OECD Economics Department Working Papers No. 369

Policies for an Ageing Society: Recent Measures and Areas for Further Reform

Bernard Casey,
Howard Oxley,
Edward Whitehouse,
Pablo Antolín,
Romain Duval,
Willi Leibfritz

https://dx.doi.org/10.1787/737005512385

OECD

Unclassified **ECO/WKP(2003)23**

Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

20-Nov-2003

English - Or. English

ECONOMICS DEPARTMENT

ECO/WKP(2003)23
Unclassified

POLICIES FOR AN AGEING SOCIETY: RECENT MEASURES AND AREAS FOR FURTHER REFORM

ECONOMICS DEPARTMENT WORKING PAPERS NO.369

By Bernard Casey, Howard Oxley, Edward Whitehouse, Pablo Antolin, Romain Duval and Willi Leibfritz.

JT00154271

English - Or. English

ABSTRACT/RESUME

This paper provides a synthesis of age-related developments and policies for a range of OECD countries, drawing on recent OECD work. It describes the expected impact of ageing on expenditure and fiscal pressures taking into account the current configuration of age-related policies. Since later retirement appears to be a key policy to easing the burden of ageing, it looks at indicators of the incentives for early retirement via pension systems and other transfer programmes permitting early withdrawal from the labour market for those approaching retirement. The report discussed the different types of age-related reforms undertaken up to now and areas where further reforms appear needed.

JEL classification: H550, I380, J110, J140, J260, J320

Keywords: Fiscal implications of ageing; Retirement incentives; Pension system reforms; Care for the elderly.

*****

Ce document présente une synthèse des évolutions et des politiques liées au vieillissement pour un ensemble de pays de l'OCDE, basée sur des travaux récents de l'OCDE. Il décrit l'impact prévu du vieillissement sur les dépenses et les pressions budgétaires en tenant compte de la configuration actuelle des politiques liées au vieillissement.

Dans la mesure où le recul de l'âge de la retraite est un moyen essentiel pour alléger le poids du vieillissement, ce papier examine certains indicateurs d'incitation à la retraite anticipée par le biais de systèmes de retraite et d'autres programmes de transferts sociaux permettant aux individus approchant de la retraite de quitter plus tôt le marché du travail. Ce rapport étudie les différents types de réformes liées au vieillissement mises en place jusqu'à présent, ainsi que les domaines dans lesquels des réformes supplémentaires seraient nécessaires.

Classification JEL : H550, I380, J110, J140, J260, J320

Mots-clés : Implications fiscales de la vieillissement ; Incitiations de départ à la retraite ; Reformes de la système de retraite ; L'aide et les soins des personnes agées.

TABLE OF CONTENTS

Boxes

Tables

Figures

Annex Tables

Annex Figures

POLICIES FOR AN AGEING SOCIETY: RECENT MEASURES AND AREAS FOR FURTHER REFORM

By

Bernard Casey, Howard Oxley, Edward Whitehouse, Pablo Antolin, Romain Duval and Willi Leibfritz[1]

Introduction

1. Over the next half-century, OECD countries are set to experience a significant ageing of their populations. Past falls in fertility rates and increasing life expectancy will raise significantly the proportion of elderly and the share of age-related expenditure in GDP, in particular for public pension programmes and for health care. This problem is compounded by past declines in participation rates of those of working age, in particular older male workers. The change in demographic structure will in most OECD countries begin to be felt in the next decade and will culminate in the period 2025-2035.

2. Reforms are needed in a number of areas to adjust to these developments. First, policies need to aim at increasing overall living standards by fostering higher labour utilisation as well as saving and investment. Second, reforms to public age-related spending programmes are necessary to ensure fiscal sustainability. Finally, attention has to be paid to ensuring that the sources of income in retirement are balanced and adequate and that services are sufficient to care for the needs of the frail elderly. While the reform process has begun in most countries, additional measures are required almost everywhere and need to be introduced rapidly. As recent experience with pension reform shows, long periods of transition to the new pension system are, most often, part of the needed consensus, reflecting the fact that households require time to adapt their behaviour to the new institutional arrangements, particularly when they affect long-term savings decisions.

3. The aim of this paper is to take stock of the reform process and to identify areas where further attention or action is needed. Particular attention is focused on retirement income and on care for the frail elderly. The paper builds on and extends the work commenced under the Horizontal Project on Ageing (OECD 1998), and followed up in OECD (2000f). In particular, the bulk of this paper considers developments in sixteen countries for which more detailed analysis had been carried out in various countries: Australia, Canada, Finland, France, Germany, Hungary, Italy, Japan, Korea, the Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom, and the United States.[2] The study also draws

---

1 Bernard Casey and Edward Whitehouse were consultants at the OECD when the report was prepared. The remaining authors are members of the Structural Policy Analysis Division 1 in the Department of Economics. For further information contact Howard Oxley (howard.oxley@oecd.org).

2. Special chapters on ageing within the context of OECD Economic Surveys have been prepared for Australia (OECD,1999a), Finland (OECD, 2000a and 2003), Hungary (OECD, 2000b), Iceland (OECD, 1999b), Italy (OECD, 2000c), Korea (OECD, 2001d), the Netherlands (OECD, 2002a), Norway (OECD, 2001e), Spain (OECD, 2001f), Switzerland (OECD, 2000d) and the United States (OECD, 1999c). Countries covered in OECD (2001a) presented to the Employment, Labour and Social Affairs Committee (which focused on incomes in retirement) were Canada, Finland, Germany, Italy, Japan, the Netherlands,

on other OECD work: national projections of long-term fiscal costs of ageing in OECD countries (OECD, 2001b and Dang *et al.*, 2001), the analysis of private pension arrangements[3] and, on material on health and long-term care.[4] The paper also presents new evidence on the incentives to take early retirement.

4. The paper is divided into five Sections. Section 1 describes, first, the latest long-term demographic projections. Based on these – and additional assumptions regarding labour market developments and productivity growth – it then reviews the impact of the ageing of populations on fiscal sustainability. Section 2 looks at the factors that determine the timing of retirement and makes an attempt to quantify the incentives for early retirement which are implicit in the regular pension system and in schemes such as unemployment, disability and occupational pension arrangements. This builds on earlier work by Blondal and Scarpetta (1998) and OECD (2001a). Section 3 reviews the pension reforms that countries have taken so far to meet the challenges posed by the ageing of their populations. Section 4 briefly describes reforms in the area of care for the elderly. The concluding Section 5 attempts to identify areas and countries where further attention and/or reforms may be needed, mainly drawing on recommendations found in the EDRC country study chapters on ageing and OECD (2001*a*).

1. The fiscal implications of demographic change

5. In order to review the fiscal implications of ageing, long-term projections have been produced for age-related spending to 2050 for 22 OECD countries (OECD, 2001*b*, and Dang *et al.*, 2001). These are based on the most recent Eurostat population projections for EU countries and national projections for the remaining OECD members that participated. A common set of economic background assumptions was agreed between countries so as to provide a basis for international comparability. These essentially concerned factors underlying long-term GDP growth (*e.g.*, labour force participation, unemployment and productivity). Using this material as inputs, national authorities provided projections of spending using national long-term projection models and frameworks. The projections include the effects of most recent pension reforms as of the year 2000 even when they have been legislated but not yet fully implemented.

1.1 Demographic developments

6. The old-age dependency rate – which shows the number of people aged at least 65 years of age relative to the working-age population (here defined as being between 20 and 64) – is projected to slightly more than double over the next half century (Figure 1). This implies that the number of the elderly will increase sharply with respect to the age group of the population that normally produces the goods and services used to support them. The countries facing the most pronounced ageing (a change of over 30 percentage points) are likely to be Austria, the Czech Republic, Italy, Japan, Korea, Poland and Spain while changes in the dependency rates are projected to be relatively smaller (under 20 percentage points) in Denmark, Norway, Sweden, the United Kingdom and the United States.

[Figure 1. Old age dependency ratio, 2000-2050]

Sweden, the United Kingdom and the United States. France was, in fact, neither the subject of a special EDRC chapter, nor was it covered in the "retirement income review". However, France is included here because it faces significant demographic and fiscal challenges. There is only limited reference to Iceland despite the existence of a special EDRC chapter as it did not, like Switzerland, provide long-term projections, and the size of any fiscal impact is limited by the fact that the pension system is largely funded.

3. OECD (2000e), OECD (2001g), OECD (2001h), OECD (2001i).

4. OECD, (1994), OECD (1995), Jacobzone (1999), Jacobzone *et al.* (1999); Jensen and Jacobzone (2000).

7. At the same time, the ratio of the very old (80 and above) within the older (65 and above) population will also increase rapidly (Table 1). Currently, people over the age of 80 make up only about a quarter of the older population in most Member countries. By 2050, they will make up between a third and close to 40 per cent of the older population in many countries. These increases are particularly important for care for the frail elderly as the prevalence of disability and long-term institutional care is likely to increase sharply at ages above 80.

[Table 1. The old-age dependency ratio and the share of the very old in the total elderly population]

1.2 The fiscal challenges[5]

8. On the basis of a set of agreed assumptions, Member countries have made projections of general government spending over the next half-century for those expenditure components most likely to be affected by the ageing of populations (old-age pension, "early-retirement" programmes, health and long-term care, child/family benefits and education).[6] Starting from a current level of some 21 per cent of GDP in 2000, age-related spending is projected to increase, on average, by about six percentage points of GDP to about 27 per cent of GDP by 2050 (Table 2, col. 2). Spending on old-age pensions and spending on health and long-term care are each projected to increase by more than three percentage points of GDP on average; spending on education and child benefits could provide a small offset.[7] However, there are considerable differences between countries in the total projected spending increase, ranging from less than two percentage points in Italy and the United Kingdom[8] to an increase of over eight percentage points in Canada, Germany, Korea, the Netherlands, New Zealand, Norway and Spain.[9] In these countries (as well as in Australia, Belgium, the Czech Republic, Denmark, France and the United States, where spending rises by more than five percentage points), the projected spending increases would call for sharp (and

5. For earlier OECD work in this area, see Leibfritz *et al*. (1995) and Roseaveare *et al*. (1996)

6. Early-retirement" programmes concern alternative pathways into retirement, such as disability and long-term unemployment benefits. Calculations do not distinguish between, for example, the truly disabled and other individuals who have been accorded access to these programmes.

7. Projections discussed in this section do not include the impact of certain recent reforms. Nonetheless, some information on the 2003 Finish reforms can be found in Table 10 of OECD (2003). These suggest that pension spending in Finland (old age pensions and "early retirement" programmes combined) might increase by around one percentage point of GDP less than in the projections presented in Table 2 for the period 2000 to 2050. More recent projections by the national authorities in a number of European countries suggest that the overall increase in spending might be somewhat less than the numbers projected here (European Commission, 2003). These results show substantial downward adjustments of projections for pension spending in 2050 for Austria, Germany, Portugal and Spain. These changes reflect pension reforms (Austria, Germany and Portugal), changes to projection models (Spain, Germany) and differing assumptions for population and labour force growth (Austria, Spain).

8. The assumptions underlying the projections for Italy and the United Kingdom importantly affect this result. For Italy, it is assumed that pension benefits will be fully adjusted for lengthening lifetimes (benefits are to be negotiated between the government and the unions every ten years). For the United Kingdom, pension projections do not cover the Minimum Income Guarantee and they assume that the existing old age pension will remain indexed to prices.

9. Table 2 also includes recent estimates for health care for Austria, France, Germany, Italy and Spain, found in Table 4.1 of EPC (2001). For Germany and Spain, the increase in long-term care costs was set at one percentage point, equal to the EU-area average. These projections use the same macro-economic assumptions. However, in contrast to the other countries, they do not allow for any increase as a result of technological change or in the cost of health care as a result of movements in relative prices. This may bias the outcomes downward relative to the other countries.

undesirable) increases in tax pressure. A range of sensitivity tests suggests that, with the possible exception of longer-than-expected lifetimes, changes in underlying assumptions will not affect these outcomes significantly (Table 3).

[Table 2. Projections of Age-related spending, 2000-2050

[Table 3. Average impact of sensitivity tests on age-related spending: 2000-2050]

Old-age pensions

9. The projected increases in spending on old-age pensions primarily reflect the impact of ageing. However, they also include the effects of the maturing of pension systems and the lagged impacts of recent reforms, which in some cases, are large. A decomposition of this expenditure increase helps to understand the key underlying reasons for the wide cross-country differences. Table 4 breaks down the future change in pension spending into the part associated with *a*) demographic change (col. 3); *b)* change in labour force participation and unemployment (col. 4); and *c)* changes in the generosity of the pension system (col. 7).[10] The latter comprises two elements: the "eligibility effect" (col. 5), which refers to changes in the share of those aged 55 and over receiving benefits; and the "benefit effect" (col. 6), which refers to changes in the average pension benefit. This calculation illustrates how much spending might increase as a result of changes in one underlying factor, the other elements held constant. The results, in each case, are shown as the change in spending in percentage points of GDP.

[Table 4. Decomposition of changes in old-age pension spending, 2000-2050]

10. While the results of such decomposition need to be treated with caution, they suggest that the demographic effect is the key factor driving pension spending over the period (Table 4, col. 3). In the absence of other changes, the average increase in spending caused by this factor is just over five percentage points of GDP. Countries with more generous pension systems in 2000 tend to have a large "demographic effect", (*e.g.*, Austria, the Czech Republic, France, Germany, Italy, Poland and Spain) and *vice versa* (*e.g.*, Australia, Denmark, Hungary, New Zealand, the Netherlands, Norway, the United Kingdom, and the United States).

11. Countries will be affected differently by the three other factors (Table 4, cols. 4-6). The increase in employment rates consequent upon an increased share of women working, later retirement by men and a fall in unemployment boosts output and reduces pension costs as a share of GDP by just under one percentage point on average. The large employment effect for Austria, Italy, and Spain highlights the sensitivity of the results to the labour market assumptions underlying the projections for these countries.[11]

12. The main factor damping expenditure increases is a projected reduction in average benefits relative to output per worker. Taken alone, this could lead to a fall in expenditure averaging around 1¼ percentage points of GDP.[12] Among the countries considered here, the decline in average benefits

10. See Dang *et al.* (2001) for a full explanation of how the breakdown is calculated.

11. For Austria, this reflects a projected increase in older male worker participation rates of 33 percentage points to 71 per cent. In the case of Spain, this partly reflects the assumption of a larger fall in structural unemployment than in the other countries.

12. This reflects a range of offsetting factors. For greater detail, see Dang *et al*. (2001).

relative to productivity over the period 2000 to 2050 is over ten per cent in Australia, Belgium, Denmark, France, Germany, Italy, Japan, Poland, Sweden, and the United Kingdom (Table 4, col. 8)[13]. In some of these countries, particularly where benefits are already relatively low, this may have implications for the adequacy of income in retirement, particularly if there is no increase in private savings for retirement among lower income groups. In Norway, the average benefit rate relative to productivity will rise by over 60 per cent as the pension system there matures.

13. In contrast, most country projections show increases in the share of individuals in the target population defined as persons aged 55 and over drawing a pension ("eligibility" effect, Table 4, cols. 5-6). Higher rates of employment amongst women, and the maturing of pension systems, should lead, over time, to an increase in the number of beneficiaries. However, this increase in eligibility appears to be offset, at least in part, by reforms undertaken in many countries to encourage later retirement. Thus, the overall increase in eligibility remains modest. In Austria, Italy and Poland the overall share of pensioners in the target population even declines significantly over the period.

Health and long-term care

14. Health-care costs have risen rapidly as a share of GDP in many countries; many if not most countries have introduced measures to control costs and reforming health care systems is already a major policy concern. Looking forward, spending is expected to increase further as the share of the elderly increases. This reflects the fact that the *per capita* consumption of health-care services by the elderly is three to five times higher than for younger groups. This will affect both "normal" health care (hospital and ambulatory care and pharmaceuticals) and care services for the frail elderly (which is the focus of attention here). For the 19 countries where this information is available, the projections indicate an average increase in health and long-term care spending of around 3-3½ percentage points of GDP over the 2000-2050 period (Table 2, cols. 7-8). Once again, there are wide cross-country differences, ranging from over six per cent in Australia to under two per cent in the United Kingdom and under one per cent in Korea.[14] Besides Australia, increases of four percentage points or more are projected for Canada, the Netherlands, New Zealand and the United States. There is, however, a particularly wide margin of error around these spending estimates, partly reflecting uncertainty about the appropriate method of modelling the impact of ageing on health spending.[15] In addition, assumptions of the increase in costs associated with the impact of technological change and the relative cost of health care services vary considerably across countries and small differences in the growth rates applied can make a large difference in outcomes over periods as long as fifty years.

13. For Australia, this reflects the income tested nature of the pension system, combined with the increase in private savings under the superannuation scheme, which will reduce the number of beneficiaries and the average benefit for those receiving a (partial) state pension. The state pension is indexed on wages.

14. Korean data does not include spending under the social security scheme. The projected rise for the United Kingdom is also lower than for other countries because costs were indexed on the GDP per capita rather than to wages - a difference which could add more than ¾ of a percentage point to the change (EPC, 2001). Austria has assumed in its projections that recent reforms to early retirement arrangements will lead to a very large increase in older male participation rates. For Australia, only around one- quarter of the increase is age-related with the remainder assumptions concerning the increasing demand for health care services and technological change.

15. In particular, if expenditure is more closely linked to spending in the last years of life than to the age structure of the population, a progressive lengthening of (healthy) lifetimes will delay the onset of care spending at the end of life and thereby damp the growth of spending.

Other age-related spending components

15. Spending on family and child benefits and on education, taken together, averaged around 6 to 6½ per cent of GDP in 2000 for the countries presenting data (Table 2, cols. 9-10). Modest projected falls in youth-dependency ratios are expected to offset spending increases on the old by around one percentage point of GDP on average.[16] Only the Netherlands and Norway project spending increases for this component. With the exception of Norway, "early retirement" programmes (*e.g.,* disability schemes) (col. 6) contribute little to the overall projected increase in age-related spending.

The fiscal implications and long-term sustainability: some broad policy conclusions

16. Taking into account small declines in taxes in the baseline projections for several countries[17], the primary budget balance of the general government sector could weaken on average by six to seven percentage points of GDP over the period (OECD, 2001b) (Table 5). In the absence of increases in taxes or cuts in expenditure relative to the baseline projections, a progressive weakening of the overall fiscal position will occur. The extent and timing of such deterioration will depend on the size of the current general government deficit or surplus and the associated effect on debt- interest payments as the size of the public debt is modified.

[Table 5. Changes in cyclically-adjusted primary balances and net lending of general government]

17. Simulations for a stylised country – whose parameters, primary surpluses and spending developments have been chosen to approximate a 'median' or 'typical' OECD country (Table 6) provide some indication of the required fiscal effort to compensate for the increased age-related spending. These results suggest that the net impact of ageing and the initial fiscal position is to raise the level of net debt from 55 per cent of GDP in 2000 to around 150 per cent of GDP in 2050. The impact from age-related spending alone (more than 200 percentage points) is partly offset by the existing primary surplus which, assuming it is sustained, would tend to reduce the level of debt, other things held unchanged. These results also show that relatively small further increases in primary surpluses or reductions in deficits, if introduced in the next few years and sustained until the end of the projection period, can lead to a significant loosening in the fiscal constraints over the next half-century.[18] Maintaining large primary budget surpluses over long periods is, however, politically difficult and governments would be unwise to rely entirely on policies at the macro-fiscal level.

---

16. Several factors may make it difficult to wind back spending in this area. First, the assumed increase in the labour market participation of women will raise demand for child-related services such as pre-school care. Second, there may be increased spending on training associated with life-long learning and increased training for older workers. Third, it has politically been difficult to cut back on services directed to the young even if their number has declined over recent decades.

17. The decline in taxes reflects offsetting factors. A few countries (Canada, Denmark, the Netherlands and the United States) will benefit from higher tax revenues associated with the deferred tax in tax-sheltered private pension arrangements. Despite this, stability or declines in tax revenues are projected in all countries except Germany, partly reflecting the return of part of the recent fiscal improvement in the form of lower taxes (mainly over the period to 2005) and because, in many countries, the elderly are taxed less heavily than workers. (See OECD (2001a), Table 3.5.

18. Results found in Dang *et al*., (2001) Table A.14 indicate the approximate increases in the primary surplus to keep public debt unchanged at mid-century for individual countries. However, these estimates do not include the impact of projections for health care spending for Austria, Germany, France, Italy and Spain as is found in Table 2.

[Table 6. The impact of ageing in a "stylised" country, 2000-2050]

18. As regards the cost of age-related programmes, the results presented in Table 4 suggest that governments have already introduced policies to lower these, mainly in the form of reductions in average benefits. The size of these declines raises concerns in a few countries about income adequacy in retirement. Such policies may need to be buttressed by the promotion of private retirement savings, accompanied by appropriate regulatory frameworks. Attention will also have to be given to limiting the growth of public spending on other age-related spending such as health care.

19. As noted above, policies that delay retirement and increase the participation rate of older men can also have an important effect. The results of the sensitivity tests (Table 3) suggest that government policies to increase the labour supply and its utilisation by more than assumed in the projections could go some way to providing the resources to finance the increase in age-related spending. For example, if the participation rates of women increase by five percentage points more than baseline by the end of the period and participation rates of older workers recover half of the fall since 1970, total age-related spending as a share of GDP would fall by around ¾ of a percentage point. But, as suggested by the policy simulations for a "stylised" country shown in Table 6 (Panel B first two lines), the overall fiscal impact could be considerably larger.[19] The relatively high fiscal impact from delaying retirement reflects the combined effect of lower pension spending and higher GDP, contributions and general taxes. While the size of the overall fiscal impact from delaying retirement will depend on the parameters of the pension system and whether those who delay retirement continue working, delaying retirement appears to be a more promising avenue for achieving fiscal sustainability.[20,21] The next section, thus, examines factors affecting the retirement decision.

2. What determines the age of retirement?

20. The decline in the level of employment among older workers is a longstanding one (Table 7), reflecting the maturing of public pension systems, more private savings or pension arrangements in some countries that reduced the need to work to an advanced age. With the combined sources of retirement income increasing, a greater share of the population took retirement once they reached retirement age. However, the decline in participation became steeper during the decades following the first oil crisis in many countries, partly reflecting revisions to retirement income systems (see OECD, 1996a). A variety of

19. OECD calculations shown in the first two lines of Table 6 Panel B suggest that, to achieve the same 10 percentage point reduction in debt as a share of GDP at the end of the projection period in 2050, the required per cent reduction in the number of beneficiaries (and increase in the number of employed associated with this) would need to be considerably smaller than for average benefits. However, the magnitude of the difference in the required per cent change between the two alternatives is overstated because people who work and contribute to pension systems longer may get a higher pension. For example, in systems with actuarial adjustment, individuals who delay retirement have an increase in their benefit because they will receive the pension over a shorter period. Using the national authority's model, simulations of the impact of later retirement for Italy, which has an actuarially adjusted pension system, illustrates this effect. The overall fiscal impact from a fall in the number of beneficiaries (associated with later retirement) is still stronger than for a similar per cent reduction in average benefits but the difference with respect to the change in average benefits is much reduced when compared to the results in Table 6.

20. An additional reason for favouring later retirement is that it may also improve income adequacy in cases where delaying retirement leads to higher individual benefits (see footnote 20). Such increases could offset -- at the individual level -- the projected benefit declines suggested by the fall in average benefits shown in Table 4.

21. However, these calculations do not take into account possible negative effects of later retirement on aggregate savings and on potential growth. For a discussion, see Visco (2001)

measures facilitated workforce reductions and restructuring, by doing them in a more "socially acceptable" fashion. At the same time, it was believed that this would reduce the impact of falling employment upon the level of "open" unemployment.[22] The people targeted by these measures – older workers – often found the compensation offered sufficiently attractive to make early retirement an acceptable option.[23] As shown by Duval (2003), these programmes have indeed contributed to lowering the effective retirement age.

[Table 7. Participation and employment rates of males aged 55 to 64, 1970 to 2000]

21. The declines in employment were particularly evident for older male workers, but older female workers experienced a similar (if less marked) fall, although this development was masked by the increasing share of economically active females in each successive cohort.

22. On the basis of data adjusted for these cohort effects, the downward trend in the effective retirement age appears to have come to a halt in many countries during the 1990s and may have reversed itself slightly in a few countries (Figure 2) (Scherer, 2001). This may have reflected better labour market conditions in some countries. Reforms to reduce either the incentive or the ability to withdraw from the labour market also appear to have played a role.

[Figure 2. Average age of withdrawal from the labour force]

23. In order to assess the incentives to retire, it is useful to summarise them in two measures that vary with age: the replacement rate and pension wealth. The replacement rate is defined as the ratio of annual pension or early-retirement benefits to earnings just prior to retiring.[24,25] Pension wealth corresponds to the present value of the future stream of (net of tax) pension payments to which a person is entitled over his or her life in retirement. For example, working an extra year might increase the annual pension as a result of an extra year of contributions. But an additional year of work also reduces the number of years over which that pension is paid out. If the pension scheme is "actuarially neutral", the additional contributions will be matched exactly by an increase in the level of the pensions received over the remaining (shorter) retirement period. If this obtains, pension wealth remains the same if the individual works another year and, using this

22. Government policy measures included: the extension of the period of entitlement to unemployment compensation for older people (*e.g.*, Finland, France, Germany and the Netherlands); the possibility for older people, who had been unemployed for an extended period, to draw an early but unreduced age pension (*e.g.*, Finland, Germany and Sweden); special early retirement programmes that provide benefits to older job leavers, conditional upon their employer replacing them with an unemployed person (*e.g.*, France, Germany, the Netherlands and the United Kingdom); and, easier access to disability schemes (*e.g.*, Finland, Germany and the Netherlands). Where the state did not provide such arrangements, or provision was considered inadequate, severance payments were sometimes negotiated and/or access to early, and often unreduced, company or occupational pensions were granted (*e.g.*, Canada the United Kingdom and the United States).

23 Although their acceptance of a severance package, or an early pension, might make it appear as if they had retired "voluntarily", choices were, in practice, often severely constrained.

24. The reference earnings are those in the years immediately prior to retirement, as these are likely to be the benchmark for individuals when making the retirement decision. Benefits have been calculated here by assuming a steady increase in earnings over working life. If, instead, earnings capacity falls with age (with benefits based of lifetime earnings), replacement rates would be higher than calculated here. Both prior income and benefits are calculated net of tax.

25. It should be noted that this Section refers to transfer incomes from public programmes. As shown in OECD (2001a), public retirement programmes only make up a portion of total incomes in retirement, in many countries, with the difference between public transfers and total retirement income becoming more marked for higher income groups.

measure, the system does not encourage earlier retirement. Where working an additional year leads to a fall in pension wealth an individual will have an incentive to retire early.[26] The system is then said to be "actuarially non-neutral". This non-neutrality is expressed as a ratio of the change in pension wealth to the income earned from working an additional year, which is the indicator used here.[27] The calculations reported here also take into account the income tax rate on earnings and pensions so that the effect of the tax system on retirement incentives is also taken into account (see Annex for more details).[28]

24. The combined effect of the level of pension or early retirement benefits and the change in pension wealth will determine the incentive to retire. If the replacement rate is high enough, a person might withdraw from the labour force and collect his or her benefit. However, if the replacement rate is low, the person might find it more appealing to continue to work even though, in some cases, working an extra year might reduce pension wealth. Thus, these two measures need to be considered together.

25. The following sub-sections examine, in turn, the potential impact of the replacement rate and pension wealth on the retirement decision arising from "regular" retirement schemes and "special" schemes permitting earlier withdrawal from the labour market. Following earlier work at OECD[29], these indicators are calculated for hypothetical individuals using the parameters of the transfer systems in individual countries – such as accrual rates, minimum pensions, indexation rules, eligibility requirements and the tax system etc. (See Annex for a further explanation and a description of parameters). This allows the simulation of replacement rates and changes in pension wealth at different ages of retirement and at different levels of income (50, 100 and 150 per cent of Average Production Worker (APW) earnings). Recent reforms to pension and transfer programmes are taken into account, including cases where the reforms have been passed but come into effect substantially far into the future (*e.g.* Italy and the United States). In the particular cases shown here, the individual is assumed start work at age 20 and to have a full work career before retiring.[30] However, these results should be treated with some caution, particularly for earnings related systems (*e.g.*, the new pension system in Italy) where the loss in pension wealth from an additional year of work may be over estimated for individuals during the pre-retirement period – *i.e.* below the "official" or "latest" retirement age (See Annex).

Box 1. A brief overview of OECD estimates of retirement incentives

As described in more detail in the Annex, the OECD has recently created models permitting the simulation of retirement incentives. These have been used in a number of recent OECD publications with the results of these models sometimes presented in slightly different ways.

- This paper, which updates OECD (2002b), presents *net* replacement rates (*i.e.* it takes into account the tax treatment of earnings and benefits) and *net* changes in pension wealth from working for an additional year for both old-

26. Systems with parameters that produce this result will also give a less-than-appropriate reduction to the pension level when retirement is brought forward.

27. This is often referred to as an "implicit marginal tax on working" when there is a fall in pension wealth from working an additional year.

28. Some of these results have been already presented in Economic Outlook No. 72 (OECD, 2002b). Values for replacement rates and changes in pension wealth presented here may differ slightly as a result of further model development.

29. See Blondal and Scarpetta (1998).

30. As many workers do not have a full work career, the estimates presented here may over-estimate the actual replacement rates. On the other hand, the projections also abstract from other resources in retirement -- such as private pension arrangements or pension savings, which would normally increase incomes in retirement relative to previous wages and from the impact of household economies of scale.

age pension and early retirement schemes taken as a share of earnings.[31] In this framework replacement rates are calculated as:

$$R_R = P_R / Y$$

where R_R is the replacement rate at age R, P_R is the pension level if retiring at age R and Y is the earnings level just before retirement. Net changes in pension wealth are calculated as:

$$\Delta(NPWY_R) = [NPWY_{R+1}] * [S_{R+1}/(1+r)] - NPWY_R ,$$

where $NPWY_R$ is net pension wealth as a proportion of earnings at retirement age R, S_{R+1} is the survival function at age R+1 (i.e. the probability of being alive at age R+1, conditional upon being alive at R) and r is the real discount rate. Data is available for 15 OECD countries and provides an assessment of the incentives to retire in current systems (at their steady state) for single individuals aged from 55 to 70 at various levels of income.

- In the absence of readily available historical data on the tax treatment of earnings and benefits for all countries, the second approach used in Duval (2003) employs *gross* replacement rates (*i.e.* before tax) and *gross* changes in pension wealth for 22 countries (as in previous OECD work (Blöndal and Scarpetta, 1998)). In this study, the change in pension wealth from and additional year of work is calculated as:

$$\Delta(PWY_R) = [[PWY_{R+5}] * [S_{R+5}) /(1+r)^5] - PWY_R - (CONTRIBUTIONS)] / 5 ,$$

where PWY_{R+5} is *gross* pension wealth as a proportion of earnings at retirement age R+5, S_{R+1} is the survival function at age R+5, r is the real discount rate and CONTRIBUTIONS is the present value of all contributions to the pension system paid between R and R+5.[32] These results were presented for individuals under old-age pension and early retirement schemes at ages 55, 60 and 65 only. Duval (2003) also presents replacement rates (but not implicit tax rates) for couples with a dependent spouse as well as for single workers. These calculations were carried for earlier years (generally to 1967) on the basis of the rules in the then-existing pension systems.

These two datasets are consistent with each other for the current system. They use exactly the same parameters (accrual rates, actuarial adjustments for early/deferred retirement, mortality tables…).[33] Gross replacement rates are similar for the 15 pension systems where the two presentations can be compared. Implicit tax rates differ, but simply because formulas used to compute them differ. In practice, the first presentation contains more precise results, because it takes into account the tax treatment of earnings and benefits. However, the second dataset covers a much wider range of countries and (most importantly) contains estimates of retirement incentives for the past and is therefore used in panel-data econometric estimates of the retirement decision in Duval (2003).

2.1 Incentives to retire under regular retirement provisions

26. The schemes covered under "regular" old-age pension arrangements vary from country to country but include most elements that are either obligatory public schemes or quasi-mandatory schemes covering the bulk of the population. The "normal" retirement age in OECD countries covered here is 65 (with the exception of France and Japan where it is currently 60 and in Norway where it is 67) (Table 8).[34]

31 This is equivalent to the implicit marginal tax on working with an opposite sign.

32 As for the computation of the present value of pension flows (i.e. pension wealth), the computation of the present value of contributions takes into account mortality risks: see Duval (2003) for details.

33 However, in the case of France the effects of the 2003 pension reform are not taken into account in the present paper, while they are incorporated in Duval (2003).

34. In Japan, the retirement age will be progressively increased to 65. The age at which the flat rate portion of pensions can be taken will increase to 65 over the period 2001-2013 and the eligibility age for the earnings-related component will be increased over the period 2013-2025. The simulations only take into account the increase in age of receipt of the flat rate component. However, the reforms are complex and contain several compensating changes that appear likely to allow people to continue to take retirement at an earlier date

Certain schemes permit early retirement subject to the pension being reduced (Canada, Finland, Germany, Italy, Korea, Spain, Sweden, Switzerland and the United States). The earnings-related component of the pension in Canada is available at 60 with entitlement to the flat-rate portion at 65. Also, mandatory private benefits (Superannuation) can be liquidated from 55 in Australia, 10 years before the public pension can be received, although this will be progressively increased to 60 for people born between 1960 and 1964 over the period 2015 to 2025.

[Table 8. Characteristics of "regular" old-age pension schemes]

27. Figure 3a shows replacement rate on the horizontal axis and the change in pension wealth from working an additional year on the vertical axis – for four selected ages of entry into retirement (61, 63, 65 and 67) at Average Production Worker earnings. This provides a broad picture of the differences in retirement incentives across countries at different ages. Countries towards the top left hand corner will have weak incentives to retire, with positive changes in pension wealth from working an additional year and low replacement rates.[35] In contrast, countries in the bottom right hand corner will have strong incentives to retire early as a consequence of high replacement rates and negative changes in pension wealth. A replacement rate of zero indicates that the hypothetical individual in the country indicated cannot retire at that age and draw a pension benefit. More detailed information on the level of benefits and pension wealth by year of age of retirement and by levels of income is shown for each country in the Annex. The key results are:

- Before 60 (not shown) there are almost no incentives to retire from the old-age pension system because almost all countries do not permit early retirement before this age. The only exceptions are Italy (where the earliest retirement age is 57) and Australia (where individuals can draw on their mandatory savings from 55).[36]

- Between ages 60 and 65, the incentives to retire vary markedly across countries leaving no clear picture. At ages 61 and 63, the strongest incentives to retire are France[37] and the Netherlands[38] (where both replacement rates and the loss in pension wealth for an additional year of work relative to earnings are near to or above 80 per cent). Germany (at age 63), Finland, Italy, Korea, Spain, Sweden and Switzerland have high replacement rates, ranging

---

even after this reform is in place. The impact of the reforms to the flat rate component is, therefore, expected to be small.

35. While small replacement rates tend to be associated with small changes in pension wealth, there is no necessary correspondence between the two measures as the calculation of changes in pension wealth takes into account a wider range of factors, in particular the pension contributions and the change in the benefit from working one year more. Thus, a high level of benefit but with only a marginal increase from working an additional year may lead to a significant fall in pension wealth where these changes in benefit are combined with a high contribution rate on the earning from the extra year of work.

36. However, in both cases the replacement rates are low and the fall in pension wealth from working an additional year is less than 20 per cent. As noted above, the age at which superannuation savings can be drawn in Australia will increase to 60 over the period 2015 to 2025.

37. For France, this reflects the specific assumptions that a person has reached maximum years of contribution at 60 after 40 years of work. In the case where a person had worked 35 years at age 60 there would be a progressive increase in the retirement benefit up to 65.

38. In the case of Netherlands, the modelling between ages 60 and 64 refers to a "typical" early retirement (VUT) scheme. However, since the early 1990s these PAYG schemes have been progressively transformed into less generous fully-funded systems. As a result of these transformations, the incentives to retire are probably overstated between age 60 and 64.

from 60 per cent to 90 per cent. But, Sweden and Italy excepted, the change in pension wealth is relatively small.[39] Very weak incentives to retire – *i.e.* a combination of replacement rates below or near 50 per cent and broadly unchanged or even positive changes in pension wealth as a result of an additional year's work – are only found in Canada and the United States and to a lesser extent in Australia and Japan. In Norway and the United Kingdom, the earliest retirement age is at ages 67 and 65 respectively.

- Incentives change markedly when age 65 is reached (Norway excepted, as the retirement age is at 67). Most countries lie in the quadrant of falls in pension wealth with an additional year of work and replacement rates of above 50 per cent. Replacement rates are considerably above this level in continental European countries. However, Germany, Korea, the Netherlands and Switzerland appear to be not too far off actuarial neutrality and Canada, the United Kingdom (at age 65), Japan and the United States (at ages 65 and 67) are even above actuarial neutrality, *i.e.*, they provide implicit subsidies to continued work at high ages.

- Incentives to retire tend to be stronger at 50 per cent of APW earnings, reflecting the effect of pension minima in many systems, which tend to push up replacement rates in the period of pre-retirement from age 60 to 64 and at 65 (Figure 3b). However, broad actuarial neutrality is maintained in most countries during the pre-retirement period and there are strong incentives to continue working at 65 in Japan, the United Kingdom, the United States and Japan. Incentives to retire early tend to be less marked at higher income levels (see Annex) reflecting various ceilings in the calculation of benefits in many countries.

28. How these indicators affect the individual retirement decision depends importantly on the weight attached to each and these weights may depend, amongst other things, on the employment status of the individual (and his or her partner or spouse) at the time the retirement decision is made. For example, workers with jobs may be more inclined to continue work than those who have fallen unemployed and who will have to search for another job, possibly accepting a lower wage.

[Figure 3. Replacement rates and changes in pension wealth under "regular" retirement schemes by age]

2.2 Retirement under special provisions

29. Various social transfer programmes can permit earlier retirement than under the "regular" retirement schemes. Not all countries have such schemes, and most of those without them generally have some provision for early retirement built into the regular age pension scheme. Table 9 gives a summary of the "special" schemes examined here, which are generally those which are considered to be the most used in each country as alternative pathways into retirement outside the regular old-age pension schemes. No attempt is made at being comprehensive in the coverage of such schemes.

[Table 9. Programmes permitting early withdrawal from the labour market]

Unemployment and other early retirement programmes

30. Incentives arising from unemployment programmes for Finland, France, Germany, the Netherlands, Spain and the United Kingdom are shown in Figure 4, which shows the replacement rate in the year that the person falls unemployed as well as the change in the pension wealth associated with

[39]. Change in pension wealth within the limits of + or – 20 per cent of previous earnings. However, as noted, the loss in pension wealth can be overestimated in some earnings related systems such as Italy.

working an additional year.[40] It is assumed that each individual will remain unemployed until retirement can be taken and use all the available programmes over the pre-retirement period. These can differ from country to country but could include mixes of unemployment benefits, unemployment pensions, unemployment assistance and social assistance.[41] For each programme the benefit levels as well as the rules for accumulating old-age pension rights are taken into account in calculating pension wealth.

31. The results[42] for unemployment benefits indicate that initial replacement rates are high, generally above 60 per cent with the exception of the United Kingdom where it is only around 20 per cent.[43] Changes in pension wealth are only marginally negative the case of the United Kingdom, reflecting the low level and flat-rate nature of the benefits, and Spain until the age of 63.[44]

[Figure 4. Replacement rates and changes in pension wealth under unemployment and other schemes by age]

Disability pensions

32. The impact of disability systems on retirement incentives was evaluated for Finland[45], Germany, the Netherlands, Norway and the United Kingdom. The calculations assume that the individual becomes disabled (or become classified as disabled) at the specified age and remain so until the earliest date when retirement benefit can be obtained. As in the case of unemployment, the replacement rate is the rate at the time the individual is classified as disabled at the age specified.[46] This rate is around 30 per cent for the United Kingdom. Replacement rates are around 60 per cent for all other countries except the Netherlands where it is above 70 per cent, rising to above 80 per cent above the age of 60. The change in pension wealth (from working an additional year) is significantly negative in all countries through the period,

40. Thus, the replacement rates do not reflect the lower rates under social assistance. The replacement rate averaged over the entire pre-retirement period should be lower than the rate in the first year of unemployment. But, this difference would tend to narrow with age: individuals falling unemployed at 55 are more likely to fall onto social assistance than those falling unemployed at, say, age 59.

41. For example, in the case of Germany, the individual falling unemployed at 55 would have, first, an unemployment benefit at 60 per cent (single person rate) for 26 months, and then the income-tested unemployment benefit at 53 per cent before moving on to social assistance benefit. The unemployment benefit increases to 32 months for those 57 and over.

42. Only information for APW earnings is shown as results for other income levels give broadly the same picture.

43. However, as noted, the replacement rate averaged over the overall pre-retirement period would be lower than this. As the benefit is of a flat-rate nature, it will form a higher percentage of previous income for those with lower earnings.

44. As noted in the text, the changes in pension wealth for unemployment programmes reflect a complex interplay between unemployment, social assistance and regular old age pension arrangement. Individuals falling unemployed at an early age, fall onto social assistance which often has much lower benefits (*e.g.* Spain). In addition in Spain, years spent in unemployment significantly reduce the level of reference earning used to calculate the old-age pension thereby providing an indirect incentive to continued work. This can lead to positive changes in pension wealth from working an additional year. Alternatively, the swing from positive to negative change in pension wealth between 62 and 64 years for Finland reflects the effects of the shift from unemployment pensions to the regular pension as the individual approaches 62, the age of eligibility for the regular old-age pension.

45. The Finnish individual disability scheme is to be phased out as a result of the reforms of 2003.

46. However, disability benefits tend to be constant over time and are thus less likely to change than for unemployment benefits (which can be exhausted).

although, less so for the United Kingdom, reflecting the lower level of benefit. Disability schemes unambiguously encourage early retirement.

[Figure 5. Replacement rates and changes in pension wealth under disability schemes by age]

Private occupational pensions

33. Private employer-employee arrangements can also permit earlier retirement, in the absence of access to public insurance and transfer programmes. These private arrangements exist in many countries under various forms (lump-sum redundancy payments or "bridge pensions" until the individual becomes eligible for public pensions). They are particularly important in countries with widespread (but not mandatory) company and occupational pension schemes, such as Canada, the United Kingdom and the United States.[47] Simulations have thus been made for these countries alone for "typical" pension arrangements. In each case, these typical occupational schemes are estimated on top of the regular retirement arrangements shown in Figure 3. This, however, can mask considerable variation across enterprises or industries and can only give very broad orders of magnitude of overall replacement rates and changes in pension wealth. These calculations are based on the assumption that early retirement is possible from 60 with full retirement at 65.

34. For these countries, the results for occupational pensions show the same broad picture as for programmes other than old-age pensions that permit early withdrawal from the labour force (Figure 6). Taking 60 as the earliest retirement age, replacement rates vary considerably in the examples chosen, ranging from around 45 per cent in the United States to over 60 per cent in the case of the United Kingdom. However, replacement rates increase sharply to around 90 per cent in the United States at 62 when individuals become eligible for the Social Security pension.[48] There are substantial increases in benefits in all countries for those delaying retirement until 65. Changes in pension wealth for an additional year worked are positive, the United Kingdom excepted, through the early retirement period but become sharply negative after 65.

35. However, in many cases, firms offer improved conditions for early retirement in the case of redundancies, for example by waiving the actuarial reduction in pensions for earlier retirement such that pension benefits are closer to the levels the individual would have had at 65.[49] To assess the possible impact of such a measure, the replacement rates and changes in pension wealth have been calculated for the United Kingdom and Canada on the basis of no actuarial adjustment for earlier retirement.[50] (See Annex for detailed assumptions). A comparison of the results with and without actuarial adjustment suggest that waiving the actuarial adjustment can provide a considerable incentive towards early retirement: the replacement rate is higher and the changes in pension wealth become negative in the United Kingdom, from about 60, and in Canada from 62.

47. This is also the case in Switzerland. However, occupational schemes for this country are discussed under the regular old-age retirement schemes shown in Figures 3 and 4.

48. The values on a pre-tax basis are considerably smaller, reflecting the relatively generous tax provisions for the retired in the United States.

49. Other measures are possible. For example, some companies in the United States have adjusted their benefit formula to increase the incentive to retire early at specific ages. In some "early out" arrangements, all employees of a certain class and number of years of service are offered an additional sum of money for retiring. While employees are not obliged to take this offer they typically do so (OECD, 2000f).

50. In general, it is assumed that an individual spends all his or her working lifetime in a single scheme or firm.

[Figure 6. Replacement rates and changes in pension wealth under occupational pension schemes by age]

3. Recent reforms and reform issues

36. This section identifies reforms undertaken in selected policy areas to ensure fiscal sustainability and a better balance of retirement incomes.[51] The first subsection concerns features of reform that influence the incentives to retire. The second subsection concerns the level and balance of income sources in retirement. In this context, it also examines the issue of income support for the very poor elderly. A final section looks at how countries are approaching the need for a sustained increase in the primary surplus as one means of preparing for the higher costs of age-related spending as the baby-boom generation enters retirement.[52]

3.1 Reducing incentives to early retirement

37. Member governments have been active in reducing or removing incentives for early retirement over the past decade. One important aspect of these efforts is reforms to public pension systems. The measures that have been undertaken are listed in schematic form by type in Table 10. The table suggests that a variety of measures to delay retirement have been taken, although the type of policy varies considerably across countries. Reforms appear to be moving in the opposite direction in Spain and in Norway, although in the latter, concern over retirement incentives is mitigated somewhat by the current high level of participation of older workers. More information on the changes is presented in Table 11, Panel 1.

[Table 10. Reforms to pension systems: later retirement]

[Table 11. Reforms to pension systems since the early 1990s: Additional information]

38. Increases in the "normal" retirement age under "regular" retirement schemes have been a key measure, sometimes combined with more flexible retirement and stronger incentives to continue work (*e.g.* Finland, Italy and Sweden). "Normal" retirement ages have been lifted for both sexes in the United States to be phased in by around 2027.[53] Italy raised the normal pension age by five years – from a relatively low 60 for men and 55 for women to 65 and 60 (to be phased in by 2008), and increased the minimum number of years of contributions from 20 to 35 for public sector employees (to be phased in by 2013). Japan raised the retirement age for its basic pension from 60 to 65 in 1994 (to be phased in over the period 2001 to 2013), while the retirement age for the state earnings-related pensions will be raised correspondingly (over the period 2013 to 2025). Iceland abolished the right of civil servants to take retirement at 60 in 1997. Hungary will raise its "normal" retirement age by two years to 62 by 2009. In addition, the normal retirement ages have been lifted for women in a number of countries where they could retire earlier than men (Australia, Germany, Italy and the United Kingdom). Equally, by increasing the number of contribution years required for a full pension, the French government has sought to discourage retirement at the earliest legal age (60). Early pensions based on long service are being phased out in

51. Descriptions of the systems can be found in the EDRC country reviews and in OECD (2001a).

52. Country coverage is restricted to the 16 countries covered in the EDRC country chapters and in (OECD, 2001a) and broadly covers the 1990s, although a few important reforms that occurred prior to this and where the phase-in periods are particularly long (*e.g.*, the United States) are also included.

53. Under legislation in 1983, individuals born in 1960 or thereafter will have a normal retirement age of 67. The age at which an early pension can be drawn remained unchanged at 62, but the benefits drawn at that age will, due to the operation of the reduction factor, be much lower than before.

Germany and Italy. Early pensions because of unemployment are also being phased out in Germany and the age of eligibility for such a pension is being raised in Finland.

39. A number of countries have moved to change the actuarial fairness of the system. The cost of retirement before the "normal" age of retirement has been increased in Finland by lowering the accrual rate for the age pension earned by people on pre-retirement benefits. The Finnish government has also increased the incentive to retire later by raising the public pension accrual rates for those who work after 60 and similar arrangements to those introduced in 2003 for the private sector are under consideration for the public sector. The notional-defined contribution systems introduced in Italy and Sweden during the 1990s permit early retirement, and apply a form of actuarial reduction to the benefits received. Late retirement (after the "normal" retirement age) has been encouraged by the introduction of benefit appreciation in the German system and in the new Swedish system. The Australian government has sought to encourage working later by offering a tax-free bonus to those who work beyond 65 and who would otherwise qualify for the old age pension.

40. Given the variety of pathways to enter retirement, policies have also acted to tighten up access to alternative arrangements. Most countries have implemented reforms to limit access to disability pensions to medically identifiable conditions (Table 12). Access to disability pensions has been made stricter in Australia, Germany, Italy, the Netherlands, Norway, Spain, Sweden and the United States. In Finland and the Netherlands, a form of "experience rating" has shifted the costs of disability pensions back to the employer and, in the former, the individual disability pension is to be phased out. Other countries, such as Italy, have increased the costs to employers by forcing them to take on greater responsibility for rehabilitation and job retention policies.[54] Some countries have also introduced more frequent medical reviews of disability cases, complemented by greater incentives to return to work, increased emphasis on rehabilitation or the end to the award of permanent benefits (Australia, Germany, Italy, the Netherlands, Norway, Switzerland and the United States). Although not reviewed here (but included in the calculations in Section 2), a number of reforms have been taken to unemployment benefit systems to lower benefits, shorten benefit periods and to enforce job search criteria for older workers in a variety of countries.

[Table 12. Reforms to disability systems]

41. Public policies affecting private pensions or private "pre-pensions" that act as a bridge until the regular retirement age have also been reformed in a few countries. In the Netherlands, collectively-agreed early retirement schemes cover a large proportion of the workforce and offer considerable incentives to leave work early. The contributions to these schemes have been tax-deductible, but the government has decided to progressively phase out this allowance by 2022**.** In future, such tax allowances are only granted to collectively-agreed pre-pension schemes that tie in with occupational pension schemes and pay reduced benefits to those who leave work early and higher benefits to those who leave work late.

Demand for older workers

42. While improving incentives to remain in the labour market is important, those who do so must also keep their jobs or be able to find new ones if they are laid off. In this context, the cross-country evidence is encouraging. Countries vary widely in the participation rates of older workers but equally widely in employment rates, suggesting that there are no inherent barriers to employment of older workers. Policies that improve the overall functioning and flexibility of the labour market may be particularly important for older workers, who may be more vulnerable to dismissal and less attractive to hire. In this

54. However, such policies, as well as "experience rating", may have negative effects on the demand for unemployed older workers.

latter respect, employment protection legislation that constrains employers to retain workers once hired is likely to have a negative impact on labour demand.

43. Flexibility in adjusting wages to productivity may well be important to maintain the demand for older workers[55] even though declining wages will reduce the supply of older workers. There can be a link here with pension arrangements for early retirement as overly generous replacement rates may generate strong disincentives to downwards adjustment of wages. Wage subsidies for employers who hire older unemployed people have been introduced in France and Korea and extended in Germany to improve the employment opportunities of older workers (Table 13 and Table 11, Panel 2). In Japan a new wage subsidy was introduced, payable to older people who accept lower paid work when they have reached the mandatory retirement age of firms (usually 60) (Table 13). In Korea, firms are encouraged to hire older workers (55+) and receive a subsidy if they have more than six percent of their staff over this age.

[Table 13. Measures aimed facilitating employment amongst older workers]

44. As individuals move towards retirement, investment in marketable skills through training declines as the period over which this investment can be amortised becomes progressively shorter. As a consequence, it is not surprising that the incidence of training falls with age (OECD, 2000f, OECD, 1999d). A corollary is that if policy reforms manage to raise retirement ages this is in itself likely to raise the incidence of training among older workers – though the magnitude of this effect is unclear. Most reforms in this area have not put in place specific programmes for older workers. Rather they have instead attempted to ensure that older workers are not excluded from such programmes. Going beyond that, the United Kingdom has introduced new training policies specifically targeted at older cohorts. The Netherlands introduced tax incentives for the training of workers over 40[56] Finland has established specific research agendas aimed at providing a better understanding of the situation and needs of older workers (OECD, 2001f).

45. In some cases, older workers may face discrimination on the basis of their age. To some degree this may reflect a higher perceived risk attached to older compared with younger workers and what appears to be discrimination may, in fact, be a reflection of these concerns in hiring practices. While there may be some question of the effectiveness of policies aimed at preventing discrimination, action has been taken in some countries. The United States has had a comprehensive ban on age discrimination in employment legislation since the late 1960s; the Netherlands has legislated to outlaw age discrimination in recruitment; and Australia has outlawed it in dismissals. The Netherlands government has also stressed that employers have a responsibility to make employment conditions friendlier to older people. The UK government published a non-binding code of practice with respect to age, governing all aspects of the employment relationship from recruitment over training and promotion to dismissal.[57] Only Korea has instituted quotas for the employment of older workers, but these are generally non-binding and apply only to the public sector.

46. Greater flexibility in the working hours will be important in retaining in the labour force those older workers who are willing to work but only part time. Finland, Germany and Spain have acted to encourage a more gradual retirement as an alternative to full early retirement. In Finland, the age of access to the individual early retirement benefit was lifted whilst the age of eligibility for its part-time pension

55. For example, highly paid older workers in large corporations in Japan often shift to subsidiaries at lower wages.

56. However, this appears to have led to a reduction in training for workers in their late 30's.

57. However, the government there prefers to rely on exhortation rather than compulsion although it has stated that, if the former does not prove effective, legislation will be considered.

was lowered. In Germany, several measures have been introduced in the 1990s. In 1992, individuals were allowed to take 1/3 to 2/3 of a regular old-age pension and to continue working part time. In 1997, workers over the age of 55 were granted access to another part-time early-retirement arrangement.[58] Spain has introduced a system of partial retirement to promote a gradual transition from work to retirement with a part pension based on the pension that will be received at age 65. In contrast, a similar, long-standing and widely used part-time pension scheme was dropped in Sweden, since it was seen as encouraging early withdrawal from work.[59] Recent reforms to the tax laws governing occupational pensions in the Netherlands also make part-time pensions possible, while certain of the newly-negotiated pre-retirement systems also foresee possibilities for partial as opposed to full retirement.

3.2 Reducing public pension benefits while sustaining the adequacy of retirement income

47. Reductions in the level of public pension benefits reduce the cost of pension schemes directly and, in most systems, will encourage individuals to retire later. Key measures taken by countries as regards benefit levels are indicated in schematic form in Table 14 (with detail provided in Table 11, Panel 3). The left-hand portion of Table 14 contains an estimate of current system generosity in the form of replacement rates for a typical worker drawn from Section 2 as well as the projected decline in average benefits of public transfers systems from Table 4 (col. 8).

[Table 14. Reforms to pension systems: benefit levels]

48. The most frequent reform for reducing pension benefits in defined-benefit PAYG systems has been to change the way in which benefits of recipients are indexed over time. A change from wage indexing to price indexing has been made, to varying degrees, in Finland, Hungary, Italy, Japan and Korea (Table 14, col. 4). Very few countries now appear to adjust pensions fully in line with wages, the only exceptions in the countries included here being Norway and Sweden.[60] In Germany, the major reform legislated in 2001 ties pensions to movements in gross wages net of contributions to the public pension system, thereby passing a share of the costs of ageing populations to pensioners themselves.

49. Another form for reducing pension benefits has been to alter the reference earnings with respect to which pensions are calculated (col. 5). This was done in Finland, France, Spain, and the United Kingdom, while for Italy and Sweden, the changes reflected a move to a notional-defined-contribution system. The longer reference period moved, in some cases, from "best years" to a "period average", further lowering the average replacement rate, although this was also aimed at avoiding increases in pensions by individuals who "arranged" for sharp increases in earnings just before retirement is taken. In some countries, alternatively or in addition, the method of calculating the reference earnings itself was changed (cols. 7 and 9) such that pensions are accumulated on a lower part of total actual earnings (Finland, France, German and Norway). In France, the number of contribution years required to obtain a full pension has been increased (col. 6).

---

58. In this scheme, workers can allocate the part-time work flexibly over the remaining period to retirement. Thus, a worker choosing half time at 60 could work 2½ years at full time and then retire completely at 62½.

59. The new Swedish pension system does, nonetheless, permit a partial liquidation of benefits once the minimum pension age has been reached, and those continuing to work part-time continue to accrue *pro rata* benefits.

60 It should also be noted that Australia adjusts to prices and otherwise tops ups benefits by wages. Pension increases can be higher than wages where the rise in the consumer price index is greater than that in average weekly earnings.

50. Third, some countries have moved to adjust benefits downward "automatically" with the lengthening of average lifetimes, thereby increasing the fiscal robustness of the pension system and making the system fairer across cohorts (col. 8).[61] Otherwise, lengthening lifetimes would lead to longer periods of retirement and an increase in pension wealth. In particular, the Italian and Swedish systems foresee downward adjustment to benefits at regular intervals as expected lifetimes increase. Finland has recently introduced similar measures. However, the Italian legislation leaves scope for negotiation between the government and the unions over the precise adjustment, such that the fall in pensions may turn out to be less marked than assumed in the projections described in Section 1.

51. Some countries also have cut benefits directly. The most substantial cut was that legislated in Korea.[62] In Germany, the actual benefit reduction will be much smaller and is being introduced more gradually. In the United Kingdom, average benefits are cut by replacing the (semi-) earnings-related supplementary pension system with a flat-rate benefit system. Since the level of the real basic pension remains constant in real terms over time, the value of that benefit relative to average incomes will fall steadily over the coming years (see below).[63]

3.3 Private pension arrangements

52. As stressed in OECD (1998) and OECD (2001a), the most important means for individuals to ease the impact on living standards in old age of cuts in public pensions is through individuals providing more for themselves through their participation in private retirement savings arrangements. In practice, this already occurs in a wide range of countries and, as a result, incomes in retirement – after taking into account other income sources – are more similar than the differences in generosity of public pension systems would suggest.[64] Apart from increasing individuals' private retirement income, shifting towards private savings schemes could have a variety of effects. Insofar as shifting to private savings increases aggregate savings and investment, the size of the "cake" to be divided would increase, making the cost of ageing easier to finance.[65] But shifting to private savings schemes also increases the exposure of pension wealth to market fluctuations (or bankruptcy or fraud) and, in order to minimise these risks, an appropriate regulatory framework is required as the recent case of Enron demonstrates.

53. Of the countries considered in this paper, private pension arrangements already form an important share of retirement income in Canada, Iceland, the Netherlands, Switzerland, the United

61. Where lifetimes lengthen, monthly benefits per pensioner are reduced such that the discounted sum of pensions over retirement remains broadly unchanged.

62. The effect of this on average benefit levels (pension payments divided by number of beneficiaries) as shown in Tables 4 and 14 is offset to a large extent by the effect of the maturing of the pension system.

63. While the context is not the same, the Australian government has sought to reduce the level of benefits received within the means-tested public pension indirectly by setting the earliest date of liquidation of mandatory private retirement savings (Superannuation) to age 60, rather than the current age of 55 (phased in over the period 2015 to 2025). This is to restrict individuals' spending private retirement savings early (or moving them into sheltered investments) so as to maximise their benefit under the state income-tested arrangement.

64. See OECD (2001a), Table 2.2, which shows that, for 9 countries, household income of those of retirement age relative to income of households aged 51 to 64 are in a relatively narrow range of 74 to 87 per cent despite very different institutional arrangements. Countries with low public pension schemes tend to have higher earnings and higher income from private savings.

65 Whether, and to what extent, aggregate savings would actually increase as a result of a shift toward private saving arrangements is a subject of much controversy in the literature and transition costs and their fiscal implications also have to be considered (see Turner *et al*. (1998) and Kohl and O'Brien (1998)).

Kingdom and the United States. This will become progressively more the case in Australia, as well as the superannuation guarantee arrangements mature. In the course of the past decade, a considerable number of other countries took steps to increase the role of private pension provision, thus putting in place some re-balancing in the sources of retirement income. However, the extent varies considerably across countries. For example, the UK government is seeking to switch the balance of overall retirement income from one where the public-private mix is, on average, 60:40 to one where it is 40:60. To do so will require extending participation in private pension plans to lower-paid workers and to workers in firms and in sectors where employer-based schemes are infrequent or non-existent. While average benefits are not projected to decline significantly, the Hungarian pension system was transformed in 1998 to a two-pillar system with one quarter of contributions going into a private pension fund for new labour market entrants (Table 15).

[Table 15. Reforms to pension systems: balance of retirement income and poverty alleviation]

54. Legislation governing new private pension arrangements has been passed in Germany, Italy and Japan. Germany and Italy have introduced policies to establish the framework for private pensions, organised either on a collective or an individual basis. In both cases, but particularly in Italy, existing structures were limited, either in their coverage or in the level of benefits they provided, largely because state provision to date had been so encompassing. Progress in Italy has been limited, partly because legislative details remain either unsatisfactory or incomplete, and partly because the social partners, who have to negotiate specific plans, have been reluctant to move so far.[66] The German arrangements offer tax incentives to individuals who open the newly permitted individual accounts, but the level of annual (tax-deductible) private savings is relatively small compared with the contribution to the public system. In Japan, the law permits employers to offer defined-contribution schemes based on individual accounts as an alternative to traditional defined-benefit plans, but it does not require them to offer either. In the new Swedish system, a small part of the total pension contribution goes to a private account, with all of the insured having to make the relevant contribution (although this is still considered as part of the mandatory first pillar)

55. In the United Kingdom, regulations were radically revised to ensure greater public confidence in private provision following failures of some pension funds and the marketing of some inappropriate and costly plans during the 1990s. Specifically, this has involved the government taking steps to regulate the terms under which individual pensions can be marketed and to impose limits to the costs that are associated with such pensions. The German government, too, has laid down minimum standards to which the newly introduced individual pensions must comply. The strengthening or extension of financial market and legal structures covering private pensions and private pension fund investments is common to countries where retirement income diversity is being promoted. Regulatory control has been improved in Finland and in Italy.[67] In the United States, the failure of Enron and the loss of employees' savings in "401k" plans has led to the discussion of new legislation aimed at permitting greater diversification of assets in these schemes.[68]

56. People with occupational pension plans often face problems of portability and vesting when changing jobs. These restrictions mean that a person may lose a good part of the value of her/his contributions when changing jobs if a minimum number of years of contributions have not been

66. For example there has been no decision on the transformation of existing employee savings in the *Trattamento del Fine Rapporto* (TFR) arrangements into retirement savings which would provide an important "kick-start" to the system.

67. In addition, a number of countries have eased rules governing the structure of assets held by pension funds (Australia, Iceland, Finland and Germany).

68. The "401k" accounts of employees held Enron equity (the contribution of the firm to these accounts) and the company prevented employees from selling these assets before the age of 50, the maximum permitted under existing legislation.

completed. In addition, the value of the pension may well fall (under defined benefit schemes) because it is based on the wage when leaving the firm rather than the wage at the time of retirement. Such problems can become even more marked when individuals change countries, which may restrict labour mobility, for example in the European Union. Finland, Italy, Japan and Sweden have introduced immediate vesting while the minimum period is two years in the United Kingdom and two to five years in Canada (depending on the province). Portability of pensions has been encouraged in a number of countries. Finland and the Netherlands have introduced clearing-house arrangements, facilitated by a high degree of uniformity across schemes.

57. A key question in considering the shift to private pension arrangements is whether such systems can adequately protect the poor in an environment where reductions in average benefits in public pension arrangements are projected (Table 14, col. 3) and where relatively few countries have introduced specific new policies aimed at protecting those on low incomes (Table 15 and Table 11, Panel 4).[69] In most countries, lower income groups rely almost entirely on state pension schemes. Within this context, the issue of the impact of a shift towards more private retirement savings on lower income groups remains unresolved in a number of countries. Participation in a private pension scheme is not mandatory in Germany, Italy or the United Kingdom. These countries, like Spain, have offered tax incentives or subsidies – aimed particularly at employees with lower earnings – in an attempt to make participation more attractive. Experience in North America suggests that lower income groups benefit relatively little from such tax expenditures.[70] Alternatively, private savings can be made mandatory, as is the case in Australia, in Sweden under the new scheme and in Switzerland.[71] Occupational pension arrangements are also quasi-mandatory in the Netherlands and Finland where such private schemes cover over 90 per cent of the population.

58. Given that the existence of assistance benefits means that those not saving will inevitably be supported by the state, mandating private pensions may be desirable to avoid "moral hazard" effects. However, mandating private pensions has its own implications and costs. First, it is by no means certain that contributions will be considered as savings and not as taxes. Indeed, if the total amount made in contributions has to increase in order to ensure an adequate level of well-being in old age on the basis of both a public and a private pension, the overall perceived tax wedge could then increase significantly.[72] If it

69. This issue may be particularly acute in Italy, Japan and the United Kingdom, three countries where the expected fall in average benefits are high and a range of indicators suggest a relatively large share of the elderly lived on low incomes in the mid-1990s (see OECD, 2000f, Table 4.5) and Förster, 2000). However, the United Kingdom has introduced a Minimum Income Guarantee which will be linked to earnings, so that the least well off share in overall productivity growth. But such income or asset tested approaches could increase spending (the Income Guarantee was not included in the projections described in Section 1) and also create moral hazard effects with negative consequences for work and savings.

70. For example, estimates for the United States suggest that the two thirds of the benefits go to the top quintile while the bottom two quintiles of the population receive only 2.1 per cent of the tax benefit (OECD, 2001a).

71. Australia differs from the other countries in this study as it never has had an earnings-related public pension system. Rather it has a state pension which is set at a relatively low level and is means-tested. Private pensions are intended to improve living standards in old age but, since the benefits they will provide are taken into account in assessing public pension entitlements, they should also reduce the extent to which the state will contribute to ensuring well-being in retirement. In Switzerland, however, certain low earner groups – who have possibly the most need for such a scheme to avoid low incomes in retirement -- are excluded from the mandatory second-tier system. For Sweden, it should be noted that the private savings component forms part of the new state pension scheme.

72. For example, the German government wishes to keep the contribution rate to a maximum of 22 per cent by 2030 (compared to 19 per cent today), but assumes that individuals will be paying 4 per cent of income on top to private pension plans (nothing today), so that the total contribution will be 26 per cent.

does, the supply of labour may be lower than otherwise and the higher labour force participation rates upon which the projected fiscal outcomes in Section 1 are predicated might not be achieved. Second, declaring a system mandatory implies that the government takes some responsibility for its functioning. Some governments set minimum performance standards for private schemes, while in all cases it is unclear whether they could refuse to intervene in the case of a plan failing or substantially under-performing.[73] This means there is an implicit liability carried by governments mandating private pensions, and this implicit liability should be taken into account when the level of public debt is assessed (see Casey, 1998). Finally, for households with low earnings, mandatory savings may squeeze incomes net of savings during working lives. In addition, since the level of savings accumulated over their working lives is likely to be small, these may not be sufficient to bring them above poverty thresholds in retirement. Thus, irrespective of the choice as regards mandatory savings, consideration also needs to be given to ensuring that minimum pensions or similar arrangements limit this risk.[74]

3.4 Pension reserve funds and improving the public sector balance sheet

59. As discussed in OECD (2001b) and Dang *et al*, (2001), one option for easing the fiscal constraints arising from age-related spending is to sustain an adequate primary surplus over a long period of time, thereby increasing government saving and pre-funding part of the future government liabilities associated with large pay-as-you-go pension schemes. A number of countries have significantly increased primary surpluses over the past decade – sometimes at a cost of increases in tax pressure – and some are rapidly running down debt (Table 5). A key issue in this environment is how to sustain these surpluses over time when there are demands for higher spending on the one hand and for tax cuts on the other.

60. Some governments have sought to set up pension reserves to set aside these funds in a more formal way (Table 16). Most public pension schemes have small reserves, but these are intended only to help smooth cash flow. Larger funds have been held in five countries – Canada, Finland, Japan, the United States and Sweden.[75] Both the Japanese and the Swedish reserve funds have in the past been criticised for investing in projects that, while they may have been socially useful, have brought returns considerably lower than would have been earned in the open market. The Swedish fund is currently being run down by using it to help pay the transition costs associated with the introduction of the new "notional defined-contribution" scheme.

[Table 16. Policies to ease the financing of age-related spending]

61. At the same time, the size of the Canadian fund is being built up substantially, from the equivalent of two years to the equivalent of five years out-goings. The build-up is made possible by the setting of contribution rates at a level higher than is needed to maintain the current equilibrium. The reserve fund will be run down in the future to assist paying for pensions at the time when the old-age dependency rate has reached its peak. France has recently initiated a reserve fund for its public pension scheme. This fund has received an initial endowment from the state and the fund is to be augmented by any future surpluses in the pension and other social security funds, plus any other windfalls including (possibly) receipts from privatisation.[76] The largest pension fund is that held in the United States and built

73. The experience of the United Kingdom over the past decade provides examples of this in the "mis-selling" of pension schemes by private pension providers. See OECD (2001a) Box 6.2.

74. This, however, may raise difficult tradeoffs as regards the incentives to work and to retire for low earners.

75. Not discussed here are the funds held by mandatory supplementary pension schemes such as those in Switzerland.

76. However, a recent decision of the Constitutional Court has limited the scope for using social security surpluses to finance this fund.

up explicitly to provide a cushion against demographic pressures. Unlike the Canadian, Finnish and Swedish funds, the United States Social Security Trust Fund invests only in government paper. Accordingly, they could be said to represent claims on deferred taxation. There has been much discussion in the United States as to whether at least some share of trust fund income should not be invested in the equity markets so that, over the longer term higher returns might be earned and claims upon future taxes reduced.

62. Policies are attempting to increase the rate of return on invested capital. The role of the Japanese fund is being revised. New management structures are being established and the remit of the fund, in the future, is to invest in a fashion that maximises returns to the pension scheme and to pensioners rather than to assist the realisation of projects deemed to be "in the public good". The investment rules of the Canadian, Finnish and Swedish funds are also being revised such that they have greater freedom to invest in equities and to invest abroad. In these cases, current portfolio restrictions implied being tied too closely to the performances of relatively small economies and/or to investment in the securities of their own governments.

63. As well as building up pension reserve funds, governments can seek, more generally, to prepare themselves to meet the coming costs of societal ageing. The Netherlands government is committed to running down its debt, thus reducing interest payments and using the savings here to create leeway for age-related spending in the future. The Norwegian "oil fund" is also regarded as being one of the sources from which increases in expenditure resulting from societal ageing will be met, although none of the resources have, as yet, been hypothecated and potentially conflicting claims are made for them. The Swedish Government has an explicit policy as regard the cyclically adjusted deficit so as to run down debt and build up assets in the pension system.

4. Caring for the elderly

64. As suggested in Section 1, spending on long-term care for the elderly can be expected to increase over coming decades as the share of the very old in the elderly population increases. But because of the wide range of factors at play, the importance of this increase is particularly difficult to judge (Box 2). Against this background, the crucial issues for long-term care policies concerns the appropriate level of supply of long-term care for the elderly, the most cost-effective pattern of care between hospitals, nursing homes and care in the home and the way in which these services are supplied and financed. In assessing these policy issues, relatively few countries appear to have broad and consistent care policies in place, partly reflecting the fact that in many, if not most, countries the supply and control of these services is the responsibility of lower levels of government. Within this context, the prevalence of reforms with a wide-scale impact is low (see OECD (2000f), and EDRC country review special chapters). Recent policies are described in schematic form in Table 17 (for greater detail see Table 18).

[Table 17. Reforms to long term care]

[Table 18. Reforms to long term care from the early 1990s: Additional information]

Box 2. Factors affecting government spending for the frail elderly

Public spending on care for the frail elderly currently only represents on average around one per cent of GDP (Table 19). There are large cross-countries differences in spending on and approach to this area of care. On the basis of the OECD Social Expenditure Data File (SOXS), which may not provide for full comparability across countries in this field, spending for the frail elderly is highest in the Scandinavian countries where it reached three per cent of GDP or more in the late 1990s, reflecting the heavy emphasis on institutionalised care in those countries. The level of spending is less than one per cent of GDP in most other countries. It is particularly low in Southern Europe, Korea and Japan, where the family has traditionally provided support for the elderly and where parents often live with their children.

In the future, there is likely to be a upward trend in the demand for care services for the frail elderly arising from:

- Changing social norms, particularly in countries where parents currently still reside extensively with their children (*e.g.,* Italy, Japan, Korea and Spain).
- Smaller family size and greater geographical mobility of children – factors that reduce the pool of individuals able to care for ageing parents.
- Reduced time available for informal care if the participation of women in the formal labour market increases and men retire later, as assumed in the projections in Section 1.

On the other hand, heavy disability, which is the key determinant for the demand for high cost care has been falling in many OECD countries. If this trend continues (which is uncertain), the growth in long-term care costs could be significantly reduced.[1] In addition, longer disability-free life spans may mean that there is greater scope for the "young old" to help the "older old".

1. Projections of long-term care costs by Jacobzone *et al*., (1999) to 2020 comparing outcomes on the basis of no change in disability and a continued fall in disability for nine countries show that a continuation of current trends could have a marked impact on future long-term care costs.

[Table 19. Spending on care for the frail elderly]

[Table 20. Living arrangements of elderly persons]

65. Korea is extending its long-term care coverage and Italy and Spain are also expanding services, but progress in this area appears to be slow (OECD, 2000c, OECD, 2001f). Most countries are aiming to reduce the overall cost of services by better matching of the services provided with individual need so as to avoid the use of high-cost hospital or nursing care where it is not required. (*e.g.*, Italy and Japan) (OECD, 2000c, OECD 2001c)). A shift from institutional care towards "ageing in place" in the homes of the elderly – aimed at achieving further cost saving – is taking place.[77] Although information is sparse, a number of countries have reduced the share of the elderly in institutional care in the late 1980s and early

77. The degree of savings that can be expected from a shift to domiciliary care depends very much on the degree of disability. In practice, significant cost savings from shifts from nursing to home care are likely for those with moderate degrees of disability. The costs of care in the home can increase steeply for higher levels of disability (Jacobzone, 1999).

1990s (Table 21), an outcome that most of the elderly feel as desirable.[78] Specific policies aimed at improving this balance have been put in place in Australia (which has a national policy framework to address these issues), Italy, the Netherlands and Norway. In addition, several States in the United States have been experimenting with "managed care" solutions that permit a better articulation between institutional care and assistance at home. As regards the allocation of supply, a few countries (Finland, Germany, Italy, Japan and the Netherlands) have established systems to evaluate the degree of disability and to find the best matching of services with needs. Such arrangements are particularly important where there is excess demand for these services or in insurance systems (Germany, Japan).

[Table 21. Share of the population in institutionalised care]

66. As regards the method of supplying care[79], more contracting out of formal help at home to private firms is taking place in some countries including Sweden and the Netherlands where public provision has been more common. In some of these countries, government transfers or tax expenditures are available to individuals to purchase these services. Public accreditation of institutions and quality control are likely to be an important function of governments in this context (OECD, 1999c).

67. Payment for care – which has an important function in the regulation of demand – has been addressed in a variety of ways. Most countries (other than Norway and Sweden where it is considered to be a citizenship right) have some form of user charges which are paid by the elderly and these are often income-tested or have ceilings so to minimise problems of access. Asset-testing also takes place in a number of countries (*e.g.,* France and the United States) with the state recouping the care costs from the individual's estate in some cases. To avoid income and asset testing, Germany and Japan have instituted mandatory long-term care insurance schemes to which all people at work contribute. These provide a partial coverage of long-term costs – subject to a ten per cent co-payment in Japan or a fixed amount according to the degree of frailty in Germany. The United States has favoured private insurance but the coverage remains thin (four per cent of the population) and, in many cases, insurance policies often lapse because payment of premiums has not been continued (OECD, 1999c).

68. Some countries have provided transfers to enable people to purchase services while living in their own homes. These have included allowances to family members who provide full-time care (Australia) and payments to neighbours and friends who provide occasional or part-time services (Australia, Canada, Finland, France and Switzerland, and in the United States, through tax credits) (OECD, 2000f and Jensen and Jacobzone, 2000). Benefits from the German long-term care insurance system can be used to purchase care privately (including from family members) as well as to pay for publicly provided services. All of these initiatives seek to exploit the availability of "informal" carers. By rewarding them for their service, they may reduce the likelihood of older people making calls upon more costly formal services and allow them to stay in an environment in which they feel most content.

69. Governments in many Member countries have recognised the need to provide a better co-ordination between their health services and their social care services. This requires creating national frameworks for care policy, setting minimum standards to be met along with the information systems

78. Concern over too much home care can be seen in the Netherlands, where recent policy has stressed that it may be more cost effective to resort to institutional care rather than to provide intensive care and assistance at home.

79. As regards supply, private institutions are common among nursing homes and other residential institutions for the elderly, typically providing 25-50 per cent of the supply. This is much less the case in the Nordic countries, while in the United States the supply of all residential institutions is private, with the bulk of these operating on a for-profit basis. Such practices are also extensive in Australia and the United Kingdom.

necessary to monitor them. Formal examples of this are to be found in framework plans drawn up or currently under negotiation in such countries as Australia, Canada, Finland, France, Spain and Sweden. Programmes to improve the information available for improved planning and policy has been evoked or put in place in Canada, Korea, Switzerland, Sweden the United Kingdom and the United States.

5. Policy conclusions: a broad approach to reform

70. The previous sections of the paper have provided a broad overview of the challenges that countries face in the light of ageing populations and of the policies that they have enacted so far. This final section suggests areas for further reform, drawing essentially on the policy prescriptions made by the EDRC review committee for the countries for which special chapters on ageing have been prepared[80], and from OECD (2001a) (see Table 22). These recommendations have been structured around the key conclusions presented in OECD (1998).

[Table 22. Main conclusions drawn from EDRC country reviews of ageing policies]

Pursuing fiscal consolidation and adjusting pension generosity

71. Given the (often large) projected increases in age-related spending, most countries were recommended to reduce the cost of pension programmes further, in particular by:

- Continuing or accelerating the introduction of pension reforms (most countries);
- Adjusting the parameters for calculating retirement benefits (including indexing after retirement) to make these less generous (Finland, Hungary, Iceland, Korea, Norway, Spain and the United States);
- Increasing the age of retirement (see below);
- Providing space for future increases in age-related spending by (improved) pre-funding of public pension systems. This can be done, directly, by increasing funding of existing arrangements, by transfers from government (as recommended for Australia, Finland, the United States and Japan) or, indirectly, by reducing general government debt (and debt interest payments) as recommended in the surveys of Spain and the Netherlands. Improvements in fund efficiency to improve their rate of return were also suggested (for Korea and the United States). For Norway, the use of the Petroleum Fund to pre-fund a (restructured) earnings related pension was also suggested as one option.

Increasing the average effective age of retirement

72. It was generally recommended that countries needed to set policies so as to discourage early retirement. This concerns both old-age retirement pension schemes, where they provide strong incentives to retire before the normal retirement age in some countries, as well as programmes permitting early withdrawal from the labour market through unemployment and disability, which continue to provide alternative pathways into retirement. The following measures were recommended:

- Increasing the normal retirement age and/or the age of earliest retirement under “regular” pension schemes (Hungary, Italy, Switzerland, Australia) or accelerating the introduction of measures already legislated (Italy and the United States).

80. See footnote 2.

- Removing incentives to retire before the normal retirement age and/or increase incentives to continue working after that age by making pension systems actuarially neutral (Finland, Italy, Korea, Spain, Norway, United States, Spain, Italy, Hungary).

- Tightening access to benefit programmes permitting early retirement. Such programmes have been heavily used in Finland and the Netherlands but they are also of concern in Hungary and Switzerland (complementary benefits), Spain (redundancy allowances) and Germany.

Improving the employment situation of older workers

73. Policies to increase the average age of retirement need to go hand in hand with policies that ensure adequate employment opportunities for older workers. Apart from underlining the importance of measures that improve the general working of the labour market, a number of specific measures affecting both the demand for older workers and their availability and skills have been suggested:

- Increasing demand for and supply of jobs for low-paid older workers through job subsidies (Australia), or lower social contributions or taxes (Finland, Hungary and Switzerland);

- Encouraging more wage flexibility for older workers (the Netherlands);

- Increasing emphasis on life-long learning or training of older workers (Australia, Korea, Italy, the Netherlands, Spain);

- Improving active labour market policies for older workers (Australia and Finland).

Improving the mix of retirement income and regulations for private pension arrangements

74. A higher share of retirement income from private sources makes it less likely that reductions in replacement rates of public pensions lead to an increase in poverty among the elderly. Policies to increase private savings for retirement were suggested for a number of countries where these are not currently in place or well developed (Finland, Italy, Korea, Norway and Spain). In selected cases it was suggested that existing arrangements be transformed into retirement schemes (TFR in Italy and the leaving allowance in Korea, and in the latter case, extended to all workers). A wider coverage of mandatory private systems to include lower income groups was recommended for Switzerland and the United States) and additional measures to sustain income adequacy of lower income retirees in the future were suggested for Japan.

Strengthening the financial market infrastructure

75. As a higher share of capital income increases the exposure of retirement income to market fluctuations (or bankruptcy or fraud), appropriate review and oversight of private pension arrangements become more important. In a few countries, the EDRC Reviews recommended improved supervision of private pensions arrangements (Korea, Switzerland). In Italy, where the new regulatory authority had just been put in place, there was a need for an accelerated process of accreditation of private funds. For Spain, equal employer-employee representation on boards governing pension funds was suggested. More co-ordination was suggested in Switzerland, where regulatory overview is divided between the central authorities and the Cantons. In that country and in Iceland there was also a need to increase the size of private pension funds so as to minimise operating costs and improve the quality of management of smaller funds.

Improving cost-effectiveness in care services for the frail elderly

76. Given the expected increase in health care spending – in particular for the frail elderly – a key policy challenge is to establish a framework for policy which covers all health and long-term care services for the elderly and relatively few countries have succeeded in this area. More specifically, it has been recommended to increase available supply, reduce regional disparities in the availability of care and provide a supply of services in line with needs and which minimises costs (Finland, Hungary, Iceland, Italy, Spain, United States). In addition, a review of user charging has been suggested for a number of countries so as to increase the share of care costs paid privately, and, in a few cases, to extend existing income tests (that have been put in place protect those on low incomes) to include assets with subsequent recuperation of the costs of care from the individual's estate (Iceland, Norway). Improved assessment of the degree of disability to ensure that care is in line with needs was suggested for Switzerland and the United States.

A broad approach to reform

77. Virtually all countries have aspects of ageing-related policies that need to be addressed even though there has been considerable progress over the last decade or so. In doing so countries will need to take a broad approach to reforms as described in OECD (1998). This reflects the multiple objectives to be achieved and the fact that age-related policies are, to a large measure, intertwined. For some areas and countries reforms will pose difficult tradeoffs.

78. Within this broad context, achieving a sound fiscal outcome during the period of rapid ageing over the next 3 to 4 decades is a prerequisite for success. The projections presented in Section 1 suggest that age-related spending will rise substantially as a share of GDP in most OECD countries even after the reforms taken up to now. Further changes are, therefore, needed and, since experience shows that these take considerable time to agree and to phase in, the earlier this reform process begins the better. In order to gain political acceptance, the cost of these reforms will need to be spread equitably across generations. Policies, that place the bulk of the change on the old or the young, are unlikely to achieve the needed consensus for change. In this context, policies that also help promote growth – and therefore make costs of ageing easier to absorb – are likely to be superior to policies that do not. As a first step, governments can achieve considerable improvement in the fiscal outlook by increasing public sector savings and running down debt: relatively small improvements in the primary balance could have a substantial impact on the fiscal situation if sustained over a long period. In many cases, however, the authorities will need to consider reducing the generosity of ageing-related programmes as well. Measures leading to later retirement are particularly desirable because they also favour economic growth. Nonetheless, in countries where replacement rates remain particularly high, and where little reduction is foreseen, cuts in public old-age pension benefits may be needed. In addition, higher private retirement savings are also desirable to supplement less generous public pension systems and it may have the additional advantage of increasing aggregate savings and potential output.

79. However, a balanced approach to reform will also need to consider the impact of these changes on overall retirement income, particularly for people in low income households who generally rely heavily on public pension arrangement and who, up to the present, have saved relatively little for their retirement. Policy choices in this area are made more difficult by the fact that high pension minima or income-tested benefits to support poor pensioners will also affect incentives to work and to save. Balanced reform programmes will also need to address capital market regulations as the willingness to save for retirement will depend on the confidence of savers in the existing system and the potential to achieve adequate rate of return on their investments.

80. Finally, with roughly half of the average projected increase in age-related spending over the next 50 years coming from health spending, government policies in this area will need to adapt as well. Care for the frail elderly, which has been the focus of attention in this report, will need to be structured in such a way that minimised overall costs and, to the degree possible, financed by the recipients of these services. The cost of health care services themselves will also increase with the ageing of the population and efforts to constrain costs by improving the efficiency and effectiveness of health care systems are also required, a subject currently under review within the OECD (OECD, 2001j and Docteur and Oxley, 2003 forthcoming).

Table 1.**The old-age dependency ratio and the share of the very old in the total elderly population**

Per cent and change in percentage points

	Old-age dependency ratio			Very-old persons ratio		
	2000	2050	*Percentage point*	2000	2050	*Change*
Australia	20.4	47.0	*26.6*	23.3	34.0	*10.7*
Austria	25.2	58.2	*33.0*	22.7	42.7	*20.0*
Belgium	28.1	49.5	*21.4*	21.5	39.7	*18.2*
Canada	20.4	45.9	*25.5*	23.8	36.2	*12.3*
Czech Republic	21.9	57.5	*35.6*	17.0	29.0	*12.0*
Denmark	24.2	40.3	*16.2*	26.8	37.4	*10.6*
Finland	25.9	50.6	*24.7*	22.0	35.2	*13.2*
France	27.2	50.8	*23.6*	22.2	37.5	*15.3*
Germany	26.6	53.2	*26.6*	21.1	37.5	*16.4*
Hungary	23.7	47.2	*23.5*	16.9	26.6	*9.7*
Iceland	20.3	44.0	*23.7*	23.9	34.3	*10.4*
Ireland	19.7	45.7	*26.1*	23.1	27.1	*4.0*
Italy	28.8	66.8	*38.0*	21.0	37.1	*16.1*
Japan	27.7	64.6	*36.9*	21.9	42.2	*20.3*
Korea	11.3	45.4	*34.2*	13.7	33.2	*19.6*
Netherlands	21.9	44.9	*23.0*	23.3	37.3	*14.0*
New Zealand	20.4	48.3	*27.9*	23.6	36.3	*12.7*
Norway	25.6	41.2	*15.7*	29.0	34.7	*5.7*
Poland	20.4	55.2	*34.8*	16.2	26.6	*10.4*
Portugal	26.7	50.9	*24.2*	19.1	30.7	*11.6*
Spain	27.1	65.7	*38.5*	21.8	33.2	*11.4*
Sweden	29.4	46.3	*16.9*	28.0	35.7	*7.7*
Switzerland	25.1	45.3	*20.3*	26.5	40.4	*13.9*
United Kingdom	26.6	45.3	*18.7*	25.0	37.3	*12.3*
United States	21.7	37.9	*16.2*	26.5	36.1	*9.6*
Average	**23.8**	**49.9**	***26.1***	**22.4**	**35.1**	***12.7***

Note: Old-age dependency ratio is equal to (persons aged 65+)/(persons aged 20-64) and the very-old persons ratio is the equal to (persons aged 80+)/(persons aged 65+).
Sources : *Eurostat;* National data for Norway, Switzerland, Canada and the United States, United Nations' "World Population Prospects 1950-2050 (The 2000 Revision)" - February 2001 for Iceland.

Table 2. **Projections of age-related spending, 2000-2050[1]**

Levels in per cent of GDP, changes in percentage points

	Total age-related spending		Old-age pensions		"Early retirement" programmes		Health care and long-term care		Child / Family benefits and education	
	level 2000 (1)	change 2000-50 (2)	level 2000 (3)	change 2000-50 (4)	level 2000 (5)	change 2000-50 (6)	level 2000 (7)	change 2000-50[2] (8)	level 2000 (9)	change 2000-50 (10)
Australia	16.7	5.6	3.0	1.6	0.9	0.2	6.8	6.2	6.1	-2.3
Austria[2]	[10.4]	[2.3]	9.5	2.2	..	..	[5.1]	[3.1]	..	..
Belgium	22.1	5.2	8.8	3.3	1.1	0.1	6.2	3.0	6.0	-1.3
Canada	17.9	8.7	5.1	5.8	..	..	6.3	4.2	6.4	-1.3
Czech Republic	23.1	6.9	7.8	6.8	1.8	-0.7	7.5	2.0	6.0	-1.2
Denmark[3]	29.3	5.7	6.1	2.7	4.0	0.2	6.6	2.7	6.3	0.0
Finland	19.4	8.5	8.1	4.8	3.1	-0.1	8.1	3.8	..	..
France[4]	[18.0]	[6.4]	12.1	3.9	..	..	[6.9]	[2.5]	..	..
Germany	[17.5]	[8.1]	11.8	5.0	..	..	[5.7]	[3.1]	..	..
Hungary[5]	7.1	1.6	6.0	1.2	1.2	0.3	..	..	..	..
Italy	[19.7]	[1.9]	14.2	-0.3	..	..	[5.5]	[2.1]	..	..
Japan	13.7	3.0	7.9	0.6	..	..	5.8	2.4	..	..
Korea	3.1	8.5	2.1	8.0	0.3	0.0	0.7	0.5	..	..
Netherlands[6]	19.1	9.9	5.2	4.8	1.2	0.4	7.2	4.8	5.4	0.0
New Zealand	18.7	8.4	4.8	5.7	..	..	6.7	4.0	7.2	-1.3
Norway	17.9	13.4	4.9	8.0	2.4	1.6	5.2	3.2	5.5	0.5
Poland[5]	12.2	-2.6	10.8	-2.5	1.4	-0.1	..	..	..	..
Spain	[15.6]	[10.5]	9.4	8.0	..	..	[6.2]	[2.5]	..	..
Sweden	29.0	3.2	9.2	1.6	1.9	-0.4	8.1	3.2	9.8	-1.2
United Kingdom	15.6	0.2	4.3	-0.7	..	..	5.6	1.7	5.7	-0.9
United States	11.2	5.5	4.4	1.8	0.2	0.3	2.6	4.4	3.9	-1.0
Average of countries above[7]	**21.2**	**5.8**	**7.4**	**3.4**	**1.6**	**0.2**	**5.9**	**3.1**	**6.2**	**-0.9**
Portugal[8]	*15.6*	*4.3*	*8.0*	*4.5*	*2.5*	*-0.4*	*..*	*..*	*..*	*..*

1. Data for health care shown in parenthesis are drawn from EPC (2001). They are the result of an EC exercise using a common methodology for all countries. The projections are based on the same macroeconomic assumptions as in OECD (2001) Table 3.1. These heath and long-term care projections assume that costs per capita rise in line with productivity/wages. They do not allow for technological change or other non-age-related factors.
2. Total pension spending for Austria includes other age-related spending which does not fall within the definitions in Cols. 3-10. This represents 0.9 per cent of GDP in 2000 and rises by 0.1 percentage point in the period to 2050.
3. Total for Denmark includes other age-related spending not classifiable under the other headings. This represents 6.3 per cent of GDP in 2000 and increases by 0.2 percentage points from 2000 to 2050.
4. For France, the latest available year is 2040.
5. Total includes old-age pension spending and "early retirement" programmes only.
6. "Early retirement" programmes only include spending on persons 55+.
7. Sum of column averages. OECD average excludes countries where information is not available and Portugal where the data are less comparable than for other countries.
8. Portugal provided an estimate for total age-related spending but did not provide expenditure for all of the spending components.

Source: OECD and EPC (2001).

Table 3. **Average impact of sensitivity tests on age-related spending: 2000-2050**[1]

Percentage points of GDP

	Old-age pensions	Total age-related spending		Old-age pensions	Total age-related spending
Increased longevity (+3 years for males and +2 years for females relative to baseline)	1.0	1.4	Fall in unemployment rates (decline to levels experienced in late 1960s)	-0.2[2]	-0.4[2]
Higher fertility (+15% relative to baseline)	-0.7	-0.7	Higher older worker participation rates (10 percentage points higher by 2050 relative to baseline)	-0.6	-1.0
Higher migration (+50% by end of period relative to baseline)	-0.4	-0.7	Higher female participation rates (10 percentage points higher in 2050 relative to baseline)	-0.6	-1.0
Fall in labour productivity growth (fall in growth rate by 1/2 point relative to baseline)	0.5	0.6[3]			
Alternative simulation					
Increase in women's participation rate of 5 percentage points and a rise of males 55-64 participation rates by half the fall from 1970[4] (relative to baseline)	-0.5	-0.8			

1. Average across the following countries: Belgium, Canada, the Czech Republic, Denmark, France, Germany, Italy, Japan, the Netherlands, Poland, Spain, Sweden and the United States. Results are defined relative to baseline at the end of the period.
2. This indicates the impact relative to baseline. However, the baseline forecasts included some decline in unemployment rates particularly for Belgium, Italy, France and Spain, such that the impact of the total fall in unemployment over the period would be larger than reported here.
3. Excluding the Czech Republic and the United States because projections of spending on health and long-term care and education are insensitive to the change in productivity growth in these two countries, *i.e.* lower productivity growth does not lead to a fall in wage growth relative to baseline in these two countries.
4. Impact on spending if the female participation rates were 5 per cent higher than baseline and if the participation rates of men aged 55 to 64 recovered to levels equal to one half of the fall during the period 1970 to 2000. Note that the overall fiscal impact would be much stronger because of higher taxes and contributions.

Source : OECD.

Table 4. **Decomposition of changes in old-age pension spending: 2000-2050**[1]

Level in per cent of GDP, changes in percentage points

	Total old-age pension level in 2000	Total old-age pension change from 2000 to 2050	Contributions of :					
			Demographic effect	Employment effect	Policy effects			% decline in average benefits relative to productivity[2]
					Benefit effect	Eligibility effect	Total policies	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Australia	3.0	1.6	2.5	-0.1	-0.5	-0.2	-0.7	-14.2
Austria	9.5	2.2	7.6	-1.9	-1.1	-2.4	-3.5	-7.4
Belgium	8.8	3.3	4.7	-0.7	-1.6	1.0	-0.6	-15.0
Canada	5.1	5.8	5.1	0.0	-0.6	1.3	0.7	-6.4
Czech Republic	7.8	6.8	8.2	-0.8	-0.1	-0.1	-0.2	1.7
Denmark	6.1	2.7	2.7	-0.3	-1.5	1.7	-0.2	-14.2
Finland	8.1	4.8	5.2	-0.1	-0.2	0.0	-0.2	-5.5
France[3]	12.1	3.8	7.6	-0.5	-3.4	0.4	-3.0	-21.3
Germany	11.8	5.0	6.4	-0.7	-2.7	2.1	-0.6	-13.7
Hungary	6.0	1.2	2.9	-1.0	-0.3	-0.4	-0.7	-6.6
Italy[4]	14.2	-0.3	10.1	-3.2	-5.5	-1.5	-7.0	-30.6
Japan[4]	7.9	0.6	5.1	-1.2	-3.9	0.9	-3.0	-38.4
Korea	2.1	8.0	4.8	-1.0	0.2	5.0	5.2	-5.0
Netherlands	5.2	4.8	3.8	-0.5	0.2	1.4	1.5	2.9
New Zealand	4.8	5.7	4.7	-0.1	1.0	0.0	-1.0	10.5
Norway	4.9	8.0	3.0	0.1	3.9	1.2	5.1	61.7
Poland	10.8	-2.5	7.3	-1.3	-5.9	-2.1	-8.0	-52.6
Spain	9.4	8.0	8.6	-2.6	0.0	2.0	2.0	-2.0
Sweden[4]	9.2	1.6	3.9	-0.5	-2.1	0.4	-1.8	-17.9
United Kingdom[4]	4.3	-0.7	1.7	0.1	-2.5	0.1	-2.4	-47.0
United States	4.4	1.8	2.4	-0.1	-0.2	-0.3	-0.5	-3.7
Average of countries above[5]	**7.4**	**3.4**	**5.2**	**-0.8**	**-1.3**	**0.5**	**-0.9**	**-10.7**
Portugal	*8.0*	*4.5*	*6.1*	*-1.0*	*-2.7*	*1.1*		

1. Each column is calculated by estimating the level of expenditure that would occur in values if only one component are changed and the other elements are held constant. See Dang *et al.* 2001 for methodology and detailed information on the time profile. Columns do not add up because linear approximations are used.

2. The percent fall in the level of average benefits relative to productivity 2000-2050. Wages are assumed to rise in line with productivity.

3. For France, data are available for 2040.

4. For these countries information on the number of pension recipients and average pensions was not available. The values for these variables were estimated by the OECD Secretariat, except for Italy, where data refer to the number of pensions and not the number of pensioners.

5. Average excludes countries where national information is not available and Portugal which is less comparable than other countries.

6 For Australia, this fall reflects the use in private savings (under the Superannuation Guarantee) in an income tested pension system.

Source : OECD.

Table 5. **Changes in cyclically-adjusted primary balances and net lending of general government**

Percent of GDP and changes in percentage points of GDP

	Net Lending			Revenues, expenditure and the primary balance 2000-2050		
	(Change and levels)			(Change)		
	Change 1995-2000	Projected change 2000-2005	Projected level, 2005	Revenues	Expenditure	Primary balance
Australia[1]	3.4	0.8	0.7	..	5.6	-5.6
Austria[1,2]	3.1	2.2	0.3	..	2.3	-2.3
Belgium	3.3	1.5	0.8	0.1	4.3	-4.2
Canada	6.7	0.0	2.6	-1.2	8.7	-9.9
Czech Republic	-4.4	2.6	-2.9	0.0	6.8	-6.8
Denmark	2.9	-0.3	2.0	1.7	5.7	-4.0
Finland	4.6	-1.6	3.9	-1.7	8.5	-10.2
France[1,2]	4.9	0.8	-0.9	..	6.4	-6.4
Germany[2]	1.4	0.8	-0.6	2.8	8.1	-5.3
Hungary[1]	4.5	-0.5	-3.5	..	1.6	-1.6
Italy[1,2]	6.5	0.9	0.1	0.0	1.9	-1.9
Japan	-2.6	1.2	-5.3	0.1	3.0	-2.9
Korea	2.7	-1.3	5.6	-1.8	8.5	-10.3
Netherlands	4.7	0.5	0.8	3.2	9.9	-6.7
New Zealand	-0.5	-2.4		0.9	11.2	-10.3
Norway	2.5	-1.1	-0.7	-0.5	16.5	17.0
Poland	0.3	-1.2	-3.4	-1.2	-2.2	1.3
Spain[2]	4.3	0.5	0.0	0.0	10.5	-10.5
Sweden	11.0	-1.8	2.2	-3.3	3.6	-7.0
United Kingdom	6.9	-3.0	-1.0	-0.3	1.2	-1.5
United States	4.1	-1.0	0.3	-0.3	4.9	-5.2

1. Revenues not provided in country submission for projections in the second panel. The change in the deficit 2000-2050 assumes no change in revenues as a percent of GDP over the projections period. Change in expenditure includes changes in non-age-related spending. Thus expenditure can differ from values found in table 1.
2. These data include an estimate for health and long-term care of the elderly from EPC (2001) Table 4.1. Germany and Spain did not include an estimate for long-term care and the EU area average was used.

Source: OECD and EPC (2001).

Table 6. **The impact of ageing in a "stylised" country, 2000-2050**[1]

Panel A. Changes in primary balances and net debt for a "stylised" country[2]
(difference between 2000 and 2050 in percentage points of GDP)

	Change 2000-2050 in:		Difference relative to baseline
	Primary balance	Debt	
Baseline			
Impact of all age-related spending on the "stylised" country	-6.1	-96	
-- Impact abstracting from initial debt and primary surpluses[2]	-6.1	-210	
-- Impact of initial and sustained primary surpluses[3]	0.0	115	
Impact of pension spending alone[4]	-4.2	-74	22
Policy simulations			
Sustained primary deficit of one per cent of GDP[5]	-6.1	-435	-340
Primary surpluses disappear after 10 years	-8.6	-274	-178
Sensitivity test			
Sustained increase in the primary surplus of 1 percentage point of GDP[6]	-6.1	-1	97
Age-related spending is 1 percentage point lower in 2050	-5.1	-62	34
Initial debt is 10 percentage points lower	-6.1	-75	21
Real interest rates are one percentage point lower	-6.1	-61	35

Panel B. Policy measures to keep debt constant as a share of GDP at the end of the period

	Year policy measure takes effect:		
	2005[7]	2015[7]	2025[7]
Reduction in the number of pension beneficiaries (per cent)	7.7	9.5	12.3
Reduction in average pension benefits (per cent)	17.3	21.3	29.9
Increase in the primary surplus needed to keep debt constant at the level in 2000[8]	1.1		
Memorandum item:			
Increase in the primary surplus needed to eliminate all debt by 2050[8]	1.8		

1. This table is based on a "stylised" country that has pension spending equal to eight per cent of GDP at the beginning of the period, a primary surplus of 2.5 per cent and net debt of 55 per cent of GDP. These parameters are broadly representative of an "average" of the countries considered. This "stylised" country is assumed to experience an increase in ageing-related expenditure in the number of pensioners, in average pensions, in health-care spending and in other age-related spending over the period equal to the median increase for each element across participating countries. The impact of these changes is shown in Panel A, along with selected policy simulations and sensitivity tests. For further details, see Dang *et al* Annex.
2. Initial debt and primary balances, are set to zero.
3. Assumes that non-age-related spending increases in line with GDP.
4. Assumes that other age-related spending increases in line with GDP.
5. The primary deficit is assumed to be one per cent of GDP initially (compared to a surplus of 2.5 per cent in the baseline). The deficit is assumed to remain constant over the period, excluding the effect of ageing. The impact of ageing is then introduced in this new baseline.
6. Increase from the beginning of the period from 2000 excluding the effect of ageing. The impact of ageing is then introduced in this new baseline.
7. The reduction is fully implemented in the corresponding year and sustained through the period.
8. The surpluses are sustained throughout the period.

Source : OECD (2001b), Dang *et al*. (2001).

Table 7. **Participation and employment rates of males 55 to 64, 1970-2000[1]**

Per cent

	1970		1980		1990		2000	
	Participation Rate	Employment rate	Participation rate	Employment rate	Participation rate	Employment rate	Participation rate	Employment rate
Australia	85		69	67	63	59	62	59
Canada	84	79	75	71	64	60	61	58
Finland	74	73	57	55	47	46	48	44
France	75	74	69	65	46	43	42	38
Germany[2]	80	79	67	64	61	52	55	48
Hungary							35	33
Iceland					94[3]	93[3]	95	94
Italy[4]	48	48	40	39	36	35	31	30
Japan	87	85	85	82	83	80	84	78
Korea					77	76	71	68
Netherlands	81[5]	79[5]	63	61	46	46	51	50
Norway	84[6]	83[6]	79	79	73	71	74	73
Spain	84[6]	83[6]	76	71	62	57	60	55
Sweden	85	84	79	77	75	74	73	68
Switzerland					86[3]	85[3]	79	77
United Kingdom					68	62	63	60
United States	83	81	72	70	68	65	67	66
Average	**79**	**77**	**69**	**67**	**66**	**63**	**62**	**59**

1. Per cent of male population aged 55-64
2. Until 1990, data refer to West Germany.
3. 1991
4. Age group 60-64
5. 1971
6. 1972

Source: Labour Force Statistics (OECD).

Table 8. **Characteristics of "regular" old-age pension schemes**

	Scheme Covered	Earliest retirement age	"Normal" retirement age	Actuarial reduction rate for early retirement (%)	Actuarial enhancement rate for later retirement (%)
Australia	State means-tested pension		65		9.4
	Mandatory private pension		55		
Canada	State basic pension		65		
	State earnings related pension	60	65	6.0	6.0
Finland	State basic pension		62 to 68		4.8 from 68 onwards
	Mandatory earnings related pension		62 to 68	7.2 at 62 0 otherwise	4.8 from 68 onwards
France[1]	State basic pension for private sector employees	60	60		
	State supplementary pension for private sector employees	60	60		
Germany	State pension for private sector employees	63	65	3.6	6.0
Hungary					
Italy[2]	State pension for private sector employees		57 to 65	Retirement permitted at 57, but with "full" actuarial adjustment	No adjustment after 65
Japan[3]	State basic pension for private sector employees		65	Earnings related at 60 and special unreduced equivalent of basic pension if not working at all	12 until 67 26 from 67 onwards
	State earnings related pension for private sector employees		65	No pension payable before 65	8.4
Korea[4]	State pension	55	60	5.0	
Netherlands	State basic pension		65	No early liquidation possible for public or occupational pension	No enhancement for late retirement
	Quasi mandatory occupational pension		65		
	Collectively agreed pre-pension	60			
Norway	State basic pension		67		
	State supplementary pension	62	67		
Spain	State pension	60	65	6-8	2.0 per year of work
Sweden	State pension (including mandatory contributions to individual fund)	61	65		
	Quasi mandatory occupational pension	61	65	Retirement permitted at 61 with full actuarial ajdustment	No upper limit for later retirement with full actuarial adjustment
Switzerland	State basic pension	63	65	6.8	6.8
	Mandatory occupational pension	63	65	2.8	2.8
United Kingdom	State basic pension		65/60[5]	No early liquidation possible for public pension	10.4
	State earnings related pension			No early liquidation possible for public pension	10.4
United States[6]	State pension		67	5 to 6.7	8.0

1) The French pension reforms enacted during the summer of 2003 are not taken into account.
2) Assumes Dini/Prodi reforms are fully introduced.
3) Future changes in the Japanese pension system are not included.
4) Future changes in standard age from 60 to 65 in Korea between 2011 and 2033 not included.
5) Men/women.
6) Calculations are for the current system fully phased in.

Source : OECD Secretariat.

Table 9. **Programmes permitting early withdrawal from the labour market**

	Unemployment benefit/ Social assistance	Disability benefits	Occupational pensions
Australia			
Canada			X
Finland	X	X	
France	X		
Germany	X	X	
Italy			
Japan			
Korea			
Netherlands	X	X	
Norway		X	
Spain	X		
Sweden			
Switzerland			
United Kingdom	X	X	X
United States			X

Note: "X" indicates that the programme is found in the country indicated.

Source: OECD.

Table 10. **Reforms to pension systems: encouraging later retirement**

	Participation rate, 55-64 in 2000		Measures to delay retirement[1]						
			"Regular" retirement programmes					Access to other "early retirement " programmes	Other
			Increasing "normal" retirement age	Upward adjustment of women's retirement age	Lengthening contribution periods for full pension	Limiting access to early pensions	Improved actuarial characteristics		
	Male	Female							
Australia	*61*	*35*		+			+	+	
Canada	*58*	*39*							
Finland	*48*	*44*	+[3]				+	+	+
France	*42*	*30*			+				+ / -
Germany	*56*	*37*		+		+	+	+	-
Hungary	*38*	*16*	+	+	+			+	
Iceland			+[3]						
Italy	*45*	*17*	+	+[2]		+	+		
Japan	*84*	*47*	+						
Korea	*74*	*50*	+						
Netherlands	*46*	*18*					+	+ / -	+ / -
Norway	*69*	*57*					+	-	
Spain	*58*	*22*					-	-	
Sweden	*72*	*65*	+		+		+		
Switzerland	..	..		+					
United Kingdom	*66*	*40*		+				+	+
United States	*68*	*52*	+				+		

1. A "+" indicates a measure which should induce a rise in the effective age of retirement in the case of policies affecting the age of retirement, a fall in average benefits in the case of policies affecting average benefits, and an increase in the employment of older workers for measures affecting employment. A negative sign indicates the opposite. Based on Table 11.
2. New labour-market entrants only.
3. Civil servants only.

Source: OECD.

Table 11. **Reforms to pension systems since the early 1990s: Additional information**

Panel 1. Measures to remove incentives to early retirement/increase incentives to later retirement[1]

Australia	Tax-free bonus for those working after pension age; phased lifting of retirement age for women to 65 from 1997 to 2013; phased increase in the age at which the Superannuation Fund can be drawn to 60 over period to 2025.
Canada	Flexible retirement age to 70 introduced (1987); reduction of some disability-type benefits.
Finland	Reforms in 1990s: employee contributions introduced; public sector workers retirement ate increased by two years with reduced accrual rate and long phase in period; Raised accrual rate for persons age 60-64; raised age of eligibility for certain early pensions by two years; lowered accrual rights to old age pensions for those in early retirement programmes; unemployment benefit for older workers reduced from five to three years. Reforms in 2003: Flexible retirement between 62 and 68 with actuarial adjusted benefit and accrual to pension rights rising with age; ceiling on pension abolished; pension based on earnings over entire work career; system will adjust to increased life expectancy; Indexing of rights and of benefits gives heavier weight to prices.
France	Extension of contribution period for access to full pension (1994) from 37½ years to 40 years; increased costs to employers of making older employees redundant.
Germany	Raised lower age limit and minimum number of contribution years for early retirement; accelerated phased abolition of early pensions for unemployment and long service; introduction of benefit reductions and measures for early and late retirement; upward equalisation of retirement age for women from 2000-2004 (1992). Ability of unemployed employees to claim old age pensions modified to reduce pension benefits. Early retirement at 62 allowed from 2012 with 35 years contributions.
Hungary	Raised official retirement age to 62 from 60m/55w to be achieved between 1997 and 2001 for men and 2009 for women; abolished special programme allowing early retirement for labour market reasons.
Iceland	Government employees no longer able to claim pension from age 60 (1997); accrual rate for retirement delayed beyond 65 increased (1998).
Italy	Progressive move into a notional defined contribution scheme whereby benefits are related to longevity and to contributions; abolition of "seniority pension" by 2008; increase in the number of contribution years for early retirement to 40 years by 2008; lifting of normal retirement age by five years (to 65m/60w); equalisation of retirement age for men and women for new entrants.
Japan	Flat rate portion of Old Age Employees Pension raised from 60 to 65 phased in over period 2001-2013 (1994); proposed increase in the earnings related component to 65 over the period 2013 to 2025.
Korea	Increase in the age at which flat-rate benefits are received from 60 to 65 (phase in period ending in 2013).
Netherlands	Increased costs placed on employers responsible for disability retirement; removal of tax privileges from voluntary early retirement schemes; changed tax rules governing occupational pensions to increase amount accrued if more years worked; transformation of VUT early retirement schemes into flexible retirement arrangements with the cost of early retirement shifted onto the individual rather than the collectivity.
Norway	Introduced an early retirement scheme (AFP) and reduced the eligibility age from 66 to 62 (1998). Access to this scheme was recently tightened up. Reduced the deduction from pensions payable due to income from work (1997); reduced rate of pension entitlements for each year of work.
Spain	Opened early retirement to all people who have been unemployed for at least 6 months from age 61; reduced the actuarial reduction for early retirement from eight to six per cent.
Sweden	Progressive move into a notional defined contribution scheme whereby benefits are related to longevity and directly to contributions to make the system more neutral with respect to the retirement decision; upper age limit for actuarial adjustment for a deferred pension abolished (1999). New legislation in the labour market area allows employees to remain in the labour force until 67.
Switzerland	
United Kingdom	Tightened access to disability pension; upwards equalisation of retirement age for women.
United States	Increase in the age for receiving a full pension to 67 (legislated 1983, phase-in period until 2027); increase in the appreciation of benefits when taken after "normal" retirement age.

1. Covers both "regular" and special retirement programmes.

Source: OECD.

Table 11. **Reforms to pension systems since the early 1990s: Additional information** (continued)

Panel 2a. Measures to improve the employability of older people

Australia	Scheduled introduction of training credits for mature job seekers and the introduction of the community work programme.
Canada	
Finland	Major research programme initiated on work adjustment and work conditions throughout working life – objective to improve employment chances in later life; special employment and labour market programmes for older unemployed.
France	
Germany	
Hungary	Exempted old-age pensions fully from taxation in 2002, thus increasing significantly the work incentives for retirees.
Italy	
Japan	
Korea	
Netherlands	Encouraging work adjustment by placing responsibility for disability benefits on the individual employer. Tax incentives for training older workers (over 40+).
Norway	
Spain	Introduction of training and placement assistance for older people who have exhausted unemployment insurance.
Sweden	
Switzerland	
United Kingdom	Introduced explicit provision for older people within special employment and training.
United States	

Source: OECD.

Table 11. **Reforms to pension systems since the early 1990s: Additional information** (continued)

Panel 2b. Measures to increase employment opportunities for older people

Australia	Recognition of importance of dynamic economy; outlawed dismissal on grounds of age alone.
Canada	
Finland	
France	Introduced wage subsidy for recruitment of older people.
Germany	Extension of wage subsidy for recruitment of older people.
Hungary	
Italy	
Japan	Special employment measures for older people including wage subsidies for employers of pensioners.
Korea	Firms are encouraged to fill at least three per cent of positions with workers aged 55+ and firms with over six per cent receive a subsidiary. Firms hiring workers unemployed for at least 3 months, the government pays a subsidy for 6 months. The elderly are also given priority in certain professions in state enterprises.
Netherlands	Outlawed use of age criteria in recruitment.
Norway	
Spain	
Sweden	
Switzerland	
United Kingdom	Code of Practice.
United States[1]	

1. Long-standing age discrimination legislation.

Source: OECD.

Table 11. **Reforms to pension systems since the early 1990s: Additional information** (continued)

Panel 3. Measures to reduce the level of benefits from the public pension system[1]

Australia	Placed limits on early liquidation of private pension to reduce probability that age pension will be received (age pension is means-tested); State Pension now linked to community living standards, as measured by wages.
Canada	
Finland	Reduced accrual rates for pensions during period of pre-retirement. Switch from indexing pension benefits from 50:50 to 80:20 prices and wages; reference period for calculating benefits moved to lifetime earnings but the rate if accrual of rights increased as well, particularly for those over 63 and over (2003) so that net effect on replacement rates is indeterminate.
France	Extension of reference earning period from the best 10 to the best 25 years; indexing past earnings to prices for calculations of pensionable earnings rather than wages.
Germany	Introduction of indexing on the basis of wages net of taxes and contributions; temporary alterations to indexing procedure to reduce actual increases granted; phased reduction in standard pension level from 70% to 68% of reference wage by 2030 (to be filled by voluntary private pension).
Hungary	Moved from wage indexing to mix of wage and price indexing; however, the indexing formulae remain notional and actual pension increases exceed the indexed amounts considerably; higher benefits available to those with long contribution periods; pensions calculated on basis of gross earnings.
Italy	Moved from wage to price indexing; benefits based on notional contributions over working life.
Japan	Moved from wage to price indexation.
Korea	Revision in the benefit formula resulting in a reduction of replacement rate from 70 to 60 per cent; price indexation introduced.
Netherlands	
Norway	Reduction in level of earnings credited at full rate from 8 to 6 “base amounts”; reduction in coefficient to calculate supplementary pensions 45 to 42 per cent; reduction in basic pension if spouse has income above certain level.
Spain	Extension of the earnings reference period; price indexation; stronger link between contribution years and benefits.
Sweden	Benefits are based on notional contributions over working life.
Switzerland	
United Kingdom	Extension of reference earning period from best 20 to average of 25 years; further cap on reference wage; eliminated some benefits for special groups.
United States	

1. Covers both “regular” and “special” retirement programmes.

Source: OECD.

Table 11. **Reforms to pension systems since the early 1990s: Additional information** (continued)

Panel 4. Measures to ensure income adequacy for older people

Australia	Updated state pension by reference to earnings as well as prices.
Canada	
Finland	
France	
Germany	Easing procedures for claiming means-tested benefits.
Hungary	Introduced means-tested minimum benefit for retirement age people with incomes less than 80 per cent of minimum pension (approx. 50 per cent of average pension).
Italy	
Japan	
Korea	
Netherlands	
Norway	
Spain	Increased minimum pension floors by more than wage growth.
Sweden	The minimum guarantee pension, together with a means-tested housing allowance is higher than the minimum-income standard.
Switzerland	
United Kingdom	Introduced "minimum-income guarantee" that will be indexed to earnings, for which assessment/award is automatic rather than requiring claim; proposed reduction in deductions from means tested assistance for people with low private pension income.
United States	

Source: OECD.

Table 11. **Reforms to pension systems since the early 1990s: Additional information** (continued)

Panel 5a. Measures to establish/expand private, funded provision

Australia	Mandated private pensions for all except young and lowest paid workers, but excluding self-employed.
Canada[1,2]	
Finland[2]	
France	
Germany	Granted subsidies for participation in new private pension schemes as individual accounts or as employment based fund.
Hungary	
Italy	Encouraged establishment of private occupational pension schemes.
Japan	Proposals to establish framework for private individual accounts.
Korea	
Netherlands[1]	
Norway	
Spain	Granted tax incentives for privately-managed occupational accounts and individual pension accounts.
Sweden[1,2]	Diverted 2.5 per cent of 18.5 per cent contribution to mandatory public pension to individual accounts with private, mutual funds.
Switzerland[1]	
United Kingdom[1]	Encouragement of private second-tier provision and reduction of attractiveness of public second tier for other than lowest earners – objective, to switch from 60:40 public: private mix to 40:60 mix.
United States[1,2]	

1. Occupational and private schemes already well established.

2. Some funding within public system already exists.

Source: OECD.

Table 11. **Reforms to pension systems since the early 1990s: Additional information** (continued)

Panel 5b. Measures to strengthen regulation of financial markets

Australia	Establishment of regulatory authorities to oversee mandatory private pension system.
Canada	
Finland	
France	
Germany	Setting of minimum criteria and performance standards for new individual accounts.
Hungary	Established independent supervisory structure to oversee mandatory second-tier and voluntary third-tier private pensions.
Iceland	Established new regulatory agency and strengthened regulations for pension fund oversight (1997).
Italy	New supervisory structures put in place to deal with the introduction of private occupational schemes.
Japan	
Korea	
Netherlands	
Norway	
Spain	
Sweden	
Switzerland	
United Kingdom	Extensive revision of regulatory structures for company and individual plans; resetting of performance standards, capping of costs of individual plans.
United States	

Source: OECD.

Table 11. **Reforms to pension systems since the early 1990s: Additional information** (continued)

Panel 6. Measures to increase pension contributions, to build up reserves or to smooth future growth

Australia	Mandatory superannuation contributions started at three per cent of salary in 1992, increasing to nine per cent in 2002.
Canada	Raised contributions to build up a reserve fund; relaxed reserve fund portfolio restrictions.
Finland	Liberalised rules governing investment of second tier public pension schemes.
France	Smoothing pension reserve established.
Germany	Switch from system centred upon expenditure to system focused on revenue with explicit assumption that future increases in contribution levels and budget transfers will be contained.
Hungary	
Italy	
Japan	Explicit assumptions that contributions have to cover expenditures; refocusing objective of public pension fund investments to maximise returns rather than serve other public policy targets.
Korea	
Netherlands	More general policy of reducing public debt and, by reducing payment on interest, building up resources to pay for societal ageing.
Norway	
Spain	Used social security contribution surpluses to build up reserve fund.
Sweden	Relaxed investment restrictions on public pension fund.
Switzerland	
United Kingdom	
United States	

Source: OECD.

Table 12. **Reforms to disability systems**[1]

	Tighten up eligibility	Changed benefits	Experience rated premiums or placing risk on employer	Increase flexibility to allow and encourage work	Extend coverage
Australia	+				
Canada					+
Finland	+	+	+	+	
France					
Germany	+	+			
Hungary					
Iceland					
Italy	+				+
Japan					
Korea				+	
Netherlands	+	+	+		
Norway	+			+	
Spain	+				+
Sweden	+		+		
Switzerland					+
United Kingdom	+	+	+		+
United States	+			+	

1. A "+" indicates the introduction of a policy leading to a decrease in the number of disabled.

Source: OECD.

Table 13. **Measures aimed at facilitating employment amongst older workers**[1]

	Improving employment among older workers			
	Anti age-discrimination legislation	Measures to improve employability	Measures to improve employment opportunities	Increased part-time work
Australia	+	+	+	
Canada				
Finland		+ / -		+
France			+	
Germany		-	+	+
Hungary				
Italy				
Japan			+	
Korea			+	
Netherlands	+	+		
Norway				
Spain		+		+
Sweden				-
Switzerland				
United Kingdom	+[2]	+	+	
United States				

1. A (+) indicates measures likely to increase employment of older workers and a (-) indicates a decline. The symbol (+ / -) indicates a measure where the direction of impact of the measure is undetermined.
2. Non-binding charter.

Source: OECD.

Table 14. **Reforms to pension systems: benefit levels**[1]

	Indicators of benefit levels			Measures to reduce benefits					
	Net replacement rate at earliest retirement age[2]	Net replacement rate at "normal" retirement age[2]	Projected per cent fall in average pensions relative to productivity 2000-2050	Shift from indexing on wages towards prices	Changing the reference earnings	Lengthening contribution period	Changes to rules for accruing pension rights	Actuarial adjustment with increased life expectancy[3]	Other measures to restrict benefits
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Australia	*23*	*55*	*-14.2*						+
Canada	*21*	*53*	*-6.4*						
Finland	*55*	*64*	*-5.5*	+	+		+	+	
France	*87*	*87*	*-21.3*		+	+	+		
Germany	*68*	*77*	*-13.7*	+			+		
Hungary	*..*	*..*	*-6.6*	+			+ / -		
Italy[4]	*55*	*80*	*-30.6*	+	+	+	+	+	
Japan	*15*	*62*	*-38.4*	+					
Korea	*50*	*74*	*-5*	+					
Netherlands	*83*	*92*	*2.9*						
Norway	*..*	*63*	*61.7*				+		
Spain	*71*	*101*	*-2*		+				
Sweden[4]	*72*	*72*	*-19.9*		+	+	+	+	
Switzerland	*55*	*68*	*..*						
United Kingdom	*..*	*40*	*-47*		+				+
United States	*43*	*58*	*-3.7*						

1. A (+) indicates measures likely to reduce average benefits and a (-) indicates a rise. The symbol (+ / -) indicates a measure where the direction of the impact of the measure is difficult to determine.
2. Replacement rates at APW earnings net of taxes and contributions.
3. This includes measures which affect the way in which pension rights are accumulated other than changes in reference earnings and the lengthening of the contribution period.
4. For Italy and Sweden, these measures reflect the move from a defined benefit system to a notional defined-contribution system.

Source: OECD.

Table 15. **Reforms to pension systems: balance of retirement income and poverty alleviation**[1]

	Better balance of retirement income			Minimising poverty
	Countries with well established private pension schemes	Countries introducing measures to promote private retirement savings	Measures to strengthen regulation of private financial markets	
Australia	X	+	+	+
Canada	X			
Finland				
France				
Germany			+	+
Hungary		+	+	+
Italy		+	+	
Japan		+	+	
Korea	X			
Netherlands				
Norway		+		
Spain				+
Sweden	X			
Switzerland	X		+	
United Kingdom	X	+	+	+
United States	X			

1. A (+) indicates that policies have been introduced in the area indicated.

Source: OECD.

Table 16. **Policies to ease the financing of age-related spending**[1]

	Set up reserve funds	Increased contributions to prefund pensions	Explicit policy for reducing overall government debt	Changed investment rules of reserve funds
Australia			+	
Canada		+		+
Finland				+
France	+			
Germany				
Hungary				
Italy				
Japan				+
Korea				
Netherlands			+	
Norway				
Spain	+			
Sweden	+	+	+	+
Switzerland				
United Kingdom				
United States				

1. A (+) indicates the introduction of a policy in the specified category.

Source: OECD.

Table 17. **Reforms to long-term care**[1]

	Established better framework policies	Improving co-ordination and assessment	Measures concerning payment schemes	Measures concerning supply and its quality	Cost minimising mix of services	Transfers to elderly to purchase services and to informal carers
Australia	+	+	+	+	+	+
Canada	+		+			+
Finland	+	+	+			+
France	+	+	+			+
Germany		+	+			
Hungary			+			
Italy		+		+		
Japan			+			
Korea				+		
Netherlands		+	+		+	+
Norway				+	+	+
Spain	+	+				
Sweden	+		+			
Switzerland						+
United Kingdom		+	+			
United States						

1. A (+) indicates that a policy has been introduced in the specified category.
Source: OECD.

Table 18. **Reforms to long-term care from the early 1990s: Additional information**

Australia	Comprehensive care-needs based planning and assessment framework from 1982 with increasing co-ordination between the Commonwealth and the States. Major expansion of services for the elderly but spending increasing more slowly than this target group. Individual assessment of needs through assessment teams. Support for informal carers from 1992 and this extended in 1997. Greater co-payments for accommodation with income testing. Improved oversight of quality through accreditation from 2001. Put in place carer payment for low income individuals and a carer allowance.
Canada	National Framework on Ageing (1996) to help policy makers plan for an ageing society. Policy to improve information and research on health by the establishment of a specialised statistical agency. Carer allowances available in Nova Scotia and Quebec on an income-tested basis.
Finland	Introduced National Ageing Policy (1996-2001) to improve coordination of health care policy between the local and national levels. A new plan will extend to 2003. Policy is focusing on supply of a greater variety of care arrangements and better integration between hospital and other long-term care options. Greater attention to cost-effective provision (Health care into the 21st century). Pensioners care allowance and informal carers allowance on an income tested basis.
France	Financial support for the elderly to purchase services (*Prestation spécifique de dépendance*). Efforts to improve co-ordination among health and long-term care providers.
Germany	Introduced an insurance system covering the cost of long-term institutional care for those on low incomes. Degree of care evaluated by assessment group.
Hungary	Introduced a home care policy in 1997aimed at helping patients at home for short periods of time.
Iceland	Increase supply of geriatric beds in the Reykjavik area to release hospital beds.
Italy	Geriatric Assessment Units set up. Attempts to increase supply of long -term care places and improve the supply of home services to the elderly.
Japan	Recently introduced new insurance arrangements that cover both medical and long-term care.
Korea	Improvements in basic health data. Consideration of the needs for long-term care in a country where support is almost exclusively family based. Greater emphasis on preventive medicine.
Netherlands	Policy of assessing the type of care on the basis of cost rather than patient preferences.
Norway	Action plan (1998-2001) aimed at ensuring adequate capacity and improving quality.
Spain	Action plan for the elderly 2000-2005 to modernise the system of dependent care including highly decentralised delivery.
Sweden	Policies under discussion to improve the co-ordination between health and long-term care providers.
Switzerland	Extensive system of community and home-based care for the elderly from early 1980s. Research given support with a focus on factors likely to occur over the medium to long term. Established *bonnifications pour tâches d'assistance* for individuals providing services to neighbours.
United Kingdom	Recently reviewer the long-term care system.
United States	Experimenting with "managed care" solutions to the provision of health and long-term care mainly at the State levels. Recently introduced a tax credit for people with long-term care needs, provide funding for services to support family caregivers; improve the Medicaid eligibility for people in home- and community-based settings; encourage the purchase of private long-term care insurance by federal employees. Important efforts to improve information to underpin policy.

Source: OECD.

Table 19. **Spending on care for the frail elderly**

	Total spending on formal long term care for elderly (1992-1995)[1] *Jacobzone (1999) estimate*	Public and mandatory insurance spending on formal long term care for elderly (1992-1995)[1] *Jacobzone (1999) estimate*	Public and mandatory insurance spending on formal long term care for elderly and disabled (1997)[2] *OECD Health Data*	Share of population aged 65 and over in institutions[3]	Share of population aged 65 and over receiving formal help at home[4]
	% GDP	*% GDP*	*% GDP*	*% of total*	*% of total*
Australia	0.90	0.73	0.7	6.8	11.7
Austria	1.4	-	0.5	4.9	24
Belgium	1.21	0.66	0.4	6.4	4.5
Canada	1.08	0.76	-	6.2 to 7.5	17
Denmark	-	2.24	3.1	7	20.3
Finland	1.12	0.89	1.6	5.3 to 7.6	14
France	-	0.50	0.7	6.5	6.1
Germany	-	0.82	0.7	6.8	9.6
Japan	-	0.15/0.62 [5]	0.3	6.0 [6]	5
Luxembourg	-	-	0.4	6.8	-
Netherlands	2.70	1.80	0.4	8.8 [6]	12
Norway	2.80[7]	2.80	3.0	6.6	17
Sweden	2.7[7]	2.7	3.8	8.7	11.2
United Kingdom	1.30	1.00	0.6	5.1	5.5
United States	1.32	0.70	0.0	5.7	16
Greece	0.17	-	0.3	-	-
Ireland	0.86	-	0.4	5	3.5
Italy	0.58	-	0.2	3.9	2.8
Portugal	0.39	-	0.2	-	-
Spain	0.56	-	0.3	2.9	1.6
Switzerland	0.75	-	0.3	-	-

Note: "-" indicates that information is not available.

1. Long-term care spending refers to the care needed to help older persons lead an independent life at home or in an institution. It excludes informal help. Home care, should include all home care services, including district nurse's services but excluding medical visits. Institutional care includes all the costs related to care and lodging, including help for all self-care activities, but excluding medical costs. Public costs include all costs incurred by public institutions, municipalities, sickness funds or old age funds. Private spending refers to out of pocket payments or payments by private long-term care insurance when the definitions are available. Definitions are not fully homogenous across countries as Jacobzone (1999) drew the information from different sources.
2. Estimates for long-term care expenditure in OECD Health Data 2001 differ from the figures estimated by Jacobzone (1999) as they include long-term care for disabled, but can exclude a considerable share of long-term care programmes.
3. Estimates may vary according to the concept chosen for institutions (sheltered housing, hotels for the elderly, medical homes). Normally, the concept described should include only staffed homes. For Denmark the concept of older persons refers mostly to persons over 67.
4. Proportion of older persons receiving formal help at home, including district nursing, and help with Activities of Daily Living. For Australia, this does not include the population receiving a carer payment.
5. The data of 0.15 corresponds to present spending for care to the older person in 1995 (not including hospitalisation costs) while 0.62 corresponds to the additional spending by the current long-term care insurance.
6. Some of the residential accommodation is provided within hospitals.
7. Approximate estimates.

Source: Jacobzone (1999), OECD Health Data 2001 and Hansmann (1996).

Table 20. **Living arrangements of elderly persons**
Age 55-64, 65-74, and 75 and over, mid-90s

	Single women living alone			Single persons living with others and the person is not a household head			Persons living with spouse and at least one other and neither the person nor spouse is the household head		
	Age group			Age group			Age group		
	55-64	65-74	75+	55-64	65-74	75+	55-64	65-74	75+
Canada	9	17	32	4	5	9	2	2	2
Finland	14	26	43	2	3	8	3	4	4
Germany	12	27	54	1	1	5	0	0	0
Italy	4	16	28	3	7	23	2	2	3
Japan	4	9	11	3	10	35	2	7	10
Netherlands	10	24	40	1	0	2	0	0	0
United Kingdom	10	19	36	2	3	7	0	0	0
United States	9	18	33	5	5	9	1	1	1

Note: Since the data is obtained by income survey data, the numbers could be different from those found in national census data.

Source: OECD calculations based mainly on data from the Luxembourg Income Study.

Table 21. **Share of population in institutionalised care**

Australia	**1985**	**1993**
Aged 65-79	3.0	1.8
Aged 80 and over	24.9	17.6
All 65 and over	6.7	5.1
Netherlands	**1980**	**1995**
Aged 65-79	3.0	2.0
Aged 80 and over	27.0	17.0
All 65 and over	7.7	5.5
Sweden	**1980**	**1995**
Aged 65-79	3.6	3.1
Aged 80 and over	27.0	25.1
All 65 and over	8.2	8.8
United States	**1982**	**1994**
Aged 65-69	1.4	0.9
Aged 70-74	2.3	1.8
Aged 75-79	5.0	3.8
Aged 80 and over	17.6	15.3
All 65 and over	5.7	5.1

Source : Jacobzone *et al*. (1999).

Table 22. **Main conclusions drawn from EDRC country reviews of ageing policies**

	Remove incentives to retire early	Policies to improve employment prospects of older workers	fiscal consolidation should be pursued	Retirement income should come from a mix of sources	Greater focus on cost-effectiveness in health and long-term care	Strengthen financial market infrastructure	Strategic frameworks should be put in place
a) Conclusions from Country Survey special chapters on ageing							
Australia	Roll back trend towards early retirement: increase age when Superannuation can be drawn to 65.	Increase in-work benefits for low paid older workers; greater investment in life-long learning.	Accumulate a fund to finance future outlays.		Move away from fee-for-service care under Medicare.		
Finland	Lift the pension ceiling of 60 per cent of pensionable earnings to improve incentive to work after 60; abolish old-age pension accrual during early retirement; shorten the "Unemployment Pipeline"; make pension systems actuarially neutral; use full work career to calculate pensionable wage.	Reduce the current higher rate of contributions for older workers; step up labour market measures for older workers; apply sanctions when older workers refuse training or jobs.	Ensure that the Stability programme is adhered to; use higher returns on pension fund assets and any additional windfall contributions to increase pre-funding of the pension system; introduce a properly funded pension scheme for government employees.	Consider introducing personal pension accounts for older workers.	Reduce wide differences in quality and cost of services across regions and municipalities; review the current system of user charges to prevent shifts towards higher cost care; complement income testing with asset testing for long-term care.		
Hungary	Increase retirement age to 65 as longevity increases. Eliminate incentives to retire early, particularly via unemployment and light disability. Reform the pension system to make it more actuarially neutral with regard to the retirement age.	Remove disincentives in the tax system to the employment of older workers.	Restore higher contribution rate to mandatory pension funds; increase the scope for private provision and payment for health-care services.		Create more low-cost nursing places to substitute for high-cost inpatient care. Switch the financing of the health-care system from payroll taxes to general taxation.		Support public dialogue on ageing and improve harmonisation of policies on ageing between ministries. Assure a better supply of data for research and policy making.

Table 22. **Main conclusions drawn from EDRC country reviews of ageing policies** (continued)

	Remove incentives to retire early	Policies to improve employment prospects of older workers	Fiscal consolidation should be pursued	Retirement income should come from a mix of sources	Greater focus on cost-effectiveness in health and long-term care	Strengthen financial market infrastructure	Strategic frameworks should be put in place
Iceland			Indexation of state pensions to wages rather than higher of prices or wages; ensure that means-tested benefits decline as private pensions increase; simplify current system of means tested benefits; prevent individuals from taking supplementary benefit by delaying receipt of occupational pensions; pre-fund unfunded civil service pensions.		Increase supply of nursing care beds in Rekjavic area. User charges based on income and wealth test should be increased; co-ordination among providers should be improved; Central government funding to municipalities should be on a block grant basis.	Rules on opting out of private pension arrangements and common rules for accumulation in private funds may be needed; raise minimum number of members in a fund to encourage pension fund consolidation; ease limits on domestic and foreign investments; regulators need to be vigilant as to coverage of system and to the possible impact of increases in longevity on fund equilibrium.	
Italy	Raise the age for earliest retirement to well above 60; ensure that the transformation coefficients for calculating the pension take into account the increase in longevity; improve the actuarial adjustment for those retiring after 65.	More attention paid to maintaining human capital for older workers.	Ease financial burden during the transition period by moving all individuals into the pro-rata system; ensure that the re-calculation of the pension every 10 years appropriately reflects expected growth and longevity.	Increase second pillar savings by channeling TFR into mandatory pension funds possibly with increased employer/employee contributions; as second pillar pensions increase, public pensions should be reduced.	Broader range of long-term care services need to be provided from the current low level; prevention needs to be increased to limit the calls on these services; improve co-ordination of health and long-term care services; long-term care services should be priced at cost with income and asset tests.	Accelerate accreditation of private pension funds.	

Table 22. **Main conclusions drawn from EDRC country reviews of ageing policies** (continued)

	Remove incentives to retire early	Policies to improve employment prospects of older workers	Fiscal consolidation should be pursued	Retirement income should come from a mix of sources	Greater focus on cost-effectiveness in health and long-term care	Strengthen financial market infrastructure	Strategic frameworks should be put in place
Korea	Care should be taken to ensure that incentives to retire early do not appear as the pension system matures.	Increase retraining for older workers.	Undertake reforms to reduce benefits; move to a system with a low publicly-financed first tier and a privately-funded universal second tier.	Transform the leaving allowance system to a second-tier mandatory fully-financed corporate pension system.		Improve supervision of institutions handling private pension accounts; improve the management of the National Pension Fund.	
Netherlands	Accelerate phasing out of VUT schemes; restructure disability and unemployment insurance schemes to reduce access of older workers.	Increase flexibility of older workers by moving away from the seniority pay system; end automatic extension of seniority pay clauses to all firms in wage contracts; more work-related training for older workers.	Front-load debt reduction over coming decade.	Change incentives for insurers to improve the efficiency of health-care provision.			
Norway	Abolish pension accrual during early retirement and early old age pensions; put the separate early-retirement system on a sound actuarial footing; use entire work career for calculating pensions; abolish tax incentives to retire early.		Index pension benefits to a combination of wages and prices rather than just wages; index pension rights to economic growth; increase number of years of contribution to obtain a full pension; adjust the supplementary pension percentage downwards.	Separate the minimum pension from the earnings-related component and move to a single earning-related pension system, partly financed by the petroleum fund; system should use a notional accounts system as in Sweden and Italy; introduce private pension accounts.	Reduce wide variation in quality and cost of care between municipalities; improve co-ordination in care provision between municipalities and reduce incentives to shift costs of care; change user charges so as to avoid incentives to shift to higher cost care; increase user charges and introduce asset testing.		

Table 22. **Main conclusions drawn from EDRC country reviews of ageing policies** (continued)

	Remove incentives to retire early	Policies to improve employment of older workers	Fiscal consolidation should be pursued	Retirement income should come from a mix of sources	Greater focus on cost-effectiveness in health and long-term care	Strengthen financial market infrastructure	Strategic frameworks should be put in place
Spain	Make systems actuarially neutral and extend actuarial adjustment to work after 65; restrict early retirement options related to corporate restructuring by reducing redundancy allowances; limit further the access to disability pensions.	Increase retraining for older workers; increase incentives for part-time work.	Reduce replacement rate by 20 percentage points; bring public-sector pension systems in line with the general scheme; limit the ability to cumulate pensions by a means test.	Minimum contribution to a compulsory private second-tier pension.	Expand long-term care services with an emphasis on non-institutionalised care; develop a voucher system with a flexible public private mix to ensure that services are affordable; improve co-ordination among administrative levels so as to provide the same quality of care; promote prevention.	Equal representation of employer and employee on regulatory boards of second-tier pension funds.	Need a wider programme to foster long-term economic growth; *e.g.* higher immigration and services permitting increased labour market participation of women.
Switzerland	Reduce attractiveness of early retirement through the complementary benefit scheme if this proves too popular; increase retirement age to 67.	More uniform contribution rates over an employee's working lifetime.	Increase retirement age to 67; finance cost of pensions by a broadly based tax rather than a labour tax.	Second-tier pensions should be extended to low earners.	Improve cost efficiency of health care system; improve pricing mechanisms for hospital care and improve incentives facing providers and insurers through regulated competition; shift in care towards ambulatory sector; better filtering of applicants for long-term care; more comprehensive policies on prevention.	Set a minimum size of pension fund membership; improve transparency and competition in the area of "collective funds"; more pro-active regulatory control and greater coherence in regulatory control between cantons and federal government; move toward "prudent person" rules for pension fund assets.	Better co-ordination of policies between the Federal and canton governments.

Table 22. **Main conclusions drawn from EDRC country reviews of ageing policies** (continued)

	Remove incentives to retire early	Policies to improve employment of older workers	Fiscal consolidation should be pursued	Retirement income should come from a mix of sources	Greater focus on cost-effectiveness in health and long-term care	Strengthen financial market infrastructure	Strategic frameworks should be put in place
United States	Remove earnings test for people drawing benefits; improve the actuarial fairness of the system; ensure that contributions paid after the maximum computation period result in increased benefits.		Constrain public expenditure (excluding health and pensions) to a fixed per cent of GDP over the longer term; increase the current federal budget surplus; transfer funds from the general budget to Social Security; accelerate the introduction of normal retirement of 67. Slow growth in benefits by linking levels to longevity and limiting the cost of living adjustments.	Implementation of the proposed voluntary "USA" saving accounts and possibly make them mandatory.	Increase the number of individuals enrolled in managed care arrangements by making provision for the chronically sick; increase the competition between HMOs by giving more choice of plans; allow the HCFA greater freedom to obtain competitive prices for medical care; better federal and state integration of acute and long-term care; more Medicaid support for home and community based systems; better filtering of need for home care with co-payments; encourage long-term care and insurance; tighten estate recovery programmes for long-term care.		

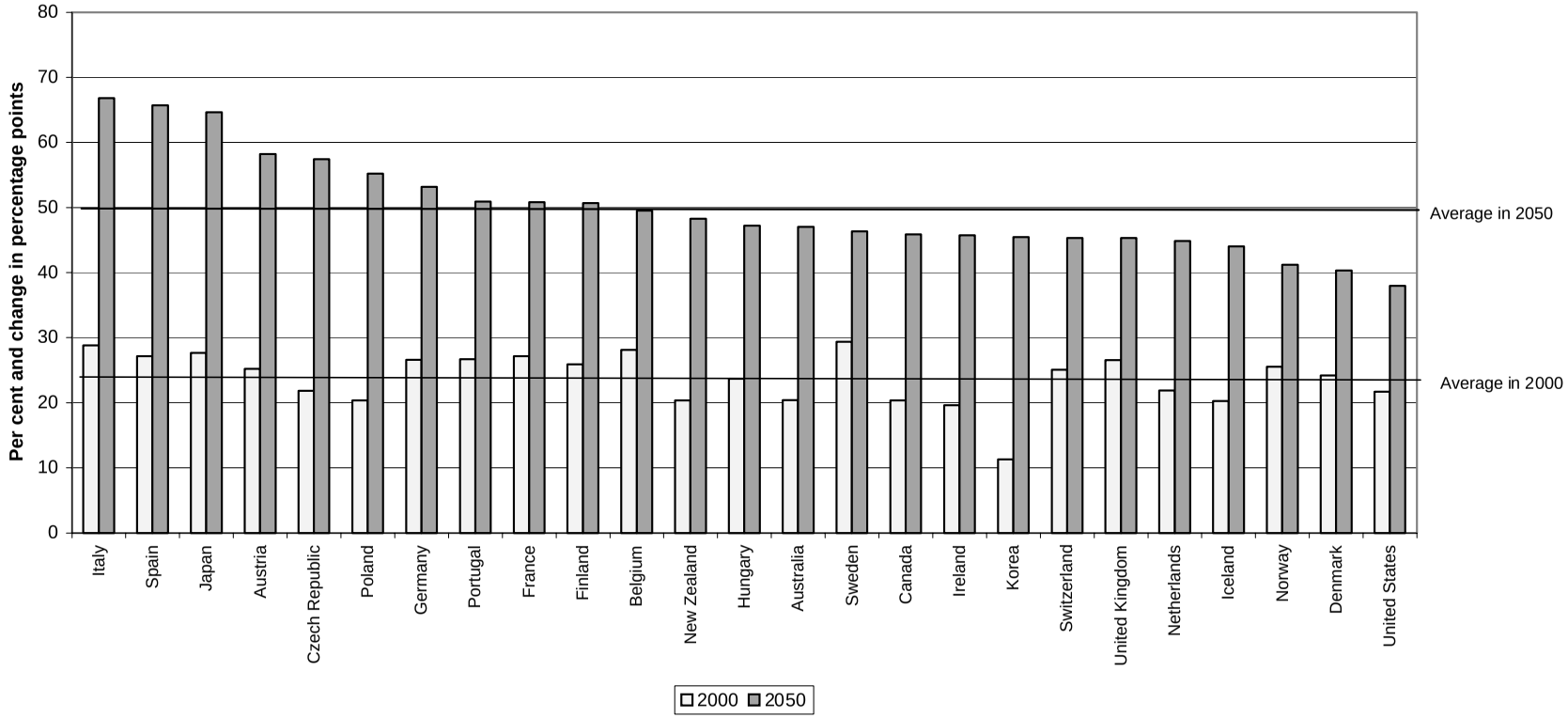
Source: OECD.

Table 22. **Main conclusions drawn from EDRC country reviews of ageing policies** (continued)

	Remove incentives to retire early	Policies to improve employment of older workers	Fiscal consolidation should be pursued	Retirement income should come from a mix of sources	Greater focus on cost-effectiveness in health and long-term care	Strengthen financial market infrastructure	Strategic frameworks should be put in place
b) Conclusions from countries covered in OECD (2001a)							
Canada	Need to increase the average effective age of retirement.						
Germany	Tighten access to benefits permitting early retirement.						
Japan				Retirement income may be inadequate for lower-income retired in future.		Action required to bring corporate pension funds back into financial balance.	
Sweden				May need to extend the private savings component of the pension system.			
United Kingdom							

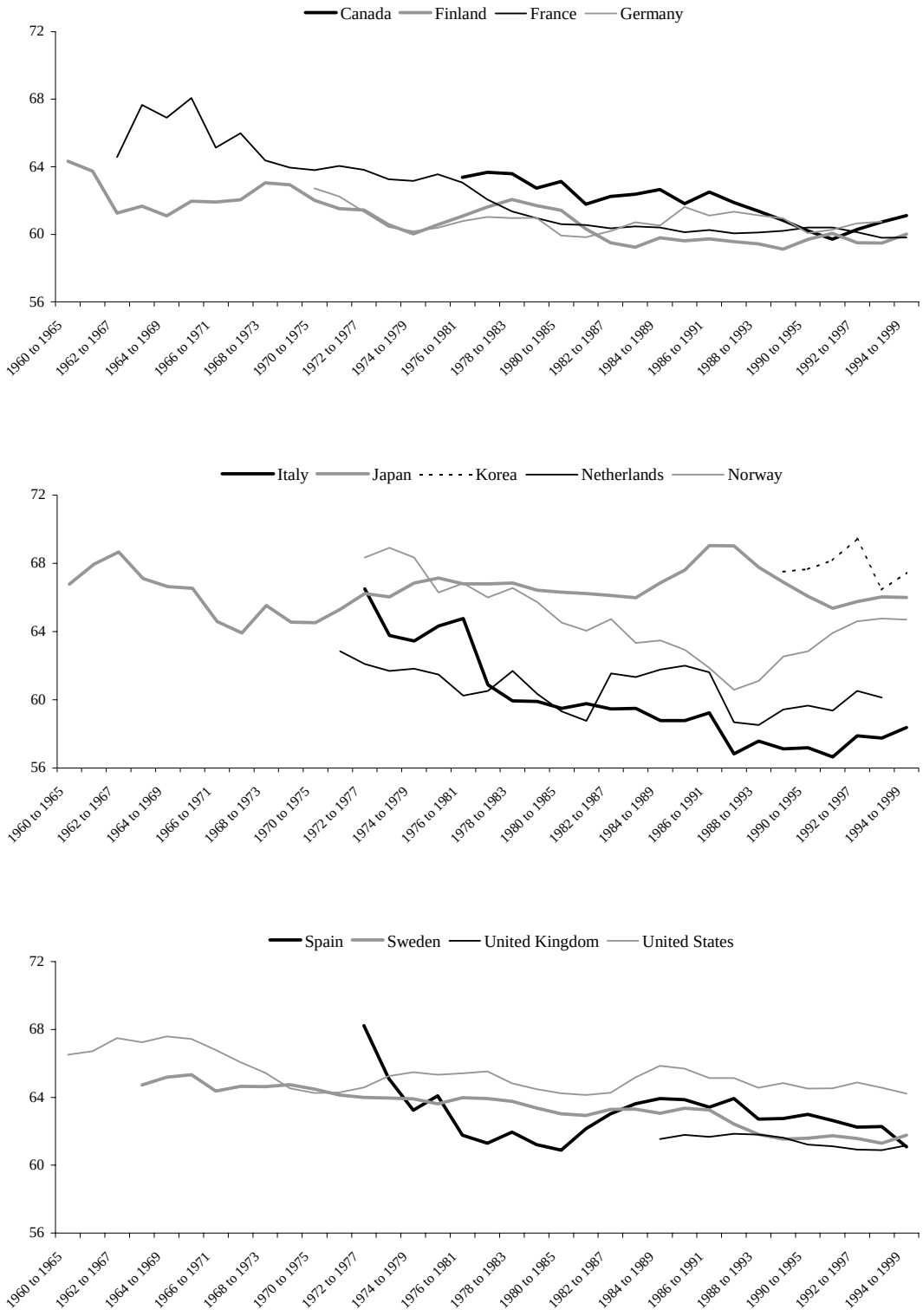
Source: OECD (2001a).

Figure 1. **Old age dependency ratio, 2000-2050**
Per cent



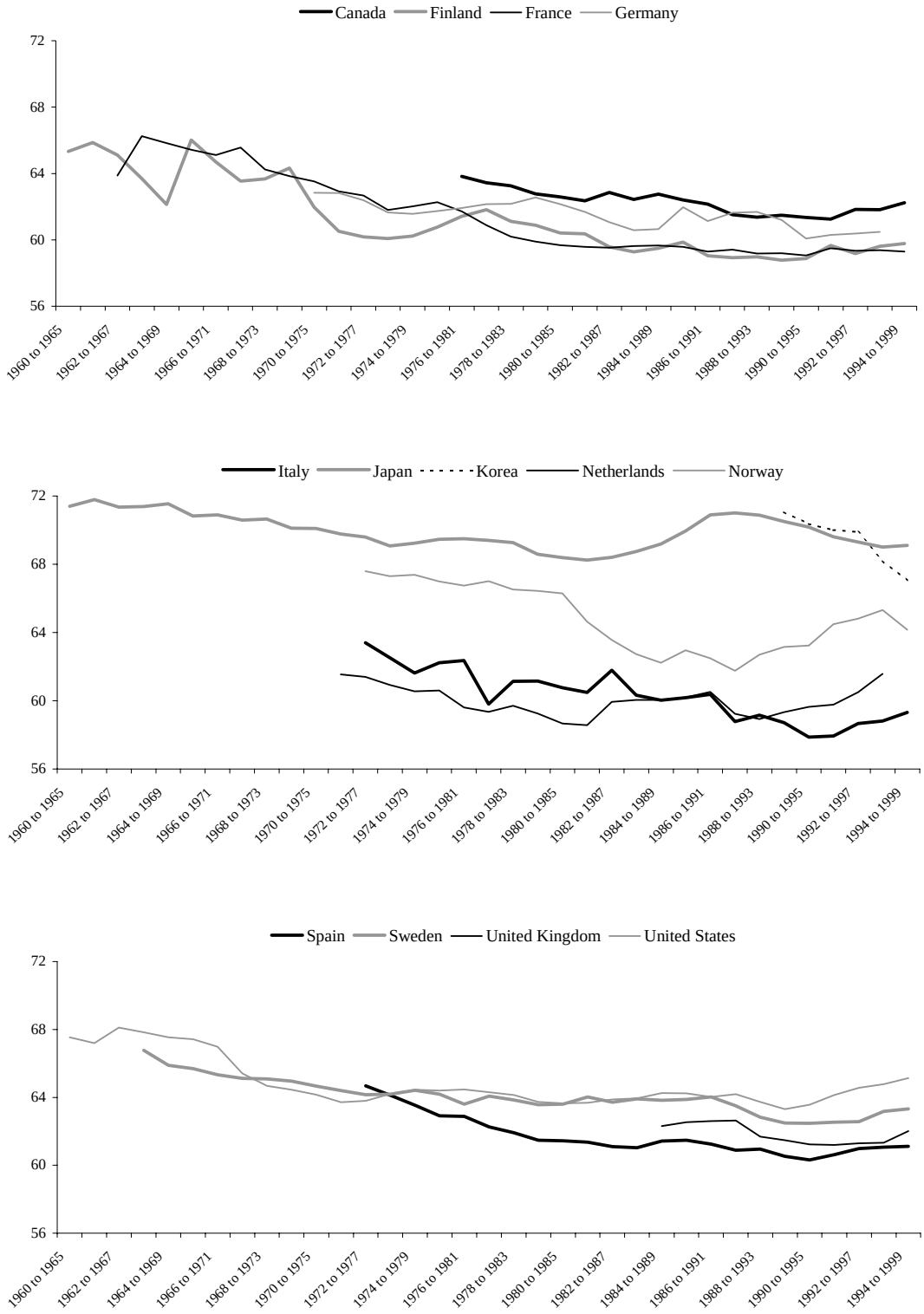
1. Share of population aged 65+ in population aged 20 to 64.
Source: OECD, Office fédérale de la statistique for Switzerland and United Nations' "World Population Prospects 1950-2050 (The 2000 Revision)" - February 2001 for Iceland.

Figure 2a. **Average age of withdrawal from the labour market, women**



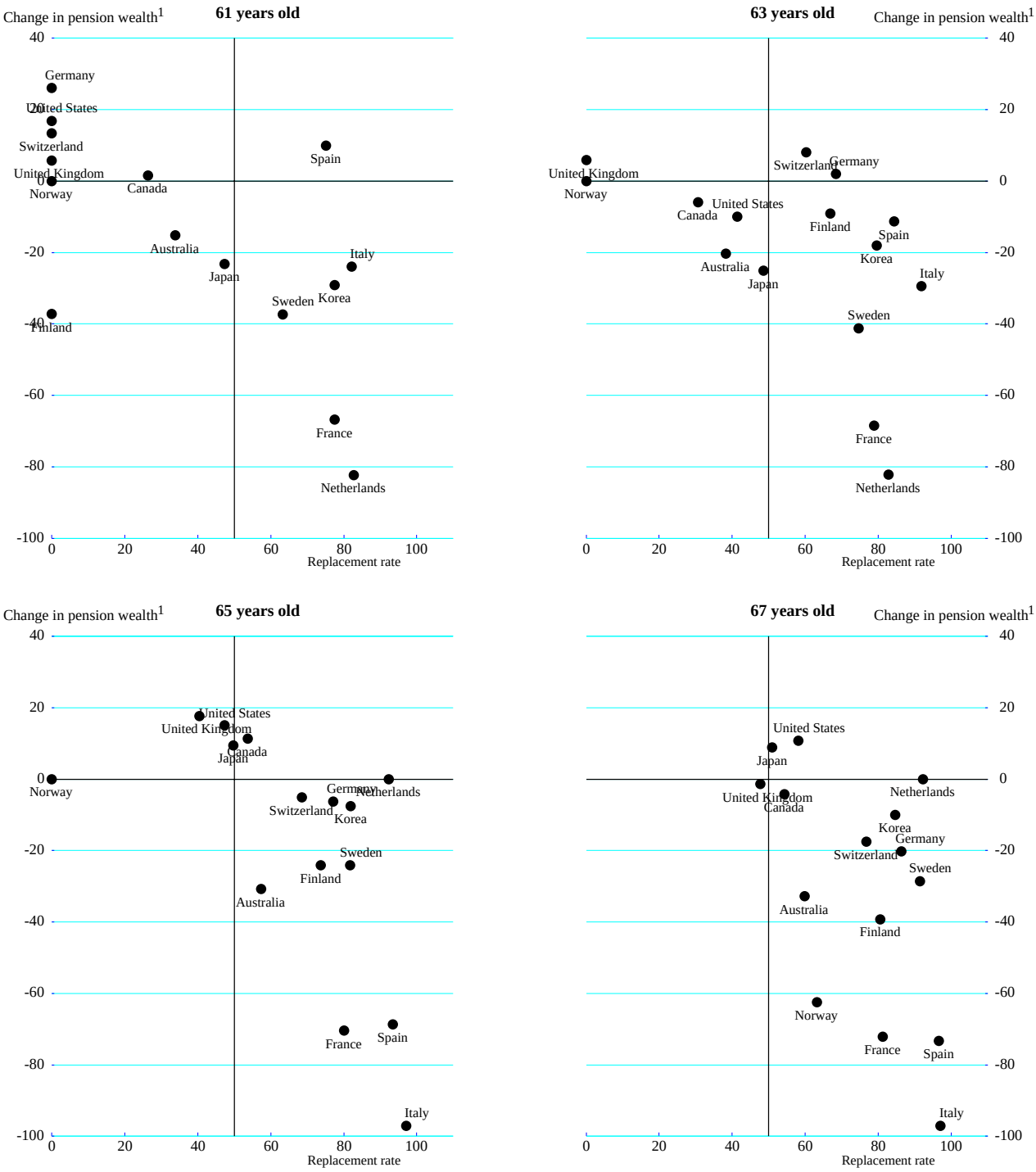
1. Adjusted for cohort effects.
Source : Sherer (2001).

Figure 2b. **Average age of withdrawal from the labour market, men**



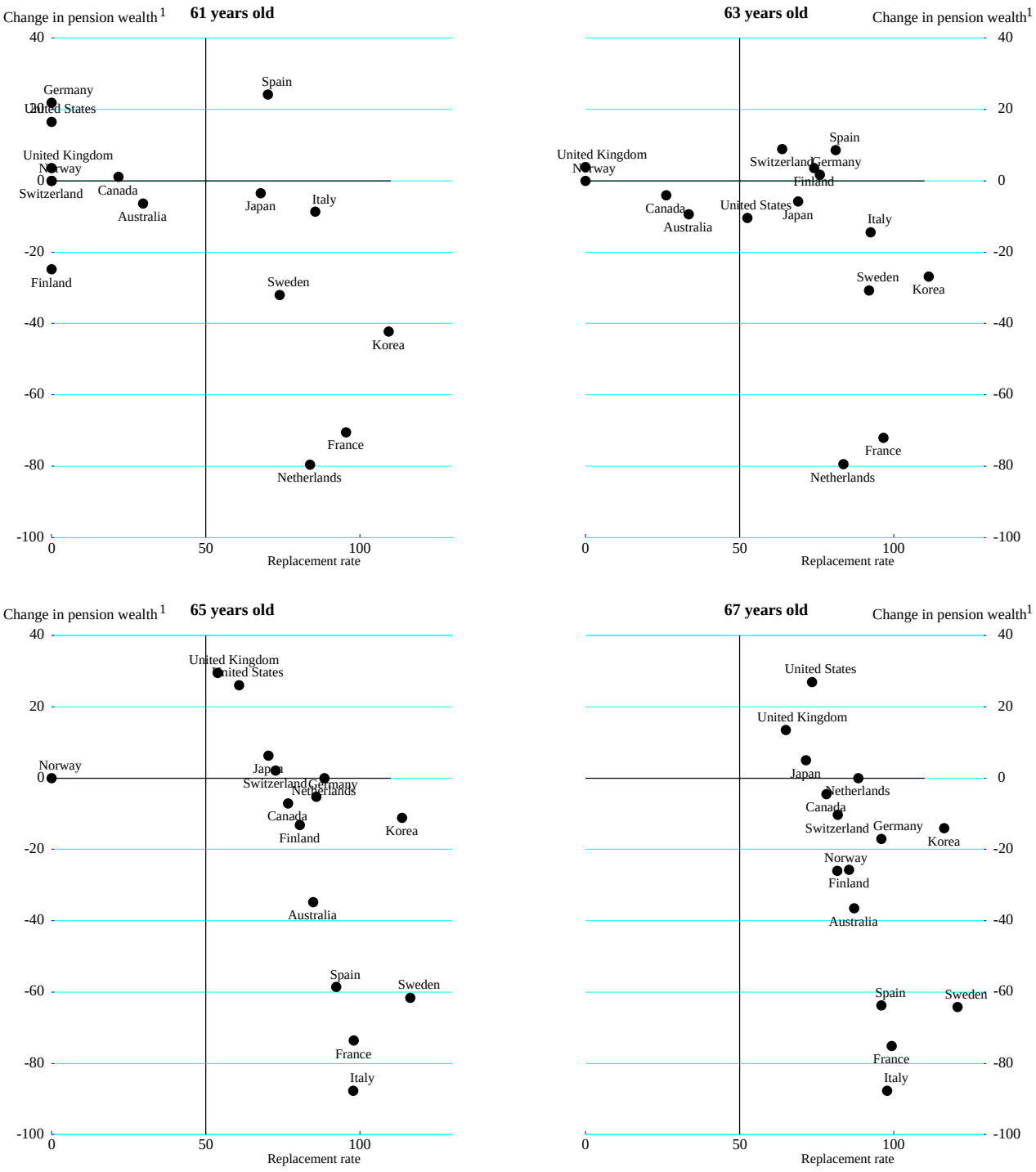
1. Adjusted for cohort effects.
Source : Sherer (2001).

Figure 3a. Replacement rates and change in pension wealth under regular retirement schemes by age, 100% APW



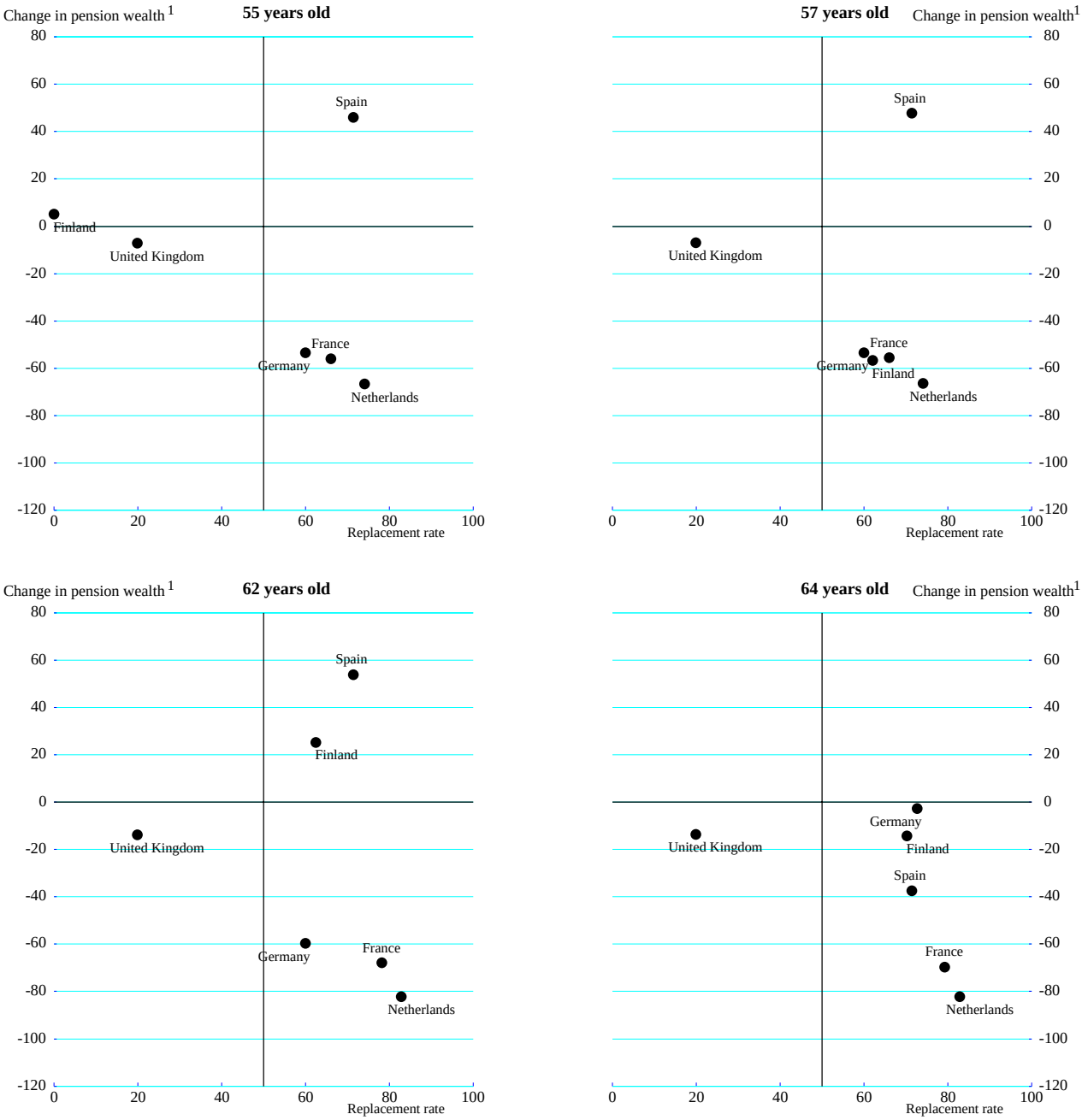
1. Changes in pension wealth as a percent of net earnings.
Source: OECD.

Figure 3b. Replacement rates and change in pension wealth under regular retirement schemes by age, 50% APW



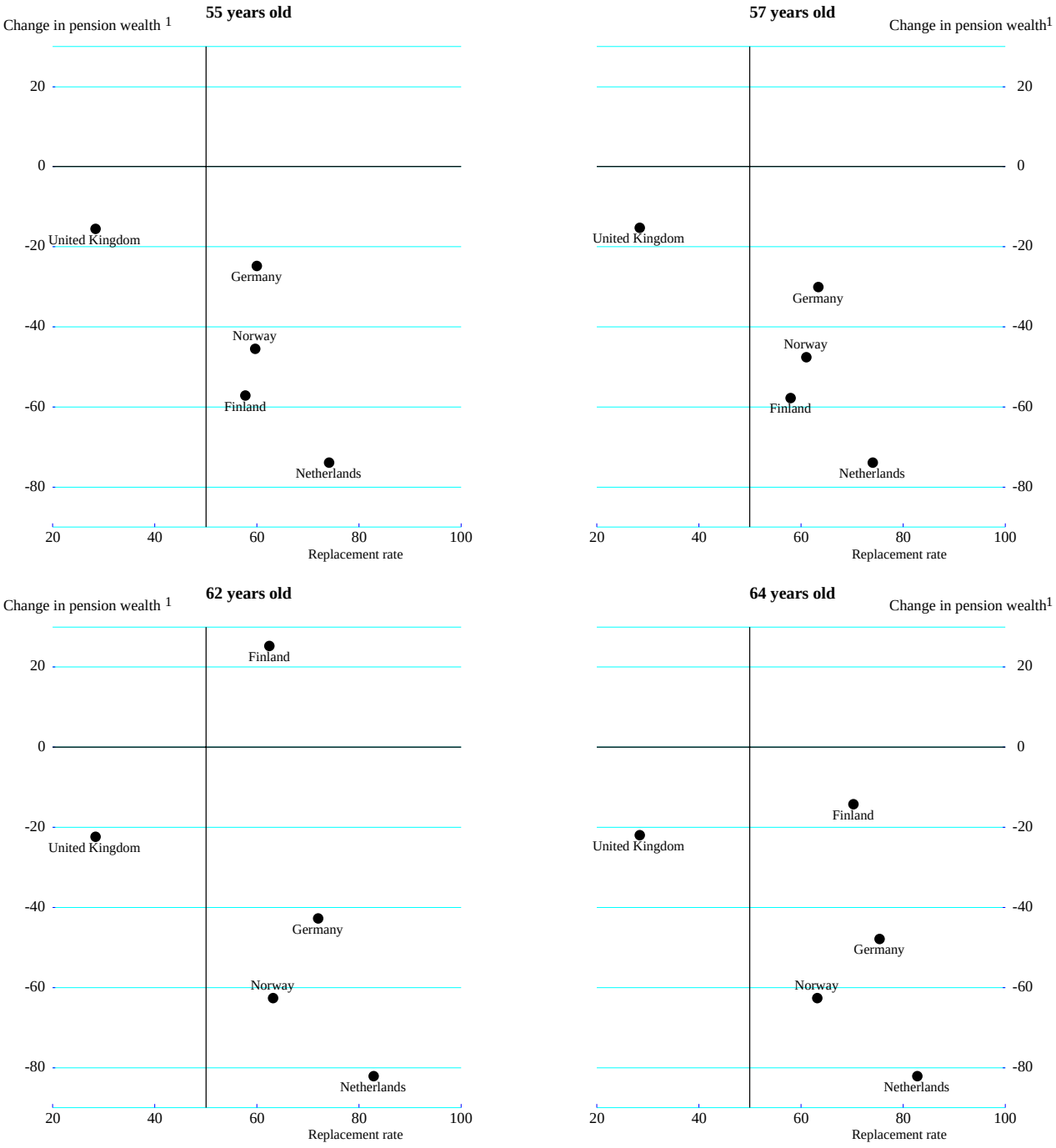
1. Changes in pension wealth as a percent of net earnings.
Source: OECD.

Figure 4. Replacement rates and change in pension wealth under unemployment and other schemes by age, 100% APW



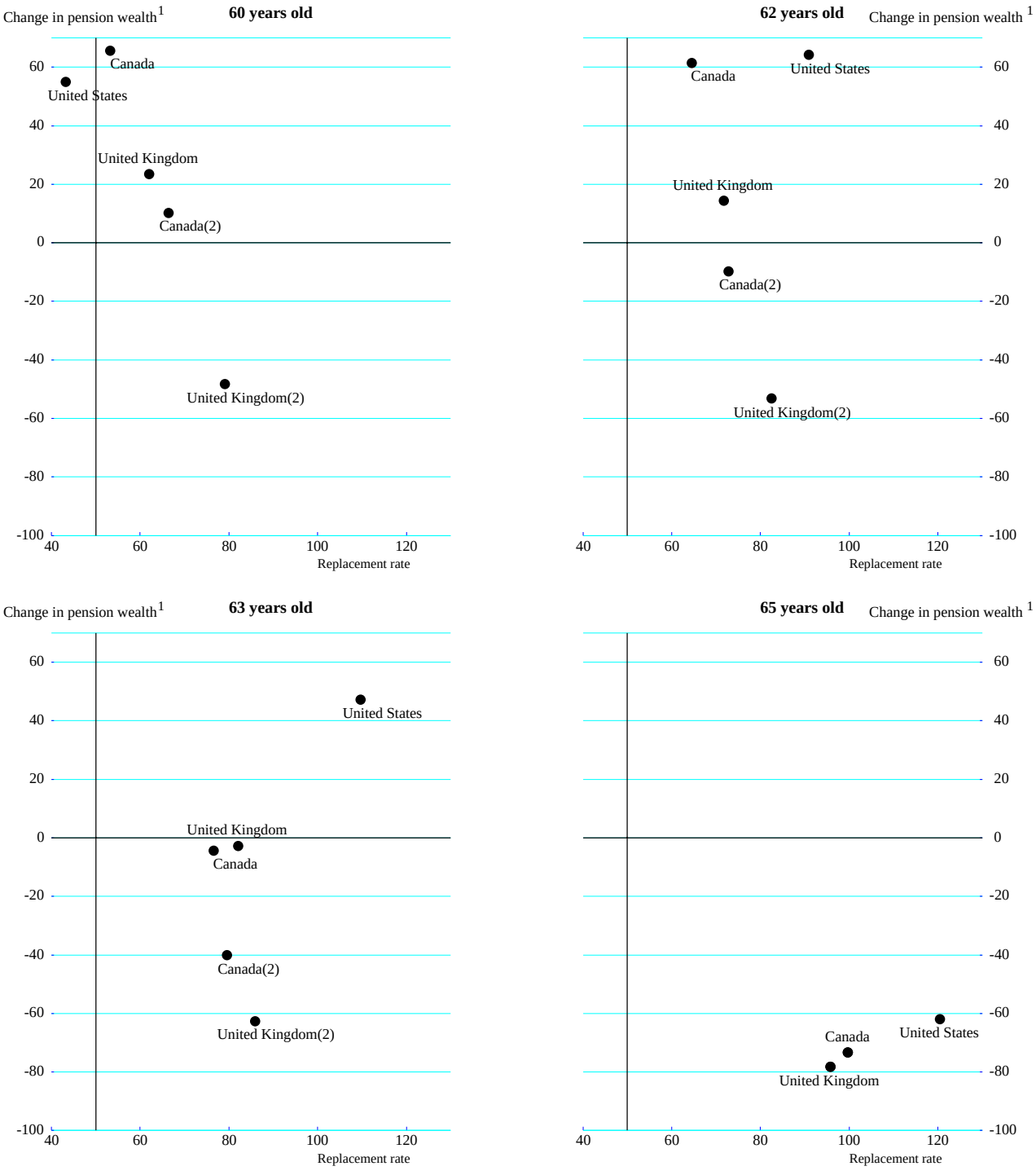
Note: For unemployment (Finland, Germany, the Netherlands and Norway) the replacement rate refers to the unemployment benefit at the time the person falls unemployed relative to the preceding wage.Replacement rates and pension wealth are calculated for individuals falling unemployed at each age. The estimate of pension wealth assumes that the individual continues on unemployment benefit until hey are exhausted. If this occurs before earliest age for receipt of for old-age retirement benefits is reached, the individual is assumed to fall back on unemployment assistance or social assistance benefits (which are normally income tested) at a lower replacement rate for the intervening period.For the special early retirement schemes (France and Spain), the method follows that indicated under the regular retirement schemes.
1. Changes in pension wealth as a percent of net earnings.
Source: OECD.

Figure 5. Replacement rates and change in pension wealth under disability schemes by age, 100% APW



Note: The replacement rates is the rate assuming that the individual is classified as disabled at that age.
For pension wealth, the individual is assumed to remain disabled until the earliest age at which old-age retirement benefits can be obtained and then switch to the old-age benefits.
1. Changes in pension wealth as a percent of net earnings.
Source: OECD.

Figure 6. Replacement rates and change in pension wealth occupation pension schemes by age, 100% APW



1. Changes in pension wealth as a percent of net earnings.
2. Canada(2) and UK(2) refer to calculation with no actuarial adjustment for pre-retirement.

ANNEX

INCENTIVES FOR EARLY RETIREMENT

1. Measuring retirement incentives

81. Two measures, the replacement rate and the change in (net) pension wealth, are used to assess the incentives to retire.

- The *replacement rate* is defined as the ratio of annual pension or early-retirement benefits to earnings just prior to retiring.

- The *change in pension wealth* from working an additional year. Pension wealth corresponds to the discounted present value of the future stream of pension payments that the eligible person can expect to receive, net of the present value of all future contributions to the pension system. The incentive to retire is measured by the change in pension wealth of the person if he continues to work an additional year for each year after the age of 55. If the change in the pension wealth from working an additional year is negative – that is, the additional pension received in following years does not compensate for the pension foregone in the year of additional work plus the additional pension contributions paid – there is an incentive for the individual to retire to avoid this loss (and *vice versa*). The change in pension wealth is expressed as a per cent of wages.[81]

Both measures are calculated after tax as retirement income is taxed more lightly than earnings in many countries.

82. Individuals can be encouraged to retire if the replacement rate is high enough, even though the pension may increase by working an additional year. Thus, both the level of the pension and the change in pension wealth need to be considered together in judging the overall effect of the public pension arrangements on the retirement decision. However, there are a range of other factors impinging on the retirement decision that are not addressed here. Older persons can draw on other income (part-time earnings, private occupational pensions, private savings and housing) and, since a growing share of women work (and receive pensions in their own right), the work-retirement decision is becoming more and more a joint household decision.

81. In most pension systems, working an additional year will increase the annual pension as a result of the extra year of contribution. This means that anyone retiring before the "standard" age will normally receive a lower pension. For each additional year worked without drawing a pension, two countervailing factors will affect pension wealth. First, deferring the pension by one year reduces pension wealth by a) the pension that would have been received in that year and by b) the cost of pension contributions for the additional year of work. Second, if the replacement rate is increased by working an additional year (benefit accrual), pension payments for all the years the pension is received will increase. In an "actuarially neutral" pension scheme these two effects exactly balance each other. If the benefit accrual rate is too low (relative to the rate of contribution), pension wealth will fall for an extra year of work and this provides an incentive to retire.

2. Modelling assumptions

83. In order to make these calculations manageable for a wide range of countries and time periods, the following assumptions are made:

- Replacement rates and changes in pension wealth are calculated for a hypothetical individual (unmarried and without dependants) who begins to work at age 20 and has a full work career before taking retirement.

- The age-earnings profile over the working life is assumed to be flat, *i.e.* earnings are assumed to grow in line with countrywide average earnings. Under this assumption, lifetime earnings at the age of retirement are simply equal to 60, 100 or 140 per cent of APW earnings, depending upon the earnings level considered. A key implication is that changes in the earnings base used in the pension benefit formula are, in general, not reflected in the calculations.

- The estimates assumed a real wage growth of 1¾ per cent per annum, an inflation rate of two per cent.

- The parameters used in the calculations are those that exist currently or have been legislated and will be implemented in the near future. In some cases, these reforms are being phased in on a long period (*e.g.* Italy and the United States). Furthermore the baseline results assume that selected parameters (*e.g.* contribution floors and ceilings) will rise in the long term in line with wages. Where pension programmes are income-tested, it is assumed that the hypothetical individual has no additional sources of income during retirement.

- The reported replacement rates only cover public schemes and mandatory or quasi-mandatory (as in Finland, the Netherlands,[82] Sweden, Switzerland or the United Kingdom) private occupational schemes. Occupational schemes offered by employers on a voluntary basis (as in Canada, Germany, Japan or the United States) are not covered in the regular pension scheme calculation.

84. The main source for present pension rules is *Social Security Programs Throughout the World*, published every two years by the U.S. Department of Health and Human Services. In the case of European member countries, the modelling also relies heavily on MISSOC *(Social Protection in the Member States of the European Union*), published by the Commission of the European Communities. Supplementary information is obtained from national sources and contacts.

85. Replacement rates and changes in pension wealth are calculated for a range of schemes for all earnings levels between 0.5 and 2.5 times average production workers' (APW) earnings for all possible retirement ages between 55 and 70. The results are presented here for individuals with 50 per cent, 100 per cent and 150 per cent of Average Production Worker (APW) earnings. These calculations are not representative of the entire population, particularly those with less-than-full work careers, who will have lower replacement rates in most contribution-based systems.

82. As mentioned in the main text, in the case of Netherlands, a "typical" early retirement (VUT) scheme is considered between ages 60 and 65. However, since the early 1990s these PAYGO schemes have been progressively transformed into funded systems. Because of these transformations the modelling adopted here is less relevant now than it was in the 1970s and 1980s.

86. The *replacement rate* is classically defined as:

$$R_R = P_R / Y$$

where R_R is the replacement rate at age R, P_R is the pension level if retiring at age R and Y is the earnings level just before retirement.

87. The calculation of *pension wealth* levels is directly derived from the computation of replacement rates presented above. As a first step, for each possible retirement age R between 55 and 70, the future stream of expected pension payments is computed from age R to age 110. Pension wealth is then computed as the present value of this stream using the following formula:

$$PWY_R = \sum_{A=R}^{A=105} (S_A * R_A) / (1+r)^{(A-R)}$$

88. where PWY_R is the pension wealth (as a proportion of earnings) for a single individual with APW earnings retiring at age R, R_A is the replacement rate (computed as P_A/Y) that this individual would receive at age A if he or she stops working now, r is the real discount rate, and S_A is the value of the survival function at age A. The latter is the probability of being alive at age A conditional upon being alive at age R, and is derived from country-specific mortality tables published each year by the United Nations and the World Health Organisation. The survival function allows discounting more heavily pension flows received late in life, since the probability of receiving them is lower. In practice, with the combined effects of the survival function and the real discount rate, the discounted real value at age 65 of pension flows to be received at ages 90 and 100 are respectively about only five per cent and 0.1 per cent of the undiscounted real value of these flows. When the retirement age is lower than the earliest age at which a pension is available, the pension flow received before that age is simply zero.

89. For all retirement ages between 55 and 70, *changes in pension wealth* from working for an additional year (*i.e.* from R to R+1) are then computed as:

$$\Delta PWY_R = [PWY_{R+1}] * [S_{R+1} / (1+r)] - PWY_R$$

90. The calculation of levels and changes in pension wealth relies on the following additional assumptions:

- The real discount rate is set at two per cent. A higher (lower) rate would produce higher (lower) implicit taxes on continued work but would not affect the results qualitatively, in particular with regard to cross-country comparisons.

- When making his decision to withdraw from the labour market or to work for an additional year, the individual is assumed to expect constant real earnings if choosing to work. This assumption is consistent with the fact that age-earnings profiles are generally flat, or even declining, at older ages. An alternative modelling choice would have been to assume expected earnings to grow in line with APW earnings. This would have produced slightly lower implicit taxes on continued work.

- In addition, the individual is assumed to expect unchanged economy-wide real earnings if choosing to work. As a result, his lifetime earnings are also expected to remain unchanged. This assumption has no effect on replacement rates. However, this assumption can affect the magnitude of calculated implicit tax rates across components

of the pension system and more generally across countries. While there is no impact in flat-rate schemes, implicit tax rates can be over-estimated (and changes in pension wealth under-estimated) in earnings-related schemes (*e.g.* in the new pension system in Italy). This is because the automatic revaluation of past earnings in line with economy-wide earnings, as is the rule in most OECD countries, is not taken into account at the margin – *i.e.*, the potential re-evaluation of earnings that could take place as a result of the increase in economy-wide average earnings during the additional year is not incorporated in the calculations.

91. Strictly speaking, the above formula for changes in pension wealth applies only when full-time work cannot be combined with the receipt of any full or reduced pension. Even though this assumption holds for a worker with APW earnings in most countries and at most ages, this is not always true. For instance, work can be combined with the receipt of a reduced old-age pension in Japan (subject to an income test) between ages 60 and 64. In such instances, the computation of the change in pension wealth from working for an additional year incorporates the stream of pension payments that the individual would receive during this year (*i.e.* PWY_{R+1} incorporates not only the stream of pension payments received from age R+1 but also that received between at ages R). As a result, changes in pension wealth are more positive (or less negative) and implicit taxes on continued work are lower than in the case of a strict income test. In the extreme case where the receipt of a pension is not income-tested and no contributions to the old-age pension system have to be paid (*e.g.*, in Switzerland from age 70), the implicit tax on continued work is simply zero because the stream of pension payments remains unchanged whether the individual keeps working or not.

3. Retirement incentives in "regular" retirement systems

92. The modelling covers the key components of public pension systems, (see Table 8 in main text) which can include:

- Flat rate universal basic pension.
- Resource-tested public benefits, where the benefit is withdrawn from richer pensioners. These can be means-tested, where both assets and other income sources are taken into account, purely income-tested or tested only against pension income.
- Earnings-related public benefits (including the so-called notional-accounts based schemes in Italy and Sweden). These pay higher pensions to those with higher earnings and contributions through their working lives although they but they also redistributing income in most countries, often through pension floors and ceilings.

93. There are a number of borderline cases. Quasi-mandatory private occupational pension schemes in Finland and the Netherlands, Sweden and Switzerland are included because of their wide coverage even though these are generally classified as lying outside the general government sector. The defined-contribution component in the new mandatory scheme in Sweden is included, as are personal pensions in the United Kingdom (where employees must make some provision for a second pension above the basic level). In contrast, employers in Canada, Germany, Japan, the United Kingdom and the United States offer occupational schemes on a voluntarily basis. As these have a much narrower coverage, they are not included under regular schemes.

94. Figure 1 shows replacement rates by age of retirement and Table 1 provides further information for sub-periods. With only three exceptions, the "normal" retirement age is 65 – in France it is lower (at

60), and in Norway and the United States, it is higher at 67.[83] Certain schemes permit early retirement subject to the pension being reduced (Canada, Finland, Germany, Italy, Sweden and the United States). In addition, the basic pension can be taken in Japan at 60, although the earnings related pension is first available at 65. Also, mandatory private benefits can be liquidated from 55 in Australia, ten years before the age of entitlement to a public pension.

[Figure A1. Net replacement rate]

95. The key results are:

- Replacement rates at the "normal" retirement age vary from between just 40 per cent to just over 90 per cent at the APW (Table and Figure A1). Highest rates (over 80 per cent) are in France, Italy, the Netherlands, Spain and Sweden with lowest rates (below 60 per cent) in Australia, Canada, the United Kingdom and the United States, countries that rely heavily on private pension arrangements.

- For those countries permitting early retirement, the level of benefit at the earliest age of retirement is most generous for the Netherlands (because of the VUT pre-retirement scheme), Germany, France and Spain. The average annual increase in the replacement rate between the earliest age of retirement and the "normal" age is particularly small for Japan, Finland and the Netherlands, suggesting that there is little encouragement for individuals to delay retirement. This is also the case for France (for retirement after the normal retirement age of 60 for individuals with full work histories).[84] For most other countries there are significant annual increases in replacement rates for delaying retirement.

- Replacement rates are higher at 50 per cent of APW earnings (relative to 100 per cent APW earnings) reflecting the impact of pension floors or flat-rate components of pensions: aside from the United Kingdom and the United States they range from just over 70 per cent to over 100 per cent. Replacement rates are relatively less (than at the 100 per cent APW) at 150 per cent of APW (Table A1). The increase in replacement rates from working additional years in the early-retirement period is generally higher at 50 per cent of average earnings.

- Finally, replacement rates after tax are generally higher than before tax, suggesting that the tax favoured treatment of pensions is an important element in the "retirement income package" (Table A2).

- With respect to change in pension wealth among the countries permitting early retirement, eight appear to have systems that are neutral at APW earnings or have positive changes in pension wealth (Australia, Canada, Germany, Korea, Spain, Switzerland and the United States)[85]. For the remaining countries there is, on average, a negative change in pension wealth from an additional year of work, thus an incentive for early retirement, most markedly so for France and the Netherlands (Figure A2 and Table A3).

83. Progressively increased from the current 65 to 67 by 2028 in the United States.

84. Results for Japan and France are sensitive to the number of years worked. If it is assumed that a person has only 35 years of contributions at age 60, then additional contribution years lead to an increase in the pension benefit through the period to age 65.

85. Japan and Sweden have positive changes in pension width but at 50 per cent of APW only.

- For many countries, the incentive to retire (as measured by the change in pension wealth) appears to increase modestly through the early-retirement period. At the normal retirement age the change in pension wealth is strongly negative with the exception of Canada, Germany, Switzerland.[86]

[Table A1. Replacement rates (after tax): regular old-age retirement schemes]

[Table A2. Replacement rates before and after taxes: 100 per cent of APW]

[Table A3. Changes in pension wealth (after tax): regular old-age retirement schemes]

[Figure A2. Change in pension wealth from working an additional year]

4. Alternative pathways into retirement

96. There are a variety of channels whereby individuals can withdraw from the labour market before the regular retirement age is reached. Unemployment benefits/social assistance benefits and disability programmes are the most important. Such programmes exist in most countries, but they are more widely used in some than in others. No attempt has been made to cover all countries. Nonetheless, the results presented here – which all go in the same direction – suggest that the results for similar programmes in other countries are unlikely to be very different. This is the case because individuals receive a pension over a longer period. In addition, they often to accumulate their old-age pension rights (although sometimes at reduced rates) in many of these programmes even though they are not working – *i.e.* they obtain a higher pension for free. When they switch onto full retirement benefits their replacement rates are higher than they would be if only the years of work were taken into account.

4.1 Unemployment benefits

97. In estimating the replacement rates and changes in pension wealth, it is assumed that the individual falls unemployed at a particular age and then receives the available unemployment benefit. These are received until rights are exhausted. He or she is then assumed to fall back on either unemployment assistance or social assistance schemes (which are generally income tested)[87] until it is possible to receive the old-age retirement pension. The replacement rates shown in Figure A3 are those of the unemployment benefits programme when the person falls unemployed. It will, thus, overestimate the average benefit that the individual will receive over the period before he or she switches to the old-age retirement programme.[88]

[Figure A3. Indicators of the incentive to retire: unemployment]

86. In contrast, they swing from negative to no change after the normal retirement age in a few countries because a person can work and receive the pension at the same time (Italy, the Netherlands and Switzerland) although not necessarily in the same firm. However, the rules can be complex. For example in the Netherlands the basic state pension is received by all persons age 65 and above. However for those who continue to work there can be claw-back from the occupational schemes. In this case the change in pension wealth would be negative and there would be a continuing incentive to retire.

87. Individuals are assumed to have no other income.

88. As the age increases the chances that the individual will exhaust full unemployment benefits (and fall onto assistance-type programmes) is reduced. Thus, this over-estimate narrows as age increases. Pension wealth is calculated at each age taking into account the benefits received and the contributions made. The latter are generally very limited.

98. The results for unemployment suggest that initial replacement rates on falling unemployed are above 60 per cent, except for the United Kingdom. In some cases they rise between ages 60 and 65 as soon as the individual shifts to the regular old-age pension system. Changes in pension wealth are negative over the early retirement period (Figure A3).

4.2 Invalidity schemes

99. Disability-induced early retirement is integrated with the old-age system in many countries so that, at normal pension age, the pensioner makes the transition the regular old-age pension. As with unemployment benefits, individuals frequently accumulate pension rights for at least some, if not all, lost years of work over the period of disability. In some countries (*e.g.* the Netherlands), there has been widespread use of these schemes for early retirement to cope with redundancies of older workers. However, countries have been progressively tightening up access to these schemes.

100. As is the case for unemployment benefits, replacement rates for disability arrangements are high in the early retirement period with the exception of the United Kingdom and changes in pension wealth are consistently negative (Figure A4).

[Figure A4. Indicators of the incentive to retire: disability]

4.3 Occupational pension arrangements

101. As noted above, Canada, the United Kingdom and the United States rely heavily on private occupational pension schemes. These have not been considered under the regular old-age pension schemes because a significant portion of the population that does not benefit from them. To improve the comparability with other countries, replacement rates and changes in pension wealth have been calculated by adding on the pensions from stylised private occupational defined benefit schemes to those received under public pension arrangements in each of the three countries.[89] These assume that the normal retirement age is identical to that for public pension systems and that the individual has worked his entire career in the same firm.[90]

102. Occupational pension systems can also encourage early retirement. This can occur, for example, where firms offer to waive the usual reductions in pension benefits for redundant employees to encourage early retirement. Where this is the case individuals would receive a pension that is non-actuarially adjusted for earlier retirement, although it may well be less than what it would have been if the individual had worked to the normal retirement age because contribution periods are shorter. The impact of this is shown

89. Key parameter values used here are: Rate of actuarial adjustment: six per cent for United States and Canada; five per cent for United Kingdom.
Normal retirement age: 65 for all three countries. Earliest retirement age: 55 for United States and Canada and 60 for United Kingdom.

90. This latter assumption probably leads to an overestimate in the actual pension received as most people change firms during their working lives. When this occurs, the pension rights sometimes lapse if a given number of contribution years have not been achieved (vesting period). Even when pension rights are maintained, their value will often be less than they would be if the person had spent all his life in the same firm. This is because pensions in defined benefit schemes are most often based on the salary at the time of departure from the firm or at the time of retirement. With earnings generally higher at the end of working careers, the pension benefits from firms that the individual worked for earlier, will be less as they would be based on the salary at the time the individual changed jobs.

by alternative calculations of replacement rates and changes in pension wealth for Canada and the United Kingdom. (Figure 6 in main text).

103. The results indicate that individuals on typical occupational schemes can have high replacement rates even though the public pension schemes provide benefits that are considerably less than in many European countries where public schemes are dominant. At the normal retirement age of 65, replacement rates would be between 90 and 100 per cent after tax and considerably above this for the United States.[91] Such programmes, if they are fully actuarially adjusted, promote later retirement as the pension benefit increases with the age of retirement and the change in pension wealth remains positive until the normal retirement age. However, the waiving of actuarial adjustments for early retirement can make a considerable difference as can be seen for the alternative simulations for Canada and the United Kingdom. In this case, the change in pension wealth becomes negative at a much earlier age.

91. This may reflect more generous tax provisions for pension income.

Table A1. **Replacement rates (after tax): regular old-age retirement schemes**

Years, per cent of previous earnings and changes

		Earliest age of benefit	Replacement rate at earliest age of benefit	Average replacement rate in early retirement	"Normal" age of benefit	Replacement rate at "normal" age of benefit	Replacement rate at 68	Age when sharp jumps occur
Australia								
	50%	55	21	27	65	85	89	65++
	100%	55	23	31	65	57	61	65+
	150%	55	26	34	65	48	51	65+
Canada								
	50%	60	19	24	65	77	79	65++
	100%	60	21	26	65	53	54	65+
	150%	60	16	19	65	42	42	65+
Finland								
	50%	62	84	78	65	80	88	62++
	100%	62	62	67	65	74	84	62++
	150%	62	62	66	65	74	84	62++
France								
	50%	60	95	95	60	95	100	60+++
	100%	60	77	77	60	77	82	60+++
	150%	60	77	77	60	77	82	60+++
Germany								
	50%	63	76	78	65	86	101	63+++
	100%	63	68	71	65	77	91	63+++
	150%	63	74	76	65	84	99	63+++
Italy								
	50%	57	68	83	65	98	98	57 +++
	100%	57	65	80	65	97	97	57+++
	150%	57	65	80	65	97	97	57+++
Japan								
	50%	60	66	35	65	70	72	60+++
	100%	60	45	48	65	50	52	60+++
	150%	60	38	41	65	43	27	60+++
Korea								
	50%	55	71	86	60	108	118	..
	100%	55	51	61	60	77	86	..
	150%	55	45	54	60	67	77	..
Netherlands								
	50%	60	84	84	65	89	89	60+++
	100%	60	83	83	65	92	92	60+++
	150%	60	84	84	65	89	89	60+++

Table A1. **Replacement rates (after tax): regular old-age retirement schemes**
(continued)

		Earliest age of benefit	Replacement rate at earliest age of benefit	Average replacement rate in early retirement	"Normal" age of benefit	Replacement rate at "normal" age of benefit	Replacement rate at 68	Age when sharp jumps occur
Norway								
	50%	67	82	0	67	82	82	67+++
	100%	67	63	0	67	63	63	67+++
	150%	67	51	0	67	51	51	67+++
Spain								
	50%	60	65	76	65	92	98	60+++
	100%	60	70	80	65	93	98	60+++
	150%	60	68	78	65	93	98	60+++
Sweden								
	50%	61	74	86	65	116	123	61+++
	100%	61	63	72	65	82	97	61+++
	150%	61	54	70	65	82	93	61+++
Switzerland								
	50%	63	64	66	65	73	87	63++
	100%	63	60	62	65	68	81	63++
	150%	63	49	51	65	56	66	63++
United Kingdom								
	50%	65	54	0	65	54	70	65++
	100%	65	40	0	65	40	51	65++
	150%	65	34	0	65	34	42	65++
United States								
	50%	62	50	53	65	61	79	62++
	100%	62	40	41	65	47	62	62++
	150%	62	36	37	65	43	55	62++

Note: + and - signs in the last column indicate the direction of change and an assessment of the relative magnitude. + = 10-20 percentage point jump. ++ = 20-50 percentage point jump and +++ is over 50 percentage point jump.
Source: OECD

Table A2. **Replacement rates before and after taxes: 100 per cent of APW**

Per cent of previous earnings

		Replacement rate earliest age of benefit	Average replacement rate in early retirement	Replacement rate at "normal" age of retirement	Replacement rate at 68
Australia					
	Before	17	23	46	47
	After	23	31	57	58
Canada					
	Before	16	19	43	44
	After	21	26	53	54
Finland					
	Before	55	58	68	80
	After	62	66	74	84
France					
	Before	63	63	63	67
	After	77	77	77	82
Germany					
	Before	43	44	48	57
	After	68	71	77	91
Italy					
	Before	55	70	88	88
	After	65	80	97	97
Japan					
	Before	41	42	43	45
	After	45	48	50	52
Korea					
	Before	47	56	71	80
	After	51	61	77	86
Netherlands					
	Before	80	80	70	70
	After	83	83	92	92

Table A2. **Replacement rates before and after taxes: 100 per cent of APW**
(continued)

		Replacement rate earliest age of benefit	Average replacement rate in early retirement	Replacement rate at "normal" age of retirement	Replacement rate at 68
Norway					
	Before	52	0	52	52
	After	63	0	63	63
Spain					
	Before	60	70	85	90
	After	70	80	93	98
Sweden					
	Before	51	63	74	90
	After	63	72	82	97
Switzerland					
	Before	51	53	58	70
	After	60	62	68	81
United Kingdom					
	Before	34	0	34	45
	After	40	0	40	51
United States					
	Before	31	32	37	49
	After	40	41	47	62

Source: OECD

Table A3. **Changes in pension wealth (after tax): regular old-age retirement schemes**

As per cent of earnings

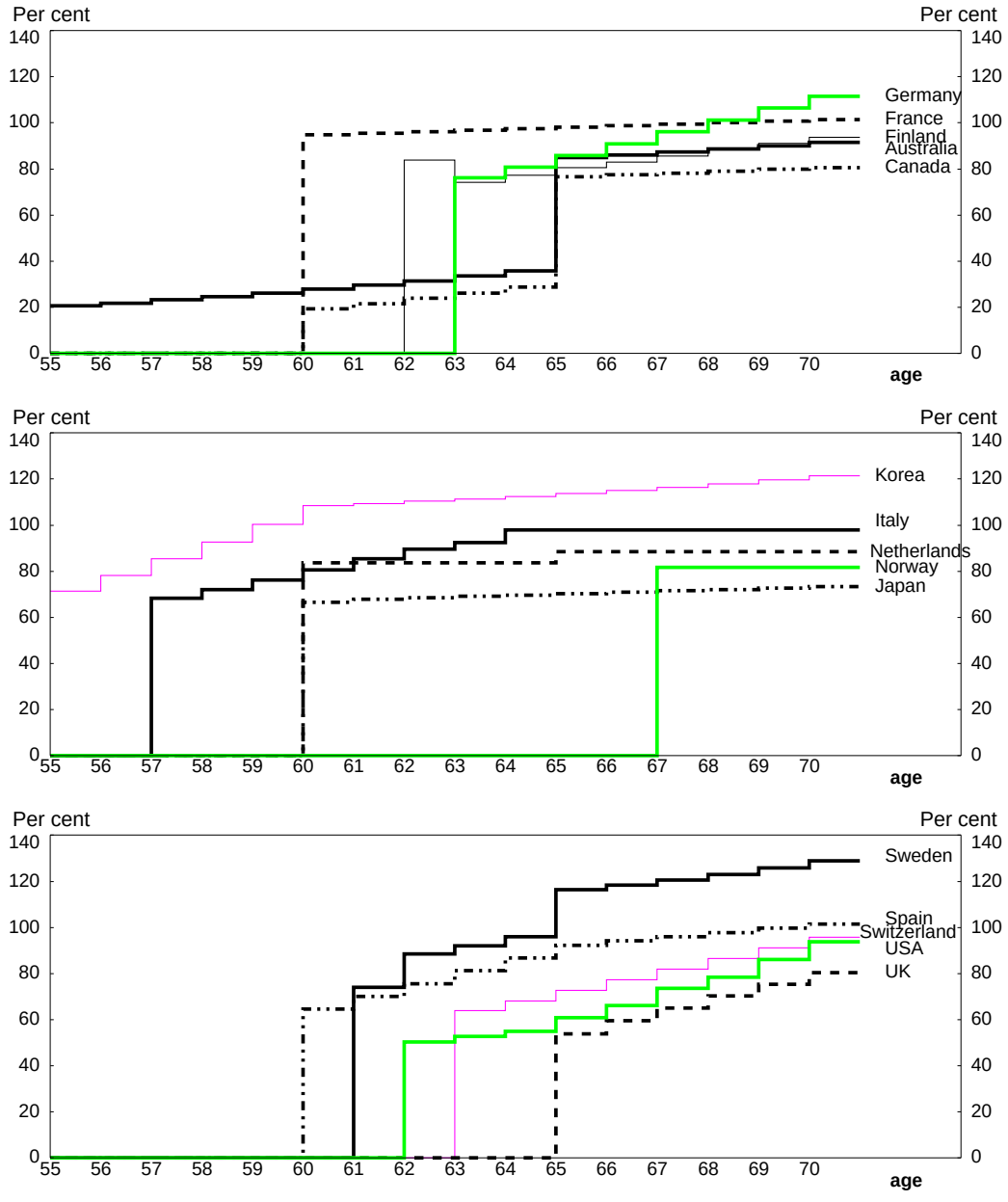
		Pre-retirement period average)	At "normal" retirement age	"Normal" retirement age to age 68 (average)	"Normal" retirement age to age 70 (average)
Australia					
	50%	-9	-50	-54	-55
	100%	-12	-31	-34	-37
	150%	-15	-29	-29	-25
Canada					
	50%	-2	-7	-5	-4
	100%	-2	11	+2	-1
	150%	-2	49	-4	-5
Finland					
	50%	-92	-41	-47	-53
	100%	1	-24	-35	-40
	150%	0	-25	-35	-41
France					
	50%	-83	-83	-86	-87
	100%	-66	-66	-69	-70
	150%	-65	-65	-69	-70
Germany					
	50%	0	-7	-19	-27
	100%	0	-6	-17	-24
	150%	0	-7	-18	-26
Italy					
	50%	-27	-98	-98	-98
	100%	-21	-97	-97	-97
	150%	-22	-97	-97	-97
Japan					
	50%	-4	-7	6	3
	100%	-24	9	9	6
	150%	-29	-7	-8	-10
Korea					
	50%	58	-101	-39	-35
	100%	37	-68	-21	-20
	150%	31	-29	-15	-15
Netherlands					
	50%	-83	0	0	0
	100%	-82	0	0	0
	150%	-84	0	0	0

Table A3. **Changes in pension wealth (after tax): regular old-age retirement schemes** (continued)

		Pre-retirement period average)	At "normal" retirement age	"Normal" retirement age to age 68 (average)	"Normal" retirement age to age 70 (average)
Norway					
	50%	-	-81	-81	-81
	100%	-	-62	-62	-62
	150%	-	-51	-51	-51
Spain					
	50%	18	-63	-68	-70
	100%	-1	-69	-72	-74
	150%	6	-68	-72	-74
Sweden					
	50%	14	-89	-90	-91
	100%	-41	-24	-27	-33
	150%	-24	-41	-43	-45
Switzerland					
	50%	5	-2	-13	-14
	100%	5	-5	-14	-15
	150%	3	-5	-12	-12
United Kingdom					
	50%	-	32	16	5
	100%	-	18	4	2
	150%	-	9	3	-2
United States					
	50%	5	33	30	20
	100%	5	15	10	7
	150%	-3	3	13	10

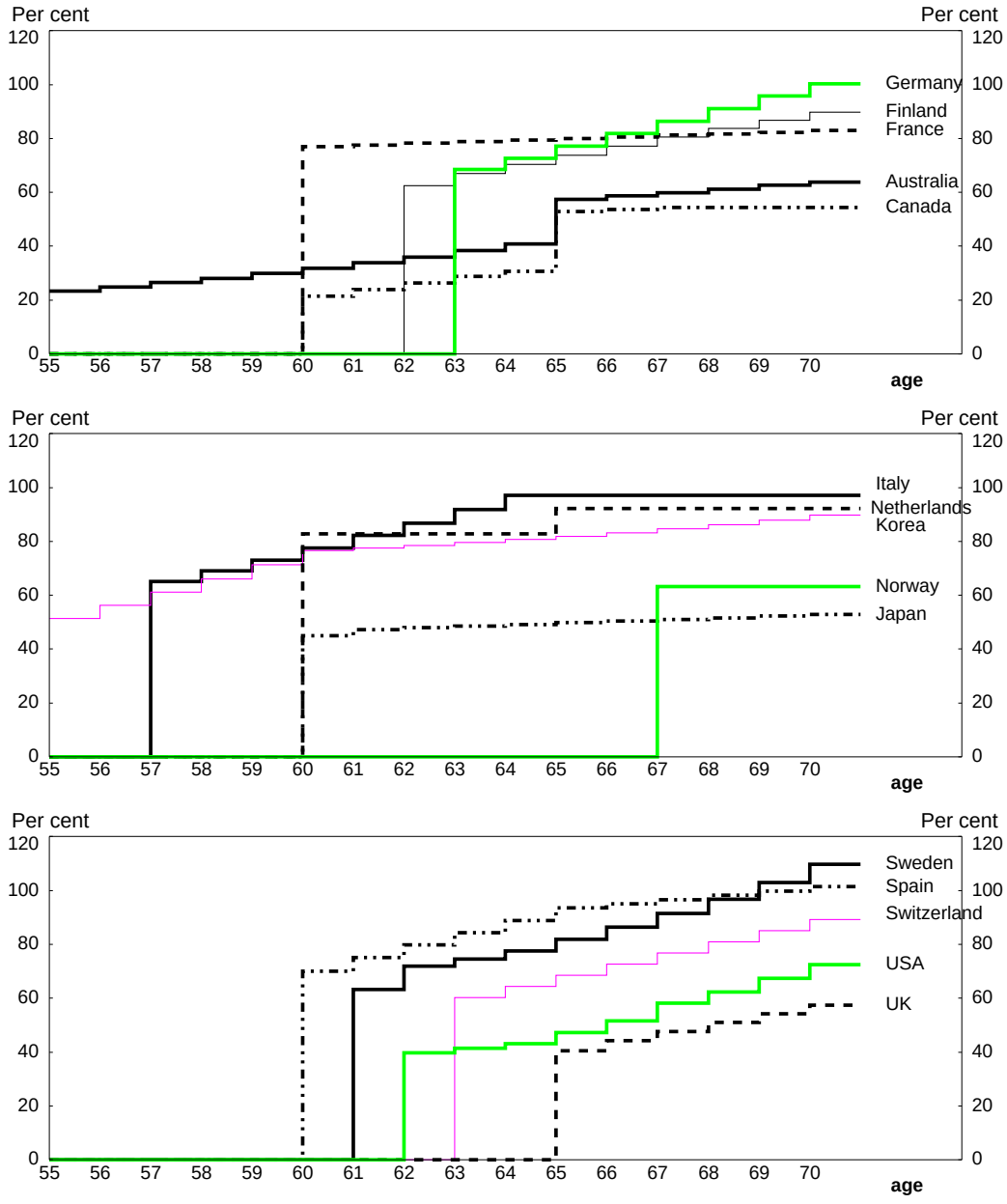
Source: OECD

Figure A1a. Net replacement rate
APW=50%



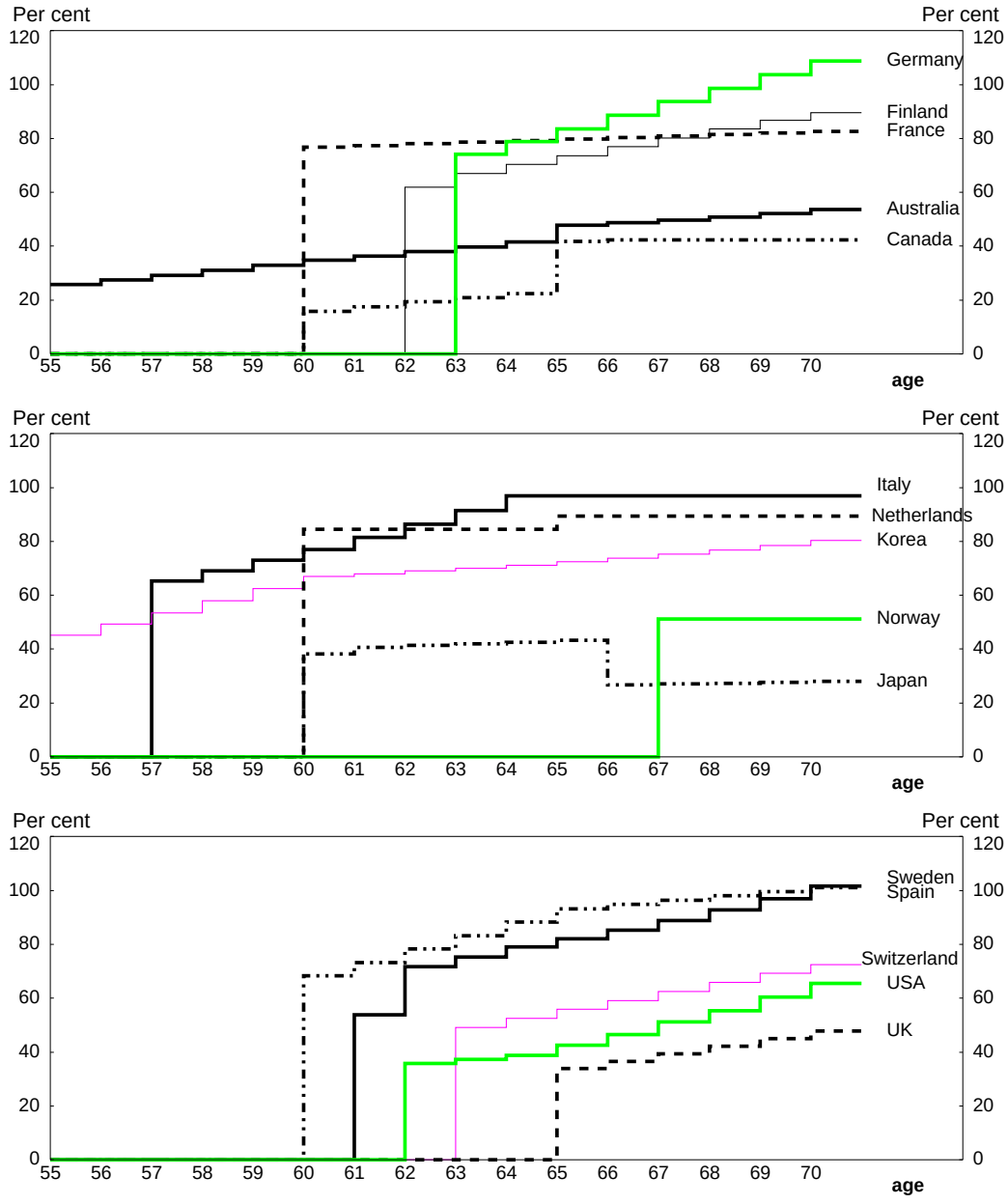
Source: OECD.

Figure A1b. Net replacement rate
APW=100%



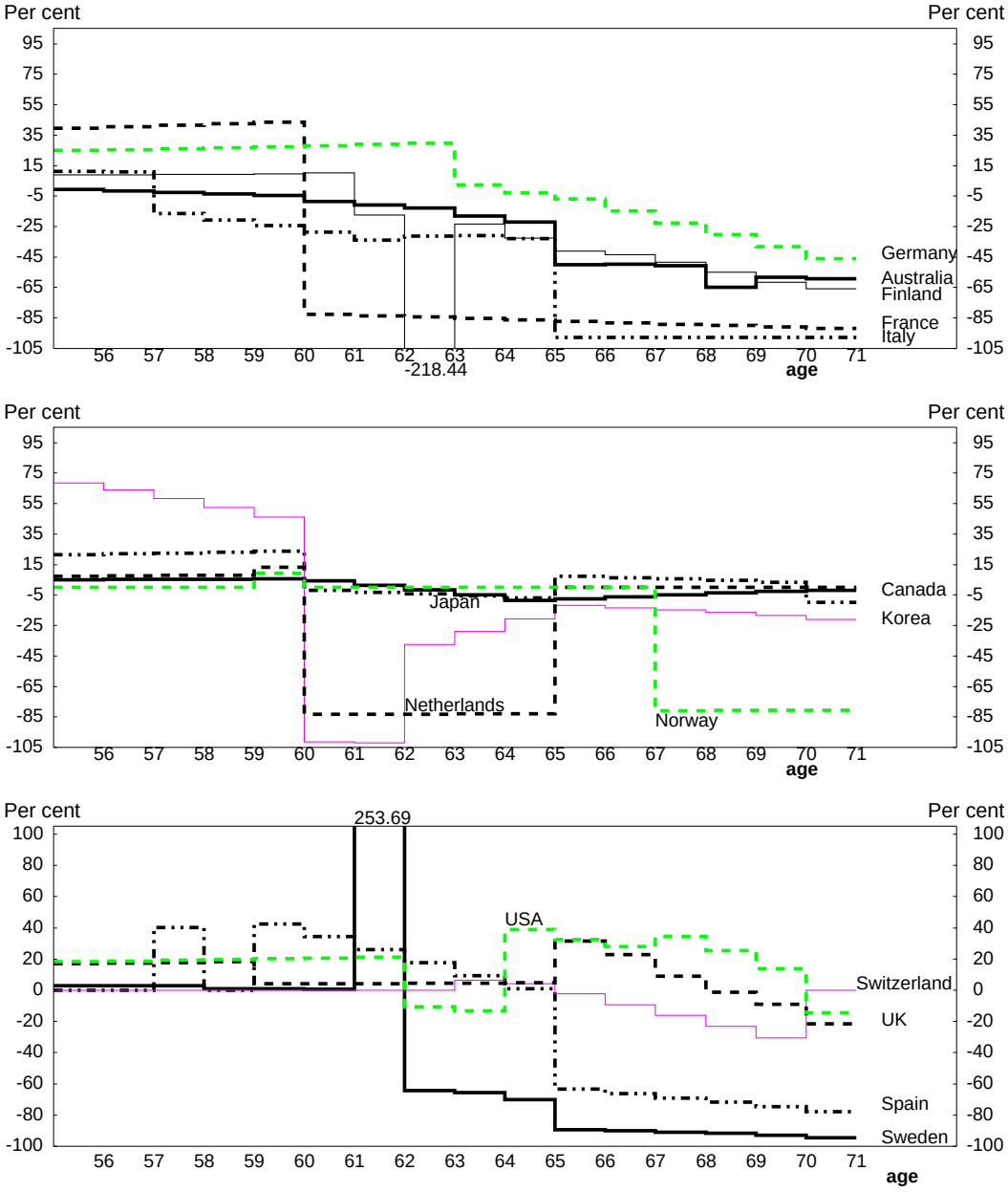
Source: OECD.

Figure A1c. Net replacement rate
APW=150%



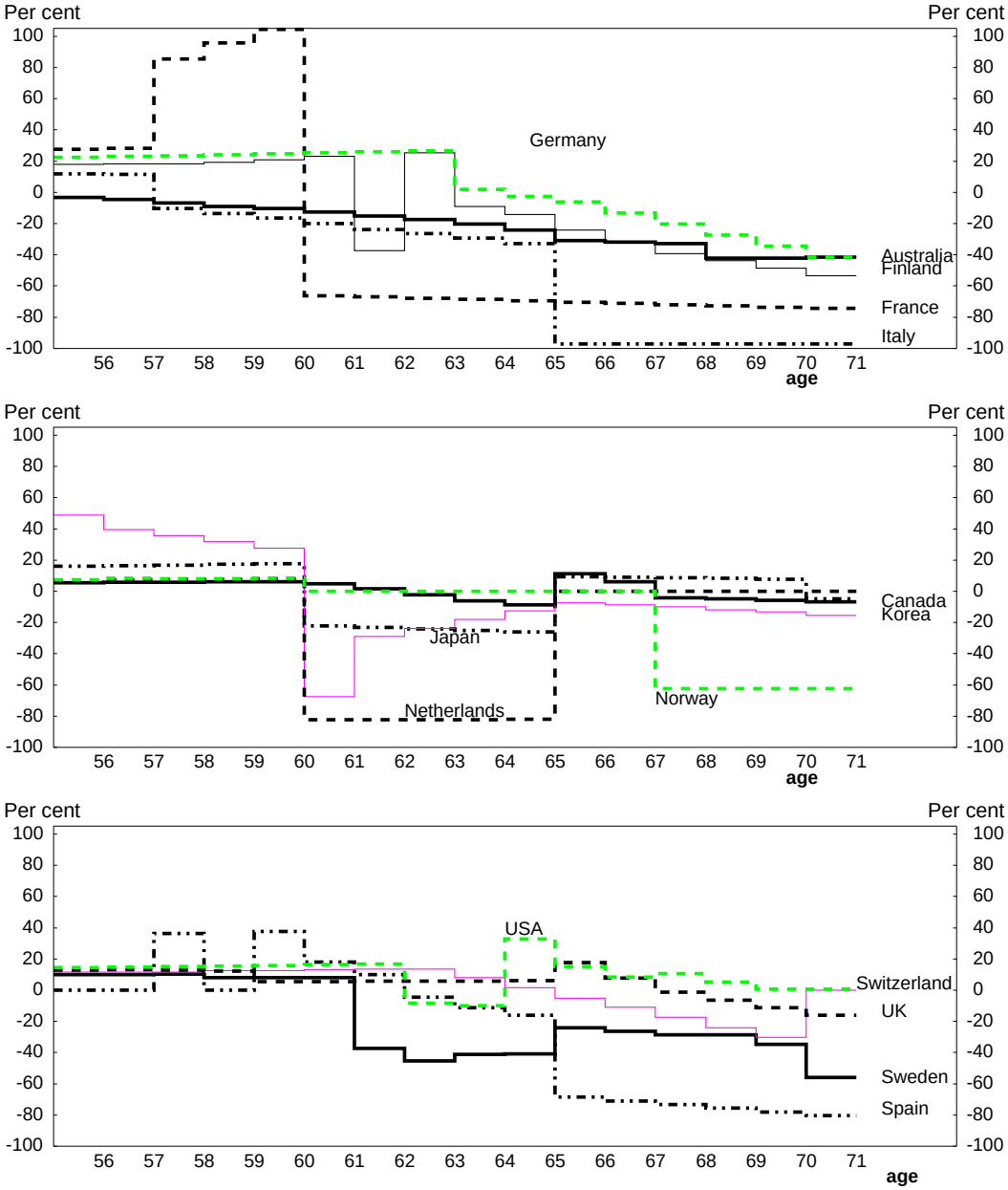
Source: OECD.

Figure A2a. Change in pension wealth from working an additional year
APW=50%



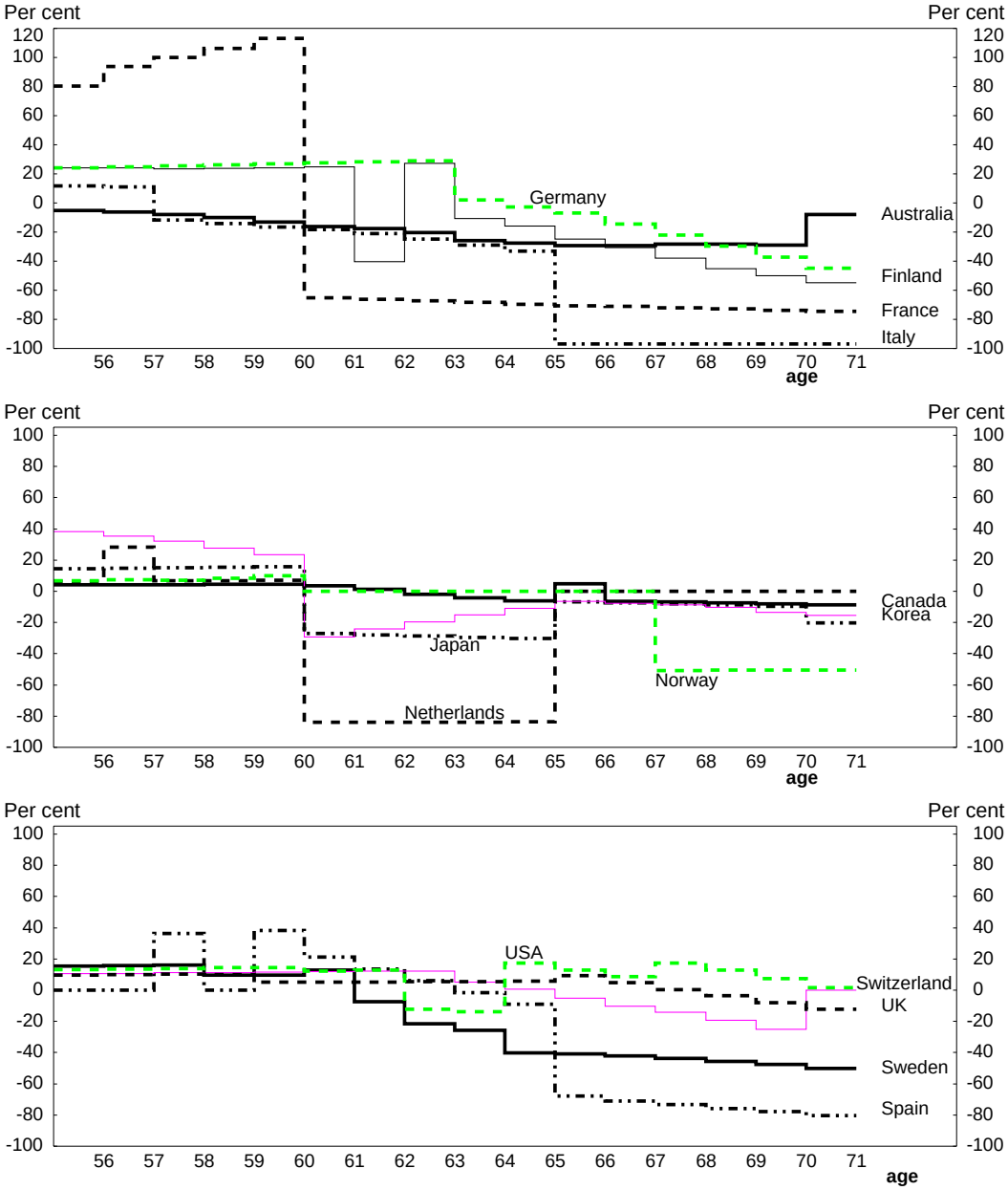
Source: OECD.

Figure A2b. Change in pension wealth from working an additional year
APW=100%



Source: OECD.

Figure A2c. Change in pension wealth from working an additional year
APW=150%



Source: OECD.

Figure A3. Indicators of the incentive to retire: unemployment
APW= 100%

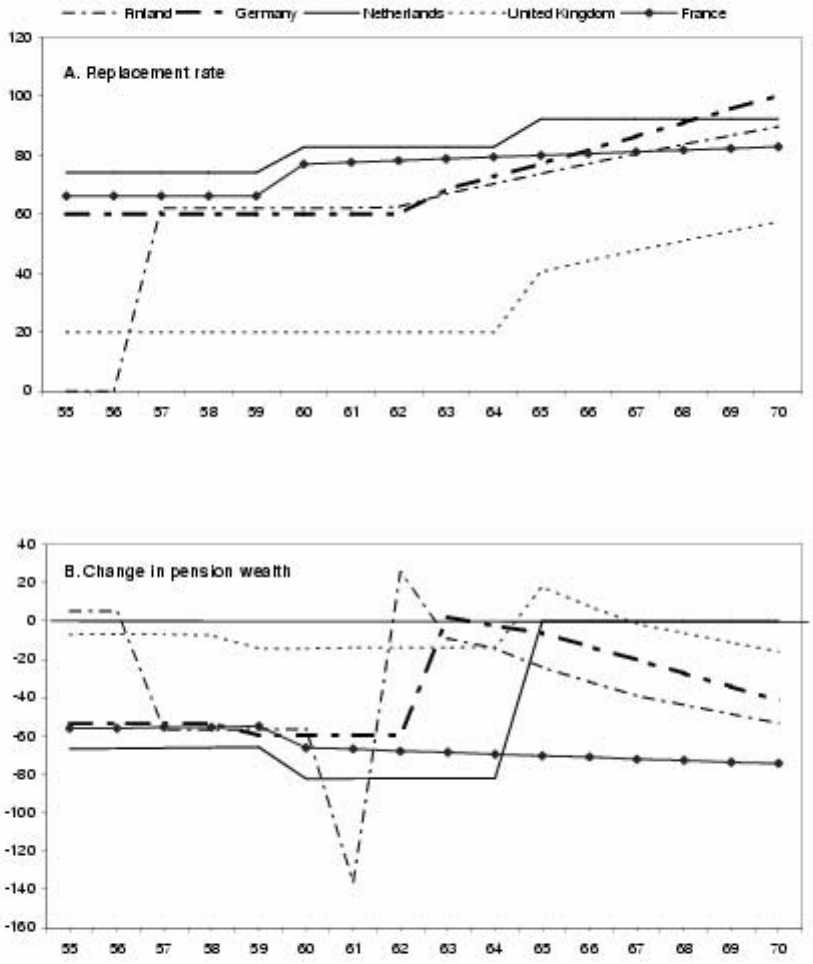
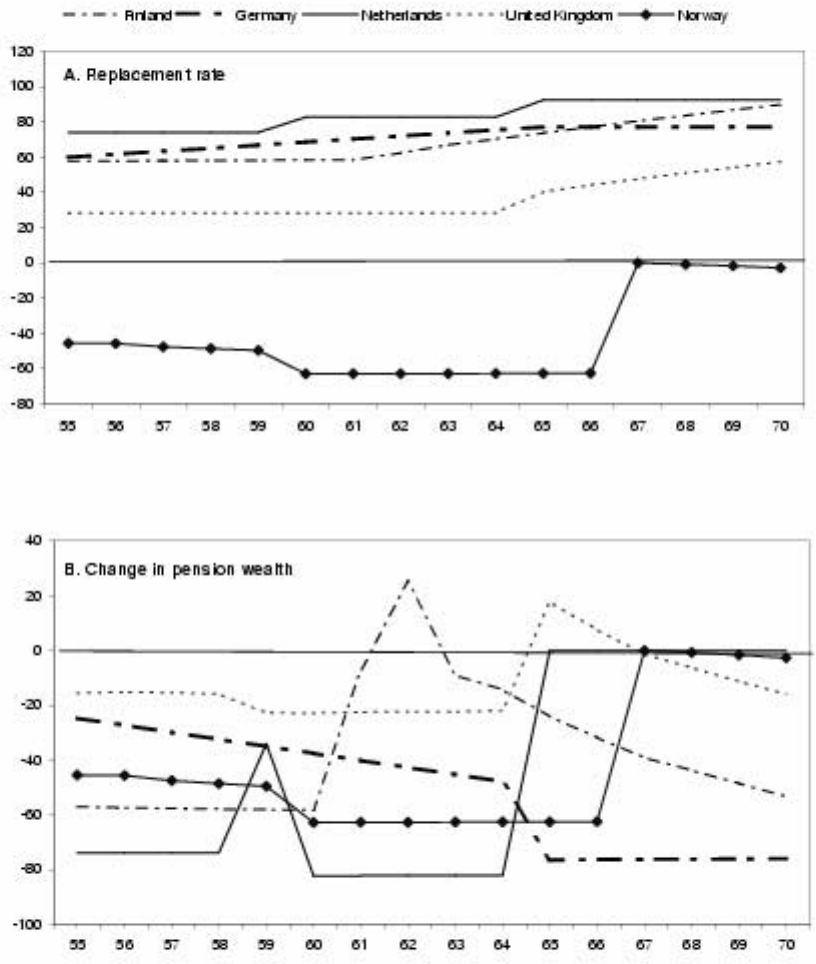


Figure A4. Indicators of the incentive to retire: disability
APW=100%



BIBLIOGRAPHY

BLONDAL, S. and S. Scarpetta (1998), "The retirement decision in OECD countries," *OECD Economics Department Working Papers* No 202.

CASEY, B. (1998), "Mandating private pensions - the public finance implications", *International Social Security Review*, 4/98 pp57-70.

DANG, T-T, P. Antolin and H. Oxley (2001), "Fiscal implications of ageing: projection of age-related spending", *OECD Economics Department Working Papers*, no 305.

DOCTEUR, E. and H. OXLEY (2003), "Health care systems: lessons from the reform experience", *OECD Economics Department Working Papers,* forthcoming.

DUVAL, R. (2003), "The retirement effects of old-age pension systems and other social transfer programmes in OECD countries", *OECD Economics Department Working Paper*, forthcoming.

ECONOMIC POLICY COMMITTEE (EU) (2001), *The Budgetary Challenges posed by Ageing Populations: the Impact on Public Spending on Pensions, Health and Long-term Care for the Elderly and Possible Indicators of the Long-term Sustainability of Public Finance*, Brussels. EPC/ECFIN//655/01-EN Final.

EUROPEAN COMMISSION (2003), "Public finances in EMU – 2003", *European Economy, 3.*

FÖRSTER, M. (assisted by M. Pellizzari) (2000), "Trends and driving factors in income distribution and poverty in the OECD area", *OECD Labour Market and Social Policy Occasional Papers* No. 42.

HANSMANN, H. (1996), "The changing role of public, private and non-profit enterprise in education, health care, and other human services", in V.R. FUCHS (eds.) *Individual and social responsibility*, NBER, University of Chicago Press.

JACOBZONE, S, E Cambois, E. Chaplain, J.M Robin (1999), "The health of older person in OECD countries: Is it improving fast enough to compensate for ageing societies?", *OECD Labour Market and Social Policy Occasional Papers* No 37.

JACOBZONE, S.(1999), "Ageing and care for frail elderly persons: an overview of international perspectives", *OECD Labour Market and Social Policy Occasional Papers* No. 38.

JENSEN, J and S. Jacobzone"(2000), "Care allowances for the frail elderly and their impact on women care-givers", *OECD Labour Market and Social Policy Occasional Papers* No 41.

KOHL, R. and P. O'Brien (1998), "The macroeconomics of ageing, pensions and savings: a survey", OECD Economics Department Working Papers No. 200

LEIBFRITZ, W., Roseaveare, D., D. Fore, and E. Wurzel (1995), "Ageing populations, pension systems and government budgets: How do they affect savings?" *OECD Economics Department Working Papers*, No. 156.

OECD (1994), *Caring for Frail Elderly People: New Directions in Care*, Paris.

OECD (1995), *Caring for Frail Elderly People: Policies in Evolution*, Paris

OECD (1996a), *Ageing in OECD Countries, A Critical Policy Challenge*, Paris

OECD (1996b), *Care for the Frail Elderly: Policies in Evolution*, Paris.

OECD (1998), *Maintaining Prosperity in an Ageing Society*, Paris

OECD (1999a), *Economic Survey of Australia*, Paris.

OECD (1999b), *Economic Survey of Iceland*, Paris.

OECD (1999c), *Economic Survey of the United States*, Paris.

OECD (1999d), *Employment Outlook*, Paris

OECD (2000a), *Economic Survey of Finland*, Paris.

OECD (2000b), *Economic Survey of Hungary*, Paris.

OECD (2000c), *Economic Survey of Italy*, Paris.

OECD (2000d), *Economic Survey of Switzerland*, Paris.

OECD (2000e), *Pension Fund Governance in OECD Countries*, Paris, DAFFE/AS/PEN/WD(2000)14/REV2

OECD (2000f), *Reforms for an Ageing Society: Social Issues*, Paris

OECD (2001a), *Ageing and Income, Financial Resources and Retirement*, Paris.

OECD (2001b), *Economic Outlook No 69*, Paris

OECD (2001c), *Economic Survey of Japan*, Paris.

OECD (2001d), *Economic Survey of Korea*, Paris.

OECD (2001e), *Economic Survey of Norway*, Paris.

OECD (2001f), *Economic Survey of Spain*, Paris.

OECD (2001g), *Pension plan funding: Discussion and Issues*, Paris, DAFFE/AS/PEN/WD(2001)17

OECD (2001h), *Private Pensions: Selected Country Profiles*, Paris DAFFE/AS/PEN/WD(2001)

OECD (2001i), *The Prudent Person Approach*, DAFFE/AS/PEN/WD(2001)15

OECD (2002a), *Economic Survey of the Netherlands*, Paris.

OECD, (2002b), *Economic Outlook No. 72*, Paris.

OECD (2003) *Economic Survey of Finland*, Paris.

ROSEAVEARE, D., W. Leibfritz, D. Fore, and E. Wurzel (1996), Ageing populations, pension systems and government budgets: simulations for 20 OECD countries, *OECD Economics Department Working Papers, No 168.*

SCHERER, P. (2001), "Age of withdrawal from the labour force in OECD countries", *OECD Labour Market and Social Policy Occasional Papers* No 49.

TURNER, D., C. Giorno, A. de Serres, A. Vourc'h.and P. Richardson (1998), "The macroeconomic implications of ageing in a global context", *OECD Economics Department Working Papers*, no. 193

VISCO, I. (2001), "Ageing populations: economic issues and policy challenges". Paper presented at the Kiel Week Conference "Economic Policy for Ageing Societies", 18-19 June 2001.

WORKING PAPERS

The full series of Economics Department Working Papers can be consulted at www.oecd.org/eco/Working_Papers/

368. *Financial Market Integration in the Euro Area*
(October 2003) Carl Gjersem

367. *Recent and Prospective Trends in Real Long-Term Interest Rates: Fiscal Policy and Other Drivers*
(September 2003) Anne-Marie Brook

366. *Consolidating Germany's finances: Issues in public sector spending reform*
(September 2003) Eckhard Wurzel

365. *Corporate Taxation of Foreign Direct Investment Income 1991-2001*
(August 20030) Kwang-Yeol Yoo

364. *Indicator Models of Real GDP Growth in Selected OECD Countries*
(July 2003) Franck Sédillot and Nigel Pain

363. *Post-Crisis Change in Banking and Corporate Landscapes – the Case of Thailand*
(July 2003) Margit Molnar

362. *Post-Crisis Changes in Banking and Corporate Landscapes in Dynamic Asia*
(June 2003) Margit Molnar

361. *After The Telecommunications Bubble*
(June 2003) by Patrick Lenain and Sam Paltridge

360. *Controlling Public Spending in Iceland*
(June 2003) Hannes Suppanz

359. *Policies and International Integration: Influences on Trade and Foreign Direct Investment*
(June 2003) Giuseppe Nicoletti, Steve Golub, Dana Hajkova, Daniel Mirza, Kwang-Yeol Yoo

358. *Enhancing the Effectiveness of Public Spending in Finland*
(June 2003) Philip Hemmings, David Turner and Seija Parviainen

357. *Measures of Restrictions on Inward Foreign Direct Investment for OECD Countries*
(May 2003) Stephen S. Golub

356. *Tax Incentives and House Price Volatility in the Euro Area: Theory and Evidence*
(May 2003) Paul van den Noord

355. *Structural Policies and Growth: A Non-technical Overview*
(May 2003) Alain de Serres

354. *Tax Reform in Belgium*
(May 2003) David Carey

353. *Macroeconomic Policy and Economic Performance*
(April 2003) Pedro de Lima, Alain de Serres and Mike Kennedy

352. *Regulation and Investment*
(March 2003) Alberto Alesina, Silvia Ardagna, Giuseppe Nicoletti and Fabio Schiantarelli

351. *Discretionary Fiscal Policy and Elections: The Experience of the Early Years of EMU*

(March 2003) Marco Buti and Paul van den Noord

350. *The US Health System: An Assessment and Prospective Directions for Reform*
(February 2003) Elizabeth Docteur, Hannes Suppanz and Jaejoon Woo

349. *The Effectiveness of Public Expenditure in Portugal*
(February 2003) Chiara Bronchi

348. *Comparative Analysis of Firm Demographics and Survival: Micro-Level Evidence for the OECD Countries*
(February 2003) Eric Bartelsman, Stefano Scarpetta and Fabiano Schivardi

347. *Regulation, Productivity and Growth: OECD Evidence*
(January 2003) Giuseppe Nicoletti and Stefano Scarpetta

346. *Public Expenditure Management in Poland*
(December 2002) Andrew Burns and Kwang-Yeol Yoo

345. *Enhancing the Effectiveness of Public Expenditure in Sweden*
(December 2002) Deborah Roseveare

344. *The Decline in Private Saving Rates in the 1990s in OECD Countries: How Much Can Be Explained by Non-Wealth Determinants*
(November 2002) Alain de Serres and Florian Pelgrin

343. *Enhancing the Effectiveness of Public Expenditure in Norway*
(October 2002) Isabelle Joumard and Wim Suyker

342. *Productivity and Convergence in a Panel of OECD Countries: Do Regulations and Institutions Matter?*
(September 2002) Stefano Scarpetta and Thierry Tressel

341. *Managing Public Expenditure: The UK Approach*
(August 2002) Paul van den Noord

340. *The Brazilian Pension System: Recent Reforms and Challenges Ahead*
(August 2002) Marcos Bonturi

339. *Challenges in the Mexican Financial Sector*
(August 2002) Marcos Bonturi

338. *Coping with Population Ageing in Hungary*
(August 2002) Andrew Burns and Jaromir Cekota

337. *Next Steps for Public Spending in New Zealand: The Pursuit of Effectiveness*
(July 2002) Dave Rae

336. *Strengthening the Management of Public Spending in Hungary*
(July 2002) Jaromir Cekota, Rauf Gonenc and Kwang-Yeol Yoo

335. *Automatic Stabilisers and Market Flexibility in EMU: Is There a Trade-Off?*
(July 2002) Marco Buti, Carlos Martinez-Mongay, Khalid Sekkat and Paul van den Noord

334. *The Economic Consequences of Terrorism*
(July 2002) Patrick Lenain, Marcos Bonturi and Vincent Koen

333. *Investment in human capital through post-compulsory education and training: Selected efficiency and equity aspects*
(July 2002) Sveinbjörn Blöndal, Simon Field and Nathalie Girouard