Chapter 4

Financing Social Protection: The Employment Effect

Public social protection can be funded through either social contributions or general taxation. Does this matter for employment? Yes, for a number of reasons. First, social contributions tend to weigh on labour costs and thus may affect employment – unless workers are prepared to accept lower net wages to compensate for social contributions. Other funding bases like income taxes and value-added taxes may also raise labour costs, but because they are typically levied on broader population groups – and not just wage earners – they may be less detrimental to employment than social contributions. The chapter also considers the specific cases of switching to taxes on capital, including real estate, and activities detrimental to environment. Second, the "progressivity" of the funding system also matters. Adverse employment effects can be alleviated by taxing less low-paid employment than high-paid employment. Third, strengthening the link between social contributions and pension entitlements and introducing experience-rating for certain social schemes like sickness benefits may be helpful.

Introduction

Financing social protection is becoming a major challenge for most OECD countries. Some structural factors, including population ageing, exert (and will increasingly exert) upward pressure on social expenditures, in particular in the areas of health and pensions. Many studies focus on the management of spending programmes, with a view to contain their cost and limit their negative impact on employment. However, the issue of how to fund social protection has received less attention in the literature. The purpose of this chapter is to help fill this gap through an analysis of a wide range of topics related to the potential employment effects associated with funding social protection.

The Restated OECD Jobs Strategy concluded that high labour taxes (which is one way to fund social protection) may affect low-paid employment, notably in the presence of overly-high minimum wages. There was little discussion, however, as to whether alternative funding mechanisms or a better design of existing ones would have yielded better employment outcomes. This is precisely the question addressed in this chapter. Obviously, given the redistributive pattern of the tax/benefit system underlying social protection, policy changes in this area may have strong distributive effects with equity implications, which although they are not at the centre of this chapter, should be taken into account when assessing possible policy changes.

Due mostly to the lack of data on the financing of private social protection, this chapter focuses essentially on the financing of *public* social expenditures, although some elements on the private financing are also provided, and references to private social schemes are made in various instances. Section 1 presents an overall picture of social protection expenditure and its financing, and discusses how the associated tax wedge may weigh on employment performance. Section 2 examines how different ways to finance social protection may impact on employment. It starts by discussing whether the progressivity of the tax wedge matters, and examines what can be done in this respect to improve employment prospects at low wage levels. It also assesses cases where the link between the taxes and contributions that fund social protection on the one hand, and the social protection benefits or expenditure on the other can be improved so as to reduce the impact of the tax wedge on employment. Finally, it analyses the extent to which switching tax bases (from social contributions to taxes which weigh less directly on labour) may help to improve employment outcomes.

Main findings

- *Public spending on social protection represents about one quarter of GDP on average in OECD countries.* It has risen significantly since 1980, mostly as a result of spending pressures associated with ageing populations – mainly in the areas of pensions and health.

- *There are significant cross-country differences in how spending on public social protection is funded.* In the majority of OECD countries, social contributions and other earmarked revenues are the main funding source – these revenues cover over 60% of spending on social protection in most Central and Eastern European countries, Belgium, France, Greece, Korea, the

Netherlands and Spain. By contrast, some countries rely mainly on general taxation, *i.e.* non-earmarked government revenues. This is especially the case for Australia, Canada, Denmark, Ireland, New Zealand and the United Kingdom. However, over the past three decades, there has been some convergence across countries in the share of social spending financed by social contributions and other earmarked revenues – with, on average, a significant decrease in countries where such revenues have traditionally been the main source of funding, and some increase in other countries.

- *Social protection financing drives a wedge between total labour costs and what finally remains in the workers' pocket.* The higher the public spending on social protection, the higher is the tax wedge. But the extent to which a higher tax wedge has an impact on employment depends crucially on three factors: *i)* the "progressivity" of funding systems; *ii)* the link between what is paid and expected benefits; and *iii)* how labour taxation affects wage claims and replacement incomes. The chapter examines in detail these three issues and draws implications in terms of how best to structure funding systems so as to make them more consistent with employment goals. It should also be stressed that social protection on its own, if well-designed, will have positive productivity effects which may offset some of the possible adverse employment effects associated with its funding. These productivity effects, however, are not examined in detail in this chapter.

- *Making funding systems more progressive may help alleviate the adverse employment effect of the tax wedge.* Evidence shows that the negative employment effects of the tax wedge are especially strong for low-paid employment, notably in the presence of a binding minimum wage. This justifies policy initiatives to cut the tax wedge on low-paid employment, notably via lower employer contributions. But going too far in this direction may be not the most effective way to boost employment among vulnerable groups. Evaluations show that the deadweight losses are substantial. This raises the question as to whether a combination of well-designed and well-targeted employment-conditional benefits with a moderate minimum wage would be more cost-effective in promoting employment and reducing poverty than a high minimum wage combined with large cuts in employer contributions. More generally, given that higher marginal tax rates tend to moderate wage claims at higher wage levels, the task of alleviating the tax burden on low-paid employment could be facilitated by raising the overall progressivity of the tax system. However, increasing the progressivity of taxation may also have efficiency costs, notably in terms of tax avoidance and reduced incentives to improve skills and productivity for top-income earners. Hence, there is an optimal degree of tax progressivity.

- *Strengthening the links between taxes and expected benefits may help reduce the adverse employment effect of the tax wedge in certain cases.* For employees, it could be achieved in the case of pensions by creating a stronger link between the taxes and contributions they pay and expected pension benefits. Clearly, the extent to which the linkage between taxes and benefits can be reinforced is limited, as it may compromise the solidarity and redistribution principles embedded in pension schemes. For employers, "experience-rating" (*i.e.* partly relating unemployment, disability, pension and sickness contribution rates to the firm history as regards respectively layoffs, early retirement, sickness and disability inflows) may encourage firms to improve workforce management and, ultimately, employment. There is some evidence that experience-rated schemes reduce inflows in social insurance benefits. However, such schemes need to be carefully designed so as to reduce the risk that employers become reluctant to recruit among disadvantaged groups.

● *Reshuffling direct and indirect labour taxation may also reduce the employment impact of the financing of social protection.* Income and consumption taxes have broader tax bases than social contributions and, unlike social contributions, also weigh on replacement incomes. Thus, for a given tax revenue, a partial shift from social contributions to income or consumption taxes may have favourable employment effects. Indeed such a policy may lower both the average tax wedge and replacement incomes – thus increasing incentives to work and moderating wage claims. Which switch (towards the income or consumption tax) is most desirable in terms of employment effects depends on national circumstances, notably on existing indexation mechanisms for replacement revenues and wages (in particular minimum wages) and on the progressivity of the tax wedge. More generally, the specific macroeconomic implications of higher income and/or consumption taxes for growth and employment need to be taken into account.

● *Reductions in the tax wedge could also be obtained by switching in part to other taxes weighing less directly on labour:*

   ❖ The effects of higher corporate taxes on investment outcomes depend on a number of factors – some tax provisions may reduce the cost of capital, while others may increase it. Overall, however, in most cases it is difficult to justify higher corporate taxes to compensate for the loss of revenues arising from lower social contributions. Indeed, due to relatively high mobility of capital, an increase in corporate taxes is likely to be detrimental to investment and growth, and thus employment. For similar reasons, an adverse employment effect may arise in the case of a switch, currently considered in some countries, towards a contribution paid by firms on the basis of their value-added (a different option *vis-à-vis* the value-added tax, which is paid by the consumer). Taxes on households capital income, on the other hand, are much less likely to affect investment. This is especially the case of taxes on property, in particular real estate, which is among the least mobile tax bases, and is quite difficult to evade. Property taxes are relatively low in a number of European countries with high tax wedges. Reducing the favourable tax treatment of pension savings is another possibility, as it is found to be a costly and poorly targeted policy tool.

   ❖ If they are justified from an environmental point of view, environmental taxes could also be part of a tax reshuffling aiming at limiting the possible negative effect of labour taxation on employment. Due to the size of the associated tax base, taxes on energy and transport are the only ones likely to yield sufficient revenues. Concerns about their effects on firms' competitiveness have tended to limit recourse to this tax base up to now, but this may change in the context of climate change.

● *The tax shifts described above are complex and should not be regarded as a substitute for a better management of social protection spending programmes. But overall, the chapter suggests that the structure of financing of public social protection matters for employment.* In particular, the tax burden weighing on labour income could be alleviated in a number of OECD countries by funding social expenditures that encompass a strong collective dimension (*e.g.* health expenditures) through general taxation. Social contributions would then fund social protection areas where individuals perceive a stronger link between taxes and benefits. The size of the employment and distributional effects of the different reform options have not been quantified, however. Further research, taking into account both the direct and indirect effects of the reform options, is therefore needed.

1. How is social protection funded?

1.1. *The size of social protection*

In most OECD countries, spending on social protection represents a significant share of GDP (Figure 4.1).[1] Leaving aside Korea, Mexico and Turkey, where social protection systems have not matured as yet, spending on social protection range from a low 17% of GDP in Ireland to a maximum of 34% of GDP in Sweden in 2003. Spending on social protection as a share of GDP is generally above-average in northern European countries, and below-average in the Asia/Pacific countries, central and eastern European countries, and some southern European countries.[2] In general, social protection is mainly provided by government (Figure 4.1). In most European countries, government spending on social protection accounts for about 90% of total spending on social protection, while the figure is between 70 and 80% in Australia, Canada, the Netherlands, the United Kingdom and Switzerland, and around 60% in the United States.

Figure 4.1. **Social expenditures in 2003**

Gross public and private social expenditure as a percentage of GDP
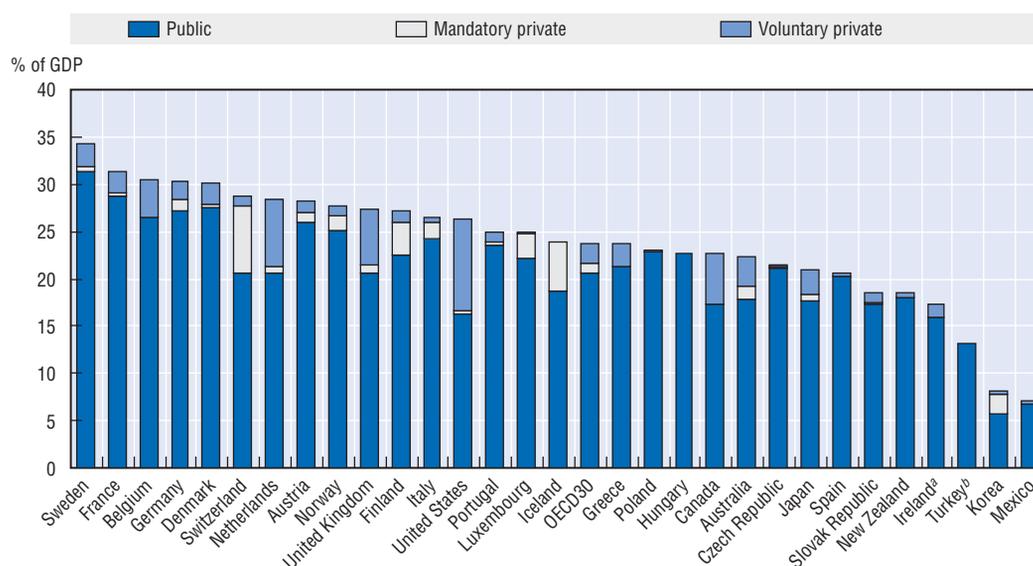
Note: Countries are ranked from left to right in descending share of total social expenditure as a percentage of GDP.
*a)* Data for voluntary private expenditure refer to 1999.
b) Data refer to 1999.
Source: OECD Social Expenditure database (SOCX).

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Spending on social protection has risen significantly between 1980 and 1993, and, leaving cyclical fluctuations aside, has tended to stabilise between 1993 and 2003 (Figure 4.2). All in all, public spending on social protection has passed from 18% of GDP in 1980, to above 22% in 2003 in the OECD countries for which data are available. Greece and Portugal have registered significant increases, while Ireland, Luxembourg and the Netherlands have experienced reductions. While starting from a much lower level, private spending on social protection increased gradually from 2% of GDP in 1980 to more than 4% of GDP in 2003, in the 12 countries for which data are available. At 5.5 percentage points of GDP, the increase in private spending was particularly large in the United States.

Figure 4.2. **Evolution of public and private social expenditures, 1980-2003**

A. **Public social expenditure, OECD average**[a]

B. **Private social expenditure for selected OECD countries,**[b] **average**
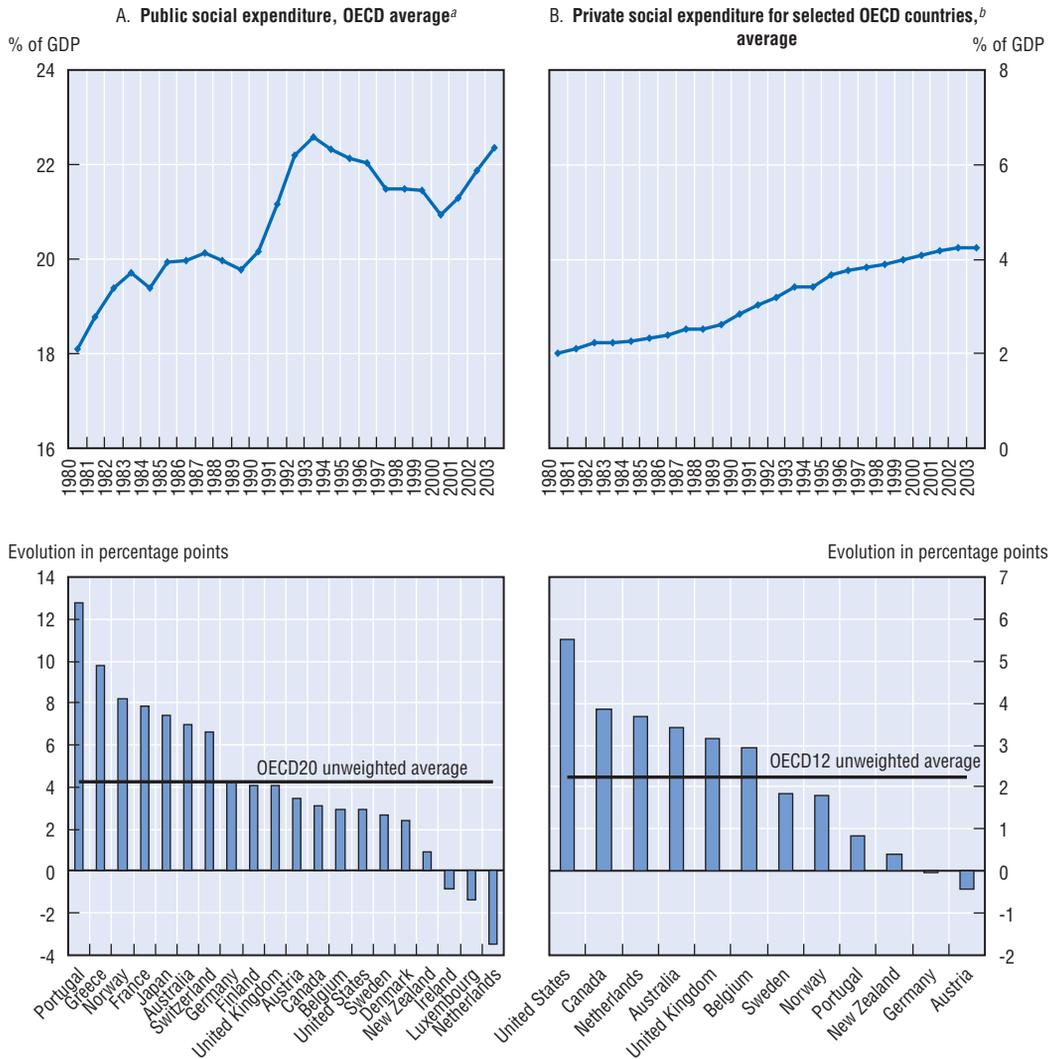
a) Unweighted average for OECD countries excluding the Czech Republic, Hungary, Iceland, Italy, Korea, Mexico, Poland, the Slovak Republic, Spain and Turkey.

b) Unweighted average for 12 OECD countries: Australia, Austria, Belgium, Canada, Germany, the Netherlands, New Zealand, Norway, Portugal, Sweden, the United Kingdom and the United States.

Source: OECD Social Expenditure database (SOCX).

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The main upward spending pressures come from health and pensions. Currently, government spending on pensions and health accounts for two thirds of total government spending on social protection. Likewise, private spending on health and pensions is rising rapidly.[3] And current projections point to a further increase in both government and private spending on health and pensions in coming years, reflecting population ageing. As noted by de Kam and Owens (1999), there are possibilities to limit the claims on public spending by limiting access to or coverage of publicly-financed health programmes, reforming public pensions systems and privatising part of non-basic pensions, but they correspond to social choices with important distributional consequences and are unlikely to relax the overall upward pressure on spending and thus tax levels. OECD (2006a) projects that, in the absence of additional policy measures, public spending on health

and long-term care could double from close to 7% in 2005 to some 13% in 2050; if cost-containment policies are implemented, average expenditures would still reach 10% of GDP in that same year, and the increase would exceed 2.5 percentage points of GDP in almost all countries.[4] Pension projections by the European Commission based on a "no policy change" scenario find much more variance across countries, with increases in pension spending in 2050 projected to be particularly high (above 6 percentage points of GDP) for Hungary, Ireland, Portugal and Spain, and negative in Austria and Poland (European Commission, 2006).[5]

1.2. Social protection financing and the tax wedge

Public social protection can be funded through earmarked contributions and taxes, or the general taxation system. In the absence of national social security accounts allowing proper comparison across countries (see Annex 4.A1 in OECD, 2007), it is assumed in this chapter that public social expenditures not financed by earmarked taxes are financed by general taxation. The relative importance of the two funding sources varies considerably across countries. Social contributions and other earmarked taxes financed more than half of public spending on social protection in 17 out of the 30 OECD countries in 2003 (Figure 4.3, Panel A). Only a few countries, Australia, Denmark and New Zealand, rely exclusively or quasi-exclusively on general taxation. On average, earmarked resources accounted for almost half of the financing of public spending on social protection.

Figure 4.3. **Earmarked contributions and taxes for the financing of social protection, level and evolution**

As a percentage of public social expenditures
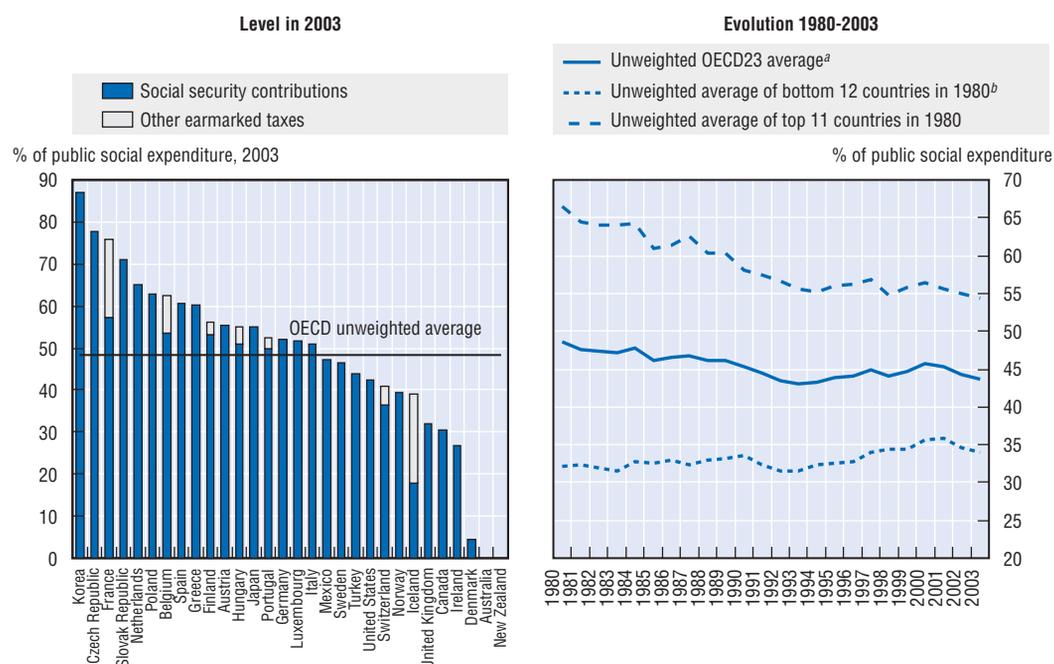
a) OECD average for 23 countries excluding Czech Republic, Hungary, Iceland, Korea, Mexico, Poland and Slovak Republic.
b) Bottom 12 countries, *i.e.* countries with lowest earmarked contributions and taxes (% public social expenditures) in 1980: Australia, Austria, Belgium, Canada, Denmark, Finland, Ireland, Luxembourg, New Zealand, Sweden, the United Kingdom and the United States.

Source: OECD Revenue Statistics database; OECD Social Expenditure database (SOCX).

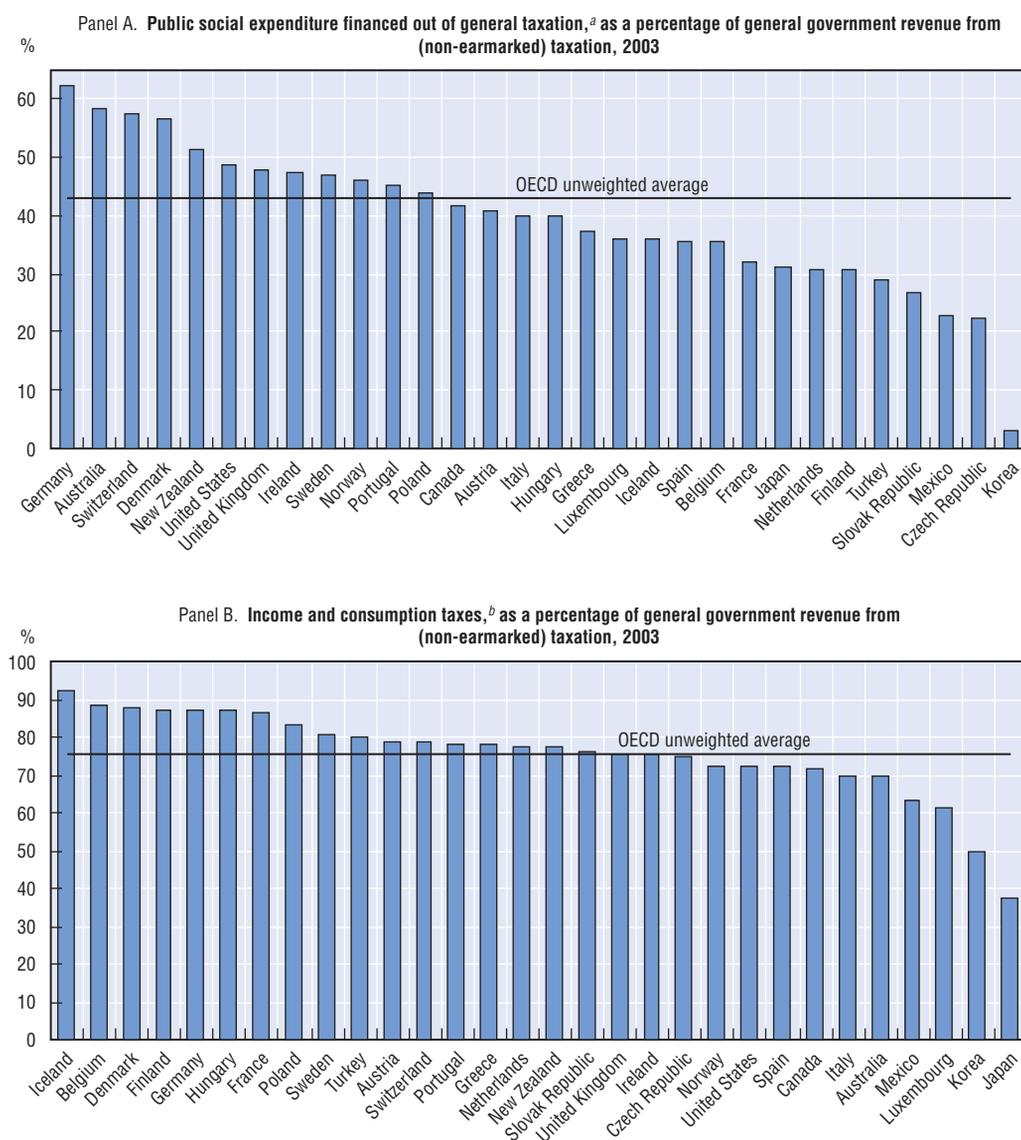*StatLink* ᔥᓬ☜ *http://dx.doi.org/10.1787/024021357760*

There have been significant changes over the past two decades regarding the relative importance of earmarked resources *versus* general taxation. On average in the OECD, the share of earmarked resources has declined by 5 percentage points (Figure 4.3, Panel B). There has also been some convergence in funding patterns across countries. The share of earmarked resources has declined significantly in countries where social contributions are the main source of funding and it has increased somewhat in other countries.

In countries with low social contributions, public social protection financing takes up a considerable share of general taxation[6] – more than 50% in Australia, Denmark, Germany, New Zealand and Switzerland (Figure 4.4, Panel A). But the share of general taxation used for public social protection is also important in other OECD countries. On average in the OECD, it has risen from 34% in 1980 to 43% in 2003. Finally, as income and consumption taxes constitute 75% of these general taxes, the wage bill is likely to be the main tax base for the financing of social protection, even in countries with relatively low social contributions (Figure 4.4, Panel B).

The previous figures provide a first insight into differences across countries and through time in terms of social protection funding. However, they tell little about the economic impact of these funding sources, in particular on employment. To analyse the effect of social protection financing on employment, this chapter will subsequently focus on the so-called "tax wedge", defined as the difference between labour costs and the take home pay in proportion of labour costs.[7] While encompassing a number of limitations, it constitutes the best instrument that can be used in absence of precise and comparable national accounts of social protection funding:

● The tax wedge is the instrument traditionally used to analyse the impact of taxes on employment, as it includes all taxes which have a direct impact on labour costs and real wage incomes: employers' and employees' social security contributions, as well as personal income taxes and consumption taxes.

● A very large share of the taxes included in the tax wedge is in fact related to the financing of public social expenditures: social security contributions are, by definition, earmarked for social protection and while income and consumption taxes are mostly non-earmarked taxes, a large share of these revenues is generally used to finance social protection. And overall, Figure 4.5 indeed shows a close correlation between the tax wedge level and public social expenditures.

● Yet, there is no strict equivalence between the effects of social protection financing on employment and the effect of the tax wedge on employment. The tax wedge is a partial equilibrium construct, measuring the extent to which social contributions, income and consumption taxes *directly* affect wage claims and labour costs. But these taxes also impact *indirectly* on employment, through their potential effect on producer prices, competitiveness and growth, for instance. Thus, the tax wedge is a useful device to analyse the (direct) employment effect of financing social protection, but it is not a substitute for a full general equilibrium treatment. And other taxes may also have indirect implication for employment outcomes. Hence, when examining the possibility to finance social protection out of taxes not included in the tax wedge or, more generally, not exclusively weighing on labour incomes (*e.g.* consumption and income taxes as opposed to social contributions), the possible indirect effects on employment also need to be taken into account.

Figure 4.4. **A significant share of general taxes is devoted to social protection financing**

Panel A. **Public social expenditure financed out of general taxation,[a] as a percentage of general government revenue from (non-earmarked) taxation, 2003**

Panel B. **Income and consumption taxes,[b] as a percentage of general government revenue from (non-earmarked) taxation, 2003**

a) Calculated as: (Public social expenditures – taxes earmarked for social protection)/(Total taxes – taxes earmarked for social protection).
b) Calculated as: (Income and consumption taxes)/(Total taxes – taxes earmarked for social protection).
Source: OECD Revenue Statistics database; OECD Social Expenditure database (SOCX).

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Significant cross-country differences in the tax wedge – measured on the basis of actual tax revenues – emerge in Figure 4.6, the latter ranging from a low of 26% in Korea to a high of 57% in Sweden in 2003. On average, social security contributions – the total of employer and employee social security contributions – accounted for almost 20% of labour costs, that is half of the total tax wedge (Figure 4.6, Panel A). These contributions are substantially higher in virtually all countries with above-average tax wedges. By contrast, social security contributions rarely exceed 12-13% of labour costs in countries with below-average tax wedges. Overall, earmarked resources for the financing of social protection largely contribute

Figure 4.5. **Tax wedge and public social expenditure, 2003**

Total tax wedge (% of labour cost)
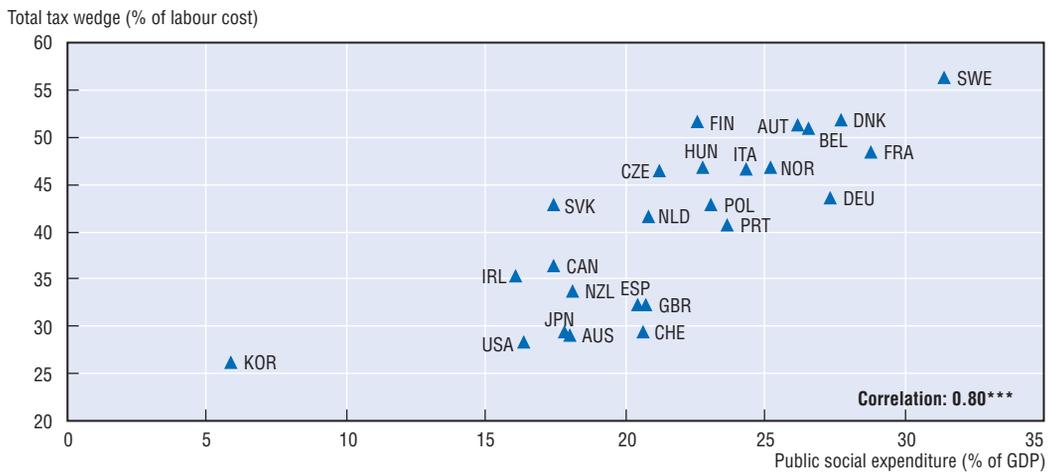
Source: OECD (2007), "Financing Social Protection: the Employment Effect – Further Material", *www.oecd.org/els/employmentoutlook/2007*; OECD Social Expenditure database (SOCX).

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to explain cross-country differences in the tax wedge. It should, however, be stressed that private contributions, earmarked to fund private social protection, are not included in the estimated tax wedge. As noted earlier, private social protection is important in a number of OECD countries, thereby entailing substantial contributions by employers and/or employees (see Box 4.1). Thus, cross-country differences in the tax wedge may also reflect differences in public social insurance coverage.
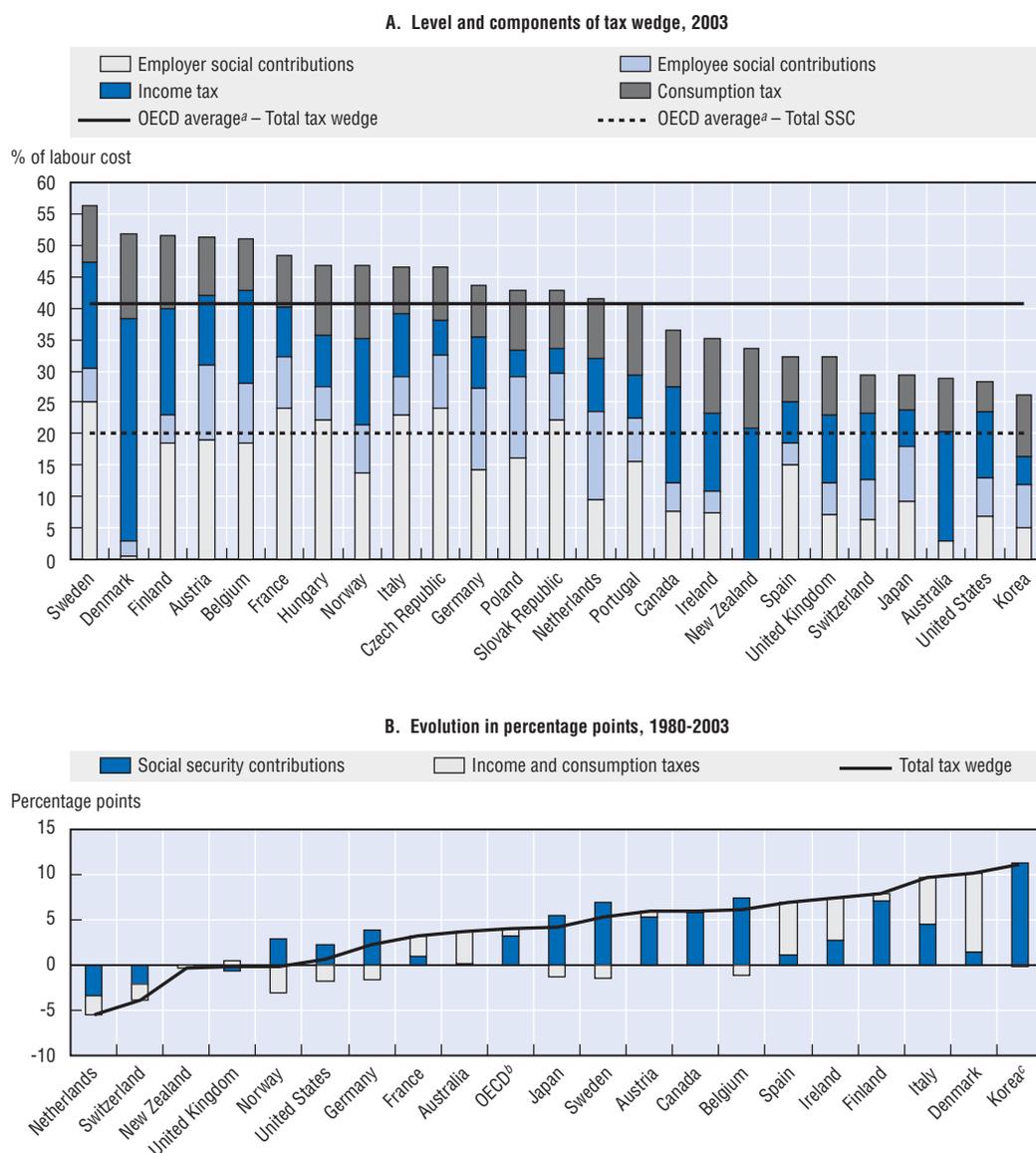
The tax wedge increased by 4 percentage points, on average, over the period 1980-2003 (Figure 4.6, Panel B). It increased in all countries, except the Netherlands and Switzerland. The rise was mostly driven by social security contributions: they explain almost entirely the rise in the total tax wedge in 7 out the 11 countries where the latter increased more than the average. By contrast, in countries where the tax wedge declined or rose slightly, these favourable trends have partly, if not mainly, resulted from a decrease in non-earmarked resources.

Finally, the share of indirect taxation in the total (direct and indirect) tax burden weighing on labour incomes has been rather stable, on average, over the period 1980-2003 (Figure 4.7, Panel A). The various components of direct labour taxation show a quite different picture, however (Figure 4.7, Panel B). On average, there has been a substantial shift from personal income taxes to employee social security contributions, while the share of employer social contributions in direct labour taxation has been stable. The latter decreased significantly in a few countries, however: Italy, the Netherlands, Spain and the United Kingdom. Employer social security contributions were shifted towards employee social security contributions and consumption taxes in the Netherlands and the United Kingdom, while in Italy and Spain, the share of income taxes in direct labour taxation increased (in Spain, this was also accompanied by a shift towards consumption taxes).

1.3. *The effect of the average tax wedge on employment*

The economic agent on which a tax is levied is not necessarily the one that fully pays the tax in question, since resulting labour and product market adjustments may result in tax shifting. For instance, in certain cases, firms may seek to partly or wholly shift higher employer social security contributions onto lower wages. In other cases, workers may

Figure 4.6. **The overall tax wedge on labour incomes,
its components and evolution**

A. Level and components of tax wedge, 2003

☐ Employer social contributions   ☐ Employee social contributions
■ Income tax   ■ Consumption tax
── OCED average*a* – Total tax wedge   ···· OECD average*a* – Total SSC

% of labour cost

B. Evolution in percentage points, 1980-2003

■ Social security contributions   ☐ Income and consumption taxes   ── Total tax wedge

Percentage points

SSC: Social security contributions.
a) Unweighted average for OECD countries excluding Greece, Iceland, Luxembourg, Mexico and Turkey.
b) Unweighted average for countries shown.
c) Benefits in cash for old age, incapacity and unemployment are missing before 1990, they represent less than 3% of the income tax base in 1990.

Source: See OECD (2007), "Financing Social Protection: the Employment Effect – Further Material", *www.oecd.org/els/ employmentoutlook/2007.*

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demand higher wages in the face of higher employee contributions or higher consumption taxes. The respective bargaining power of workers *versus* that of their employers will determine the degree to which changes in the tax wedge impact on real wages, and in turn on employment.

Box 4.1. **The cost of employment-based private social schemes:
some estimates**

Employment-based private social schemes are important in a number of OECD countries. This is especially the case in the United States for health – as the government does not guarantee universal health care – and pensions. Such schemes are also important in Canada and the Netherlands (for both health and pensions), as well as Australia, Ireland, Switzerland, and the United Kingdom (for pensions), and France for complementary health insurance. Both types of schemes have significantly developed in a number of OECD countries as a result of the reform of pension and health systems implemented in face of the increasing pressures on public budgets.

Information on payments for private social scheme as a share of labour costs is not easily available. For the aim of this chapter, an attempt was made to collect such data from relevant national bodies for selected schemes (mainly pensions and health) in certain countries. The choice of scheme and countries was made based on the importance of the associated private social expenditures in current social expenditures, as well as in expected future expenditure for pensions. Contrary to what is provided in the chapter for public social schemes, this data is obviously not comprehensive: some countries for which private schemes are important (*e.g.* Canada) are not covered, and, in the countries for which data have been collected, all private social schemes are not systematically included (for more detailed information on the data, see Annex 4.A3 in OECD, 2007). Given that these data are not based on a common methodology, caution is also required when making cross-country comparisons.

Estimates suggest that these payments by employers and employees represent a significant share of labour costs in a number of countries where the tax wedge (as measured for the purposes of the chapter) is low (see figure below). In the United States in particular, for a worker covered by pensions and health schemes, average payments for private schemes are almost as high as the taxes levied on the gross wage, and they would likely be higher if employees' payments for private pension schemes were included.

**Average effective payments to selected private social schemes
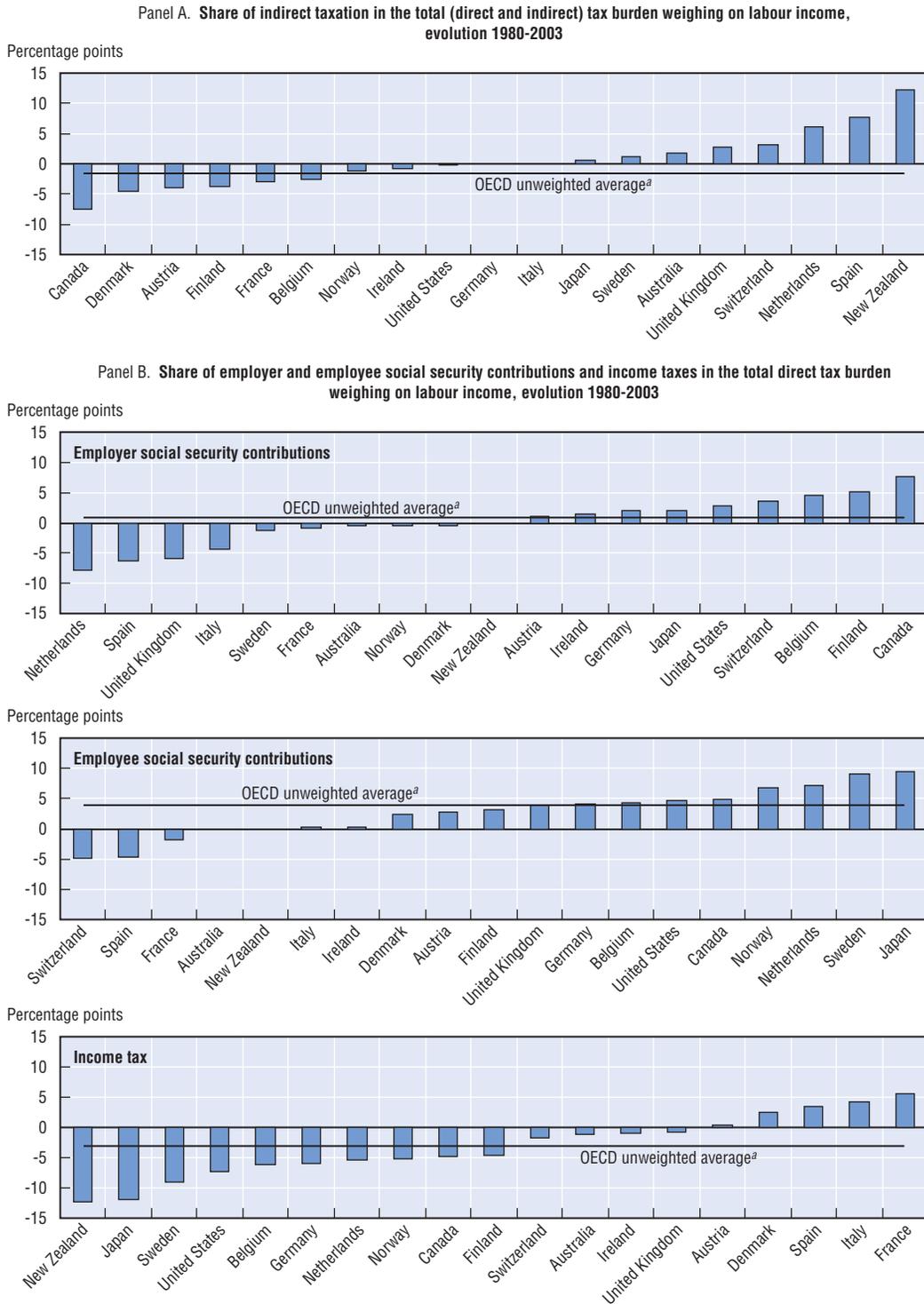in seven OECD countries**

Note: 2005 for Ireland, Hungary, the Netherlands, the United Kingdom and the United States; 2002-03 for Australia and 2004 for Switzerland.

a) Pension contributions for employers only.

Source: OECD Secretariat based on national sources (see OECD, 2007, "Financing Social Protection: the Employment Effect – Further Material", *www.oecd.org/els/employmentoutlook/2007*).

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Figure 4.7. **Evolution of the structure of the total tax burden weighing
on labour income**

Panel A. **Share of indirect taxation in the total (direct and indirect) tax burden weighing on labour income,
evolution 1980-2003**

Panel B. **Share of employer and employee social security contributions and income taxes in the total direct tax burden
weighing on labour income, evolution 1980-2003**

a) Excluding Czech Republic, Greece, Hungary, Iceland, Luxembourg, Mexico, New Zealand, Poland, Portugal,
Slovak Republic and Turkey. Korea is also excluded (extreme values).

Source: See OECD (2007), "Financing Social Protection: the Employment Effect – Further Material", *www.oecd.org/els/
employmentoutlook/2007.*

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Other things being equal, labour demand always decreases as labour costs rise. Consequently, the extent to which higher taxes may result in lower employment depends crucially on how real wages react to the tax increase – which in turn depends on the supply-side of the labour market (see for instance, Pissarides, 1998; and Bovenberg, 2006). More specifically, there are three different effects of higher tax wedges on labour supply decisions and wage claims:

● A *substitution effect*: other things equal, a higher tax wedge reduces the opportunity cost of not working (as defined by the ratio between non-labour incomes and after-tax wages) and thus tends to depress labour supply and generate wage resistance. This effect holds under the fairly general condition, which often holds true, that non-labour market incomes face a different tax treatment than wages, and partly escape the tax burden supported by employees. In most OECD countries, replacement incomes are generally not fully indexed on net wages: unemployment benefits are indexed on gross rather than net wages (except in Austria, the Czech Republic and Germany) and are often taxed at reduced rates, while other benefits such as family, housing or social assistance benefits are generally not treated as taxable income and, in a number of cases, take the form of lump-sum transfers (OECD, 2004a). In addition, in the presence of opportunities for undeclared work, the opportunity cost of not working (in the regular labour market) is also reduced as taxes on wages rise.

● An *income effect*: in order to compensate for the income loss resulting from higher taxes on wages, households may tend to raise their labour supply, thus moderating wage claims. Higher labour taxes entirely translate into lower after-tax wages, if replacement incomes are fully indexed on after-tax wages (thus neutralising the substitution effect). In case of partial indexation, the extent to which the additional tax burden is shared between reduced after-tax wages and higher labour costs depends on the relative strength of workers' and employers' bargaining positions. Such a trade-off is likely to result in greater wage moderation in centralised/co-ordinated wage-setting regimes than in intermediate wage-setting regimes – where unions are not able to internalise the employment impact of their wage claims (Calmfors and Driffill, 1988).

● A "*perception*" *effect*: employees may be willing to accept lower after-tax wages as taxes rise if they effectively recognise a linkage between the taxes they pay and their benefits entitlements (Summers, 1989; Gruber and Krueger, 1990). While being partly subjective, workers' perceived (individual and collective) value of the taxes and contributions that they pay may be influenced by policy. This may be the case when there is a close link between the tax base and the beneficiary population. Likewise, centralised and co-ordinated wage bargaining systems may facilitate workers' recognition of the tax/benefit linkage (Summers, Gruber and Vergara, 1992). More fundamentally, the perceived value of a tax is strongly associated with the efficiency of the social programme funded from the tax in question. In this perspective, improving the efficiency of social expenditures would not only help to reduce labour taxes, but also, for a given tax burden, it would make labour taxation less distortionary, thus reducing its potential adverse effects on employment.

The above three effects of the tax wedge ignore the potential impact of social protection on productivity. As shown in Chapter 2, certain welfare benefits like parental leave, effective active labour market policies and well-designed unemployment benefits may raise labour productivity in various ways, which would offset any negative employment impact of the taxes needed to finance these welfare benefits. Likewise, health programmes may support workers' motivation and productivity. More generally, well-designed social protection are likely to be a productive input for the economy.

Overall, the employment effects of higher tax wedges may go in different directions and depend on policies and institutions in place. Yet, empirical studies most often conclude that a higher tax wedge tends to increase labour costs (see Annex 4.A1, Table 4.A1.1 for a literature survey). Also, high taxes on labour are particularly damaging to employment of low-paid workers in the presence of a binding high minimum wage (see Bassanini and Duval, 2006; and OECD, 2006b, for a survey). At average wage level, employment taxes are found to be shared between higher labour costs and lower take-home pay, but the magnitude of these adjustments varies considerably across countries and studies.

Results strongly differ as regards the financing of the private social protection schemes implemented in the United States. Indeed, empirical studies on the impact on wages in the 1990s found that the costs of these mandated employer-provided health insurance (which are quite high, Box 4.1) are almost fully shifted to employees in the form of lower wages, with little or no effect on labour utilisation (for a literature survey, see Gruber, 2000). Along the same line, findings from the 2006 Health Confidence Survey indicate that three-quarters of individuals with employment-based health benefits in the United States would prefer USD 6 700 in employment-based coverage to an additional USD 6 700 in taxable income (EBRI, 2006). This indicates that the "perception" effect is very high in that case, where a significant share of the population is not covered by health insurance. This does not mean that private and individual schemes are superior to more redistributive public schemes, however such an assessment would require a deeper and broader analysis of social protection systems which lies beyond the scope of this chapter – see Pearson and Martin, 2005. Moreover, the debate currently taking place in the United States on the potentially detrimental effects of rising health costs on firms competitiveness suggests that the situation may have changed recently (or at least that there are fears that this may change in the future).

2. What is the employment impact of the different ways of financing social protection?

As discussed above, the *average* tax burden weighing on wages and labour costs may shape employment performance in various ways. The precise impact depends crucially on: *i)* the tax burden on low-wage employment (since the presence of wage floors makes it difficult to pass tax increases onto lower wages); *ii)* the extent to which there is a close link between the taxes and contributions that fund social protection on the one hand, and social protection benefits on the other (*a priori*, the closer the link, the less the risk of a negative impact of taxes on employment); and *iii)* the extent to which a broadening of the tax base to fund social protection, as is being done in some countries and debated in others, helps meet employment objectives, notably by affecting the wage/replacement income ratio. This section examines these three key policy issues.

2.1. The role of progressivity

The tax wedge tends to be progressive, especially when funding relies on personal income tax

Figure 4.8 presents an estimate of the progressivity of the tax wedge, *i.e.* the extent to which the tax wedge on low-wage employment is lower than the tax wedge on high-wage employment. The tax wedge is measured here on the basis of statutory rates for social contributions and income taxes, paid by single individuals earning 67% and 167% of the average wage.[8] The tax wedge so calculated is 20% lower for low-wage employment than for high-wage employment, on average across OECD countries. The country ranking has to

Figure 4.8. **Progressivity index of the tax wedge from direct labour taxation**

Relative tax wedge difference between 167% and 67% of AW, single worker without children,[a] 2004
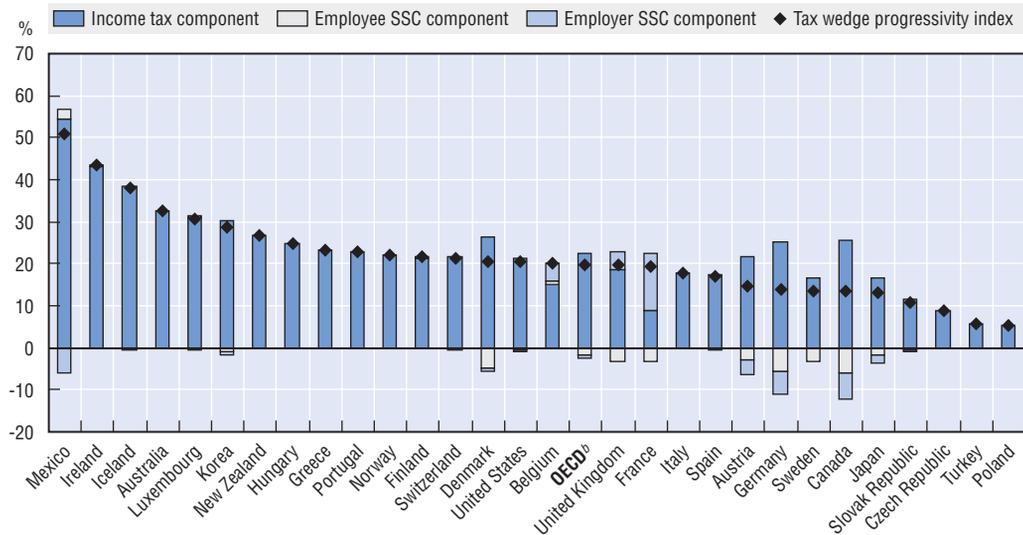
AW: Average wage.

SSC: Social security contributions.

a) The progressivity index of the tax wedge is calculated as $(TW_{167} - TW_{67})/TW_{167}$, where TW_{167} and TW_{67} is the tax wedge for workers at 167% and 67% of average wage, respectively.

b) OECD unweighted average.

Source: OECD Taxing Wages database.

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be considered with caution, however, this measure does not give a synthetic picture of the overall progressive structure of direct labour taxation, since it depends on family types and wage ranges – presently rather narrow – over which it is calculated. Moreover, it does not take into account consumption taxes – another key component of the tax wedge. Therefore, since consumption taxes are likely to bear disproportionately on low-wage employment (the propensity to consume is relatively high for low-income people), it provides an upper bound estimate of tax wedge progressivity.

In most countries, the progressivity of the total tax wedge is entirely explained by the progressive structure of personal income taxes. Social contributions are often proportional and capped at a certain level. Hence, they tend to be regressive – although this does not appear in Figure 4.8, probably due to the fact that the progressivity index is calculated over a relatively small wage range.

Stronger tax progressivity via lower tax wedges on low-wage employment may improve job prospects of vulnerable groups…

At the minimum wage level, labour costs and net incomes result entirely from policy choices as regards labour taxation, benefits and the minimum wage itself. The latter plays a doubled-edge role: a high minimum wage relative to the average wage tends to deter the employment prospects of vulnerable groups, but it also contributes to make work pay relative to welfare benefits. And higher labour taxation will fully translate into either increased labour costs, or reduced opportunity costs of not working, depending on whether taxes are levied on the employer or the employee side.

On the employer side, labour taxation does not impact directly on the minimum-wage cost *relative* to the average wage cost, since social contributions often have a flat structure over this wage range (Immervoll, 2007). In relative terms, labour costs at the minimum-wage would thus result from policy choices as regards gross minimum wage levels rather than labour taxation. However, flat payroll taxes may indirectly increase the relative cost of minimum-wage workers since, at the average wage level, part of these taxes may be transferred onto workers in the form of lower gross wages. Hence, flat taxes are *non-neutral* in presence of a binding minimum wage and lower employers' contributions at the bottom of the wage ladder would avoid that the low-skilled are disproportionately affected by labour taxation. Several countries, notably Belgium, France, the United Kingdom and, until recently, the Netherlands have already moved in this direction. They have applied significant cuts in employer social security contributions on low-wage employment.[9]

… but such a policy may lead to substantial deadweight losses

The effectiveness of broad employers tax cuts at the bottom of the wage ladder should be assessed *vis-à-vis* alternative policy tools to support employment prospects of disadvantaged workers. In this respect, empirical evidence suggests that:[10]

● Payroll tax cuts targeted on lower-wage earners are generally found to be more effective in boosting the employment prospects of disadvantaged groups and reducing aggregate unemployment, than general tax cuts.

● However, deadweight losses – *i.e.* the fact that the reduction of employer social contributions also benefits existing low-wage jobs and new jobs that would have been created even in the absence of the tax reduction – tend to be substantial.[11] This is a strong limitation, as these measures pose a major funding issue and require higher taxes elsewhere in the wage ladder.

● Insofar as payroll taxes are not overly high, implementing or going further with broad tax cuts covering all those in low-paid work may be less cost-effective than schemes more closely targeted at jobless and hard-to-employ individuals, and aimed at facilitating transitions from unemployment or inactivity to regular employment in the private sector. And in countries with overly high minimum wages, well-designed employment conditional benefits may help limit further increases in the statutory minimum wage, and may be more cost-effective that further broad employers tax cuts.

On the employee side, financial rewards from moving from unemployment or inactivity to low-paid work tend to be very low in most OECD countries. For unemployed or inactive persons, accepting a low-paid job – *e.g.* a full-time job at the minimum wage or at 67% of the average wage – provides little net additional incomes (Figure 4.9, and OECD 2005a, Chapter 3 for a detailed analysis). When moving from unemployment to work, 70-80% of the additional gross income is on average taken away in the form of income taxes, employee social security contributions and/or lower welfare benefits. This proportion is lower when switching from inactivity to work but still represents on average 60-70% of the additional gross income.

These high marginal effective tax rates may have sizeable consequences on participation behaviour and employment, notably in a context where upward wage mobility is relatively limited at the bottom of the wage ladder (see OECD, 2006b, Chapter 5). Indeed, empirical evidence suggests that for groups at the margin of the labour market, labour supply tends to be relatively sensitive to earned income (for a survey, see Roed and Strom, 2002). Yet, the striking fact is that overly-high marginal effective tax rates result primarily from sharp welfare benefit

Figure 4.9. **Unemployment and inactivity traps at the bottom of the wage ladder**

OECD average, 2004
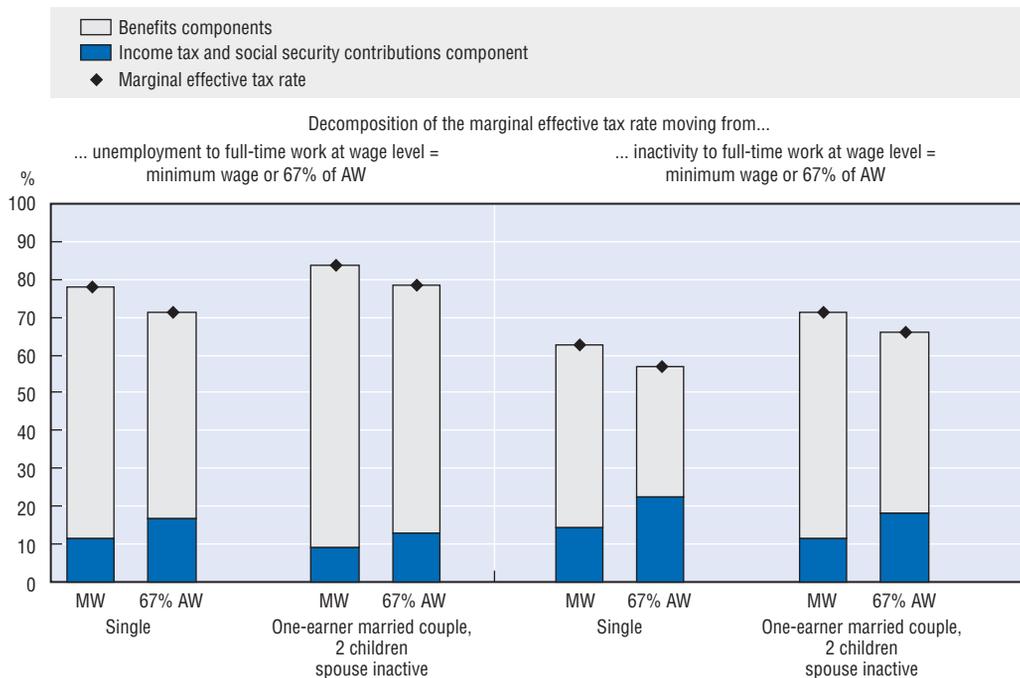
AW: Average wage.

MW: Minimum wage.

a) For minimum wage, average includes only countries with a statutory minimum wage: Australia, Belgium, Canada, Czech Republic, France, Greece, Hungary, Ireland, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Poland, Portugal, Slovak Republic, Spain, Turkey, United Kingdom and United States.

Source: OECD tax-benefits models.

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withdrawals in virtually all countries. Moreover, progressive income taxes reduce the gap between the take-home-pay of minimum-wage workers and average wage earners (Immervoll, 2007). Thus, the policy priority is not reshaping the tax structure on the employee side, but rather, the benefit system. And if well-designed, employment-conditional benefits have proved to be effective in improving the labour market situation of the most vulnerable groups (see OECD, 2005a, Chapter 3).

All in all, a very high minimum wage associated with large cuts in employer social contributions may be less cost-effective in promoting employment and reducing poverty than the combination of a moderate minimum wage with well-designed employment-conditional benefits targeted on low-income families. Even if this latter policy option does not eliminate the risk of deadweight losses, it may allow to better target poorest working families, as opposed to individual minimum wage workers. It would also help reduce high marginal effective tax rates, primarily resulting from sharp benefit withdrawals at the bottom of the wage ladder.

Tax progressivity at all wage levels moderates wage claims

The issue of tax progressivity goes beyond the particular case of minimum-wage workers. Empirical studies indeed concur that the progressive structure of personal income taxes tends to moderate wage claims, at least for workers in the middle of the wage distribution (see Annex 4.A1, Table 4.A1.1, for a literature survey). In fact, more progressive labour taxes are

associated with higher marginal tax rates and while the average tax rate is a tax on the wage level, the marginal tax rate is a tax on wage increases. Thus, the higher is the marginal tax rate, the lower the wage claims (see Box 4.2). In turn, this would tend to reduce unemployment and make room for financing employer tax relief at the bottom of the wage ladder through slight tax increases at higher wage levels (see *e.g.* Drèze and Malinvaud, 1994; and Lockwood, Slok and Tranaes, 2000). Along this line, Pissarides (1998) notes that "a reform of the employment tax structure from regressive to progressive can be one of the very few free lunches that one encounters in the analysis of economic policy". But progressivity of taxation may also have efficiency costs, in particular in terms of tax avoidance, reduced incentives to acquire new skills and to improve productivity for the highest wage workers. All in all, there is probably an optimal degree of tax progressivity, where these potential efficiency costs are just offset by the gain from reduced unemployment (Sørensen, 1999).

2.2. Increasing the link between taxes and social protection benefits/expenditures

There may also be ways to change the tax design so as to better link social contributions and social protection benefits or expenditures, and thus reduce the negative impact that the overall tax wedge may exert on employment. This may be achieved by better linking employees' contributions to their future benefits and employers' contributions to the cost they incur to the system. On the employee's side, increasing the perceived value of the counterpart to taxes would moderate wage claims, thus making taxes less distortionary. On the employer's side, introducing some linkage between labour taxation and the costs incurred by social protection systems (in terms of benefit payments), through experience-rating mechanisms, may be socially desirable and economically efficient, as employer behaviour in terms of workforce management has an impact on the observed frequency of some so-called "risks" covered by social protection and on employment.

Obviously, such a reform could only be made in social protection areas where such a linkage makes sense, *i.e.* in areas where the tax incentives strongly affect behaviours and thus the realisation of the so-called "risks" covered by social protection, and where it can be expected to have repercussions on employment. In the case of employees, pensions would be the main scheme concerned. This is not a possibility in the case of health insurance, where getting a benefit is much more random, and the risk of creaming by insurers is too large.[12] Unemployment, work injuries, disability and early retirement are the most relevant schemes in the case of employers.

Even in those areas, there are limits to increasing the linkage between taxes and benefits in social protection as it runs against the solidarity and redistribution principles embedded in most social protection schemes, to allow the most vulnerable individuals to benefit from social protection. This is obvious for the schemes financed out of general taxation, but is also the case for social insurance schemes, which are based on the same principle of mutualisation of risks as private insurance, but avoid the risks of exclusion of the most vulnerable groups that would characterize individual private insurance schemes.[13]

The link between social contributions and social benefits: employees' perception of pensions' contributions

As outlined above, the higher the perceived value of the counterpart to taxes, the more employees are likely to accept lower net wages. A fundamental determinant of this perceived value is the quality of the benefits that employees expect to get in return for the taxes they pay, and thus the efficiency of social expenditures. The neutralisation of the possible

Box 4.2. **Tax progressivity, wage claims and employment: some theory**

In a perfectly competitive labour market, the issue of tax progressivity falls into the "standard" trade-off between equity and efficiency. Indeed, increasing the marginal tax rate, while holding the average tax rate constant, simply reduces the opportunity cost of not working, at the margin. And this results in higher wages and lower employment – through the adverse substitution effect on labour supply. By contrast, in the presence of non-tax labour market imperfections – be they agents with market power or informational asymmetry – progressive taxation may both reduce inequality and improve efficiency (see among others, Koskela and Vilmunen, 1996; Sørensen, 1997; and Pissarides, 1998).

Indeed, a progressive tax is also a tax on wage increases and insofar as wages are set above the market-clearing level, greater progressivity may help alleviate distortions in some dimensions of the wage-setting process by encouraging wage moderation. For example, when unions trade-off higher wages against higher employment of their members, a rise in the marginal tax rate makes it less costly for the union to "buy" more jobs through wage moderation, since a given fall in the pre-tax wage now leads to a smaller fall in the after-tax wage. Likewise, greater tax progressivity may reduce equilibrium unemployment in cases where employers cannot fully observe workers' productivity and thus pay wages above the market-clearing level in order to elicit effort. A rise in the marginal tax rate reduces the effectiveness of a high pre-tax wage as an instrument for inducing higher productivity, leading employers to set lower wages.

Yet, tax progressivity has some limits. Raising the marginal tax rate on labour income may increase distortions in some other dimensions of labour supply, such as the choice of education and work effort (see Roed and Strom, 2002 for a survey). When much of the cost of training and education takes the form of forgone earnings, highly progressive tax schedules may reduce individual incentives to invest in human capital by taxing too heavily the higher earnings expected from skill acquisition (see for instance, Heckman *et al*., 2002). And as regards work effort, if unions bargain over both wage rates and work hours, a higher marginal tax rate induces the latter to set shorter working hours, thus distorting the labour-leisure choice in the same way as taxes distort individual labour supply decisions in a competitive labour market. Likewise, in cases where firms set wages in order to elicit effort, a higher marginal tax rate reduces labour productivity by lowering the employer's optimal efficiency wage relative to unemployment benefits, thereby encouraging shirking.*

As noted by Feldstein (1995), in terms of reduced productivity, the efficiency cost of overly-high marginal tax rates may be relatively large for high-income individuals who tend to have substantial discretion about the intensity with which they work. More generally, top-income earners may benefit from various opportunities to reduce their taxable incomes – even if the number of hours worked is unchanged – by transforming higher-taxed labour incomes into lower-taxed capital incomes in order to take advantage of legal possibilities of tax avoidance. And empirical evidence indeed suggests that the elasticity of taxable incomes with regard to marginal tax rates may be relatively high at the top of the income distribution, which in turn, reduces the overall tax return for public finances (see Gruber and Saez, 2002).

* In the standard job-search model of the labour market, while greater progressivity promotes employment by lowering equilibrium wage rates, it also lowers the efficiency of the job-matching process by reducing workers' expected marginal return to job search.

negative effect of taxes on labour supply and employment might even turn into a positive effect if the related expenditure positively affects labour supply, such as in the case of childcare. Yet, to the extent that they relate exclusively to the perceived efficiency of public expenditures, such effects, although essential,[14] fall outside the scope of this chapter.

Public pension schemes, however, are often meant to operate a form of inter-temporal transfer of wages, with a more or less explicit link between what is paid and what will be received. If pensions were strictly deferred wages, then employees would not perceive them as taxes at all. In fact, this concept of deferred wages comes close to what is meant by actuarially-fair pension schemes. Actuarial fairness requires that the (*ex ante*) present value of lifetime contributions equals the present value of lifetime benefits.[15] It is often argued that the closer to actuarially fair the pension scheme is, the lower the tax component is and thus the lower the disincentive effect on labour participation should be.

Empirical results in this area are mixed. Constructing two indicators of the tax component of pension programmes, both between and within generations, across a range of OECD countries, Disney (2004) confirms that a higher tax component and a lower savings component reduces women's participation, but does not obtain the same result for male participation. Cox Edwards and James (2006) find that the Chilean switch from a traditional pay-as-you-go (PAYG) pension scheme to a fully funded defined-contribution scheme strongly reduced the propensity to become a pensioner and to drop out of the labour force for older workers, but they are unable to determine whether this effect is due to actuarial fairness or to other constraints such as tightened access to early pensions.[16] In fact, as noted in OECD (2006d), people do not always fully incorporate the results of theoretical calculations into their retirement decisions, and they are also likely to be influenced by whether they can attain a particular income to retire on comfortably.

The link between contributions and benefits is more important in public pension programmes relying heavily on social contributions than in those relying mostly on general taxation, since in the latter, pension benefits are often completely unrelated to contributions (they are income-tested in Australia, flat in the Netherlands and New Zealand, a combination of flat and earnings-related in Canada, Ireland, Japan, Switzerland and the United Kingdom). However, even the systems relying on social contributions depart significantly from actuarial fairness. Only a fully-funded defined-contribution scheme could be actuarially-neutral. In PAYG pension systems, what employees contribute to the system today serves to pay pensions to those currently retired; it does not provide employees with savings for the future, but with entitlements to benefit from the same right as current retirees, *i.e.* be paid a pension when they retire by those still working. In addition to redistribution *between* generations, pension systems also encompass redistributive features *within* generations, such as benefits for non-working spouses, widow(er) benefits, ceilings and floors on contributions and benefits, as well as *ad hoc* departures from actuarial fairness in indexation and revaluation of benefits.

Although actuarial fairness does not have to be an aim in its own right (Queisser and Whitehouse, 2006), there are ways to improve the design of current pension systems so as to better relate what employees contribute and what they will get, and make it clearer to them. This would involve in particular: *i)* making the accrued pension rights proportional to contributions; *ii)* making accrual rates (*i.e.* the rate at which pension benefits accrue) reflect differences in life expectancy for different population groups; and *iii)* better linking the first age of receipt of state pension to differences in expected longevity. A number of OECD countries have already implemented reforms aimed at enhancing the financial sustainability of their

pension systems in the face of ageing populations, and some go in the direction outlined above. Sweden and Italy, in particular, have adopted a so-called "notional defined contribution" (NDC) model, based on individual accounts which accrue according to a notional interest rate.[17] Defined-benefit (DB) systems can also be designed so as to link benefits to all lifetime earnings and contributions, in particular those systems relying on point accumulation. In fact, Börsch-Supan (2005) find that the reformed German pension scheme comes closer to a pure NDC system than the NDC implemented in Sweden. One advantage of NDC systems, though, may be that they make the tight link between contributions and benefits clearer to employees. Although the link may be less tight, the perception of the link by employees can also be high in DB systems such as the French one, where pensions entitlements are related to simple parameters such as the duration of cotisation and the annual average earnings.

Such reforms do not make sense in pension schemes mostly financed out of general taxation, but average effective tax or contribution rates are typically lower – as the public pension system generally guarantees only a minimum income – and they are typically complemented by a mandatory or quasi-mandatory funded second pillars, with a clear link between contributions and benefits.

The link between employers' social contributions and social expenditures: employers' social responsibility

Social protection also benefits employers by boosting workers willingness and ability to work and improving productivity if well-designed. This, in turn, justifies requiring firms to make direct contributions to the funding of social protection (at least in a number of areas). Historically, this kind of consideration has for instance motivated the introduction, by employers themselves, of health insurance schemes in a number of OCDE countries. Moreover, employers' behaviour in terms of workforce management (*e.g.* external *vs.* internal flexibility) has an impact on the materialisation of some so-called "risks" covered by social protection. For instance, there is an increasing consensus on the fact that employers play an important role in the extensive use of early retirement or sickness and disability schemes in a number of OECD countries (OECD, 2003c; and OECD, 2006d). To address this issue, countries have reformed early-retirement and disability schemes and have introduced anti-discrimination legislation, information campaigns, employment subsidies and various specific re-employment or re-integration programmes.

General features of experience-rated schemes. In some countries, reforms have also sought to change employers' behaviour by introducing experience-rated schemes. Broadly speaking, experience-rating consists in linking employers' social security contributions to the firm history as regards layoffs, early retirement, sickness or disability inflows. Employers' contribution rates are individualised in order to reflect the costs incurred by social protection systems as a result of employers' individual behaviours, over a given period of time. The precise calculation of individual employer premiums is quite complex,[18] which may limit employers awareness of the experience-rating system, in particular for small- and medium-size firms.

In any case, individual contribution rates generally vary between fixed minimum and maximum premia, so that experience-rated schemes always encompass a certain degree of risk-mutualisation principle. In turn, this tends to limit their ability to provide desired incentives to employers. That said, employers cannot be held fully responsible for unemployment, early retirement or disability risks. General macroeconomic conditions play an important role as regards layoff decisions, the inflow into disability is – for an

important part – driven by worker-specific risks, and for a number of older workers, barriers to employment also result from insufficient or ineffective training policies, as well as from seniority wage-setting arrangements.

Experience rating of early retirement benefits. In the United States, unemployment insurance (UI) benefits are entirely financed through experience-rating and empirical studies concur that this system reduces employer incentives to make excessive use of temporary layoffs (OECD, 2004b, Chapter 2). Although the United States is the only country to have made experience rating a general feature regulating UI financing, some OECD countries have introduced experience rating in UI systems for older workers. Such schemes may reduce the layoff risk at old age and ultimately, early retirement, as the unemployment spells at older ages tend to mean permanent withdrawals from the labour market. The flip-side of experience-rated systems of UI targeted on older workers is that they may reduce employers' incentives to hire workers above a certain age.

In Finland, unemployment pension benefits paid to workers over 60 years of age are partially experience-rated in companies with more than 50 employees. Employment contracts that have lasted for less than three years and started after the age of 50 incur no experience rating, thus limiting the adverse effect that such a system may have on the recruitment of older workers. In the early 2000s, about three-quarter of the 60-64-year-olds received some early retirement benefits, and almost 30% of these early retirees received unemployment pension benefits. In 2000, the Finnish government increased the liability share of firms in order to constrain early retirement in large companies (see Box 4.3). A recent study by Hakola and Uusitalo (2005) shows that this reform of the unemployment pension benefits reduced the unemployment risk of the older workers by about 16%.

Similarly, in France, when dismissing workers over the age of 50 that had been hired before the age of 45, firms have to pay a "one-shot" special contribution to the UI system – the so-called "Delalande" contribution. Yet, according to recent empirical studies, this measure would have little impact on firings of older workers while its effects on hiring are difficult to evaluate (Behaghel, Crépon and Sédillot, 2004; Bommier, Magnac and Roger, 2003). These studies suggest that workers aged 45-49 face lower re-employment chances but, given the existence of hiring subsidies targeted on workers over 50 years of age (notably, the so-called "*Contrat de retour à l'emploi*"), the extent to which this result is imputable to the "Delalande" contribution is not clear.[19]

Experience rating of work-injury and disability benefits. Not surprisingly, considerable age profiling is apparent in disability benefit programmes and in many countries, disability benefit awards are highly concentrated among people over age 50 (OECD, 2003c). However, countries in which the disability scheme is predominantly used by older workers tend to be countries with large numbers of people on early retirement programmes. This lends some credence to the idea that disability benefits may serve as a route for early retirement in countries where the society as a whole tends to have a negative attitude towards employment at older ages. That said, the experience rating of work-injury and disability benefits poses a number of specific issues, notably as regards the appropriate degree of experience rating and the prospective *versus* retrospective approach of rating:

● Employers have a limited ability to control work-injury risk, and more generally, the disability risk. For an important part, the latter are driven by worker-specific risks, whereas layoffs result more directly from the decisions of employers. Thus, the degree of experience

Box 4.3. **The Finnish reform of the unemployment pension scheme**

While the official retirement age in Finland is 65, the activity rate of workers aged 60-64 is very low. In 2002, 40% of early retirees received disability pension benefits, and 27% received unemployment pension benefits. A worker needs first to be laid off before he can retire with unemployment-related benefits. Those who retire because of unemployment first receive UI benefits and at the age of 60, they become eligible for the unemployment pension benefits. Finally, at the age of 65, they receive old-age pension benefits. Accounting for both the UI benefits and the unemployment pension benefits implies that a worker who loses his job after the age of 55 is entitled to unemployment-related benefits until old-age retirement. This system is commonly known as "the unemployment tunnel". The tunnel creates powerful incentives to withdraw permanently from the labour market up to ten years before the official retirement age.

In order to contain early retirement, the Finnish government implemented two important changes in the unemployment pension scheme in 2000. First, it changed the employer contribution rate to the unemployment pension benefits. The employer contribution rates vary with the age of the worker and the size of the firm, and the contribution rates are partially experience-rated. Before 2000, firms with more than 300 employees paid 50% of the present value of the unemployment pension benefits. The liability share of firms with 50-300 workers increased linearly with the firm size from 0% to 50% of the expected benefits. Moreover, experience rating was more heavily applied to social security contributions for disability pensions than for unemployment pensions in larger firms. Thus, if a large firm wanted to get rid of older workers, it had an incentive to lay-off older workers rather than let them become disabled. The situation was the opposite for the small- and medium-sized companies. After the 2000 reform, contributions for both disability and unemployment pensions were made equal. The new maximum liability share of firms for unemployment pensions was set at 80% of the present value of the expected early retirement benefits, and this maximum applied to firms with more than 800 employees. The liability shares for the smallest firms (with less than 50 employees) were unchanged, and the pension liabilities for the firms with 50-800 employees were adjusted so that the firm share of the benefits increased linearly with the firm size in this range. After the reform in 2000, the pension costs for a firm when a 60-year-old former employee starts to receive an unemployment pension, represents almost four years' pension payments for the largest firms.

The second part of the reform reduced the accrual rates of the unemployment pension benefits. Before 2000, the unemployment pension was calculated almost as if the unemployed had been working up to their old-age retirement age. After 2000, the benefit calculations took the employment history into account only up to the age the employee began receiving the unemployment pension. The reform thus reduced the incentives for early retirement, and the maximum reduction in a pension was 4.0% per annum for all years before 65.

Source: Adapted from Hakola and Uusitalo (2005) and OECD (2004e).

rating should probably be lower for disability than for unemployment insurance. Yet, the appropriate degree of experience rating is difficult to evaluate. Setting the rate is for instance a two-stage process in a number of experience-rated workers compensation schemes implemented in the United States and Canada (Hyatt and Thomason, 1998). In the first stage, firms are categorised into rate groups, which are defined according to underlying risk, so that firms with similar risk profiles are placed in the same group. For example, rate groups can be based on industrial sectors, reflecting the belief that employees in the same sector are exposed to similar risks. In the second stage, the base rate is modified according to the firm's own accident experience.

● The firm's ability to prevent injuries is substantially greater than its ability to reduce claim severity once an injury has occurred. In this respect, making employers directly liable for the first payments of the benefits received by their former employees (as is already the case in a number of sickness insurance schemes), instead of having a complex system of individual experience-rated premiums, allows one to have a more transparent and direct link between workplace safety and compensation costs. The employer knows that every industrial accident will result in a higher compensation bill. The major drawback of such a system is that it provides little or no incentive for firms to control or reduce the severity of injury through rehabilitation or prevention.

● By necessity, experience rating programmes use cost-based measures of accident experience to adjust premiums for individual firms, thus following a retrospective approach. Ideally, from the employer perspective, experience rating should be fully prospective, and based on the full information on the employer's effort to prevent disability insurance costs. In practice, such a setting is not possible, but experience-rated schemes can nevertheless encompass some prospective elements. For example, employers can choose to invest more in prevention in a way that can be verified, thereby decreasing the extent of experience rating.

In the Netherlands, empirical research on the size of hidden unemployment in disability insurance suggests that the disability insurance scheme has been used by employers as an exit route for under-performing workers: about 10% of the disability insurance inflow would be due to redundancy of workers (Hassink, van Ours and Ridder, 1997). In 1998, the government introduced a system of experience-rating in order to curb this tendency (see Box 4.4). In principle, employers bear the costs of the first five years of disability insurance benefits. In 2003, the experience rating incentive has reached its maximum impact, and criticism against this system has grown steadily, as an increasing group of employers had been confronted with substantial increases in their premiums. In parallel, various measures have been introduced as to reduce the potential side-effect of experience rating on the recruitment of persons with an increased risk of ending up in the disability scheme (*e.g.* older persons and disability benefit recipients).

Available empirical evidence suggests that the impact of experience rating on disability insurance inflow has been substantial in the Netherlands (Koning, 2004). More strikingly, the decision of employers to increase preventative activities seems to have been driven mainly by the experience rating system once they had experienced substantial increases in their premium rates. This *ex post* effect of the experience rating system is estimated to amount to a 15% reduction in the disability insurance inflow after one year. Increasing the *ex ante* employer awareness may thus have substantial impact. The way this could be done is not clear, however.

Likewise, the bulk of empirical studies reviewed by Hyatt and Thomason (1998) on experience-rated schemes implemented in the United States and Canada for work-injury and disability benefits strongly suggests that experience rating is associated with a reduction in the incidence of workplace injuries (at the extreme, the estimated impact can even amount to a reduction of about 40%). Evidence of the effects on the severity of claims is however less convincing, as once an injury has occurred, employers have limited ability to rehabilitate workers. Finally, it seems that experience rating induces employers to appeal more often against decisions to grant workers' compensation.

Box 4.4. **Dutch reforms of sickness and disability schemes**

Expressed as a percentage of the insured population, disability insurance enrolment peaked at 16% in the mid-1980s, and since then declined and stabilised at about 13%. At the same time, various reform plans have been introduced. For an important part, these plans have aimed at improving employer incentives. To start with, the sickness benefit programme was privatised in 1996, making employers fully responsible for these costs for the first year of benefit payments. This period was then extended to two years in 2002. Since the disability insurance programme follows after a period of absenteeism, preventative measures on absenteeism may have important implication for disability insurance.

In 1998, employer's incentives were further enhanced by the introduction of an experience-rated system of disability insurance. The calculation of the employer disability risk combines information on the disability costs of the first five worker cohorts and the average wage sum over a five-year period. Individual employer premiums vary between maximum and minimum premiums. For large firms, the maximum premium is set equal at four times the average premium, whereas it corresponds to three times the average premium for small firms. Next, the minimum premiums are set at the level that balances the disability costs with the collected premiums. Since premiums of small firms have a higher probability to be bounded by the maximum, the minimum premium is higher for small firms. In 2002, the (potential) impact of incentives was extended by a more stringent system of gate-keeping. In order to be eligible for a medical disability insurance assessment, both workers and employers have to meet several conditions, so as to convince the benefit administration that disability was unavoidable.

To reduce the potential side-effect of experience rating on the recruitment of persons with an increased risk of ending up in the disability scheme (*e.g.* older persons and disability benefit recipients), several measures have been taken to relieve a new employer of some of the potential costs, either through a reduction of employer contributions or by taking away part of the future risk. Since 2002, employers get various contribution exemptions if they hire a disabled person. In the interests of stimulating employment of older workers, the employer is exempted as of 1 January 2004 from paying the fixed part of the disability benefit contribution for any incumbent employee aged 55 years and over and for all new hires aged 50 and over. The exemption is granted on the condition that the employee was not hired within six months of the end of a previous labour relationship, to prevent misuse.

Initially, the experience-rating system did not cause substantial controversy among employers and policy makers. However, as the incentive became stronger, criticism against it grew steadily. In 2003, the Dutch government responded to this by abolishing the experience rating system for employers with less than 25 employees. The whole system will be abolished as of 1 January 2008, in line with the drastic reform of the disability system that was introduced in 2006 and privatised partial disability schemes. The abolition was requested by the employers, on the grounds that: i) they already pay for two years of sickness and have to supplement the wages of those with a partial but considerable handicap, not admitted to the new disability system; and ii) the public part of the new disability system – *i.e.* the only part that could be subject to experience rating – covers only "irreparable" disability, which employers are unable to influence.

Source: Adapted from Koning (2004) and OECD (2005c).

All in all, experience rating appears to reduce substantially inflow in disability benefits. However, this result has to be qualified by the fact that none of the empirical studies mentioned above are able to determine whether experience rating results in actual reductions in the frequency and costs of injuries, or whether some claims are either not reported or shifted to other forms of disability insurance. This is an area where further research is needed.
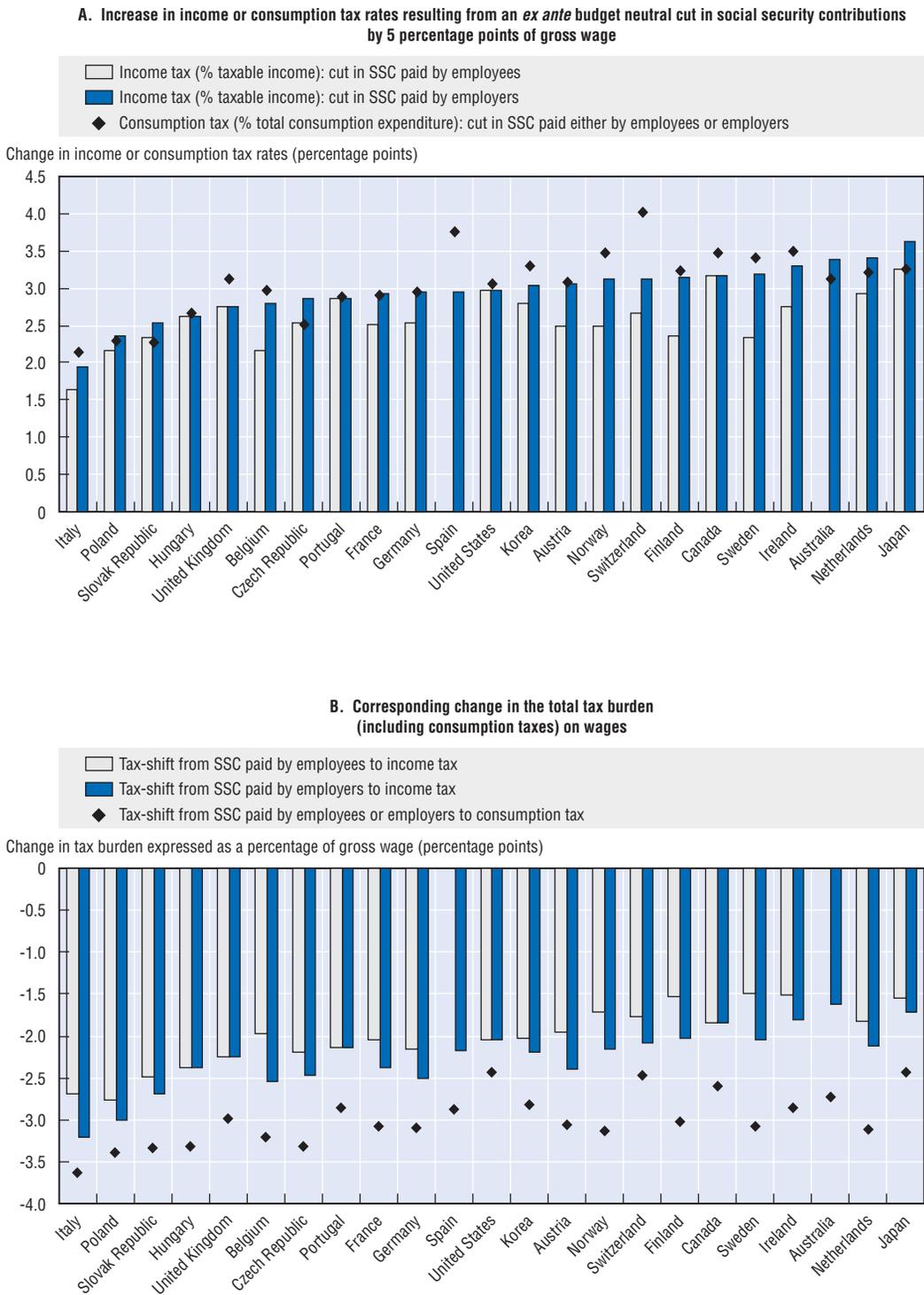
2.3. Switching tax bases

The literature on the effect of the tax wedge on employment generally assumes that payroll, personal income and consumption taxes have broadly similar effects on labour market performance.[20] However, this view – the so-called Invariance of Incidence Proposition – strongly relies on the assumption that the various tax-components of the overall tax wedge have the same structure regarding the size and the type of incomes included in the tax base. In practice, this is not the case, and the formal composition of the overall tax burden on labour may impact on the wage-formation process and employment levels. Potentially, this makes room for reducing the employment impact of the financing social protection through reshuffling labour taxation.

The formal composition of the overall tax burden on labour matters

The larger the tax base, the lower the average tax wedge and the lower the replacement income/wage ratio. For a given tax revenue, broadening the tax base from labour income only to other tax bases would obviously reduce the overall tax burden on labour. While social security contributions mainly weigh on labour incomes, the personal income tax burden is more equally shared between active and inactive persons as well as between labour and capital incomes of households, and all individuals are subject to the same consumption tax rates. In most OECD countries, social security contributions have a smaller tax base than consumption and personal income taxes. Hence, for an *ex ante* revenue-neutral reform, a given reduction in the average social contribution tax rate would require a smaller increase in percentage points in the average tax rates on consumption or income. And ultimately, such tax shifts would reduce the overall tax wedge, which may impact on employment. Moreover, although high tax rates *per se* do not appear to influence levels of undeclared work in international comparisons, shifting part of the tax burden weighing *directly* on labour costs and wages onto consumption expenditures may reduce incentives for under-declaring earnings per employee and increase tax revenues (see OECD, 2004b, Chapter 5).

Figure 4.10 illustrates this size effect of the tax base for 22 OECD countries. Switching 5 percentage points of social contributions to income tax would imply an increase in income tax rate ranging from 1.6 percentage points in Italy to 3.6 percentage points in Japan. If the switch were towards consumption taxes, increases in consumption tax rates would range from a minimum of 2.1 percentage points in Italy to a maximum of 4 percentage points in Switzerland. In general, the income tax base is larger than consumption, and the switch towards income tax thus requires a smaller increase in the income tax rates than in the consumption tax rates. In those countries where employees' contribution are deductible from the income tax, the size effect of a switch from social contributions to income tax is higher when the reduction is made on employee's social contributions than on employers' contributions (because reducing employee contributions increases the income tax base).

Figure 4.10. **Cutting the rate of social security contributions would imply smaller rises of income or consumption tax rates**

A. Increase in income or consumption tax rates resulting from an *ex ante* budget neutral cut in social security contributions by 5 percentage points of gross wage

☐ Income tax (% taxable income): cut in SSC paid by employees
■ Income tax (% taxable income): cut in SSC paid by employers
◆ Consumption tax (% total consumption expenditure): cut in SSC paid either by employees or employers

Change in income or consumption tax rates (percentage points)

B. Corresponding change in the total tax burden (including consumption taxes) on wages

☐ Tax-shift from SSC paid by employees to income tax
■ Tax-shift from SSC paid by employers to income tax
◆ Tax-shift from SSC paid by employees or employers to consumption tax

Change in tax burden expressed as a percentage of gross wage (percentage points)

SSC: Social security contributions.

Source and calculations: See OECD (2007), "Financing Social Protection: the Employment Effect – Further Material", *www.oecd.org/els/employmentoutlook/2007.*

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In terms of tax burden on labour, a tax shift from social security contributions towards the income tax leads to an *ex ante* reduction of the *overall* tax burden on labour ranging from 1.5 to 3.2 percentage points of gross wage. The substitution in France over the 1990s of some social contributions by the CSG, an earmarked tax for social protection weighing on *all types* of households' revenues – with a limited number of allowances and exemptions compared to personal income tax – is an example of such a shift (Box 4.5). *Ex ante* reduction of the overall tax burden on labour ranges from 2.4 to 3.6 percentage points of gross wage in the case of a switch towards the consumption tax and is always larger than for the switch towards income tax. This is due to the fact that only part of the households revenue are consumed, which cushions the effect of the increase in the consumption tax rate. Finally, although not surprising,[21] it is noticeable that the size effect and the *ex ante* reduction in the tax burden on labour generally tends to be higher in countries where the employment rate is relatively low,that is in countries where the issue addressed in this chapter probably matters most. If the reduction of the tax burden on labour improves the employment performance, the *ex post* reduction in the tax burden on labour could even be larger, or alternatively, resources for financing social protection could increase.

Box 4.5. **An example of base broadening of social protection financing: the French CSG**

The Contribution Sociale Généralisée (CSG) was introduced in 1991, initially to finance some family-related social expenditures. At the same time, employer and employee social contribution for pension and health were reduced, especially for low wages. The CSG is a proportional tax, levied at the household level. The CSG applies in principle to all revenues from activity, social transfers, and capital, but some exemptions also applied in the income tax persist (most importantly on the income from some savings instruments). Its current level of 7.5% was reached in several steps and it also now finances part of health expenditures. In 2003, the CSG represented 13.5% of all financing earmarked for social protection, while wage and salaries constituted 65% of the CSG tax base and revenues.

Overall, the substitution of tax bases has had a limited impact on the overall tax burden weighing on labour. Compared with the former financing structure of social protection, these changes would have allowed a reduction of taxes on wages of about 1.1 percentage point, as measured in 2003. However, this has to be qualified by the fact that these changes in the financing structure/system of social protection were not aimed only at substituting one base to the other, but also at increasing tax revenues for social protection (tax revenues increased by about 1%).

Source: Based on Caussat *et al.* (2005).

A word of caution is necessary when considering these results:

● As regards the switch towards the income tax, they rely on the assumption that the rise in the average rate for personal income tax applies uniformly to all types of households' revenues, that is labour and capital incomes as well as pension, unemployment and disability benefits. Hence, they provide a lower-bound estimate of the rise in the average rate of personal income required to compensate for the cut in social contributions. Indeed, capital income is often taxed at a lower rate than labour income and in all OECD countries, personal income tax systems encompass a large range of tax allowances and tax exemptions. The latter tend to reduce the efficiency of the tax system and over the

past two decades, most countries have reformed their personal income tax system in order to broaden the tax base, thus lowering tax rates (for a comprehensive report on reforms of personal income tax systems, see OECD, 2006c).[22]

● More generally, reducing the tax wedge by broadening its tax base may reduce the *direct* impact of labour taxation on employment but does not reduce *per se* the *overall* incidence of the *total* tax burden weighing on households' incomes on labour market performance. In other words, the above results are of a partial equilibrium, first-round nature. They take no account of a number of possible second-round effects. The latter may for instance result from changes in consumer prices, as well as from changes in individual behaviours as regards wage bargaining or economic decisions that are not directly related to the labour market, such as savings and investment decisions.

Regarding wage outcomes, broadening the tax base for financing social protection may increase the opportunity cost of not working – that is the wage/replacement income ratio – thus weakening workers position in the wage negotiation. A switch from social security contributions towards consumption taxes would indeed transfer part of the tax burden weighing on wages towards replacement incomes, thus making it possible to reduce wage costs while increasing the financial incentives to work (Bovenberg, 2006).[23] These effects are likely to be lower in the case of a switch towards the personal income tax, due to its progressive structure (in that low replacement incomes are not subject – or at reduced rates – to personal income tax). Moreover, personal income tax may have mixed effects on the wage/replacement income ratio and labour supply in countries with joint income taxation that discriminates by marital status. For instance, Caliendo, Gambaro and Haan (2007) show that joint taxation in Germany leads to strong negative labour supply incentives for secondary earners and to positive incentives for first earners in married couples, relative to single filers.

Pro and cons of the various bases: a synthesis. Social security contributions are often seen as being less detrimental to employment than other taxes not earmarked for the financing of social protection. The main advantage of social contributions is to open individual/households rights to social insurance schemes, which makes the tax/benefit linkage more obvious than for the other direct and indirect taxes weighing on wage income. This view must be qualified, however, as health and pension payments constitute the bulk of social security contributions in virtually all OECD countries (see Figure 4.11):

● While a number of health expenditures are related to work, as in the case of work injury and sickness benefits, a substantial part, if not the main part, of these expenditures funds benefits and public services that benefit households in general, not employees only. In other words, a large part of the beneficiary population contributes little to their funding in countries where social contributions represent an important resource for the financing of social expenditure. For instance, few countries charge contributions on pension income for health and long-term care insurance or for survivors' insurance (OECD, 2005b). From this perspective, a shift from health social contributions towards income or consumption taxes would bring the tax base more in line with the beneficiary population and would, on average, reinforce the tax/benefit linkage of (remaining) social security contributions levied on labour income.

● Public pension expenditures are projected to increase in line with ageing populations. This raises the question as to what extent pension social contributions should increase in line. Indeed, dependency ratios are projected to rise substantially in most OECD

Figure 4.11. **Structure of social security contributions, 2005**

Social security contributions for a single worker without children at 100% AW, percentage of gross wage
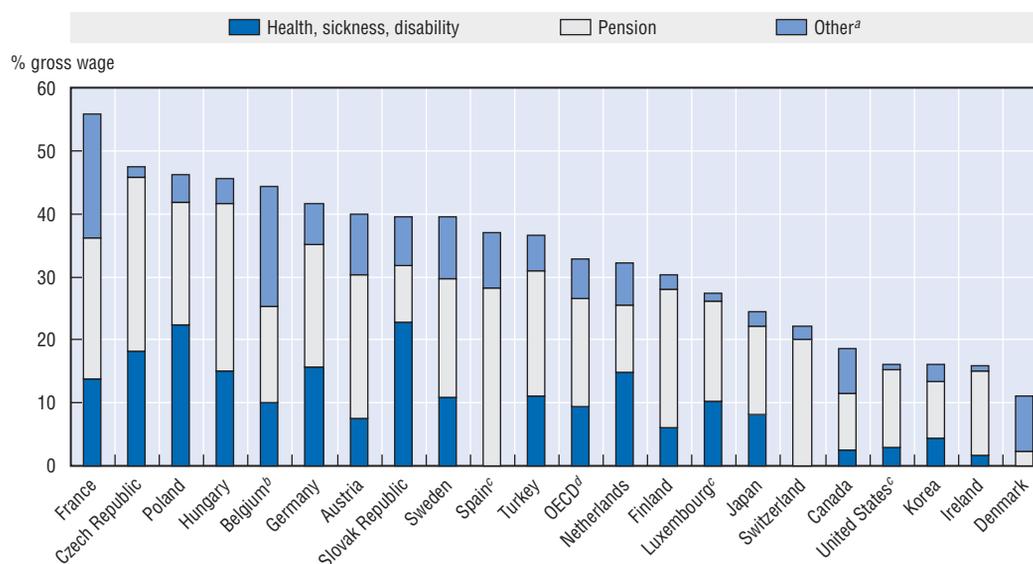
AW: Average wage.
a) The "other" category mainly includes unemployment insurance and work-related illness and accident insurance.
b) The "other" category includes family allowances (6%) and wage restraint (6.6%).
c) Pension includes disability. For Spain, it also includes health.
d) Average for countries shown except Luxembourg, Spain and the United States.

Source: OECD (2005d), *Taxing Wages, 2004-2005*, Paris.

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countries (OECD, 2006d), which will widen the gap between the tax base for pension contributions and the beneficiary population. In PAYG pension systems, the perceived value of tax counterparts and its incidence on the wage-formation process may depend, for a substantial part, on the degree of altruism between generations in each society. The extent to which this *structural* degree of altruism may evolve in line with population age structure is not entirely clear, notably in the present context of *marked* population ageing, since demographic shocks, as with most shocks, in part encompass a *temporary* component. Thus, the extent to which pension contributions – instead of income taxes or consumption taxes which would also concern pension revenues – could be used to insure the sustainability of pension systems is an open question and the answer is likely to vary between countries.

All in all, given their present form, transferring part of social contributions towards income or consumption taxes may alleviate the potential distortive effect of the overall tax burden weighing on labour income. Yet, the extent to which consumption taxes may be more "employment-friendly" than personal income taxes is not entirely clear and remains an empirical question. Both of them have relatively broad tax bases (at least potentially in the case of personal income taxes), in line with the beneficiary population as regards a number of areas of social protection expenditure. The major side effect of consumption taxes lies in the fact that they will result in consumer price rises and generate upward wage pressure, while their positive impact on competitiveness remains uncertain (Box 4.6). On the other hand, due to their progressive structure, income taxes should not create much wage pressure. But this is an empirical question depending on the wage-setting process and union bargaining power, both of which will differ across countries and over time.

> ### Box 4.6. **Special features of consumption taxes**
>
> Beyond their potential distortive effects on domestic product and labour markets, taxes may impinge on international competitiveness. And in most countries, there are fears that non-competitive tax systems induce physical and human capital to move abroad. From this perspective, consumption taxes are often viewed as a better option than social security contributions or personal income taxes that directly weigh on households' incomes. Along this line, Germany has recently reduced contributions for the unemployment insurance by 2 percentage points (from 6.5 to 4.2) while at the same time increasing the standard consumption rate from 16 to 19%. Although this substantial hike pursues broader policy objectives of budget consolidation than solely reducing direct labour taxation, it is expected to finance one third of the cut in unemployment insurance contributions.
>
> As consumption taxes are levied on imported goods but not on exported goods (while the opposite is true for social security contributions), such a tax shift may raise competitiveness if labour costs decrease as a result and domestic producers cut their sales prices by the amount of the cost relief. This gain of competitiveness may boost growth and employment, at least temporarily. However, a standard prediction of the international trade literature is that consumption taxes do not impact on either exports or imports – except in the very short-run – insofar as real exchange rate adjustments tend to offset the effect of consumption taxes on the relative prices of domestic and foreign goods. And from an empirical point of view, consumption taxes do not appear to influence trade performance in international comparisons (Desai and Hines, 2002; and Keen and Syed, 2006). Yet, in the context of a monetary union such as the euro area, raising consumption taxes in an individual country may still boost the competitiveness of the country in question *vis-à-vis* its partners. But the other member countries are likely to view such a measure as highly non-co-operative.
>
> Moreover, (after-tax) domestic consumer prices are likely to increase as a result of a hike in consumption taxes, which in turn would deter domestic consumption and generate upward wage pressure, thus reducing the potential beneficial effect on employment. Statutory or contractual minimum-wage levels, as well as some government transfers such as social assistance, might be progressively adjusted in line with prices in order to maintain their purchasing power, even if there is no direct institutional link between social assistance or minimum-wage levels and price developments. In turn, this would both reinforce general wage pressure and raise public expenditures (as a result of increased transfer incomes per beneficiary and possibly wage increases in the public sector).

Finally, and although general redistributive issues go beyond the scope of this chapter, it is important to keep in mind that the choice between income or consumption taxes is also determined by societal preferences. Income and consumption taxes contribute to shape the redistributive pattern of any tax/benefit system, but in opposite directions: consumption taxes tend to weigh less heavily on the richest while personal income taxes redistribute income towards the poorest (see Förster and Pearson, 2002; and Immervoll *et al.*, 2005).

Some empirical evidence. Available evaluations of the labour market effects of budget neutral reshuffling of labour taxation are mainly based on simulation models. The main advantages of macro-econometric or CGE models is that they allow for a general equilibrium treatment of tax reforms. That said, evaluation results are very sensitive to the underlying assumptions, notably as regards the modelling of the wage-formation process, the extent to which benefits are indexed on consumer prices and wages, and the international openness

of the economy. And indeed, short-term results vary substantially across and within studies, depending on the selected baseline assumptions (see Annex 4.A1, Table 4.A1.2). In the long-run, the employment outcomes of a budget neutral reshuffling of labour taxation are found to be either slightly positive or slightly negative. But overall, these studies suggest that such reforms would have little impact on labour market performance (yet, in most cases, long-run outcomes are almost fully determined by the underlying modelling assumptions).

In addition, simulation models have the major drawback of relying on a too synthetic representation of labour taxes, which reduces their relevance in assessing the employment effect of a switch from one tax base to another. They generally do not fully, if not at all, account for the progressive structure of personal income tax, the linkage between taxes and benefits and the fact that different taxes have different impacts on the wage/replacement income ratio. In sum, these models tend to offer a more accurate view of the indirect effects of labour taxes on employment than of their direct effects.

As regards econometric evaluations, most studies on the employment effect of labour taxation use the overall direct tax wedge variable, based on the hypothesis that the precise structure of labour taxation is a second order issue. Empirical evidence on the employment effect of the formal composition of the overall tax wedge is relatively scarce and this is an area where further research is needed. Existing studies suggest that employers' social contributions impinge more heavily than taxes on employees (social contributions and personal income tax) on the wage-setting process and/or unemployment (see *e.g.* Koskela, 2001; Graafland and Huizinga, 1999; and Muysken, van Veen and de Regt, 1999). These results stand in line with the fact that the progressive structure of personal income tax is often found to moderate wage claims. In most cases, these studies do not include consumption taxes and thus, they do not discriminate between income and consumption taxes.

The estimates made for the purpose of this chapter – for 19 OECD countries and over the period 1982-2003 – offer the same broad picture (see Annex 4.A2). On average, direct labour taxes, taken together, tend to have a detrimental (and statistically significant) effect on unemployment. But this effect appears to be entirely driven by social security contributions. Indeed, while also positive, the estimated coefficients for income taxes are never statistically significant. And the same result holds for indirect taxation, the positive estimated coefficients for consumption taxes being not statistically different from zero. Finally, employers' social contributions seem to impinge more heavily on unemployment than employee's contributions (the difference is not statistically significant, however). And overall, these results hold over both a short-term (annual data) and a medium-term (three-year average data) perspective.

Turning to other tax bases

Environmental taxes.   Targeting value-added tax hikes on specific goods would obviously reduce the magnitude of their side effect on prices. However, this would also reduce the associated additional tax revenue and therefore, the scope for cutting direct labour taxation. Unless there are other kinds of positive externalities from taxing more heavily the consumption of specific goods or inputs, targeted hikes in value-added taxes would not necessarily constitute a better option than a general increase in consumption taxes.

In this respect, compared with other value-added taxes, environmental taxes have the advantage to deliver a first dividend in terms of an improved environment. Actually, the need to better internalise environmental externalities should always be the first condition to introduce an environmental tax. But when direct taxes on labour are judged to affect

employment negatively, it may be appropriate to use the revenues from environmental taxes to cut labour taxes and improve the efficiency of the tax system – thereby giving rise to a so-called "double dividend".

All member countries have introduced environmental taxes to a varying extent and some countries have implemented more comprehensive so-called "green tax reforms". Denmark, Finland, Germany, the Netherlands, Norway, Sweden and the United Kingdom have implemented such reforms, recycling the revenue from new environmental taxes to reduce other taxes (Table 4.1). Tax cuts have focused on labour taxes, especially employers' social security contributions but also on the personal income tax. Tax shifts undertaken have been relatively small, except in Sweden in 1990 and Denmark in 1994, where it concerned 2.5 and 6% of the tax revenues, respectively. In principle, such tax shifts may allow some reduction in unemployment (see Box 4.7). *Ex post* evaluations of the green tax reforms implemented are scarce, and do not always isolate employment effects from more general macroeconomic effects. In the case of the United Kingdom, while the environmental effects seem to have been effective, the small size of the tax shift is found have generated very small macroeconomic effects (Cambridge Econometrics, 2005).

Environmental taxes represented about 2.5% of GDP in 2004 on average in the OECD and about 5.5% of overall tax revenues.[24] Room remains in many OECD countries to increase them, as for example industrial consumption of energy is still very often much less taxed than households' consumption and heavy polluters often get exemptions. Carbon taxes may also play an important role in climate change mitigation. Energy consumption is probably the only base for an environmental tax that might provide a sufficiently large tax base, as other tax bases are often rather narrow.

There are limits of a political-economy nature to the size of the shift that can be realised with environmental taxes *per se*. Part of the revenues generated by the environmental tax are often earmarked to specific uses, often to compensate polluters in some way (while hopefully maintaining the appropriate price incentives) from the costs associated with the tax, reducing

Table 4.1. **Green tax reforms**

	Start year	Taxes raised on	Tax cut	Magnitude
Denmark	1994	Various[a] CO_2 SO_2	Personal income tax Social security contributions Capital income	Around 3% of GDP by 2002, or over 6% of total tax revenue
Germany	1999	Petroleum products	Social security contributions	Around 1% of total tax revenue in 1999 and 1.8% in 2002
Netherlands	1996	CO_2	Corporation tax Personal income tax Social security contributions	0.3% of GDP in 1996, or around 0.5% of total tax revenues in 1999
Norway	1999	CO_2 SO_2 Diesel Oil	Personal income tax	0.2% of total revenue in 1999
Sweden	1990	CO_2 SO_2 Various	Personal income tax Energy taxes on agriculture Continuous education	2.4% of total tax revenue
United Kingdom	1996	Landfill	Social security contributions	Around 0.1% of total tax revenues in 1999
	2001	Energy (for industry)	Social security contributions	0.2% of total tax revenues in 2002 for the climate change levy

a) Gasoline, electricity, water, waste and cars.
Source: OECD (2001a), updated by the Secretariat based on Kohlhaas and Bach (2005), *Environmental Accounts – UK National Statistics*, and OECD Revenue Statistics database.

Box 4.7. **Green tax reforms and unemployment**

Contrary to most taxes, which are aimed at raising revenues and are all the more efficient that they do so without changing behaviour very much, environmental taxes are – or should be – designed to change behaviour so as to reduce environmental externalities. Yet, as a side effect, environmental taxes also raise revenue, which can be used to reduce other taxes. Revenue-neutral green tax reforms are sometimes advocated on the basis that they can generate a "double dividend": the first dividend in terms of more effective environmental protection and the second reflecting the efficiency gains arising from the reduction in other distortionary taxes, *e.g.* higher employment when direct labour taxes are reduced.

The likelihood of such a double dividend has given rise to a large body of theoretical and empirical (mostly simulation models) literature – see *e.g.* Schöb (2003). In the mid-1990s, a number of economists – *e.g.* Bovenberg and de Mooij (1994) and Parry (1995) – have questioned the double-dividend hypothesis, arguing that the positive impact on employment that could be obtained from reducing distorting labour taxes would be reduced and even offset by the interaction effect between the new environmental tax and the remaining distorting labour taxes.

In fact, replacing labour taxes with environmental taxes is quite similar in principle to switching from labour taxes to consumption taxes weighing on specific goods, and the effects on employment – or the conditions for such effects to materialize – should thus be quite similar. Indeed, by raising the cost of production in the affected industries, environmental taxes give rise to higher prices of output in these industries and a higher price of consumption goods. In a competitive framework, in particular with market-clearing wages, this would imply a lower real wage and a lower labour supply. Environmental taxes could thus exacerbate rather than alleviate the pre-existing distortions caused by labour taxes.

But the double-dividend issue tends to be particularly topical in countries experiencing high levels of unemployment, for which perfectly competitive labour markets are not the appropriate framework for analysis. Subsequent studies, assuming imperfect competition on the labour market and sometimes also on product markets, are generally more positive on the possibility to generate a double dividend. For example, Koskela and Schöb (1999), using a model with endogenous wage negotiations between trade unions and firms, find that a revenue-neutral green tax reform alleviates unemployment by shifting the tax burden away from workers towards the unemployed. Brunello (1996) and Carraro, Galeotti and Gallo (1996), on the other hand, find that the employment dividend may vanish in the long-run if trade unions succeed in raising the after-tax real wage in line with the cut in the labour tax rate. Schöb (2003) argues that this should not be the case if the replacement income is not strictly proportional to wages, *i.e.* if part of the income of the unemployed is not related to wages, as is likely to be the case for welfare transfers other than unemployment benefits.

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the amounts available for other tax cuts. In fact, worries that environmental taxes would harm the competitiveness of energy-intensive sectors have also limited their use.[25] In addition, since 2000, higher world prices for oil and the prospects that this may be a long-run trend – as well as growing popularity of non-fiscal instruments such as emissions trading – seem to lead to reduced appetite for additional environmental taxation (European Commission and Eurostat, 2006). Indeed, in the European Union, the implicit tax rate calculated for energy (in euros per ton of oil equivalent) shows that taxation has been declining on average since 1999, due to large decrease in some large countries, notably Italy, France and Spain, offsetting increases in the majority of other countries (Figure 4.12). This is also reflected in a decrease of

Figure 4.12. **Real implicit tax ratio on energy (energy tax revenues divided by final energy consumption)**

Euro per ton of oil equivalent, deflated with final demand deflator
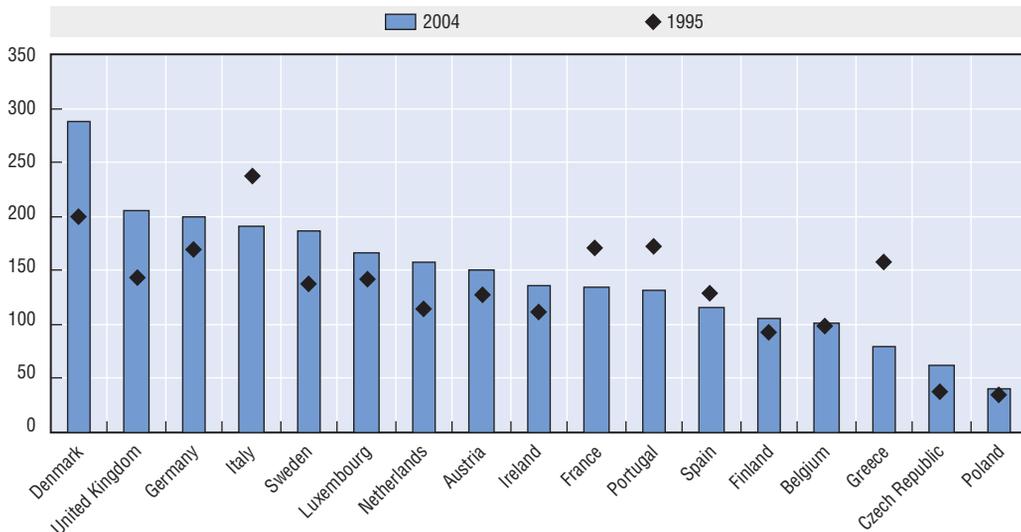
environmental tax revenues both in relation to GDP and as a share of total tax revenues. This may change, however, if the growing prominence of the climate change issue in the political debate translates into action. In particular, taxes remain the most efficient instrument to curb carbon emissions from diffuse sources, such as transport, which, contrary to emissions from other sources, are continuing to increase at very high rates (according to the 2006 report of the European Environment Agency, transport emissions are compromising the achievement of Kyoto objectives for Europe and individual EU member countries).

Taxing capital rather than labour?   If direct taxes on labour income are thought to be too important, capital is the other obvious candidate with consumption as an alternative tax base. Capital income takes many forms, such as dividends, interests, capital gains, corporate profits, the value of housing services enjoyed by owner-occupiers, etc. and all can be taxed. However, there are some limits to the use of taxes on capital by governments, as they may reduce investment and growth, and thereby cut employment rather than increasing it.

This is especially the case for *source-based taxes on capital income, i.e.* taxes levied in the country where capital income is produced, such as the corporate income tax but also source-based taxes on value added (which weigh both on labour and capital income at the firm's level). Offsetting a reduction in employers' social contributions, for example, by an increase in corporate income tax in an economy with high unemployment may reduce unemployment in the short-run, but it may in some case increase the cost of capital,[26] which, in an open economy with international capital mobility, would also reduce domestic investment in the longer run. To the extent that investment is driving innovation, this could also have long-run negative repercussions on productivity, growth and thus employment. In short, the short-run substitution of capital by labour induced by the change in the relative factor costs maybe partly or wholly offset by its effect on investment and growth.[27] A tax levied only on non-reinvested profits could have a lesser negative effect on investment.

Alternatively, an increase in corporate income tax may reduce not investment, but the tax base itself, as firms try to escape taxes (via transformation of profits into interests or salaries, shifting to affiliates located abroad, transfer pricing, etc.).

As noted above, the mobility of capital plays an important role in the potential detrimental effect of source-based taxes on capital income on investment. Obviously, capital mobility is not perfect, but it is higher than that of labour, has been increasing with the financial liberalisation that has taken place in most OECD countries over the past two decades and the implementation of the EU monetary union, and is likely to continue increasing in the future. When it comes to foreign direct investment (FDI) flows, tax differentials are indeed found to play a role in the decision of where to invest (Bénassy-Quéré, Fontagné and Lahrèche-Révil, 2003; Gordon and Hines, 2002), and, in an increasingly globalised economy,[28] this has become a concern for governments when setting corporate income tax rates, especially in small open economies. Besides, financial companies, which have greater flexibility in responding to tax incentives, tend to account for an increasing share of corporate activities, making it more difficult for governments to use corporate income taxes to generate tax revenues (Auerbach, 2006). However, other factors such as potential demand, infrastructure, the qualification of the workforce, natural resources, and possible agglomeration effects are also found to be determinant for investment location decisions, which suggests that "large" countries can impose higher taxes rates than "small" ones. Bénassy-Quéré, Fontagné and Lahrèche-Révil (2003) also find that countries with low taxation have more room for manoeuvre than those where taxes are already high.

In practice, the dominant trend in corporate income taxation across OECD countries has been a move towards lower statutory tax rates accompanied by a base broadening (reduction in deductions and exemptions),[29] and *effective* tax burdens on profits are likely to have fallen (De Kam and Owens, 1999). As to switching the base of taxes financing social protection from labour to source-based capital income, just one country, Italy, replaced part of the social contributions by a tax weighing on the net value added of firms, *i.e.* on labour costs, profits, interest payments and rents less some capital depreciation (Box 4.8). But this was part of a more wide-ranging tax reform which overall significantly reduced effective tax rates on corporate capital income. Substituting a source-based tax on the net value-added of enterprises for part of the social contributions is also one of the options envisaged in France for a possible reform of social protection financing. Most evaluations to date concur that the effect on employment would be relatively small in the short-run – due in large part to the small size of the reduction envisaged in employers social contributions (2.1 percentage points) – and quasi nil in the long run, while it would harm investment and growth.[30] However, evaluations rely on simulation models and are thus very dependent on some assumptions; in the case of the long-run scenario, for example, the assumption of perfect mobility of capital explains the absence of effects on employment.[31]

On the other hand, more room is likely to remain for increasing the contribution of *residence-based taxes on capital income* of individuals or households – or taxes on savings. Indeed, residence-based taxes on capital income, levied only on (the return to) the wealth owned by domestic residents, regardless of whether it is invested at home or abroad, as for example personal income taxes or wealth taxes, are much less likely to affect domestic investment and growth than source-based taxes. In theory, with perfect mobility of capital, an increase in taxes on savings would reduce the level of domestic savings, but would leave domestic investment unaffected, as capital imports would increase. In practice, there are two main qualifications to this (Sørensen, 2006). First, in the absence of systematic international exchange of information

> ### Box 4.8. **An experience of switch from social contributions to taxes on firms' value-added: the Italian IRAP**
>
> IRAP (*imposta regionale sulle attivita produttive*), the regional tax on business activities, a 4.5% tax on net value-added of businesses and self-employed, was introduced in 1998. As a counterpart, a social contribution earmarked for health expenditures was eliminated, bringing the overall social contribution rate down from 46.4% to 34.1%. A local tax on profits and a wealth tax on the firm's net worth were eliminated, at the same time as a two-tier system of corporate income taxation was introduced. Overall, the statutory tax rate on profits was reduced by about 10 percentage points (Bordignon *et al.*, 2001). The aim of the tax reform was mainly to rebalance tax incentives towards equity (instead of debt) financing and reduce the incentives for tax avoidance (in particular by large multinationals through transfer-pricing mechanisms) and tax evasion (mostly by small businesses). While the reduction in the social contribution rate led to a significant fall in the tax wedge measures, this is partly artificial since labour costs represented about 67% of the IRAP tax base, but are not included in the wedge.*
>
> The overall effects of the reform on employment have probably been small. Gregorelli *et al.* (2003) found that the reform encouraged a more intensive utilisation of the existing labour force instead of new hirings. The reason is that, compared with the local tax on profits which was eliminated, a tax on the value added of firms does not allow to deduct operating costs associated with new jobs.
>
> * IRAP revenues are classified as "other taxes paid solely by business" (6100 category) in the OECD tax revenue statistics and thus not included in the tax wedge.

among tax authorities, governments cannot effectively monitor a taxpayer's personal wealth invested abroad – and its associated income – and thus bring all foreign-source capital into the tax net of residence countries. Despite progress in co-operation, including through the OECD initiative to counter "harmful tax practices", wealthy investors are still able to escape residence-country tax by hiding away their wealth in foreign accounts. This effect is nevertheless moderated by the important home bias remaining also in portfolio investment due mainly to information costs and transactions costs (Faruqee, Li and Yan, 2004). Second, capital mobility is not perfect and some companies, in particular small unquoted domestic companies, may not have access to international finance, so that a rise in residence-based taxes on capital income may increase their cost of finance and reduce their investment.

Overall, reforms of current capital income taxation at the household level aiming at broadening the base by reducing preferential treatment of specific forms of savings could serve the objective of improving the efficiency of tax systems while at the same time increasing the tax revenues from capital income and thus allowing to reduce taxes on labour. This is especially the case in the two following cases:

● First, mandatory and voluntary pension plans very often receive favourable tax treatment. The main purpose of these provisions is to avoid "moral hazard" of workers who may otherwise be tempted to consume too much of their earnings during their working life and lapse into poverty or depend on the social safety net once they retire and ease the transition from pay-as-you go financing to pre-funding in countries with severe ageing problem (OECD, 2001b). However, this tax treatment is costly – Yoo and de Serres (2004) estimated the overall budgetary costs to be greater than 1% of GDP in a majority of the countries they studied – and poorly targeted, as it also benefits groups whose prospective pension is well above the social safety net.

● Home ownership is another area often favoured by tax systems, which goes against the neutrality principle and where gradual reforms could prove beneficial (OECD, 2001b). Removing allowances in place in a large number of countries on capital gains might also increase efficiency while improving equity (Joumard, 2001). Finally, in a number of OECD countries, property taxes may be under-used. Real property in particular is a tax base with few risks of distortions since it is amongst the least mobile of all potential tax base. Real estate taxes are also difficult to evade and can easily be designed to be progressive (Van den Noord and Heady, 2001). This makes them one of the most equitable and efficient tax instrument. While important in Canada, France, Japan, the United Kingdom and the United States, recurrent real property taxes represent a very small share of overall tax revenues and GDP in a number of EU countries, in particular Austria, the Czech Republic, Germany, Hungary and the Slovak Republic, as well as in some Nordic countries, such as Finland and Norway (Figure 4.13). In general, however, real property taxes are raised by local authorities. Financing a reduction in social contributions by an increase in property taxes would thus require a corresponding reduction in the transfers from central to local governments (*i.e.* a modification of the institutional arrangements for local governments financing). It would also require adjusting the valuation rules used to estimate the tax base in a number of countries where they are out of date.[32]

Figure 4.13. **Recurrent taxes on immovable property,[a] average 2002-04**
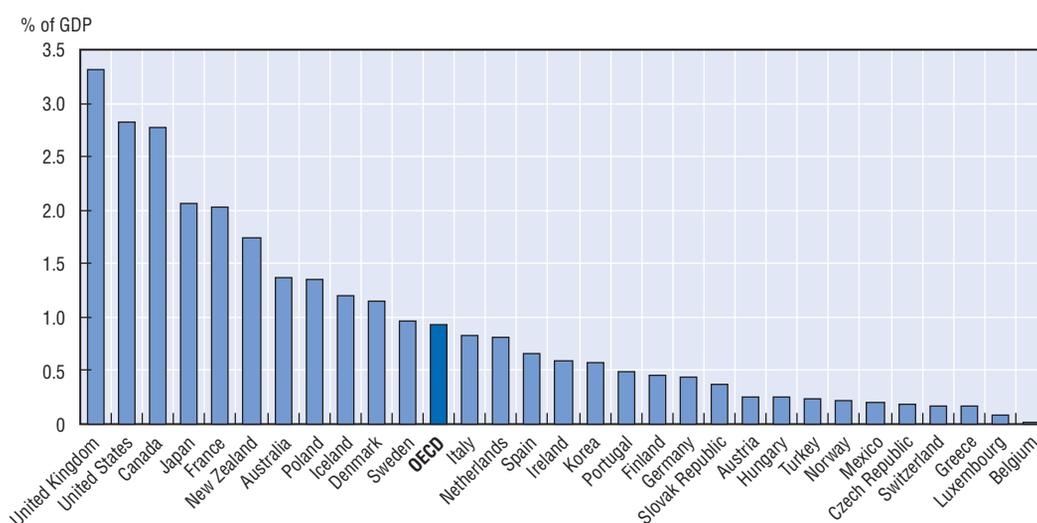
a) Item 4100 of the OECD Revenue Statistics database.
Source: OECD Revenue Statistics database.

StatLink ᴍˢᴴ *http://dx.doi.org/10.1787/024286336320*

Conclusion

This chapter suggests that the extent to which public social protection is financed via social contributions, as opposed to general taxation, matters for employment. More specifically, there are grounds for funding public social protection schemes which have a strong collective dimension (*e.g.* health) through general taxation. By contrast, social contributions should be used to fund schemes more closely related to labour market status (*e.g.* unemployment insurance or pension schemes). Besides, different options exist as to better link social contributions to their benefit counterparts. One approach is to ensure

that pension rights increase in line with the amount of contributions. Introducing some degree of experience rating in the financing of unemployment insurance or sickness and disability schemes is another possibility.

Clearer policy recommendations cannot be drawn on the basis of these findings, however. For instance, among general taxation, which taxes could constitute the best alternative to social contributions remains an open question. Addressing this issue would require a quantification of the employment effects of the various possible tax reshufflings, taking into account both their direct and indirect effects on employment and growth, as well as budget outcomes. This is an area where further work is needed. In this respect, macroeconomic models constitute a useful device. This chapter suggests, however, it would be crucial for such models to take into account the wage formation process and the structure of taxes by main group (*i.e.* going beyond simple average tax rates). Indeed, the employment effects of any given tax reshuffling depends on a number of design factors which are often ignored in macroeconomic models, namely: *i)* the progressivity of the different funding mechanisms; *ii)* their precise incidence on replacement incomes; and *iii)* their detailed impact on the wage-setting process. This is especially important since the various funding mechanisms that can be used to finance social protection differ on all three grounds.

Finally, the structure of the financing of social protection may have strong distributional implications. For instance, consumption taxes tend to weigh more heavily on the poorest households, while income taxes tend to compress income distribution. Taxes on capital income are also more equitable. Thus, the distributional consequences of the various possible tax reshufflings would also need to be assessed before drawing strong policy recommendations.

Notes

1. For a definition of social protection and information on data sources, see Annex 4.A1 in OECD (2007).

2. Differences across countries are nevertheless reduced when looking at *net* social expenditures (see Figure 4.A1.1 in OECD, 2007). Indeed, as shown by Adema and Ladaique (2005), a comparison of *gross* social spending does not provide a full picture of the collective social effort across countries, as it neglects impacts that the tax system can have on the value of social expenditures. On the one hand, governments can levy direct taxes and social contributions on cash transfers, as well as indirect taxes on the consumption made out of these transfers, which will reduce the amounts finally spent by governments. On the other hand, governments often pursue social policy through the tax system, by providing tax incentives that can be similar to cash benefits (*e.g.* child tax allowances) or aim to stimulate the provision of private social benefits (*e.g.* favourable tax treatment of health insurance provided by employers and favourable tax treatment of private pension plans), which constitute additional expenditures.

3. Pension benefits constitute a major part of private social spending everywhere, but tend to be most important in countries where the level of public pension benefits is comparatively low (the United States, the United Kingdom, Canada, the Netherlands, and Australia). Japan and Switzerland – two countries already at an advanced stage of the ageing process – are exceptions, as they have both important public and private pension spending. Public health expenditure, comprised between 5 and 7% of GDP for all but Korea and Mexico, is much more similar across countries than public pension expenditures. When taking into account private social expenditure for health, however, the United States stands out, with total social expenditure on health reaching 12.5% of GDP, almost double the 25 OECD countries average.

4. Both projections are based on a cohort approach with constant policies on labour force participation rates. Labour productivity growth is assumed to converge linearly from the initial past rate to 1.75% per year by 2030 in all countries except former transition countries and Mexico where it converges only by 2050. Population projections are those gathered by the OECD Directorate of Employment, Labour and Social Affairs from national sources.

5. The pensions projections were done using the models of national authorities, based on labour force projections following the same cohort methodology as the OECD, unemployment is expected to converge towards the 2008 estimates for the NAIRU by the European Commission and labour productivity is assumed to converge between 2020 and 2030 towards the 1.75%, the same level as in the OECD health spending projection, and stay there afterwards. See *http://ec.europa.eu/ economy_finance/publications /european_economy/2005/eesp405en.pdf, for more detail on the assumptions.*

6. General taxation is understood here as taxes not earmarked for social protection.

7. In this chapter, the average tax wedge is generally measured on the basis of actual taxes (*i.e.* through implicit average effective tax ratios). In addition, statutory tax rates are used in order to estimate tax wedges for different income levels of workers (this data come from the OECD Taxing Wages database). See Annex 4.A2 in OECD (2007) for more details.

8. Due to data availability, this is the only measure of progressivity that could be calculated.

9. France is a case in point: the budgetary cost of general tax cuts at low-wage level exceeds public expenditures on active labour market programmes (Remy, 2005).

10. For more details, see OECD (2003a, Chapter 3).

11. For instance, according to employer surveys in the Netherlands, between 20 to 60% of new recruits would have been hired without employer tax cuts (see OECD, 2003, Chapter 3).

12. The elderly and the chronically-ill are those drawing most on health benefits.

13. The degree of redistribution may vary across the type of schemes, according to the underlying logics of social protection – inter-temporal wage transfers for pensions; replacement income for unemployment benefits, which is also a sort of deferred wage but more of an insurance nature; public goods, for health; and assistance to fight poverty and ensure a minimum income, such as for minimum subsistence incomes or a minimum old-age pension. It varies also across countries, reflecting the historical construction of institutions and reflects national social choices.

14. The economic literature on the effect of the perceived quality of welfare benefits on employment, although potentially highly relevant, also seems to be very scant.

15. For a definition and discussion of the concepts of actuarial fairness and actuarial neutrality and a clarification of their relevance in the pension debate, see Queisser and Whitehouse (2006).

16. Previous research on Chile was not able to separately identify these effects either.

17. For more details on the reforms in Italy and Sweden, see OECD (2003b) and OECD (2004c).

18. See for instance, the experience-rated system of unemployment insurance in force in the United States, described in OECD (2004b, Chapter 2).

19. Moreover, there were a number of possibilities for firms to be exempt from the Delalande contribution, and many firms availed from these legal possibilities and "by-passed" this contribution (see OECD, 2005e).

20. For a survey of this literature, see Bassanini and Duval (2006).

21. If employment rates are low, it is likely that the labour tax basis will be low relative to income tax basis and consumption.

22. Broadly speaking, efficient tax systems seek to minimise tax-induced distortions. As a first consideration, efficiency may be achieved by broad tax bases and small differences in tax rates that can applied to different taxes. Indeed, special tax treatment for certain types of income (fringe benefits, owner-occupied housing, capital gains, pensions, etc.) tends to increase the compliance and administrative costs, and may thus reduce tax compliance and tax revenues. Simplicity and transparency of the tax rules may also promote the overall efficiency of the system.

23. A shift from employers' to employees' social security contributions could have similar effects insofar as some of existing replacement incomes are subject to employees' but not to employers' social security contributions (*e.g.* unemployment benefits in a number of countries).

24. Weighted average for the OECD. *Source:* The OECD/EEA database on instruments used for environmental policy. The main increase took place in the first half of the 1990s and was driven mainly by above-average increase in energy taxes.

25. For a discussion of the political economy of environmentally related taxes, in particular regarding these competitiveness issues, see OECD (2006e). Fundamentally, although there might be ways to cushion their impact, and/or phase them in progressively to avoid important sunk costs, to be effective tools, green taxes have to reduce the competitiveness of the polluting activities.

26. An increase in the corporate income tax does not necessarily increase the cost of capital. For a company with existing profits, an increased corporate income tax reduces the cost of debt-financed investment (which is deductible from profits).

27. See *e.g.* Malinvaud (1998).

28. Foreign direct investment inflows represented as much as 80% of domestic investment in 2002-03 in Ireland, 40% in Belgium, and a sizeable share also in the Slovak Republic, the Netherlands, the Czech Republic, Sweden, Hungary and Spain, and more than 5% in a number of other OECD countries (*source:* International Direct Investment Statistics Yearbook; Gross total fixed capital formation, OECD EO database).

29. See OECD (2004d) and European Commission and Eurostat (2006).

30. See "Avis du Conseil d'orientation pour l'emploi sur l'élargissement de l'assiette des cotisations de sécurité sociale", *www.securite-sociale.fr/communications/rapports/2006/cotisvalajoute/cva.htm*, as well as the synthesis of reactions of members of the Conseil d'Analyse Économique, *www.cae.gouv.fr/ avis_cotsoc.htm*.

31. By contrast, a recent article by Timbaud *et al.* (2007) finds relatively significant employment effect of introducing a "contribution sur la valeur ajoutée" (130 000 jobs over 4 years, *i.e.* about 0.7% of the dependant employment). However, the model used has significant limits, in particular, there is no mobility of capital flows (but also no effect of marginal tax rates on behaviours and no long-run determination of the long-run productivity).

32. It is also important to find proper valuation methods, which attempt to avoid excessive volatility of the tax base due to shifting market values, as observed for example in Canada.

ANNEX 4.A1

Empiral Analysis: Literature Survey

Table 4.A1.1. **Estimated effect of the average and marginal tax rates on gross wage and/or wage cost**

	Country, estimation period and dependant variable	Average tax rate (holding the marginal rate or progressivity constant)	Marginal tax rate/progressivity index (holding the average rate constant)
Malcomson and Sartor (1987)	Italy, time-series data, 1968-80. Average earnings for industrial workers.	No robust result.	Wage moderating effect of the marginal tax rate.
Lockwood and Manning (1993)	The United Kingdom, time-series data, 1954-87.	Personal[a] tax variables:	
	Average pre-tax earnings for male manual workers.	Wage increasing effect.	Wage moderating effect of the marginal tax rate.
		No clear results for the employers tax variables.	
Holmlund and Kolm (1995)	Sweden.		
	Pre-tax earnings for full time workers from the Swedish income distribution survey.		
	Time-series data, 1975-92. Quintiles of the earning distribution.	Wage increasing effect.	Wage moderating effect of progressivity.
	Micro panel data, 1989-92.	Wage increasing effect but not statistically significant (when holding progressivity constant[b]).	Wage moderating effect of progressivity.
Tyrväinen (1995)	Australia, Canada, France, Finland, Germany, Italy, Japan, the United Kingdom and the United States. Time-series data, 1972-1990/92. Average real wage from national accounts (private sector).	Wage costs increasing effect of both income and employers tax variables (the latter being only partly shifted onto workers), in virtually all countries. The magnitude of this effect differs substantially between countries.	Wage moderating effect of the marginal income tax rate in Canada, Finland, Italy and Japan. No significant effect in the other countries.
Graafland and Huizinga (1999)	The Netherlands, time-series data, 1967-93. Average wage costs from national accounts.[c]	Wage costs increasing effect of both personal[a] and employers tax variables (the latter being only partly shifted onto workers).	Wage moderating effect of the marginal personal[a] tax rate.
Lockwood, Slok and Tranaes (2000)	Denmark, time-series data, 1970-92. Average pre-tax earnings by occupational groups, income level and gender.		
	Low income-earners.[d]	Wage increasing effect of the income tax variable. Wage costs increasing effect of the employers' tax variable (the latter being only partly shifted onto workers).	No significant effect of income-tax progressivity.
	Middle-income earners.[d]		Wage moderating effect of income tax progressivity.
	High-income earners.[d]		Wage increasing effect of income tax progressivity.

Table 4.A1.1. **Estimated effect of the average and marginal tax rates on gross wage and/or wage cost** (cont.)

	Country, estimation period and dependant variable	Average tax rate (holding the marginal rate or progressivity constant)	Marginal tax rate/progressivity index (holding the average rate constant)
Hansen, Pedersen and Slok (2000)	Denmark, time-series data, 1970-92. Average pre-tax earnings.		
	Blue-collar workers.[e]	Wage increasing effect of the average tax variable.	Wage moderating effect of the marginal tax rate.
	White-collar workers.[e]		Wage increasing effect of the marginal tax rate, not statistically significant.
Brunello and Sonedda (2006)	20 OECD countries, aggregate panel data, 1997-2004. Pre-tax earnings for eight household types characterised by different economic and family status.	Wage increasing effect of the average tax variable.	Wage moderating effect in centralised or decentralised systems of wage bargaining; wage increasing effect in case of intermediate level of centralisation.
Schneider (2006)	Germany, micro panel data, 1986-90. Pre-tax earning of middle income married men aged 25-55.	Wage increasing effect of the income tax variable.	Wage moderating effect of the marginal income tax rate. Smaller and less significant effect for high-skilled labour.
Tranaes, Arnberg and Holm (2006)	Denmark, micro panel data, 1985-86; 1991-92 (and difference in difference). Earnings of full-time workers, aged 18-66 and living in the Copenhagen municipality and with no unemployment over the overall sample period (1985-91).	Wage increasing effect of the average income tax rate and progressivity. Relative wage moderating effect from unions in that the wage increasing effect tends to be lower in unionised sectors than in non-unionised ones. Magnitude and significance of the estimated coefficients vary between periods of estimates and thus between estimation methodologies (first difference *vs.* difference in difference).	
Private schemes in the United States			
Gruber and Krueger (1990)	United States, pre-tax earnings. Micro panel data, 1979-81 and 1987-88. Aggregate panel data by state/industry, 1979 and 1988.	Wage decreasing effect of the payroll tax associated with the employer-provided Workers' Compensation Insurance.	Not applicable.
Gruber (1994)	United States, micro panel data, 1978-79 and 1981-82. Pre-tax wage for 20-40 year old married women.	Wage decreasing effect of the costs associated with employer-provided maternity benefits. This effect applies to the beneficiary population only.	Not applicable.

a) Personal tax variable includes employees' social security contributions and personal income taxes.

b) Constant progressivity implies an increase in both the average and marginal rate of the same magnitude. Results suggest that a rise in the average tax rate, holding the marginal tax rate constant, would increase the pre-tax wage.

c) Employers social security contributions are fund to have a relatively large effect on wage costs. This can be explained by the fact that in the Netherlands, collective bargaining comprises contracts for the gross wage (*e.g.* wage costs excluding social security contributions paid by employers). If the gross wage is fixed, an unanticipated increased in the employers tax rate will, in the short run, cause a similar change in wage costs. An unexpected increase in the employees tax rate, in contrast is absorbed by workers in terms of a lower net wage.

d) Low-income workers: blue-collar and lower-quartile white-collar women; middle income earners: unskilled, skilled blue-collar and lower-quartile white-collar men, and median- and upper-quartile white-collar women; high-income earners: median- and upper-quartile white-collar men.

e) The category "blue-collar workers" is defined as "unskilled workers": it includes a number of both low- and middle-income workers as defined in Lockwood, Slok and Tranaes (2000). The category "white-collar workers" is defined as the upper quartile of the wage distribution for white-collar workers: it includes a number of both middle- and high-income workers as defined in Lockwood, Slok and Tranaes (2000).

Table 4.A1.2. **Employment outcomes of a budget neutral reshuffling of labour taxation**

Some examples of evaluation results from simulation models

	Tax cuts	Outcome variable (deviation *vis-à-vis* baseline)	Employment and unemployment outcomes				
			Tax cuts	Funding options			
				Personal income tax		Consumption tax	
			Individual effect	Individual effect	Combined effect	Individual effect	Combined effect
Belgium Bassillière *et al.* (2005)	Cut in employer or employee social contributions amounting to 0.5% GDP *ex ante*. This corresponds to cutting the employer SSC rate by 1.3 to 1.6% points, or the employee SSC rate by 1.6% points.	Employment level[a] (% deviation).	*Holding gross wage constant* — Employer SSC T: +0.18 T+7: +0.55 Employee SSC T: +0.07 T+7: +0.10	T: −0.10 T+7: −0.17	Employer SSC T: +0.08 T+7: +0.38 Employee SSC T: −0.03 T+7: +0.07	(*ex ante* increase in the VAT rate by 1.4% points) T: −0.25 T+7: −0.59	Employer SSC T: −0.07 T+7: −0.04 Employee SSC T: −0.18 T+7: −0.49
			Flexible gross wage — Employer SSC T: +0.17 T+7: +0.37 Employee SSC T: +0.06 T+7: +0.02	T: −0.09 T+7: −0.04	Employer SSC T: 0.08 T+7: 0.33 Employee SSC T: −0.03 T+7: −0.02	T: −0.22 T+7: −0.17	Employer SSC T: −0.05 T+7: 0.20 Employee SSC T: −0.16 T+7: −0.15
France							
Sénat (2005)	Cut in employer social contributions amounting to 1.3% GDP *ex ante*, which corresponds to cutting the employer SSC rate by 5.4% points.	Unemployment rate (% points deviation).	T+2: −1.3 T+4: −2.4[a]			(*ex ante* increase in the VAT rate by 5.3% points) T+2: +0.3 T+4: +0.4	T+2: −0.8 T+4: −1.2[a]
Benard, Nicolas and Delpal (2006)	Cut in the employer SSC rate by 2.1% points.	Unemployment rate (% points deviation).	T+1: −0.2 T+2: −0.3 Long-run: −0.15			T+1: 0.1 T+2: 0.2 Long-run: +0.15	T+1: −0.1 T+2: −0.1 Long-run: 0.0
Caussat *et al.* (2005)	Cut in the employer SSC rate by 1 percentage points.	Unemployment rate (% points deviation).		(*ex ante* average increase in personal income tax rate by 8%) T+5: −0.1		(*ex ante* increase in the VAT rate by 0.5% point) T+5: 0.0	
	Change in the structure of social protection financing over the period 1980-2003.	Unemployment rate (% points deviation).	Shift from employer SSC (EUR 27.3 billion) and corporate taxes (EUR 5 billion) towards income taxes (EUR 20.9 billion) and consumption taxes (EUR 11.3 billion). −0.90 over the period 1980-2003.				
Euro Area European Commission (2000)	Cut in labour taxation amounting to 1% GDP *ex ante*.	Employment level (% deviation).	Non-indexation of replacement incomes on consumer prices.			T+10: +0.82	
			Replacement incomes indexed on consumer prices.			T+10: +0.48	

a) Medium-term effects tend to be larger than short-run ones since firms tend to substitute labour to capital (due to reduced relative costs of labour).

ANNEX 4.A2

Empiral Analysis: Some New Elements

Table 4.A2.1. **Estimated effect of employers and employees social contributions, income and consumption taxes on the unemployment rate**

	Baseline equation: total direct tax wedge		Baseline with consumption taxes		Baseline with labour taxes split into income taxes, employers and employees SSC		Baseline with labour taxes split into income taxes and total SSC		Baseline with consumption taxes and labour taxes split into income taxes and total SSC	
	Annual data	3-year average data	Annual data	3-year average data	Annual data	3-year average data	Annual data	3-year average data	Annual data	3-year average data
Tax variables										
Total direct taxes on wages[a]	0.182***	0.171*	0.189***	0.199*						
(% of labour costs)	[3.859]	[1.792]	[3.828]	[1.896]						
Consumption taxes			0.065	0.206					0.066	0.210
(% consumption expenditure)			[0.791]	[1.108]					[0.799]	[1.125]
Income taxes					0.062	0.071	0.059	0.057	0.066	0.082
(% of labour costs)					[0.903]	[0.480]	[0.853]	[0.375]	[0.931]	[0.500]
Total social security contributions (SSC)							0.263***	0.252*	0.271***	0.283**
							[4.201]	[1.916]	[4.225]	[2.039]
Employees SSC[b]					0.222***	0.091				
(% of labour costs)					[3.152]	[0.564]				
Employers SSC[b]					0.293***	0.352**				
(% of labour costs)					[3.612]	[2.434]				
Other explanatory variables[c]										
Average replacement rate	0.092***	0.122***	0.089***	0.110**	0.091***	0.117**	0.093***	0.122***	0.090***	0.110**
	[4.473]	[2.774]	[4.231]	[2.382]	[4.369]	[2.605]	[4.481]	[2.718]	[4.254]	[2.339]
Union density	−0.016	−0.066	−0.015	−0.065	−0.005	−0.054	−0.005	−0.055	−0.004	−0.053
	[0.675]	[1.234]	[0.645]	[1.206]	[0.195]	[0.952]	[0.199]	[0.972]	[0.170]	[0.925]
Employment protection legislation	−0.301	−0.797	−0.239	−0.569	−0.234	−0.707	−0.235	−0.728	−0.172	−0.493
	[0.740]	[0.949]	[0.574]	[0.659]	[0.566]	[0.818]	[0.567]	[0.832]	[0.405]	[0.546]
Product market regulation	0.700***	0.756	0.685***	0.707	0.590**	0.602	0.599**	0.670	0.584**	0.618
	[3.141]	[1.443]	[3.014]	[1.338]	[2.545]	[1.137]	[2.585]	[1.265]	[2.471]	[1.157]
High corporatism	−2.320***	−2.179*	−2.290***	−2.093*	−2.219***	−2.082*	−2.225***	−2.099*	−2.194***	−2.008*
	[5.194]	[1.946]	[5.205]	[1.882]	[4.901]	[1.798]	[4.918]	[1.802]	[4.933]	[1.733]
Observations[d]	412	130	412	130	412	130	412	130	412	130

Robust *t* statistics in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%.

a) Sum of employers and employees social contributions, and income taxes.

b) Test of equality of employers and employees SSC coefficients (Wald test). P-values: 0.439 (0.132 with three-year average data), a high P-value meaning that the difference in coefficients is not statistically significant.

c) All regressions also include country and time dummies and output variables. For detailed information on methodological issues, see Bassanini and Duval (2006), baseline specification.

d) Estimation period: 1982-2003; countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the United Kingdom and the United States. Data for Finland, Germany and Sweden are excluded from the regressions in 1991 and 1992, since the explanatory variables are not able to fully account for the important changes in labour market performance, experienced in these three countries in the early 1990s.

Source: For tax variables, see OECD (2007), "Financing Social Protection: the Employment Effect – Further Material", available online *www.oecd.org/els/employmentoutlook/2007*; and for the other variables, see Bassanini and Duval (2006).

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