to tax away these scarcity rents and reduce taxes elsewhere.

In the field of corporate taxation, coordination in the European Union may help to avoid the downward pressure on tax rates. In particular, increasing capital mobility may intensify tax competition, thereby putting more and more pressure on governments to reduce their corporate taxes. Harmonisation, perhaps through a minimum rate, would be an effective way to avoid this.

Reducing expenditures: more targeted policies

There have been claims for a so-called basic income, which would be provided to all individuals above a certain age. It should replace all existing social benefits and no supplementary provisions would be allowed. A flat tax on each euro earned could then 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 as it makes no distinction among people when providing income support. Hence, moral hazard is largely avoided. 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 very high. It contrasts with the objective to reduce the overall tax burden in order to encourage labour-market participation and hours worked. This is exactly why governments have to rely on more targeted measures to provide income support, rather than across-the-board provisions. These targeted policies require information on verifiable indicators which reflect the need for income support of individuals. Examples are life-time income, assets, the position on the labour market, living conditions, and the number of children. Targeting income support 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, the government runs 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. To reconcile conflicting objectives, governments must thus extend their set of instruments. Particularly, targeted income support in combination with stronger private incentives allows for a reduction in public expenditure without reducing real income of the poor and needy.

Let us consider a few examples. In social insurance, the government could increase private incentives to reduce moral hazard. To illustrate, unemployment insurance may partly be replaced by individual saving accounts. With this system, part of the unemployment insurance

premium is replaced by a mandatory contribution that is credited to an individual public saving account on which a person receives interest. During a period of unemployment, individuals are allowed to collect funds from the account for consumption. If a person is short of funds, it can borrow from the government at the same interest rate. Thus, the saving account provides liquidity insurance, which is important in the presence of capital market imperfections. Indeed, people are usually unable to borrow against future earnings. Individuals who end up with a positive account at the end of their working life are allowed to increase their pensions or transfer it to relatives. Individuals will be bailed out if they end up with a negative account at their pension age or when they die. This latter involves insurance against the risk of low lifetime income. With individual saving accounts, the unemployed face better incentives to search for work, accept a job and move back into employment. Indeed, the unemployed have no incentive to increase in an inefficient way the frequency or duration of unemployment spells.⁹ Moreover, by introducing an actuarial link between premiums and the exclusive individual rights to withdraw money from the account, the system causes no disincentives to labour supply. The key to these efficiency improvements is that the public sector uses information about lifetime income in targeting its redistributive policy. Thus, the government no longer redistributes among individuals with high lifetime incomes, which is largely a form of income smoothing via the public budget. Public redistribution is reduced and tax distortions are lowered. Intuitively, exploiting information about lifetime income is efficiency improving, because these incomes are more equally distributed than annual incomes are.

In the same spirit, subsidies for higher education can be replaced by insured loans (Jacobs and Canton, 2003). 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.

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 accumulation of measures targeted at low incomes already imposes a high marginal tax rate on work for many people with low incomes. Hence, they face little incentive to escape their current position. More targeted income support can make things worse by further contributing to the poverty trap. High

⁹ The bail out of those with a negative balance, however, maintains the moral hazard problem with the group that relies on public support. Indeed, these individuals face little incentive to find work as additional unemployment has no personal cost. Another disadvantage of individual saving accounts is that people engage in excessive savings, which is less efficient than insurance. Therefore, it would be better to introduce only a partial replacement of insurance or to provide a link between saving accounts for unemployment and early retirement (see e.g. De Mooij, 2004).

marginal tax burdens on low incomes appear in most European countries. A major challenge is to activate the latent labor supply locked in social security schemes and to increase the access of vulnerable groups to work. To prevent long-run dependency and social exclusion, the government should shift away from passive towards active support that strengthens the earnings capacity, skills, adaptability, and employability of vulnerable individuals. Whereas social benefits were originally intended to carry people over relatively short unemployment spells, structural unemployment and long-term dependency require more active, interventionist policies with conditional and in-kind benefits (e.g. training) to avoid social exclusion. Conditional transfers based on the transaction principle (i.e. balancing the carrot of the benefit with the stick of certain obligations) can be used to screen claimants, thereby alleviating moral hazard. Moreover, in-kind transfers can link support to activities (such as training, unpaid trial employment, community work) that encourage rather than discourage re-entry into employment. As illustrated in section 3, active labour market policies, such as efforts to reintegrate the unemployed into the labour market via job search assistance and schooling, tend to raise participation without introducing more inequality.

5 Conclusions

Lisbon imposes a formidable task on EU policies and that of the member states. This is especially challenging in light of several trends the EU is facing during the coming decades. This paper argues why increasing tax burdens is not a viable option to respond to these challenges. Yet, blunt cuts in public expenditures may also run the risk of hurting both equity and efficiency, e.g. in the case of social insurance and education. Carefully designed reforms should help us to improve the trade-off between equity and efficiency and thus to achieve the Lisbon targets. Our analysis suggests that active labour market policy and education may be key ingredients of such reform policies. We also discuss the opportunities for reforms that reduce intergenerational redistribution (less resources to the elderly), improve the efficiency of taxation (a broadening of tax bases and more reliance on the benefit principle) and involve a more welfare state (by better targeting income support). Only with efficiency enhancing reforms can the Lisbon objectives be obtained in an ageing society.

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