



OECD Economics Department Working Papers No. 406

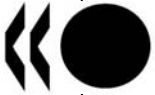
**Tax Treatment of Private
Pension Savings in OECD
Countries and the Net Tax
Cost Per Unit
of Contribution to Tax-
Favoured Schemes**

**Kwang-Yeol Yoo,
Alain de Serres**

<https://dx.doi.org/10.1787/387535760801>

Unclassified

ECO/WKP(2004)29



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

14-Oct-2004

English - Or. English

ECONOMICS DEPARTMENT

ECO/WKP(2004)29
Unclassified

TAX TREATMENT OF PRIVATE PENSION SAVINGS IN OECD COUNTRIES AND THE NET TAX COST PER UNIT OF CONTRIBUTION TO TAX-FAVoured SCHEMES

ECONOMICS DEPARTMENT WORKING PAPERS NO.406

By Kwang-Yeol Yoo and Alain de Serres

All Economics Department Working Papers are now available through OECD's Internet Web site at
<http://www.oecd.org/eco>

JT00171592

Document complet disponible sur OLIS dans son format d'origine
Complete document available on OLIS in its original format

English - Or. English

Abstract/Résumé

Tax treatment of private pension savings in OECD countries and the net tax cost per unit of contribution to tax-favoured schemes

This paper provides, for all OECD countries, an estimate of the net tax cost per currency unit of contribution to a tax-favoured retirement savings plan, using a present-value methodology. The latter takes into account the future flows of revenues foregone on accrued income and of revenues collected on benefit withdrawals corresponding to a unit contribution made in a given year. The net tax cost is first calculated for nine (five-year) age groups, which have different relative income levels and investment time horizons, and is then averaged across age groups. In order to take into consideration the relevant country-specific features of savings taxation, the paper also provides an overview of the tax treatment of private pension arrangements and alternative savings vehicles. The results indicate that the size of tax subsidy varies significantly across countries, ranging from nearly 40 cents per unit of contribution (Czech Republic) to around zero (Mexico, New Zealand). Over half of the OECD countries incur a tax cost of more than 20 cents, but most OECD countries incur at least 10 cents of the net tax cost per unit of contribution. On the basis of contributions made in 2000, this paper finds that, the present-value estimates of overall budgetary cost of tax-favoured private pensions, vary from over 1.7 per cent of GDP (Australia, Ireland, United Kingdom) to less than 0.2 per cent of GDP (Japan, Slovak Republic).

JEL classification: E21, G23, H21, H24, H31

Keywords: comprehensive income tax, expenditure tax, private pension, net tax cost, revenue foregone method

Traitement fiscal des pensions privées dans les pays de l'OCDE et le coût fiscal net par unité de contribution à un plan d'épargne retraite

Cette étude présente pour l'ensemble des pays de l'OCDE, une estimation du coût fiscal net (*e.g.* dollar ou euro) de contribution à un plan d'épargne retraite à traitement fiscal favorable, à partir d'une méthode de valeur présente. Cette dernière prend en compte les pertes futures de recettes fiscales découlant de la non-taxation des revenus d'intérêt ainsi que des recettes encaissées au moment de la perception des bénéfices par les détenteurs du plan de retraite. Le coût fiscal net est calculé pour neuf groupe d'âge (de cinq ans chacun), disposant de niveaux de revenus et d'horizons d'investissement différents. Le coût par groupe d'âge est ensuite agrégé pour obtenir un coût moyen pour l'ensemble de la population. Les résultats indiquent que la valeur de l'incitatif fiscal varie de façon significative à travers les pays, passant de 40 cents par unité de contribution (République Tchèque) à près de zéro (Mexique, Nouvelle-Zélande). Plus de la moitié de pays de l'OCDE encourt un coût de plus de 20 cents, et pour la plupart, le coût s'élève à au moins 10 cents par unité de contribution. Sur la base des contributions totales réalisées en l'an 2000, cette étude estime que la valeur présente du coût budgétaire d'ensemble des pensions varie de 1.7 pour cent du PIB (Australie, Irlande, Royaume-Uni) à moins de 0.2 pour cent du PIB (Japon, République Slovaque).

Classification JEL: E21, G23, H21, H24, H31

Mots-clés: Impôt sur le revenu, dépense fiscale, pension privée, coût fiscal net.

Copyright OECD, 2004

Applications for permissions to reproduce or translate all, or part of, this material should be made to: Head of Publications Service, OECD, 2 rue André Pascal, 75775 Paris Cedex 16, France.

TABLE OF CONTENTS

TAX TREATMENT OF PRIVATE PENSION SAVINGS IN OECD COUNTRIES AND THE NET TAX COST PER UNIT OF CONTRIBUTION TO TAX-FAVOURSED SCHEMES	5
1. Introduction	5
2. The theory and practices of taxing private pensions	6
2.1 A brief theoretical background	6
2.2 Practices of taxing private pensions in the OECD countries	8
3. Measuring the net tax cost of private pension arrangements	9
3.1 Various approaches to measuring tax expenditures.....	9
3.2 A present-value estimate of the net tax cost of private pensions: the framework for calculation ...	10
4. Main findings	18
4.1 Net tax cost by country	18
4.2 Size of tax expenditure based on a present-value approach	19
4.3 Net tax cost by component	20
4.4 Net tax cost by age-group	20
6. Sensitivity analysis	21
6. Conclusions	23
TABLES AND FIGURES	25
BIBLIOGRAPHY	49
ANNEX 1. MEASURING ABSOLUTE TAX BURDEN ON PENSION SAVINGS	51
ANNEX 2. MARGINAL INCOME TAX RATES BY FAMILY STATUS	55
ANNEX 3: STRUCTURE OF PENSION SYSTEMS IN OECD COUNTRIES.....	59
ANNEX 4: COUNTRY TABLES ON TAX TREATMENT OF PENSION SAVINGS.....	75
Boxes	
Box 1. Illustration of tax revenues collected from four benchmark regimes	7
Box A1.1. The methodological difference with OECD (1994).....	52

Tables

1.	Country groupings according to the tax treatment of private pensions	24
2.	Tax treatment of private pensions in 2003.....	25
3.	Sensitivity Analyses I	27
4.	Sensitivity Analyses II	28

Figures

1.	The age-income profile and marginal income tax rates.....	29
2.	Net tax cost of a unit contribution in tax-favoured schemes by age-group.....	34
3.	Decomposition of net tax cost per a unit contribution by age-group.....	35
4.	Tax cost and the effective tax rates on pension savings by age-group.....	36
5.	Net tax cost associated with one dollar contribution, age-group average.....	36
6.	Effective tax rates on private pension and benchmark saving.....	37
7.	Net tax cost per a unit contribution in tax favoured schemes by component.....	37
8.	Overall budgetary cost arising from contributions made in 2000.....	38
9.	Average contribution per participant.....	40
10.	Net tax cost of a unit contribution in tax favoured schemes, 4.5 per cent discount rate.....	39

TAX TREATMENT OF PRIVATE PENSION SAVINGS IN OECD COUNTRIES AND THE NET TAX COST PER UNIT OF CONTRIBUTION TO TAX-FAVOURSED SCHEMES

by

Kwang-Yeol Yoo and Alain de Serres¹

1. Introduction

1. Most OECD governments use tax incentives to encourage the development of private retirement saving plans. In many cases, for instance, private pension savings are deductible from the income tax base, and accrued return on investment is exempt from taxation, but pension benefits arising from these savings are taxed. In other cases, accrued return on pension investment is taxed, but at a preferential rate relative to other forms of savings. While several aspects of these arrangements have been studied extensively, there has been little direct cross-country comparison of the *ex-ante* tax cost of these incentives.

2. The primary purpose of this paper is to provide such comparison by estimating the net tax cost per unit (say, dollar or euro) of contribution to tax-favoured private pension plans, based a present-value methodology. The latter takes into account the future flows of revenues foregone on accrued income and of revenues collected on benefit withdrawals corresponding to a unit contribution made in a given year. Put differently, it compares the amount of taxes paid over the entire length of the investment when a dollar is saved in a tax-favoured pension plans with that when the saving is invested in a benchmark non-retirement saving vehicle. In this respect, the net tax cost is not influenced by the history of past contributions (accumulated assets) or by demographic changes. It can thus be interpreted as an indicator of the size of the tax incentive to invest in a private pension scheme faced by savers of different age and income categories. Using the comprehensive income tax regime as a benchmark, a formula is developed to estimate the net tax cost in terms of revenues foregone associated with five different types of tax-favoured private pension regimes. The net tax cost is first calculated for nine (five-year) age groups, which have different relative income levels and investment time horizons, and is then averaged across age groups.

3. In preparing such estimates, the paper provides an updated overview of the (income) tax treatment of private pension schemes as well as of alternative savings vehicles, building on earlier work in this area.² It also produces, as a by-product, estimates of average effective tax rates on private pension and non-pension portfolios, which fully reflect the differences in the tax treatment of shares and fixed-income assets.

4. The paper is organised as follows. The next section provides a brief discussion of the key concepts underlying the taxation of private pensions as well as an overview of actual pension systems and

1. Kwang-Yeol Yoo and Alain de Serres are senior economists with the Ministry of Finance and Economy, Korea and the OECD Economics Department, respectively. The paper was written when both authors were at the OECD. The authors would like to thank Pablo Antolin, Jorgen Elmeskov, Michael Feiner, Chris Heady and Giuseppe Nicoletti for their valuable comments as well as Christine de la Maisonneuve for technical assistance. This paper also benefited from comments by members of the Working Party No. 1 of the OECD Economic Policy Committee and the Working Party No. 2 on Tax Policy Analysis and Tax Statistics of the Committee on Fiscal Affairs.

² See *inter alia*, Whitehouse (2002, 1999), Franco (1996), OECD (1994) and Dilnot and Johnson (1992).

tax treatment of private pension across OECD countries. Section 3 lays out the framework used for calculation, which includes the set of assumptions and the relevant formulas. Section 4 reports the main results, both as regards the average overall net tax cost for each country and broken down by components and by age-groups. It shows that the size of the subsidy varies significantly across countries, ranging from nearly 40 cents per unit of contribution (Czech Republic) to around zero (Mexico, New Zealand). While slightly over half of the OECD countries incur a tax cost of more than 20 cents, it exceeds 10 cents in most OECD countries, underscoring the importance that government attributes to the promotion of retirement saving. Section 5 examines the sensitivity of these results to a change in a number of assumptions, including to the rate used to discount future revenues and to the tax rate used to calculate revenues collected on withdrawals. This is followed by conclusions.

2. The theory and practices of taxing private pensions

5. This section examines the tax treatment of the main private pension scheme in each OECD country. While several forms of long-term saving commitments could be viewed as pension plans, only pension plans that are privately-managed and, in principle, fully-funded are included in the analysis.³ Among the latter, the study focuses in each country on those that offer an equally favourable tax treatment, independent of whether they are mandatory or voluntary, occupational or personal.⁴ An overview of the private plans covered in each country is provided in Annex 3.

2.1 A brief theoretical background

6. In principle, most savings vehicles, including pension funds, involve three transactions that can be subject to taxation. That is,

- When a contribution is made to the savings instrument
- When investment income and capital gains accrue to the savings vehicle
- When funds are withdrawn

7. A savings scheme is usually considered as being taxed favourably when its tax treatment deviates from a regime that treats all sources of income equally from a fiscal standpoint (the so-called *comprehensive income tax* regime). In a pure comprehensive income tax system, savings are made out of taxed earnings and the accrual return on funds accumulated is also subject to an income tax. In return, the withdrawal of assets from such saving vehicles is fully exempted from taxation. Such arrangements are known as “taxed-taxed-exempt” (TTE) schemes.

8. Using this as a benchmark, there are several ways in which tax incentives can be provided. One is a regime which taxes the portion of income that is consumed, but that exempts the portion that is saved for future consumption (the so-called *expenditure tax* regime). In a pure expenditure tax regime, both the funds

³ For the purpose of this study, fully-funded plans are loosely defined as those where the benefits are entirely financed by previously accumulated pension assets, without any implication or requirement in terms of degrees of actuarial fairness. Hence, the study includes plans that operate either on a defined-contribution or defined-benefit basis or any combination of the two.

⁴ Occupational pension plans are defined as those where access is linked to an employment relationship between the plan member and the sponsor. In contrast, access to personal plans is not linked to an employment relationship. In the latter case, individuals independently purchase and select material aspects of the arrangements without intervention of their employers (INRS-ISSA, 2003). In both cases, the plans can take the form of individual accounts.

contributed and the accrual return on accumulated funds are thus exempted from taxation.⁵ In return, the benefits are treated as taxable income upon withdrawals. The pure *expenditure tax* system thus achieves fiscal neutrality between current and future consumption, since all savings are tax-exempt. Such arrangements are commonly referred to as “exempt-exempt-taxed” (EET) schemes. However, tax favour does not necessarily always entail tax deferral. Indeed, for a given tax rate, an equivalent incentive can be provided under a “taxed-exempt-exempt” (TEE) regime, commonly referred to as a “pre-paid” expenditure tax.⁶ In the case where the discount rate is equal to the rate of return, and contributions and withdrawals are subject to the same marginal income tax rate, these two regimes deliver the same net present value of revenues to the government (Box 1).

9. Conversely, tax-deferral is not necessarily synonymous with tax preference given that under similar conditions, an ETT regime is identical to the TTE regime in terms of the net present value of revenues to the government (Box 1). In addition, some tax support can be given also within the spirit of a comprehensive income tax regime. This is the case, for example, when the return on saving is taxed at flat rate that is lower than the marginal rate faced by most wage earners. Hence, a whole range of possible tax combinations going from EEE to TTT can be applied on specific savings vehicles and rates can be varied within each to alter the incentive.

Box 1. Illustration of tax revenues collected from four benchmark regimes

Assume that a taxpayer contributes \$100 to the private pension scheme in the first period and withdraws three periods later. Assume that he is subject to a 25 per cent of the marginal income tax rate and that investment earns a 10 per cent of pre-tax nominal return.

- Under the EET regime, a taxpayer pays at retirement a tax of \$33.3 from his accumulated assets of \$133.1 - initial contribution (\$100) plus accrued income (\$33.1) – and receives a disposable income of \$99.8 (table below). If he did not save in the form of pension, he (the government) should have consumed (collected) \$75 (\$25) in the first period. A \$99.8 that he receives at retirement has the same net present value as \$75 in the first period, *i.e.* $\$99.8 = \$75 * (1+10\%)^3$. The EET regime simply allows the deferral of tax payments until retirement, and he is left with the same present value of post-tax income to consume in the first period or consume later at retirement
- Under the TEE regime, a taxpayer is forced to pre-pay income tax on pension savings in the first period. A taxpayer pays \$25 out of his pre-tax contribution (\$100) and receives \$99.8 – initial post-tax contribution (\$75) plus accrued income (\$24.8) at retirement (table below). If he decided to consume in the first period, he would have been able to spend \$75, which is equal to \$99.8 at retirement in the net present value term. He is again neutral between consuming in the first period and consuming at retirement. The EET and TEE regime deliver the same value of the post-tax retirement income (tax revenues) for the taxpayer (the government), and the post-tax rate of return on pension savings – implicit in the equation $\$99.8 = \$75 * (1+10\%)^3$ - is equal to the pre-tax rate of return (10%) in both cases.
- The TTE regime is common to interest-bearing assets in most OECD countries. A taxpayer pays \$25 in the first period and receives \$93.2 at retirement (table below). A reduction in the post-tax income at retirement reflects that investment earnings were taxed during investment periods. The TTE regime results in a 7.5 per cent post-tax rate of return – implicit in the equation $\$93.2 = \$75 * (1+7.5\%)^3$. Since the post-tax rate of return is lower than the pre-tax rate of return, the TTE regime creates a disincentive to save, and a taxpayer ends up with less money when he decides to save and consume later at retirement.
- Under the ETT regime, a taxpayer receives \$24.2 of post-tax accrued income, and his pre-tax accumulated assets at retirement amount to \$124.2. He then receives a post-tax amount of \$93.2 at retirement, so the

⁵ This is as long as the accrual return is re-invested.

⁶ In both cases, investors earn the same (tax-free) rate of return and the revenues foregone by the government are also equivalent in present value terms as long as the discount rate is the same as the rate of return and provided that tax rates on contributions and withdrawals are also the same. In contrast, investors earn the post-tax rate of return in the cases of ETT or TTE plans.

Box 1. Illustration of tax revenues collected from four benchmark regimes (continued)

TTE and ETT regime deliver the same value of the post-tax retirement income (table below). Again, the post-tax rate of return is lower than the pre-tax rate of return, distorting an incentive to save. Under the TTE and ETT regime, a taxpayer is neutral between consuming and saving in the first period, because savings is treated in the same way as consumption.

Table. Alternative pension tax regimes, current dollars ¹

	EET	TEE	TTE	ETT
Pre-tax contribution (A)	100	100	100	100
Tax (B)	-	25	25	-
Post-tax initial asset (C=A-B)	100	75	75	100
Net accrued income (D)	33.1	24.8	18.2	24.2
Asset at retirement (E=C+D)	133.1	99.8	93.2	124.2
Tax on withdrawal (F)	33.3	-	-	31.1
Net pension income (G=E-F)	99.8	99.8	93.2	93.2
<i>memorandum:</i>				
Net present value of total tax ²	25	25	30	30

1) Assumes a 10% pre-tax rate of return, 25% marginal tax rate, and 3 years of investment

2) Assumes the discount rate is equal to the rate of return

2.2 Practices of taxing private pensions in the OECD countries

10. As regards the practice of taxation of private pension plans, a vast majority of countries apply a variant of the EET regime. Ten countries (Austria, Canada, Finland, Greece, Iceland, Netherlands, Norway, Poland, Switzerland, and the United States) come close to the pure EET regime in which withdrawals are subject to the progressive income tax rates (Table 1). Another twelve countries (Belgium, France, Germany, Ireland, Japan, Korea, Mexico, Portugal, Slovak Republic, Spain, Turkey and the United Kingdom) also apply an EET regime, but one where withdrawals are generally taxed more leniently than in the first group of countries or where contributions are granted a tax credit rather than a full deduction. For instance, the United Kingdom, Ireland, Spain, France, Mexico and Turkey allow a partial tax-free withdrawal of benefits in the form of a lump sum, while France, Germany and Turkey allow a similar tax privilege to annuity pension income (Table 2). In Mexico, Turkey and the Slovak Republic, pension income above a specified tax-free limit is taxed at a relatively low rate.

[Table 1. Country groupings according to the tax treatment of private pensions]**[Table 2. Tax treatment of private pensions in 2003]**

11. The practice in other OECD countries differs from the EET regime to the extent that contributions and/or accrued income are taxed (Tables 1 and 2). In Italy, Denmark, and Sweden, the tax treatment of private pensions is closer to the comprehensive income tax system. While they allow for the deferral of taxation on contributions, they tax accrued income from fund investment – albeit at preferential rates – and pension benefits at withdrawal (ETT).

12. On the other hand, Australia, New Zealand, Czech Republic, Hungary and Luxembourg tax contributions to private pension schemes.⁷ In the latter three cases, either employee's or employer's

⁷

It should be noted that in Belgium, Austria and Portugal, the tax break on contributions is granted as a less generous tax credit or partial exemption rather than a full deduction.

contributions are exempt from taxation, but not both (Table 1, Panel B).⁸ Although the treatment in Australia is uniquely characterised as a TTT regime, contributions can be partly exempted (especially for low-income participants) and investment earnings and pension benefits are both taxed at a preferential rate.

3. Measuring the net tax cost of private pension arrangements

13. This section first presents alternative approaches to measuring tax expenditures and motivates the method chosen. It then lays out the framework for calculation by discussing the assumptions used and introducing the formulas suited for each of the main pension tax regimes in place in OECD countries.

3.1 Various approaches to measuring tax expenditures

14. The evaluation of the budgetary costs and benefits of a particular tax policy measure is generally coined in the literature as *tax expenditure*. While the actual definition and practice can vary across countries, there are three common approaches to estimating tax expenditures.⁹ First, the *revenue-foregone* method measures the amount by which tax revenues are reduced by a particular tax concession, usually under the assumption of unchanged behaviour. Second, the *outlay-equivalent* method measures the cost of providing the same monetary benefit through direct spending, assuming also that behaviour is unchanged as a result of the tax concession. Contrasting with the latter two approaches, the *revenue-gain* method takes potential behavioural responses into account and provides an *ex ante* measure of the expected increase in revenues if the concessions were repealed.

15. The estimates of the net tax cost associated with tax-favoured private pension arrangements presented in this paper are based on the *revenue-foregone* method to measuring tax expenditures. However, within this method, a number of approaches can be used, in particular the *present-value* approach and the *cash-flow* approach.¹⁰ This paper uses the present-value approach which considers the future flows of revenues foregone on accrued income and of revenues collected on withdrawals corresponding to contributions made in a given year. In this respect, it is not influenced by the history of past contributions or by demographic changes. Given that the present-value method directly takes into account the inter-temporal shift in tax revenues, it may provide a more accurate picture of the underlying budgetary cost associated with participation in tax-favoured schemes, in particular during the first few years after a plan has been introduced.

16. The more commonly-used cash-flow approach differs from the present-value method in that the budgetary cost in a given year is measured as the net amount of revenues foregone on contributions, revenues foregone on accrued investment income and revenues collected on withdrawals which are all *realised* during that same year. In such a case, the revenues foregone on accrued investment and the revenues collected on withdrawals correspond to contributions made in previous years.¹¹ The latter

⁸ In the case of Hungary, mandatory employee's contributions are taxed under the TEE *pre-paid* expenditure tax system, while employer's contributions to private pension plans are completely exempted from taxation (EEE). In Luxembourg, employer's contributions are subject to a withholding tax. In the Czech Republic, a state subsidy amounting to 30 to 50 per cent of total contributions is granted in addition to the partial tax deduction of contributions from personal income taxation.

⁹ See OECD (1996) for a description of country practices regarding tax expenditure reporting and a discussion of underlying issues.

¹⁰ For a detailed exposition of the distinctions between these two approaches, see Finance Canada (2001) and Analytical Perspectives (2003).

¹¹ Although the cash-flow approach remains by far the one most widely used in the estimation of tax expenditures regularly published by fiscal authorities, some countries, including Canada and the United

approach is better suited to capture the influence of demographic changes on the profile of net fiscal revenues from tax-favoured retirement plans at different points in time. Indeed, the approach has been used recent studies to estimate the current and future profile of tax costs and benefits related to tax-favoured pension regimes in OECD countries (Antolin *et al* 2004, CBO, 2004, Boskin, 2003 and Mérette 2002).

3.2 A present-value estimate of the net tax cost of private pensions: the framework for calculation

3.2.1 Detailed assumptions

17. The net tax cost is obtained by taking the difference over the entire length of the investment between the amount of taxes collected in the case where money is saved in a private pension plan and the amount collected when funds are invested in a benchmark non-retirement saving vehicle, under the following set of assumptions:

18. First, the current tax treatment of standard savings vehicles in each country is taken as the benchmark tax system. In all cases, this is some version of the comprehensive income tax regime (TTE). Second, marginal tax rates corresponding to different levels of income and family status are derived from a tax model reflecting the current tax code in each country.¹² In all countries where contributions to private pension plans can be used to lower taxable income, these effective marginal tax rates measure the fiscal revenue foregone on a currency unit of contribution.¹³ Because the marginal income tax rate varies with the level of gross income, reflecting the progressivity of the personal income tax system in most OECD countries, the estimation of the net tax cost requires an assumption about the age-income profile of a participant to the private pension scheme. For this exercise, participants are broken down into ten five-year aged-groups (from 20-24 to 65+, with the first nine groups being contributors and the oldest one being recipients). The income level of each group is assumed to evolve with age according to the age-income profile shown in figure 1, along with the corresponding marginal income tax rates in each OECD country.¹⁴ Consistent with evidence available in a number of countries, a hump-shaped age-income profile is assumed.¹⁵ Furthermore, since the age-income profile is measured as a proportion of the income of the average production worker (APW), it is implicitly assumed that the income tax brackets are fully indexed to inflation throughout the life cycle.

[Figure 1. The age-income profile and corresponding marginal income tax rates]

States, often report in addition the present-value estimates of tax expenditure on selective programmes as a part of official budget documents.

¹² Details on the methodology and information used to calculate these marginal tax rates in OECD countries can be found in OECD (2002).

¹³ Note that employer contributions to employees' plans are treated as deductible from the personal taxable income rather than from corporate profits. While the main reason for this is to avoid the complications of dealing with corporate taxation, this is consistent with the notion that at least over a long enough horizon, the cost of employers' contributions is ultimately absorbed by employees in the form of lower wages.

¹⁴ The calculation of marginal tax rates also takes into account differences in family situations across ages. For each age group, the marginal tax rate is calculated as a weighted average of the marginal rates over three different family situations (single, two earners with no kids, one earner with two kids and two earners with two kids). Income tax brackets are implicitly assumed to be fully indexed to inflation.

¹⁵ The same age-income profile is assumed for all countries. Evidence on earnings across age groups suggests that in most countries, average income increases with age in relative terms and usually peaks somewhere between the ages of 50 and 60 depending on the country.

Third, as concerns taxation of investment income, detailed information on the tax treatment of specific non-pension savings vehicles included in the benchmark portfolio (*i.e.* a mix of interest-bearing instruments and shares, see below) is used to derive implicit tax rates on the return to investment. As shown in country-specific tables reported in Annex 4, the tax treatment of investment income varies significantly across both instruments and countries.¹⁶ Even so, savings income is generally taxed more lightly than labour income, reflecting in most cases the desire to reduce the effect of double taxation on earnings from shareholding. Considering the difficulties in collecting country-specific information about portfolio composition, the following assumptions concerning the allocation of assets in either private pension or benchmark saving and the corresponding rates of return are applied to all countries:

- The portfolio is composed of 60 per cent interest-bearing assets (bank deposits or bonds) and 40 per cent equities. Hence, the benchmark considers only financial assets and excludes real estate or housing.
- For tax purposes, the return on equity is assumed to be one-third dividends and two-thirds capital gains. Shares are assumed to be held 6.7 years on average and to be subject to capital gains tax.¹⁷ The time horizon assumed for the investment is discussed below.
- Each asset is assumed to earn a 6.5 per cent pre-tax nominal rate of return (including 2 per cent inflation).¹⁸ The discount rate is assumed to be equal to the nominal rate of return.¹⁹

19. Fourth, pension income is assumed to be taxed at a rate equal to the mid-point between the average and marginal tax rates corresponding to the average production worker's (APW) salary, provided the mid-point is no more than 5 percentage points below the marginal income tax rate (MITR).²⁰ A proper calculation would require adequate information about the level and the various sources of *taxable* income of pensioners who have participated in a tax-favoured scheme. And these can be quite different from the average level and sources of taxable income of all pensioners. On the one hand, if benefits from tax-favoured schemes were the sole source of taxable income, then the appropriate rate applied to measure revenues collected on withdrawal would be the average income tax rate corresponding to the value of the annual benefit withdrawn. In practice, however, most recipients of tax-favoured pension benefits usually receive income from various other taxable sources, in which case applying the average tax rate corresponding to the level of private pension benefits would most certainly *underestimate* the amount of

¹⁶ The net wealth tax levied in a number of countries (Switzerland, Sweden, Norway, Luxembourg, Iceland, France and Finland) is not taken into account in the calculation of the implicit tax rate on accrued investment income. Such tax is generally levied on assets valued above a threshold set at a high level.

¹⁷ This is equivalent to assuming that 15 per cent of the shares held in the portfolio are sold every year. Admittedly, this is based exclusively on US observations (Burman and Ricoy, 1997).

¹⁸ Several of these assumptions are similar to those used in the calculation of marginal effective tax rates on alternative saving vehicles in OECD countries (OECD, 1994). While it is the case that a relatively higher rate of return on shares would have been closer to reality, the focus here is on the differences in the tax treatment of the different assets included in the benchmark.

¹⁹ This may seem high considering that the government can usually borrow at the risk-free interest rate. On the other hand, a higher discount rate than the risk-free rate could be justified on the basis that in many cases, governments partly bear the risks of private pension arrangements. In any case, results based on a lower discount rate are reported in section 5.

²⁰ There are sixteen countries where the difference between the marginal and average tax rates on the average production worker's (APW) salary is substantial (over 10 percentage points), reflecting the presence of zero brackets for low income. In such cases, the tax rate on benefit withdrawal is set at 5 percentage points below the marginal rate on APW.

tax revenues recovered. On the other hand, applying the corresponding marginal tax rate would most likely lead to *overestimate* tax revenues, if only because pensioners generally benefit from special tax rebates and other benefits. The sensitivity of the net tax cost to a different assumption regarding the marginal tax rate on withdrawals is examined below.

20. Fifth, as regards the time horizon, it is allowed to vary from one year to over 40 years, depending the age of the investor at the time the contribution is made. In order to take this into consideration, the cost per unit of contribution is first calculated for each five-year age group between the ages of 20 and 65 and then averaged across age groups, using a simple arithmetic averaging formula. Representative contributors from each age group are assumed to make a one-time contribution to a private scheme at a given age and then to withdraw the initial contribution plus accrued investment return in the form of either a lump-sum payment or annuity (depending on the country) starting at the age of 65.

21. Finally, as mentioned above the tax cost per unit of contribution to a tax-favoured private pension plans is estimated under the assumption of unchanged behaviour, as is common practice in the calculation of tax expenditures based on the revenue-foregone methodology. However, the absence of behavioural change assumption can be interpreted in different ways. In the application below, it is assumed that the contributions to private pension plans do not affect the overall level of national savings. In other words, private consumption is assumed to remain unchanged following the introduction of a tax-favoured scheme. Hence, while contributors are assumed to save the amount corresponding to the value of the tax break, they do not provide new saving, *i.e.* that would be financed by a reduction in current consumption.²¹

3.2.2 Formulas used for the present-value calculations

22. For each of the main tax regimes discussed here, the relevant formula to estimate the net tax cost is shown below. In each case the aim is to estimate the difference in lifetime tax payments between investments in a private pension plan and the benchmark portfolio.

EET regime

23. The present-value net tax cost per dollar of pre-tax contribution (TE) is the discounted sum of revenue losses from contributions and accrued investment income plus revenue gains from benefit withdrawal. The net tax cost of a dollar of pre-tax contribution made at age m (that is withdrawn as a lump-sum at age 65) has the following three components as in the model (1):²²

$$\begin{aligned}
 TE_{\text{EET}} &= \text{Revenue foregone on contributions (RFC)} + \text{Revenue foregone on accrued income (RFAI)} - \\
 &\quad \text{Revenue collected on withdrawals (RCW)} \\
 &= C \cdot t_{c,m} + C[1-t_{c,m}] \left\{ \frac{i \cdot t_{a,m+1}}{(1+\rho)} + \frac{[1+i(1-t_{a,m+1})]i \cdot t_{a,m+2}}{(1+\rho)^2} + \frac{[1+i(1-t_{a,m+1})][1+i(1-t_{a,m+2})]i \cdot t_{a,m+3}}{(1+\rho)^3} + \dots \right\} \\
 &\quad - \frac{C(1+i)^{65-m} t_{b,65}}{(1+\rho)^{65-m}} = C \cdot t_{c,m} + C[1-t_{c,m}] \sum_{j=m+1}^{65} \frac{\left\{ \prod_{k=m+1}^{j-1} [1+i(1-t_{a,k})] \right\} i \cdot t_{a,j}}{(1+\rho)^{j-m}} - \frac{C(1+i)^{65-m} t_{b,65}}{(1+\rho)^{65-m}}
 \end{aligned} \tag{1}$$

²¹ An alternative interpretation would have been to assume that the value of the tax break is not saved but consumed, leading to an equivalent reduction in national saving. While this may be viewed as an extreme case, it is often implicitly assumed in the calculation of tax expenditures based on the cash-flow approach.

²² See Finance, Canada (2001) for the detailed illustration of measuring the cost related to the EET pension schemes.

where TE_{EET} and C represent the present-value net tax cost and amount contributed to the pension plan, respectively; t_c , t_a and t_b denote the relevant tax rates on contributions, accrued income and benefit withdrawals; i is the nominal pre-tax rate of return; ρ is the discount rate; and j and k are periods during which contributions earn investment income. The first and second terms in (1) measure revenues foregone on contributions (RFC), and revenues that would have been received on investment income (RFAI) respectively, while the third term captures revenues collected on withdrawals (RCW). The relevant tax rate t_a in the second term reflects different tax treatment of savings instruments across countries, and it varies across age-groups in countries where investment income is subject to the progressive income tax schedule.

24. To allow for pension payments in the form of annuity income, the third term of equation (1) can be modified and replaced by the present-value of taxes on annuity income from the age 65 to 80 (the assumed age of death in the calculation below):

$$RCW = \sum_{v=66}^{80} \frac{C(1+i)^{65-m} \times 1 / \left[\sum_{n=1}^{15} 1 / (1+i)^n \right] \times t_b}{(1+\rho)^{v-m}} \quad (2)$$

Equation (2) implies that a retiree is entitled to annuity pension for 15 years after retirement at age 65. The relevant income tax rate t_b on benefit withdrawals (which may be different from the tax rate on benefits that applies in the case of a lump sum) is assumed to be constant over the retirement periods.²³

25. A variant of the EET regime is one where contributors are entitled to tax credits on their contributions. Revenues foregone on contributions (RFC) are again reduced by the *net* amount that the government receives from contributions. A tax credit set at a constant flat rate for all contributors increases the size of tax relief for lower-income contributors while lowering it for higher-income investors. If the rate of tax credit were sufficiently high, revenues foregone on contributions (RFC) would be as large as revenues foregone under the EET regime. Revenues foregone on accrued income (RFAI) remain the same as in (1). Compared to the base model (1), revenues collected on withdrawals (RCW) are reduced in proportion to a fall in taxable pension assets that stem from *de facto* partial taxation of contributions associated with tax credits. The net tax cost per dollar of pre-tax contribution (in the case of lump-sum withdrawals) is then expressed as:

$$TE_{EET2} = C \cdot t_{cred} + C[1 - t_{c,m}] \sum_{j=m+1}^{65} \frac{\left\{ \prod_{k=m+1}^{j-1} [1 + i(1 - t_{a,k})] \right\} i \cdot t_{a,j}}{(1+\rho)^{j-m}} - C[1 - t_{c,m} + t_{cred}] \frac{(1+i)^{65-m} t_{b,65}}{(1+\rho)^{65-m}} \quad (5)$$

where t_{cred} denotes the rate of tax credit.

EET regime

26. In this case, the second term in equation (1) is modified to take into account that revenues foregone on accrued income (RFAI) are reduced by the extent to which accrued investment income from pension savings is now taxed, albeit at a lower rate than accrued income from alternative savings

²³ Note that equation (2) can also be easily adapted to the cases where pension income is subject to a flat-rate tax.

instruments. For example, Denmark and Sweden tax pension fund income at 15 per cent, so revenue losses are lower than under the EET regime. However, revenue losses are reduced by more than the flat tax rate because taxes are collected on investment income that accrues from the total amount contributed to the pension plan (C), *i.e.* including the portion corresponding to the tax subsidy, rather than on the post-tax contribution ($C \cdot (i - t_c)$) as in the EET case.²⁴ An additional term in the bracket of revenues foregone on accrued income (RFAI) in equation (3) reflects these two effects.

$$TE_{ETT} = C \cdot t_{c,m} + \{C[1 - t_{c,m}] \sum_{j=m+1}^{65} \frac{\{\prod_{k=m+1}^{j-1} [1 + i(1 - t_{a,k})]\} i \cdot t_{a,j}}{(1 + \rho)^{j-m}} - C \sum_{j=m+1}^{65} \frac{\{\prod_{k=m+1}^{j-1} [1 + i(1 - t_{k,p})]\} i \cdot t_{p,j}}{(1 + \rho)^{j-m}} - C \frac{[1 + i(1 - t_{p})]^{65-m} t_{y,65}}{(1 + \rho)^{65-m}} \} \quad (3)$$

where t_p represents the relevant flat tax rate for accrued income on pension fund investment.

27. On the other hand, accumulated pension assets at withdrawal under the ETT regime are smaller than corresponding assets under the EET regime, because accrued income from the pension fund was taxed in the previous stage. Revenues collected on withdrawals (RCW) are reduced in proportion to a fall in taxable pension wealth, and the third (last) term in equation (3) reflects that decline.

TET regime

28. The next formula applies to regimes that provide no or only very partial tax exemption on contributions and withdrawals from private pension while completely exempting accrued return on investment. This would apply for instance to employee's contributions to the employer-sponsored pension schemes in Austria, Czech Republic, and Portugal, which account for a relatively small portion of total contributions. These countries tend to tax contributions and withdrawals at a relatively low rate or with the allowance of partial exemption/tax credit so as to minimise double taxation. The following model assumes that only a certain fraction of contributions ($1-v$) and withdrawals ($1-w$) are subject to income tax (*e.g.* employee's contributions in Austria). Relative to the EET case, revenues foregone on contributions (RFC) are reduced by the amount of income taxes that the government collects from contributions, whereas revenues collected on withdrawals (RCW) are reduced in proportion to a fall in taxable pension assets that stem from (partial) taxation on contributions. Revenues foregone on accrued income (RFAI) remain broadly the same. The net tax cost per unit of pre-tax contribution under a TET regime (in the case of lump-sum withdrawal) is expressed as:

$$TE_{TET} = C \cdot v \cdot t_{c,m} + C[1 - t_{c,m}] \sum_{j=m+1}^{65} \frac{\{\prod_{k=m+1}^{j-1} [1 + i(1 - t_{a,k})]\} i \cdot t_{a,j}}{(1 + \rho)^{j-m}} - [C - C(1 - v)t_{c,m}] \frac{(1 + i)^{65-m} (1 - w)t_{b,65}}{(1 + \rho)^{65-m}} \quad (4)$$

²⁴

Remember that consistent with the assumption of unchanged national savings, contributions to tax-favoured retirement savings plans comprise the tax subsidy ($C \cdot t_c$) and personal (diverted) saving ($C \cdot (1 - t_c)$). Since the tax subsidy component would not have generated investment income in absence of the scheme, it is excluded from the calculation of revenue losses from accrued income.

where v and w stand for tax-exempt proportions when contributions are made and accumulated assets are withdrawn, respectively.

TTT regime

29. One country, Australia, collects some taxes from private pension at each of the three transaction points. Not only contributions to superannuation accounts are made out of taxed income (except for certain low-income participants), but investment earnings and benefits are also taxed, albeit at relatively low rates (Tables 1 and 2). If contributions were subject to the marginal income tax, there would be no revenues foregone on contributions (RFC). However, the employer's contributions are subject to 15 per cent contribution tax, so revenues foregone on contributions are broadly measured as the difference between the marginal income tax rate and the flat tax rate for the employer's portion of total contributions. Revenues foregone on accrued income (RFAI) are reduced by the extent to which accrued income from pension fund investment is taxed at a lower rate relative to accrued income from alternative savings instruments, with the ETT formula (second term of equation 3).²⁵ Finally, accumulated pension wealth on which revenues are collected is reduced by the extent to which contributions and accrued income were previously taxed. The net tax cost per dollar of pre-tax contribution (in the case of employer's contributions on behalf of the employee) under the TTT regime (in the case of lump-sum withdrawal) is summarised as follows:

$$TE_{TTT} = C(t_{c,m} - 0.15) + \{C[1 - t_{c,m}]\} \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1 + i(1 - t_{a,k})] \} i \cdot t_{a,j}}{(1 + \rho)^{j-m}} - C(1 - 0.15) \\ \times \sum_{j=m+1}^{65} \frac{\{ \prod_{k=M+1}^{j-1} [1 + i(1 - t_{p,k})] \} i t_{p,j}}{(1 + \rho)^{j-m}} \} - C(1 - 0.15) \frac{[1 + i(1 - t_p)]^{65-m} (1 - w) t_{ls}}{(1 + \rho)^{65-m}} \quad (6)$$

where w and t_{ls} stand for the fraction of tax-exempt withdrawals and the tax rate on lump-sum withdrawals respectively.²⁶

TEE regime

30. The employer's contributions in Luxembourg and the employee's mandatory contributions in Hungary are subject to the TEE schemes (Table 1). In the case of Luxembourg, revenues foregone on contributions (RFC) are now reduced by the *net* revenues that the government collects by imposing a 20 per cent flat tax on contributions. Revenues foregone on accrued income (RFAI) remain broadly the same as the EET model (1). Since no taxes are recovered on withdrawals, the net tax cost per one dollar of pre-tax contribution has only two components:

²⁵ The only difference with equation (3) is that, in the TTT regime, taxes are collected from the pension fund's investment income that accrues to "taxed" contributions - $C(1 - 0.15)$ - rather than tax-free contributions (C).

²⁶ In practice, without taking into account the tax-free threshold (partly due to the immature nature of the superannuation), the effective tax rate estimated at 12% is used in estimating the RCW. The effective tax rate is measured by predicting the average tax payments that workers will pay on lump-sum pension after they contribute to the scheme for 35 year at the current contribution rate.

$$TE_{TEE} = C[t_{c,m} - t_f] + C[1 - t_{c,m}] \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1 + i(1 - t_{a,k})] \} i \cdot t_{a,j}}{(1 + \rho)^{j-m}} \quad (7)$$

where t_f denotes the flat-rate tax on the employer's contributions. In Hungary where the employee's contributions are fully subject to the income tax, the net tax cost per one dollar of pre-tax contribution is simply reduced to the second term in the model (6).

31. To summarise, ten age categories are constructed, assuming a hump-shaped age-income profile over the life cycle. Representative contributors from the first nine categories are assumed to make an *once-and-for-all* pre-tax contributions of one dollar to a private pension scheme at the age m and to withdraw initial contributions plus accrued investment income associated with the one-dollar contribution in the form of lump-sum payments at age 65 or annuity income from age 65 until death at the age of 80. Since the relevant marginal tax rates vary across age-groups and evolve differently over time, revenues foregone from one dollar of pre-tax contribution differs across contributing groups. The construction of age-groups is intended to illustrate how sensitive estimates of the net tax cost are in relation to the level of age-income and the periods when investment income accrues and address the distributional implication of tax-favoured pension saving schemes.²⁷

32. The approach is illustrated in Box 2 with the use of two examples corresponding to EET and ETT cases, respectively. In both examples, the differences in the amount of taxes paid between a tax-favoured scheme and a TTE benchmark are calculated using, for simplicity, an artificially short time horizon.

²⁷

For the purpose of presentation, a representative contributor is assumed to be at the youngest age in each age-group. For example, a contributor from the age-group 20-24 years old is assumed to be 20 years old, so his (her) contribution stays in the pension scheme for the next 45 years.

Box 2. How much do different tax-favoured retirement saving plans cost? An illustration based on a short time horizon

Suppose that an individual contributes \$100 to the EET-type private pension schemes in the first period and withdraws three periods later. Assume, for simplicity, that he is subject to a 25 per cent marginal income tax and that investment earns a 10 per cent annual return. Table A displays annual income flows related to a \$100 of pre-tax pension savings and ordinary savings, respectively. Note that post-tax amount invested in ordinary savings is \$75, \$100 * (1-25%).

The difference in taxes paid between the private pension and ordinary savings (row 5 - row 2) corresponds to the cost to the government in current price (row 7). Using the discount factor (row 8), the net tax cost to government per dollar of pension savings in the present value term (row 9) is measured at 5 cents.

*Table A. Net tax cost of EET-type pension savings*¹

		Row	Contribution (year 0)	Accumulated asset			Withdrawal (year 3)	Net tax cost (present value)
				1	2	3		
Private pension (EET)	Gross balance	1	100.0	110.0	121.0	133.1	133.1	
	Tax paid	2	0.0	0.0	0.0	0.0	33.2	
	Net balance	3	100.0	110.0	121.0	133.1	99.8	
Ordinary savings (TTE)	Post-tax balance	4	75.0	82.5	88.7	95.3	93.2	
	Tax paid	5	25.0	1.9	2.0	2.2	0.0	
	Net balance	6	75.0	80.6	86.7	93.2	93.2	
Difference in taxes paid (TTE-EET)	Revenue loss	7=5-2	25.0	1.9	2.0	2.2	-33.2	
	Discount factor	8	1.0	0.91	0.83	0.75	0.75	
	NPV revenue loss	9=8*7	25.0	1.7	1.7	1.6	-25.0	

1) Assumes a 10% pre-tax rate of return (discount rate), 25% marginal tax rate, and 3 years of investment

Assume alternatively that an individual contributes \$100 to the ETT-type private pension schemes. Table B illustrates annual income flow from both pension and ordinary savings. Since the government can recover a part of revenue loss from levying a 10 per cent tax on accrued income from pension savings, the overall net tax cost to the government is lower at three cents per dollar of pension savings in the net present value terms.

*Table B. Net tax cost of ETT-type pension savings*¹

		Row	Contribution (year 0)	Accumulated asset			Withdrawal (year 3)	Net tax cost (present value)
				1	2	3		
Private pension (ETT) ²	Gross balance	1	100.0	110.0	119.9	130.7	129.5	
	Tax paid (A)	2	0.0	1.0	1.1	1.2	32.4	
	Net balance	3	100.0	109.0	118.8	129.5	97.1	
Ordinary savings (TTE)	Post-tax balance	4	75.0	82.5	88.7	95.3	93.2	
	Tax paid (B)	5	25.0	1.9	2.0	2.2	0.0	
	Net balance	6	75.0	80.6	86.7	93.2	93.2	
Difference in taxes paid (TTE-EET)	Revenue loss	7=5-2	25.0	0.9	0.9	1.0	-32.4	
	Discount factor	8	1.0	0.91	0.83	0.75	0.75	
	NPV revenue loss	9=7*8	25.0	0.8	0.8	0.7	-24.3	

1) Assumes a 10% pre-tax rate of return (discount rate), 25% marginal tax rate, and 3 years of investment

2) Assumes a 10% tax on pension fund income

4. Main findings

33. This section first presents the overall net tax cost per unit of contribution in each country and then provides a breakdown of the overall net cost by components and by age-groups. These base case results are grounded on the key two assumptions that the effective tax rate on withdrawals is set at 5 percentage points below the marginal income tax rate corresponding to the average production worker and that the discount rate is equal to the rate of return. The sensitivity of the baseline results to a change in these fundamental assumptions is examined in Section 5.

4.1 Net tax cost by country

34. The size of the subsidy, measured as the average net tax cost across age groups per unit of pre-tax contribution in a tax-favoured retirement saving plan, appears in Figure 2, which shows both the overall cost (solid line) and the three components: revenues foregone on contributions, revenue foregone on accrued investment income and revenue collected on withdrawals. The key points to highlight are the following:

- The size of the subsidy varies significantly across countries, ranging from nearly 40 cents per unit of contribution (Czech Republic) to around zero (Mexico, New Zealand).²⁸
- It is also important to note that, despite the differences in taxing private pension savings, most OECD countries incur a sizeable positive net tax cost, amounting to at least 10 cents per unit of pre-tax contribution.
- Not surprisingly, the size of the subsidy is generally higher in countries having an EET scheme. Over half of the OECD countries incur a tax cost of more than 20 cents and in nearly all of them the main private pension scheme benefits from an EET treatment. A number of countries tax pension benefits at a relatively low rate despite having an EET regime, with a significant impact on the overall cost.
- Conversely, countries whose pension tax treatment deviates from the EET model generally face a lower net tax cost. For example, Italy and Sweden – applying an ETT-type treatment - incur a net tax cost in the range of 13 to 17 cents per unit of contribution. As expected, the difference with respect to EET countries comes essentially from lower revenues foregone on accrued income, even though in most ETT cases, the tax rate on accrued investment income on pension savings is substantially lower than that applied to the benchmark saving portfolio. The high net tax cost in Denmark, another ETT-system country, however, mainly stems from bigger revenues foregone on contributions due to a high marginal income tax rate for relatively high-income workers.²⁹
- New Zealand and Mexico are the only countries with zero net revenues foregone associated with pension savings. In the case of New Zealand this owes to the neutral tax treatment of

²⁸ In the case of Mexico, the estimated net cost would be higher if the flat rate subsidy per working day paid by the government to each contributor was taken into account, something which can not be easily done under the methodology followed.

²⁹ In Denmark, “real” capital gains from equity investment are taxed. As a result, the revenue foregone on accrued income is reduced as the inflation component of investment return is tax exempt. Australia and Ireland are other countries that taxes only “real” capital gains.

pension savings relative to other forms of savings – the TTE regime applies in both cases.³⁰ As for Mexico, it provides an illustration of the equivalence between EET (private pension) and TEE regimes (benchmark) under the assumption of equality between the discount rate and the rate of return.³¹

[Figure 2. Net tax cost associated with one dollar contribution, age-group average]

35. In order to put the size of the tax incentive in perspective, Figure 3 (Panels A and B) shows the levels of effective tax rates on private pensions and the benchmark saving portfolio. The details of the calculation of these effective tax rates are exposed in Annex 1. Broadly speaking, the tax incentive corresponds to the difference between the two tax rates. It can be seen that while the majority of countries effectively tax pension savings at 10 per cent or less, only two (Korea and Mexico) tax non-pension savings at such low rates. Also, the fact that a number of countries with EET regimes (*e.g.* Poland, Korea, Greece, Slovak Republic and Mexico) have nevertheless low tax cost reflects in most cases the low taxation of benchmark saving vehicles. The only exceptions in this regard are Iceland and the Netherlands, where the effective tax rates on both pension and portfolio savings are high, partly due to a high marginal income tax rate relative to the other low-tax-cost EET-system countries mentioned above (Figure 6). Not surprisingly, countries that do not apply EET regimes are generally the ones with the highest effective tax rates on pension savings, although there are some exceptions (Italy, Belgium and Luxembourg).

[Figure 3. Effective tax rates on private pension and benchmark saving]

4.2 Size of tax expenditure based on a present-value approach

36. Using estimates of the (average) net tax cost per unit of contributions to a tax-favoured retirement saving scheme, a rough estimate of the overall budgetary cost associated with total contributions in such schemes can be produced, for countries where data on total amounts contributed are available. On the basis of contributions made in 2000, the overall budgetary cost is estimated to vary from over 1.7 per cent of GDP (Australia, Ireland, United Kingdom) to less than 0.2 per cent of GDP (Japan, Slovak Republic) (Figure 4). As mentioned above, this measure based on a *present-value* approach can be interpreted as tax expenditure, but it is not directly comparable to common estimates of tax expenditures regularly published by fiscal authorities, as the latter are typically based on a *cash-flow* methodology.

[Figure 4. Overall budgetary cost arising from contributions made in 2000]

37. Aside from the net cost per unit of contribution and participation rates, variations across countries in the overall budgetary cost reflect differences in contribution rates. Indeed, the average contribution per participant as a ratio of the average wage is relatively high in countries where participation is voluntary and where both the tax incentive and contribution limits are fairly generous (Ireland, United Kingdom, Canada and the United States) (Figure 5). Among countries where participation is quasi-universal (the Netherlands, Switzerland, Iceland, Denmark and Sweden) the contribution rate is fixed at a higher rate in the

³⁰ In New Zealand, the tax treatment of pension plans and other forms of savings is essentially the same except that accrued income is taxed at a flat 33 per cent in the case of pension, whereas it is taxed at the relevant marginal tax rate in the case of non-pension savings. However, in both cases, dividend imputation credits are applicable, hence differences in taxation are likely to be minimal.

³¹ Also the calculation for Mexico ignores the fixed government contributions (2.44 peso per day of work) to individual accounts, partly owing to the technical difficulty in quantifying its impact. In any case, considering that private pension savings are mandatory in Mexico and that the government guarantees the minimum pension benefit, it is not clear that this fixed contribution should be included in the calculation of revenues foregone from individuals' contributions.

Netherlands and Switzerland where the tax-favoured pension plan represents the main pension pillar and therefore aims for higher replacement rates.

[Figure 5. Average contribution per participant]

4.3 Net tax cost by component

38. Figure 6 decomposes the net tax cost into its three components: revenues foregone on contributions (RFC), revenues foregone on accrued income (RFAI) and revenues collected on withdrawals (RCW).

- RFC are high in Denmark, Czech Republic, Belgium, Iceland, Finland and Netherlands (Figure 7, Panel A) reflecting high the marginal income tax rate (except Czech Republic) (Figure 1). Conversely, the small size of RFC in other EET-system countries such as Poland, Korea, Japan, Slovak Republic and Greece (to some extent) mainly reflects a low marginal income tax rate for the assumed range of wage-income. In the case of Luxembourg, the small RFC stems from partial taxation of contributions to pension schemes.

[Figure 6. Net tax cost per unit contribution in tax favoured schemes by component]

- RFAI are large at above 18 cents in Canada, the United Kingdom, the United States, Norway, Ireland, Germany, Japan, France and Finland (Figure 7, Panel B). The large size of RFAI in Canada, the United Kingdom and the United States is partly due to their tax systems that subject the income from interest-bearing assets to the progressive income tax rate. In the case of Norway (and Finland) this reflects a high flat-rate tax applies to interest income and capital gains (but dividend income avoids taxation through imputation tax credits) (see Annex 2 Table).³² In contrast, the large size of RFAI in Ireland and Japan owes to the similar tax treatment of equity and interest-bearing assets (non-imputation). Germany incurs a large size of RFAI because investment income is subject to a high marginal tax rate, despite favourable tax treatment of equity investment relative to fixed income investment. France foregoes relatively big revenues from non-taxation of accrued income, because income from alternative investment is subject to 9 per cent social contribution rate (Annex 4)³³

4.4 Net tax cost by age-group

39. To illustrate how the net tax cost per dollar of contribution changes with age groups, Figure 7 depicts the median value and the cross-country dispersion of the net tax cost in each age group.³⁴

³² The RFAI in Norway (which levies a tax rate of 28 per cent on investment income) is larger than that in Finland (which levies a tax rate of 29 per cent on investment income). This is because the marginal income tax rate faced by each age-group tends to be higher in Finland than in Norway, and therefore post-tax savings (to which income accrues) and the accrued income are smaller in Finland.

³³ The generalised social contribution (CSG, 7.5%), the social security deficit contribution (CRDS, 0.5%) and social levy (2%) are levied on all types of capital income.

³⁴ The box plot shows the median OECD value of the net tax cost per dollar of contribution, the second and third quartiles of the cross-country distribution (the edges of each box), and the extreme values (the two whiskers extending from the box) for each age-group. Dots identify outlier observations.

- Unsurprisingly, the net tax cost (or tax incentive) is on average higher for pension savings made by younger age-groups as the cumulated cost related to the non-taxation of accrued investment income over a longer time horizon outweighs the generally lower cost related to the tax break on contribution.
- However, the higher median tax cost for younger age-groups masks a wider cross-country variation. The cross-country variation in the net tax cost narrows for middle-aged groups.

[Figure 7. Net tax cost per unit of contribution in tax-favoured schemes by age-group]

- This pattern is broadly confirmed by Figure 8 that decomposes the overall net tax cost into revenues foregone on contributions (RFC) and revenues foregone on accrued income (RFAI).³⁵ While the median value of revenues foregone on contributions remains broadly the same across age-groups, revenues foregone on contributions in a large number of countries are much lower for the first three younger age-groups, partly reflecting the lower marginal income tax rates faced by those age-groups (Figure 8, Panel A).
- The smaller size of revenues foregone on contributions for younger age-groups, however, is more than offset by the larger size of revenues foregone on accrued income (Figure 8, Panel B). The larger size of revenues foregone on accrued income for younger age-groups reflects the fact that, the longer the tax-deferred periods are, the larger revenues foregone related to non- or partial taxation on accrued income are.

[Figure 8. Decomposition of net tax cost per unit of contribution by age-group]

- A closer look at the countries' profiles of the net tax cost by age group reveals that a large number of OECD countries incur the largest net tax cost from pension savings with respect to the youngest age group (Figure 9). Those countries include Australia, Austria, Belgium, Czech Republic, France, Germany, Ireland, Japan, Korea, Poland, Portugal, Spain, Turkey, the United Kingdom and the United States. In countries such as Austria, Czech Republic, Germany, Ireland, Japan, Korea, Poland, Portugal, Spain and United Kingdom, the net tax cost declines monotonically with age-groups (Figure 9).

[Figure 9. Tax cost and the effective tax rates on pension savings by age-group]

6. Sensitivity analysis

40. Two of the assumptions used to make the calculations can have a particularly significant impact on the results: the choice of a discount rate and the assumed tax rates on withdrawals. This section examines the sensitivity of the net tax cost to these particular assumptions as well as to a number of less critical ones.

6.1 Assuming a lower discount rate and a higher tax rate on withdrawal

41. That the results may be sensitive to the rate at which the government chooses to discount future revenues (relative to the market rate of return) should come as no surprise in the context of a present-value

³⁵

The revenues collected from the withdrawal (RCW) are more or less the same within a given country, reflecting the same marginal income tax rates faced by each age-group in that country when an age-group reaches the retirement age. Thus the median and variance of the RCW for each age-group do not vary across age-groups, and that is why the RCW is not discussed here.

methodology. As mentioned earlier, the fact that the government can generally borrow at a lower rate than the market return does not necessarily imply that a lower discount rate is the natural choice especially considering that in many countries the governments assumes part of the risks.³⁶ In any case, the impact of using a lower discount rate (4.5 per cent instead of 6.5 per cent) is shown on Figure 10 (Panel A) for the average across age-groups.

[Figure 10: Net tax cost of a unit contribution in tax favoured schemes, 4.5 per cent discount rate]

42. As expected, with future tax revenues given a bigger weight relative to the base case calculation, the overall net cost is diminished in nearly all countries with tax-deferred pension schemes, albeit with large cross-country variations in the size of the declines (Figure 10, Panel A and Table 3, Case 2).³⁷ Indeed, a lower discount rate reduces the net tax cost by 8 cents per dollar of contribution on average across countries.³⁸ Furthermore, in a number of countries, the taxes collected on withdrawals become sufficiently large to exceed (in present-value terms) the benefits. In fact, based on a similar calculation and using a low discount rate relative to the rate of return, some have claimed that far from being a cost to the government, tax-favoured individual retirement saving plans in the United States (IRAs) were actually generating positive net tax revenues.³⁹

[Table 3. Sensitivity analysis – Lower discount rate]

43. In order to examine the sensitivity of the results to the assumption regarding the tax rate on withdrawals, the net tax cost has been calculated assuming a withdrawal rate corresponding to the marginal income tax rate relevant for pensioners receiving 100 per cent of APW income (Table 3, Case 3). Relative to the baseline calculation, this amounts to raising the tax rate on withdrawals by around 0.2 to 5 percentage points depending on the country. A higher tax rate on pension benefits leads to a reduction of the net tax cost per dollar of contributions by three cents on average across countries. Combining this with a lower discount rate (4.5 per cent) generates a cumulated decline in the net tax cost of 13 cents on average (Case 4). The net tax cost becomes positive for Belgium, Finland, Iceland, Netherlands and Sweden where tax payments on pension savings are deferred and the marginal tax rate on withdrawals is relatively high. The difference between the base case estimates and the estimates based on a lower discount rate and higher withdrawal rate provides a range of plausible net tax costs per unit contribution (Figure 10, panel C). The simple mean between these two estimates is below 20 cents for the majority of countries and negative for few, including Belgium and the Netherlands.

6.2 Sensitivity of results to other assumptions

³⁶ For instance, governments risk losing tax revenues in the case of under-funded pension plans. Also, in some countries, employment-based pension plans are guaranteed by government-backed agencies.

³⁷ Exceptions are France, Japan and Luxembourg. While Luxembourg is a TET, the rise of the net tax cost in France and Japan comes essentially from higher revenues foregone on accrued income, compared to revenues collected on withdrawals (Table 3).

³⁸ However, the relationship between the difference between the discount rate and the rate of return and the reduction in the net tax cost is not linear.

³⁹ See Dusseault and Skinner (2000). The authors argued that with asset invested in IRAs accumulating at a rate of return higher than the discount rate used by the government, the present value of future tax withdrawals exceed revenues foregone on contribution by a large amount. The assumption of a lower discount rate in the case of personal plans (such as IRAs) can be more easily justified given that the risks involved for the government are in principle much lower. However, revenues foregone from the non-taxation of accrued investment income were not taken into account.

44. The sensitivity of the results to changes in the portfolio composition and the rate of inflation has also been examined (Table 4). In both cases, the changes are having an impact only on one component – revenues foregone from the non- (or partial) taxation of accrued income (RFAI) – and this impact is generally limited. First, having a larger proportion of equities (60 per cent instead of 40 per cent in the base case) in the pension and benchmark portfolios reduces revenues foregone and the net tax cost by two cents on average, reflecting the more favourable tax treatment of dividends and capital gains compared to interest-bearing assets (Table 4, Case 5). The reduction in the tax cost ranges from zero (Iceland that does not favour equity investment in terms of taxation, and Mexico that does not tax regular investment income) to 4 cents (France, Germany, Greece and Portugal).

[Table 4. Sensitivity analysis II]

45. Second, a one percentage point increase in inflation (higher nominal return but unchanged real return) increases the net tax cost per dollar of contribution by one cent on average (Table 4, Case 6).⁴⁰ The non-neutrality of inflation stems from the common practice of taxing nominal rather than real gains from investment. In such a case, higher inflation -- hence a higher nominal rate of return -- tends to increase the net tax cost associated with non- or partial taxation of accrued income. No change of the net tax cost is observed in countries (Hungary and Mexico) where the effective tax rate on accrued income from the benchmark portfolio is very low. The net tax cost in the Netherlands, on the other hand, is immune to changes in inflation, because taxable investment earnings are statutorily set at 4 per cent irrespective of realised return from the investment.

6. Conclusions

46. This paper provides estimates of the net tax cost per unit (*e.g.* one dollar or euro) of contribution to tax-favoured retirement savings plans in OECD countries. More specifically, it is a measure, in present-value terms, of the net fiscal revenue foregone associated with a one unit invested over a given time horizon in a tax-favoured retirement saving plan. It is measured on a net basis in the sense that while it considers the revenue foregone arising from deductible contributions and from the non-taxation of accrued income (in the cases where this applies), it also takes into account the revenues collected when assets are withdrawn. For each country, it is measured as an average of the cost calculated over nine age groups, each with different characteristics in terms of income levels and investment horizons. For countries where data are available, the net tax cost per unit is then multiplied by total contributions in 2000 to provide a present-value estimate of the overall budgetary cost (in a given) year arising from participation in such schemes.

47. The results indicate that the size of the tax incentive for investing in private pensions varies significantly across countries, ranging from nearly 40 cents per unit of contribution (Czech Republic) to around zero (Mexico, New Zealand). However, despite the variations in the tax treatment of private pension savings, most OECD governments incur a sizeable positive net tax cost, amounting to at least 10 cents per unit of pre-tax contribution, underscoring the importance that governments give to the promotion of private savings. In general, the tax cost (or incentive) is higher for younger age groups, reflecting the non-taxation of accrued investment income over a longer time horizon.

48. Not surprisingly, the net tax cost is generally higher in countries having an EET scheme and lower in countries, such as Sweden and Italy, who partly tax accrued return on investment. However, given that the net tax cost reflects the generosity of tax treatment of private pension savings *relative* to alternative non-pension savings vehicles, there is no systematic pattern. In fact, several countries (Poland, Iceland,

⁴⁰ This also implies that a rise in the real rate of return would raise the RFAI by 1 cent, as the tax system does not distinguish between the components of the nominal return.

Korea, Greece, Netherlands, Slovak Republic and Mexico) with EET-type private pension arrangements also provide generous tax breaks on alternative savings vehicles, and hence incur a low net tax cost.

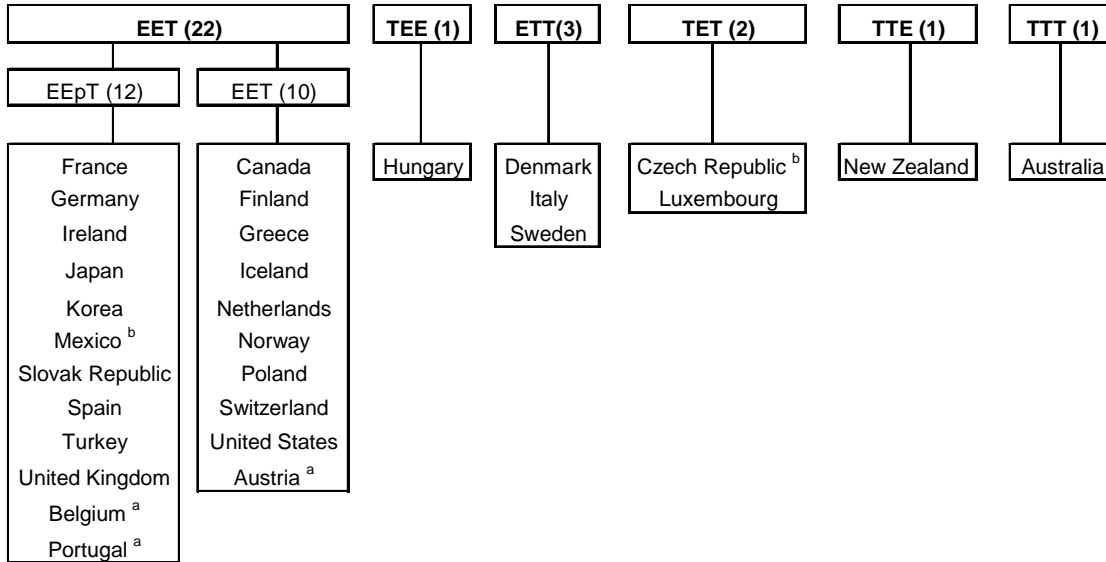
49. These calculation can be interpreted as providing an estimate of the size of the tax incentive for investing in private pension, and hence of the potential cost for government. The overall actual budgetary cost, however, depends on participation tax-favoured schemes and the magnitude of total contributions. On the basis of contributions made in 2000, the present-value estimates of overall budgetary cost vary from over 1.7 per cent of GDP (Australia, Ireland, United Kingdom) to less than 0.2 per cent of GDP (Japan, Slovak Republic).

50. In most countries, the estimated net tax cost is significantly reduced if one assumes that the rate at which future revenue flows are discounted at a rate that is lower than the assumed rate of return on investment and/or if the tax rate on benefit withdrawals is assumed to be as high as the rate used to calculate revenue losses on contributions (Figure 10, Panels A to C). In such a case, the net cost would even turn into a net gain for a number of countries.

TABLES AND FIGURES

Table 1: Country groupings according to the tax treatment of private pensions

Panel A: General overview



Abbreviations: E (exempt), pT (partially taxed; only in the EET system), T (taxed)

Note:

a) The employee's contributions are partially exempt or receive tax credits in Austria, Belgium and Portugal

b) Mexico and the Czech Republic provide a state subsidy to contributions

Panel B: Pension taxation for countries whose tax treatment differs across the source of contribution

(Employer's contribution)

Contributions	Accrued income	Withdrawal	Countries
Exemption	Exemption	Exemption	Hungary
Exemption/Subsidy	Exemption	Partial tax	Czech Republic
Tax	Exemption	Exemption	Luxembourg
<i>(Employee's contribution)</i>			
Exemption	Exemption	Tax	Luxembourg
Tax or Partial tax ^a	Exemption	Exemption	Hungary
Partial tax	Exemption	Partial tax	Czech Republic ^b

a) Mandatory contributions are fully subject to tax while voluntary contributions receive tax credits

b) A state subsidy to contributions is made in the Czech Republic

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table 2: Tax treatment of private pensions in 2003^a

Country	Contributions ^b	Fund		Pension payments	
		income	value	Annuities	Lump-sums
Australia ^c					
- Individuals	T	7.1% ^e	E	T/PC	PE/16.5%
- Employers ^f	15%	7.1% ^e	E	T/PC	PE/16.5%
Austria ^c					
- Individuals	T/PE	E	E	T/PE	T/PE
- Employers ^f	E	E	E	T	T
Belgium ^c					
- Individuals	T/PC	E	0.17%	T/PC	10%
- Employers ^f	E	E	0.17%	T/PC	16.5%
Canada	E	E	E	T	T
Czech Republic ^c					
- Individuals	T/PE/S	E	E	15%/PE	15%/PE
- Employers ^f	E/S	E	E	15%/PE	15%/PE
Denmark	E	15%	E	T	40%
Finland	E	E	E	T	T
France	E	E	E	T/PE	T/PE
Germany	E	E	E	T/PE	T
Greece	E	E	E	T	T
Hungary ^c					
- Individuals	T ^d	E	E	E	E
- Employers ^f	E	E	E	E	E
Iceland	E	E	E	T	T
Ireland	E	E	E	T/PE	T/PE
Italy	E	12.5%	E	T/PE	T/PE
Japan	E	E	E	T/PE	T/PE
Korea	E	E	E	T/PE	T/PE
Luxembourg ^c					
- Individuals	E	E	E	T	T/PE
- Employers ^f	20%	E	E	E	E
Mexico	E/S	E	E	T/PE	T/PE
Netherlands	E	E	E	T	T
New Zealand ^c					
- Individuals	T	33%	E	E	E
- Employers ^f	21%	33%	E	E	E
Norway	E	E	E	T	Not allowed
Poland	E	E	E	T	T

Table 2: Tax treatment of private pensions in 2003 ^a (Continued)

Country	Contributions ^b	Fund		Pension payments	
		income	value	Annuities	Lump-sums
Portugal ^c					
- Individuals	T/PC	E	E	20%/PE	T/PE
- Employers ^f	E	E	E	20%/PE	T/PE
Slovakia	E	E	E	15%	15%
Spain	E	E	E	T	T/PE
Sweden	E	15%	E	T	T
Switzerland	E	E	E	T	T
Turkey	E	E	E	E	5%/PE
United Kingdom	E	E	E	T	T/PE
United States	E	E	E	T	T

Abbreviations:

E (exempt) T (taxed under personal income tax) PC (partial credit) PE (partial exemption or deduction from taxation) S (state subsidy)

a) Private pension refers to mandatory or voluntary funded privately managed pension schemes.

b) Tax-deductible contributions are subject to a certain limit in most countries.

c) The tax treatment of the employer's contributions is different from those of the employee's.

d) Mandatory contributions are fully taxed, but voluntary contributions receive tax credits.

e) The effective tax rate assuming a portfolio with 60% interest-bearing assets and 40% equities.

f) A bold letter indicates that that portion of contributions to employer-sponsored scheme dominates.

See countrysheets for further detail.

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table 3 Sensitivity analysis I

	1. Base case (age group average) ^a				2. Lower discount rate ^{b, c}				3. MTR on withdrawals ^b				4. Lower discount rate plus MTR on withdrawals ^{b, c}				
	Total cost	Contributions	Accrued income	Withdrawals	Total cost	Contributions	Accrued income	Withdrawals	Total cost	Withdrawal	Total cost	Contributions	Accrued income	Withdrawals	Total cost	Contributions	Accrued income
Australia	0.29	0.21	0.15	-0.08	-0.02	0.00	0.05	-0.07	-0.03	-0.03	-0.09	0.00	0.05	-0.14			
Austria	0.22	0.20	0.17	-0.15	-0.08	0.00	0.06	-0.13	-0.04	-0.04	-0.15	0.00	0.06	-0.21			
Belgium	0.15	0.40	0.05	-0.30	-0.25	0.00	0.02	-0.26	-0.05	-0.05	-0.33	0.00	0.02	-0.35			
Canada	0.31	0.34	0.23	-0.26	-0.15	0.00	0.08	-0.23	-0.05	-0.05	-0.25	0.00	0.08	-0.33			
Czech Republic	0.41	0.44	0.12	-0.15	-0.10	0.00	0.04	-0.15	0.00	0.00	-0.10	0.00	0.04	-0.15			
Denmark	0.25	0.47	0.03	-0.24	-0.19	0.00	0.01	-0.20	-0.04	-0.04	-0.27	0.00	0.01	-0.27			
Finland	0.23	0.40	0.17	-0.34	-0.24	0.00	0.06	-0.31	-0.05	-0.05	-0.34	0.00	0.06	-0.40			
France	0.31	0.16	0.18	-0.03	0.04	0.00	0.06	-0.03	0.00	0.00	0.03	0.00	0.06	-0.03			
Germany	0.36	0.34	0.18	-0.16	-0.08	0.00	0.06	-0.14	-0.03	-0.03	-0.14	0.00	0.06	-0.20			
Greece	0.15	0.11	0.11	-0.08	-0.03	0.00	0.04	-0.07	-0.05	-0.05	-0.12	0.00	0.04	-0.16			
Hungary	0.28	0.24	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00			
Iceland	0.18	0.40	0.08	-0.30	-0.24	0.00	0.03	-0.27	-0.05	-0.05	-0.33	0.00	0.03	-0.37			
Ireland	0.29	0.21	0.19	-0.11	-0.03	0.00	0.07	-0.10	-0.04	-0.04	-0.10	0.00	0.07	-0.17			
Italy	0.17	0.29	0.01	-0.14	-0.11	0.00	0.00	-0.11	-0.03	-0.03	-0.15	0.00	0.00	-0.16			
Japan	0.24	0.09	0.18	-0.03	0.04	0.00	0.07	-0.03	-0.01	-0.01	0.02	0.00	0.07	-0.05			
Korea	0.16	0.05	0.14	-0.04	0.02	0.00	0.05	-0.03	-0.02	-0.02	-0.02	0.00	0.05	-0.07			
Luxembourg	0.10	-0.01	0.12	-0.01	0.04	0.00	0.05	-0.01	-0.01	-0.01	0.02	0.00	0.05	-0.02			
Mexico	0.00	0.16	0.00	-0.16	-0.14	0.00	0.00	-0.14	0.00	0.00	-0.14	0.00	0.00	-0.14			
Netherlands	0.13	0.37	0.11	-0.35	-0.27	0.00	0.04	-0.31	-0.05	-0.05	-0.36	0.00	0.04	-0.40			
New Zealand	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	-0.11	0.00	0.00	0.00	0.00	0.00			
Norway	0.30	0.34	0.19	-0.23	-0.13	0.00	0.07	-0.20	-0.05	-0.05	-0.23	0.00	0.07	-0.30			
Poland	0.19	0.09	0.16	-0.07	0.00	0.00	0.06	-0.06	-0.03	-0.03	-0.05	0.00	0.06	-0.11			
Portugal	0.26	0.16	0.15	-0.05	0.01	0.00	0.05	-0.04	-0.03	-0.03	-0.05	0.00	0.05	-0.11			
Slovakia	0.09	0.11	0.13	-0.15	-0.09	0.00	0.05	-0.13	0.00	0.00	-0.09	0.00	0.05	-0.13			
Spain	0.22	0.22	0.04	-0.15	-0.08	0.00	0.06	-0.13	-0.04	-0.04	-0.15	0.00	0.06	-0.21			
Sweden	0.13	0.29	0.04	-0.20	-0.15	0.00	0.01	-0.17	-0.01	-0.01	-0.17	0.00	0.01	-0.18			
Switzerland	0.21	0.17	0.14	-0.10	-0.04	0.00	0.05	-0.09	-0.04	-0.04	-0.11	0.00	0.05	-0.16			
Turkey	0.26	0.18	0.08	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.03	0.00	0.03	0.00			
United Kingdom	0.30	0.24	0.21	-0.14	-0.05	0.00	0.07	-0.13	-0.02	-0.02	-0.10	0.00	0.07	-0.17			
United States	0.27	0.24	0.20	-0.17	-0.08	0.00	0.07	-0.15	-0.05	-0.05	-0.17	0.00	0.07	-0.24			
OECD average	0.22	0.23	0.12	-0.14	-0.08	0.00	0.04	-0.12	-0.03	-0.03	-0.13	0.00	0.04	-0.17			

a) Base case assumes a portfolio of 60% interest-bearing assets and 40% equities, 6.5% rate of return (of which inflation rate is 2%), the discount rate equalling the rate of return. The net tax cost is based on the employer-sponsored schemes (except Italy and Korea) and the case of annuity pension. However, for countries in which tax treatment between the employer's and employee's contributions is the same, the distinction between employer-sponsored and individual pension schemes is meaningless.

b) Measures the difference of tax expenditure against the base case. A negative figure implies revenue gains from taxation of pension.

c) Assumes 4.5 per cent discount rate.

Source: OECD

Table 4. Sensitivity analysis II

	1. Base case (age group average) ^a		5. More equities ^b		6. Higher inflation ^c			
	Total cost	Contributions	Accrued income	Withdrawals	Total cost ^a	Accrued income ^d	Total cost ^a	Accrued income ^d
Australia	0.29	0.21	0.15	-0.08	-0.02	-0.02	0.01	0.01
Austria	0.22	0.20	0.17	-0.15	-0.03	-0.03	0.02	0.02
Belgium	0.15	0.40	0.05	-0.30	-0.02	-0.02	0.01	0.01
Canada	0.31	0.34	0.23	-0.26	-0.02	-0.02	0.02	0.02
Czech Republic	0.41	0.44	0.12	-0.15	-0.02	-0.02	0.02	0.02
Denmark	0.25	0.47	0.03	-0.24	-0.02	-0.02	0.00	0.00
Finland	0.23	0.40	0.17	-0.34	-0.02	-0.02	0.02	0.02
France	0.31	0.16	0.18	-0.03	-0.04	-0.04	0.02	0.02
Germany	0.36	0.34	0.18	-0.16	-0.04	-0.04	0.02	0.02
Greece	0.15	0.11	0.11	-0.08	-0.04	-0.04	0.01	0.01
Hungary	0.28	0.24	0.03	0.00	0.02	0.02	0.00	0.00
Iceland	0.18	0.40	0.08	-0.30	0.00	0.00	0.01	0.01
Ireland	0.29	0.21	0.19	-0.11	-0.01	-0.01	0.02	0.02
Italy	0.17	0.29	0.01	-0.14	-0.03	-0.03	0.00	0.00
Japan	0.24	0.09	0.18	-0.03	-0.03	-0.03	0.02	0.02
Korea	0.16	0.05	0.14	-0.04	-0.03	-0.03	0.02	0.02
Luxembourg	0.10	-0.01	0.12	-0.01	-0.03	-0.03	0.02	0.02
Mexico	0.00	0.16	0.00	-0.16	0.00	0.00	0.00	0.00
Netherlands	0.13	0.37	0.11	-0.35	-0.02	-0.02	0.00	0.00
New Zealand	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Norway	0.30	0.34	0.19	-0.23	-0.02	-0.02	0.02	0.02
Poland	0.19	0.09	0.16	-0.07	-0.03	-0.03	0.02	0.02
Portugal	0.26	0.16	0.15	-0.05	-0.04	-0.04	0.02	0.02
Slovakia	0.09	0.11	0.13	-0.15	-0.02	-0.02	0.02	0.02
Spain	0.22	0.22	0.15	-0.15	-0.03	-0.03	0.02	0.02
Sweden	0.13	0.29	0.04	-0.20	-0.01	-0.01	0.00	0.00
Switzerland	0.21	0.17	0.14	-0.10	-0.03	-0.03	0.02	0.02
Turkey	0.26	0.18	0.08	0.00	-0.02	-0.02	0.01	0.01
United Kingdom	0.30	0.24	0.21	-0.14	-0.01	-0.01	0.02	0.02
United States	0.27	0.24	0.20	-0.17	-0.02	-0.02	0.02	0.02
OECD average	0.22	0.23	0.12	-0.14	-0.02	-0.02	0.01	0.01

a) Base case assumes a portfolio of 60% interest-bearing assets and 40% equities, 6.5% rate of return (of which inflation rate is 2%), the discount rate equaling the rate and employee's contributions is the same, the distinction between employer-sponsored and individual pension schemes is meaningless.

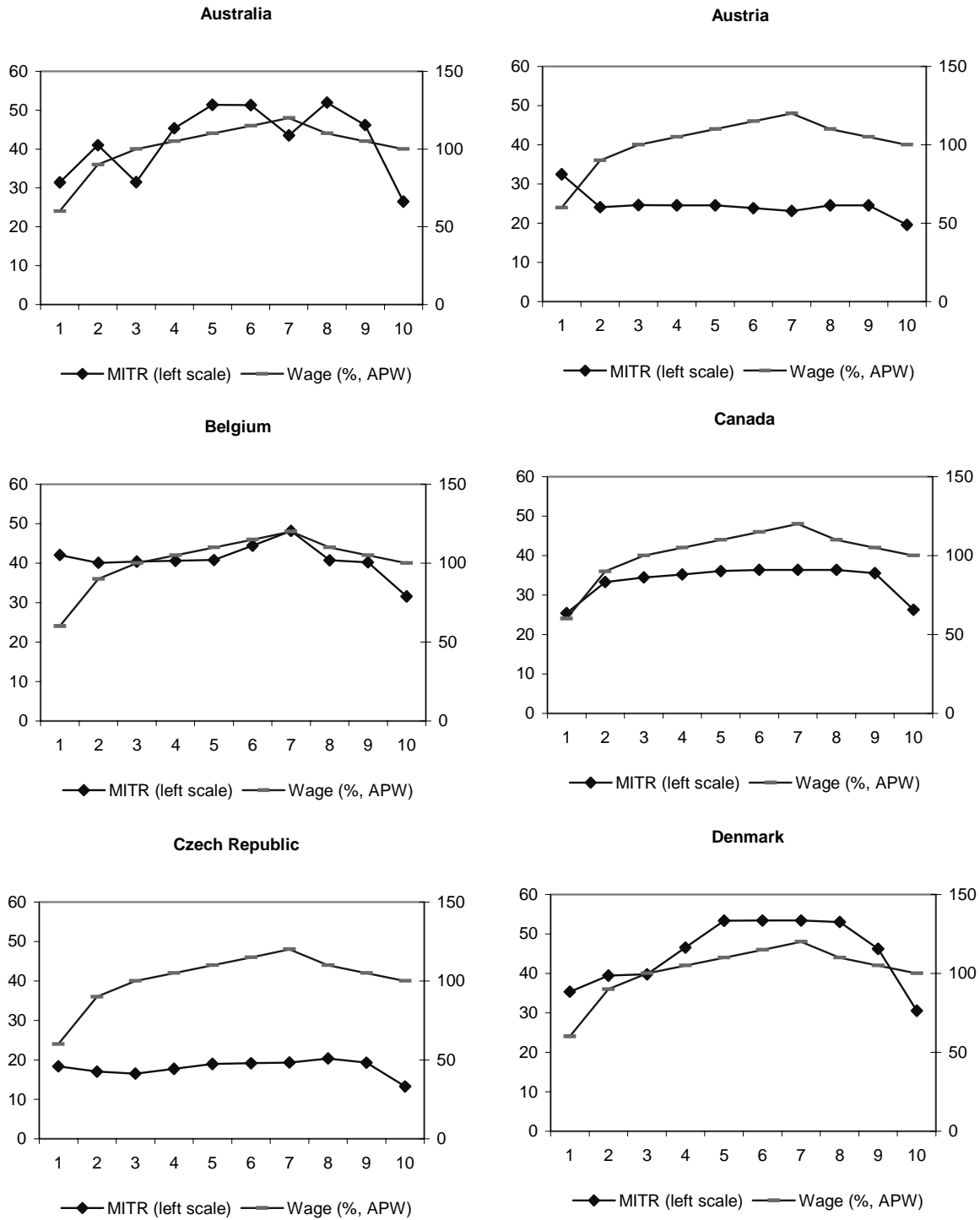
b) Assumes 60% equities and 40% interest-bearing assets.

c) Assumes 3 per cent inflation.

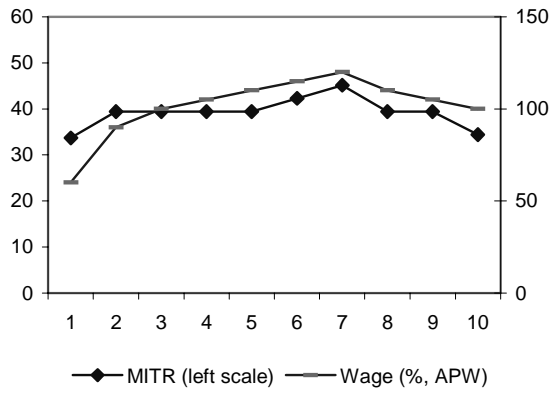
d) Measures the difference of tax expenditure against the base case. A negative figure implies revenue gains from taxation of pension.

Source: OECD

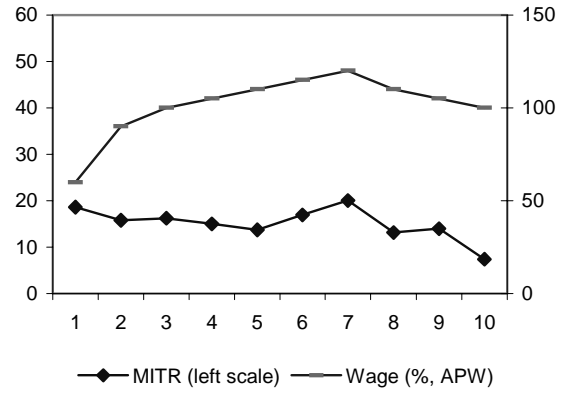
Figure 1. The age-income profile and marginal income tax rates



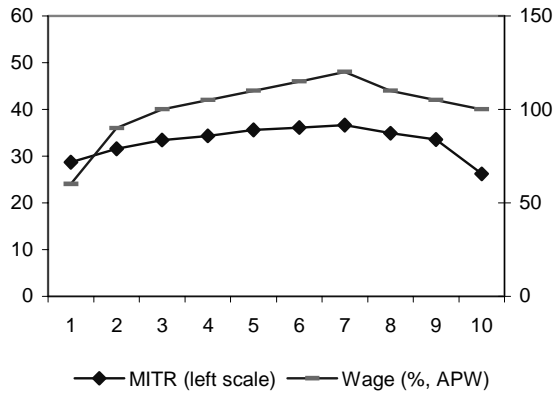
Finland



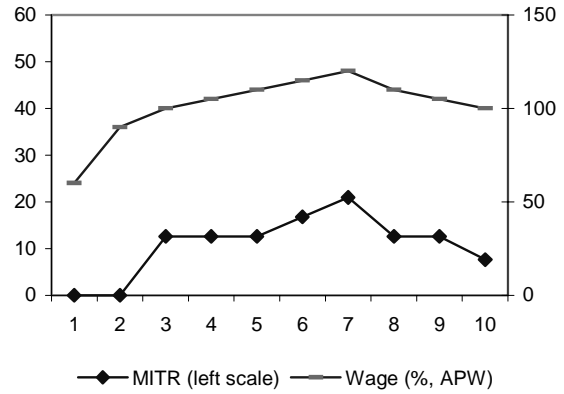
France



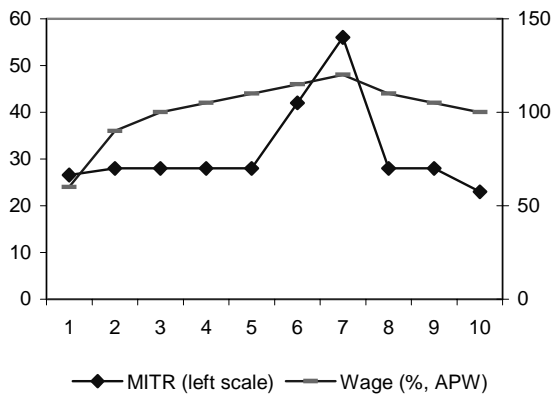
Germany



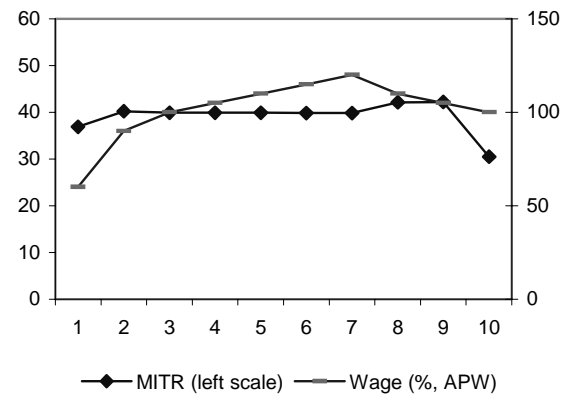
Greece



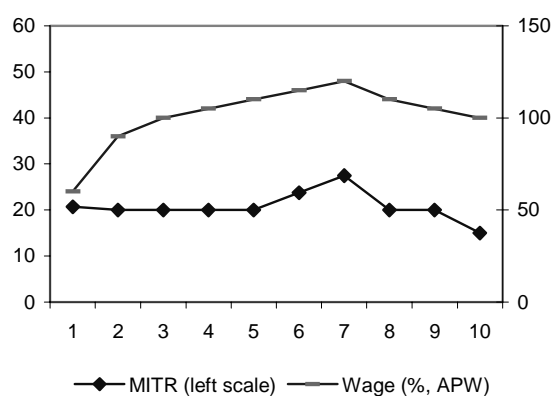
Hungary



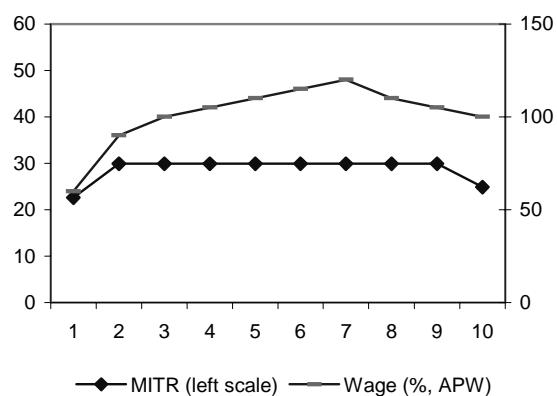
Iceland



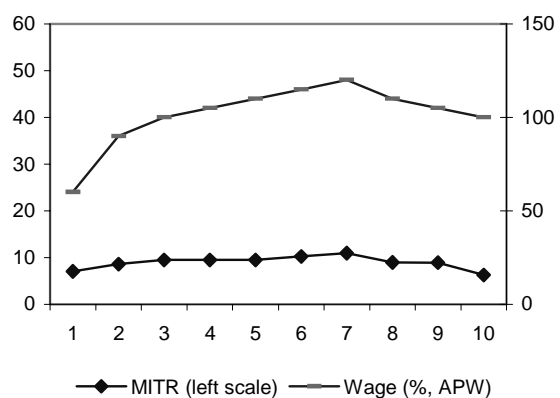
Ireland



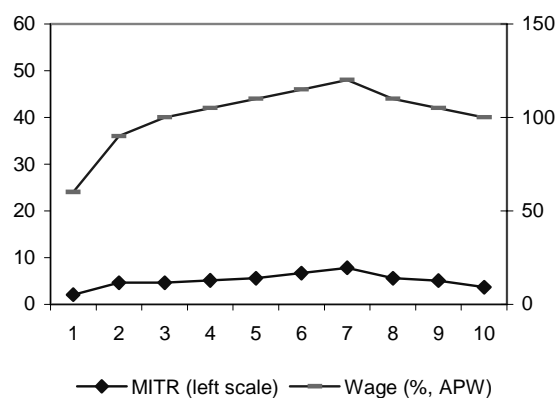
Italy



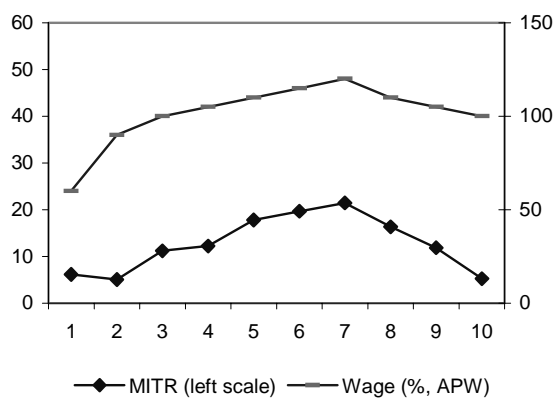
Japan



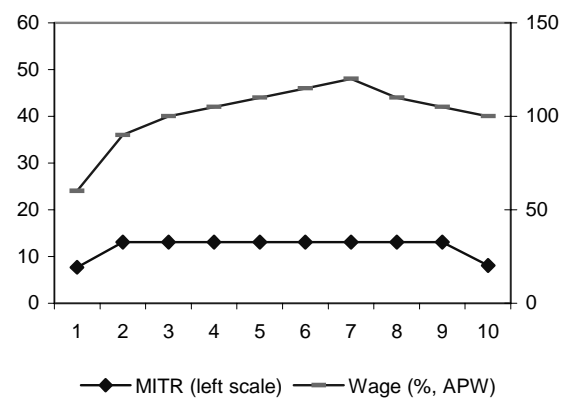
Korea



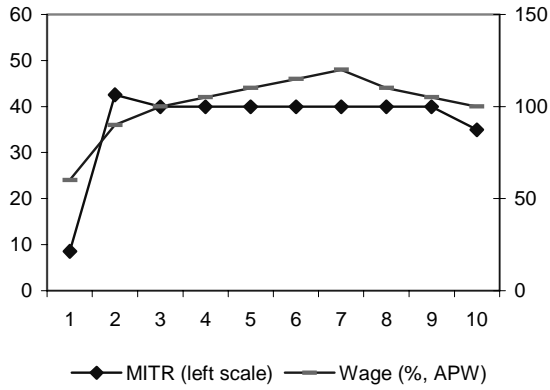
Luxembourg



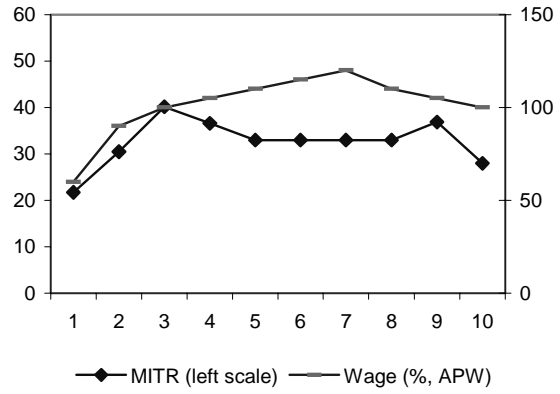
Mexico



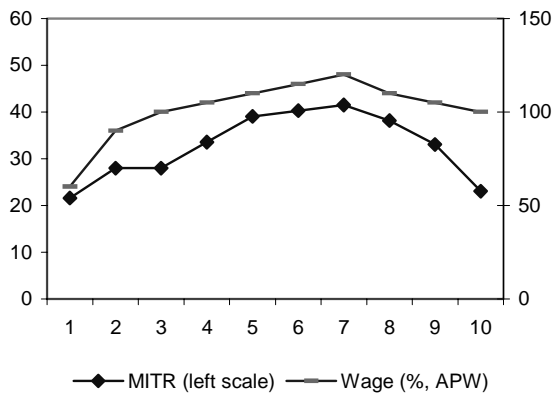
Netherlands



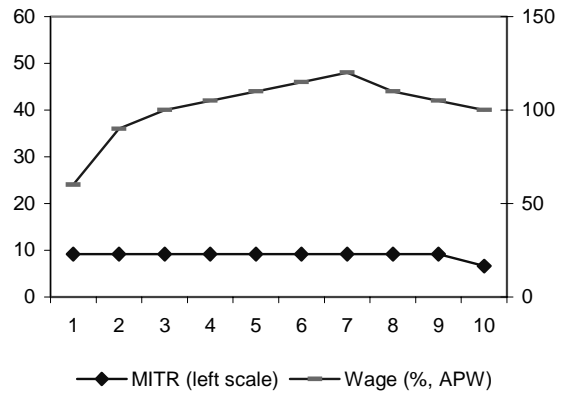
New Zealand



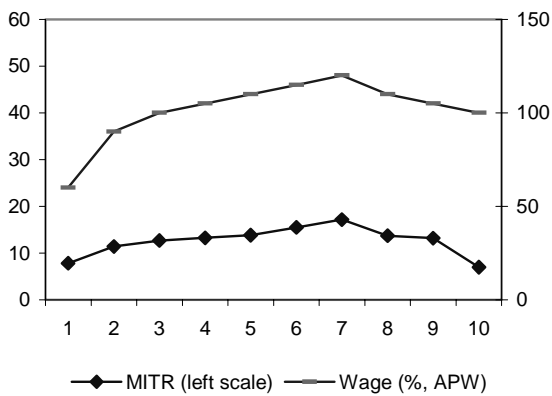
Norway



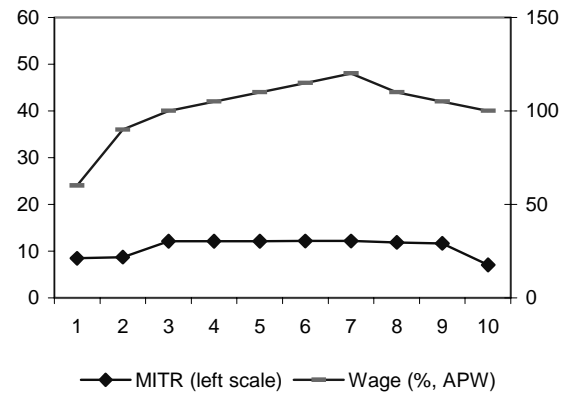
Poland

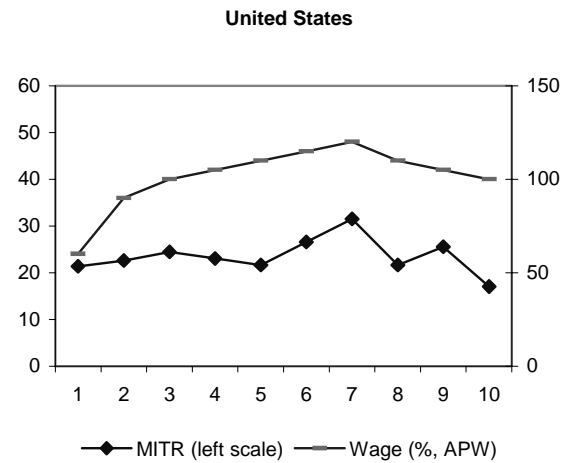
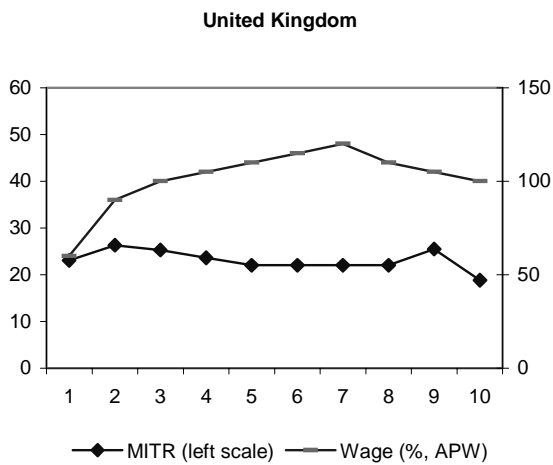
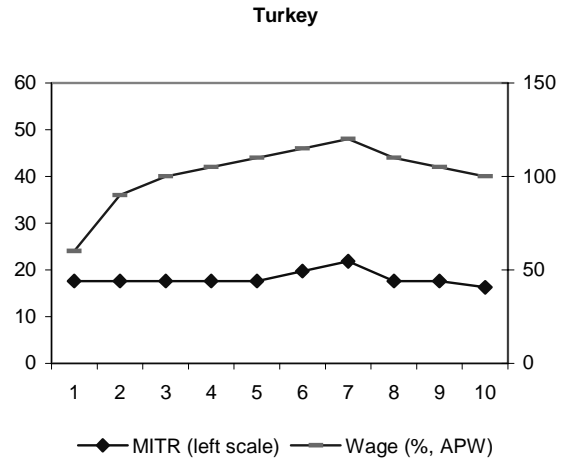
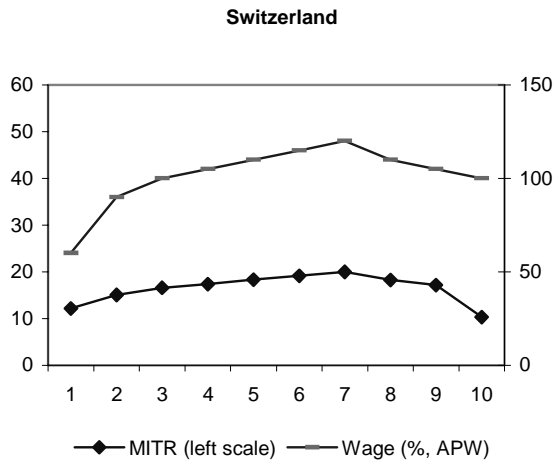
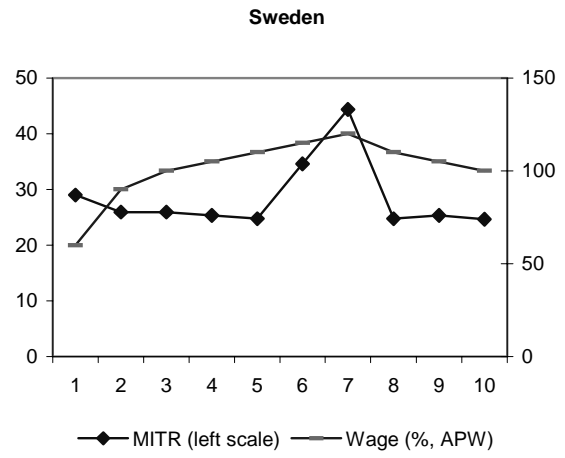
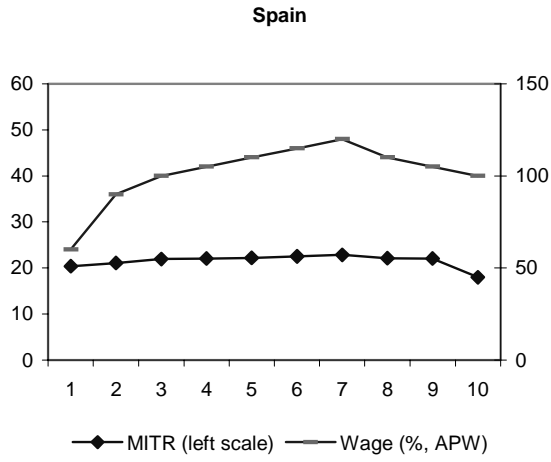


Portugal



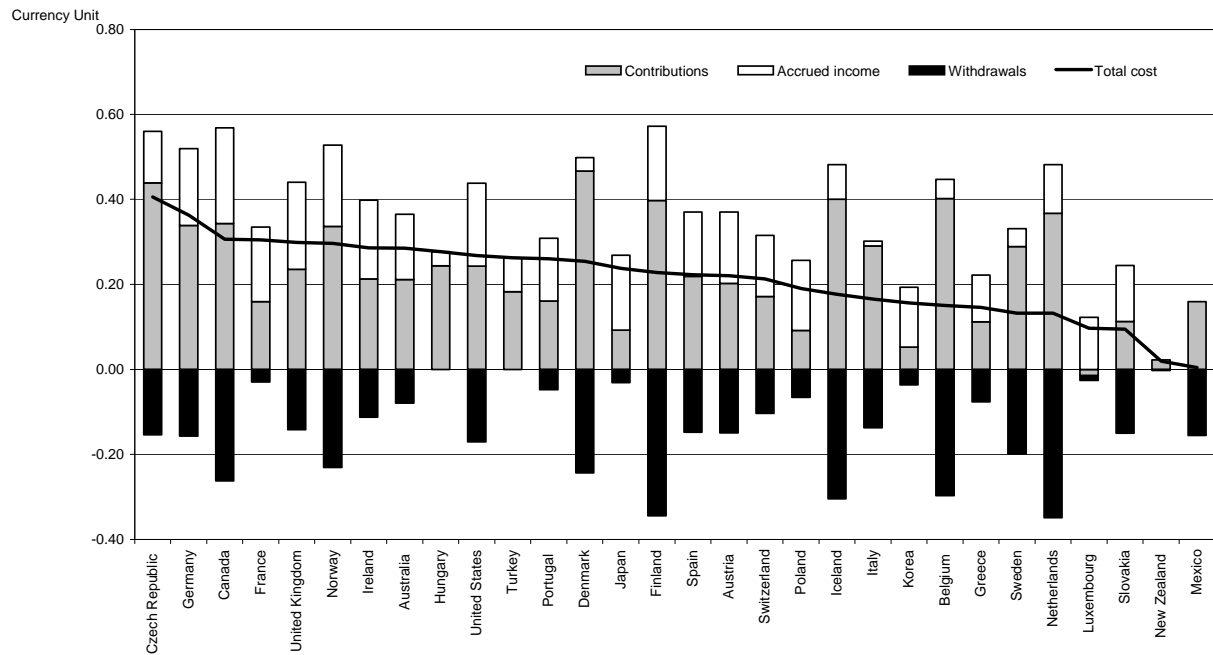
Slovakia





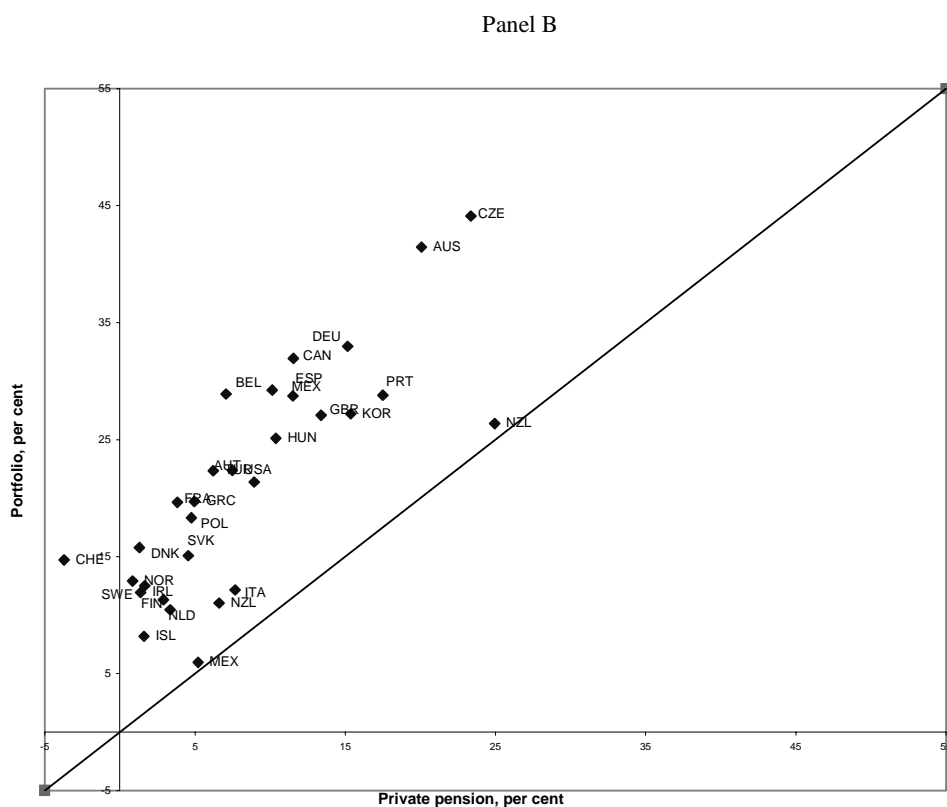
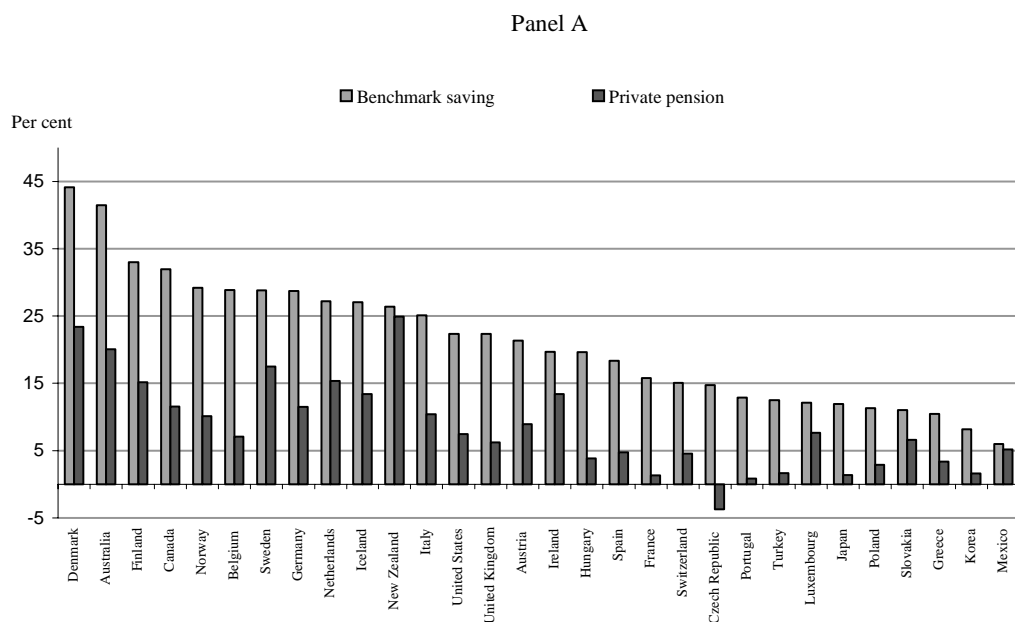
Source: Taxing Wages (OECD, 2003)

Figure 2. Net tax cost associated per unit of contribution, age-group average ^{1,2}



1. Based on the employer-sponsored schemes (except Italy and Korea) and annuity pension income. However, for countries in which tax treatment between the employer's and employee's contributions is the same, the distinction between employer-sponsored and individual pension schemes is meaningless.
 2. The outcomes in New Zealand and Mexico are driven by following factors. In New Zealand, employers' contributions are subject to a flat rate of 21 per cent, the rate lower than the marginal income tax rate. Mexico exempt income accruing to regular investment from taxation.
 Source: OECD

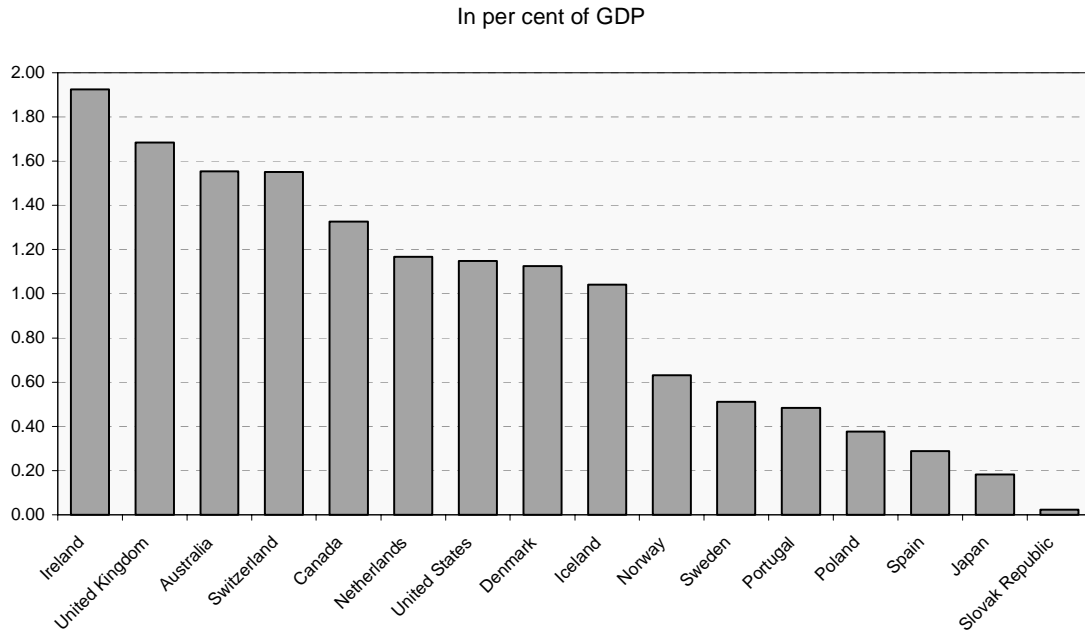
Figure 3. Effective tax rates on private pension and benchmark saving, age-group average^{1,2}



1. Based on the employer-sponsored schemes (except Italy and Korea) and lump-sum pension. However, for countries in which tax treatment between the employer's and employee's contributions is the same, the distinction between employer-sponsored and individual pension schemes is meaningless.

2. The effective tax rate is measured as the difference between the net present value of the pre-tax assets and the post-tax assets in proportion to the net present value of the pre-tax assets, for 6.5 per cent rate of return (and discount rate).
Source: OECD

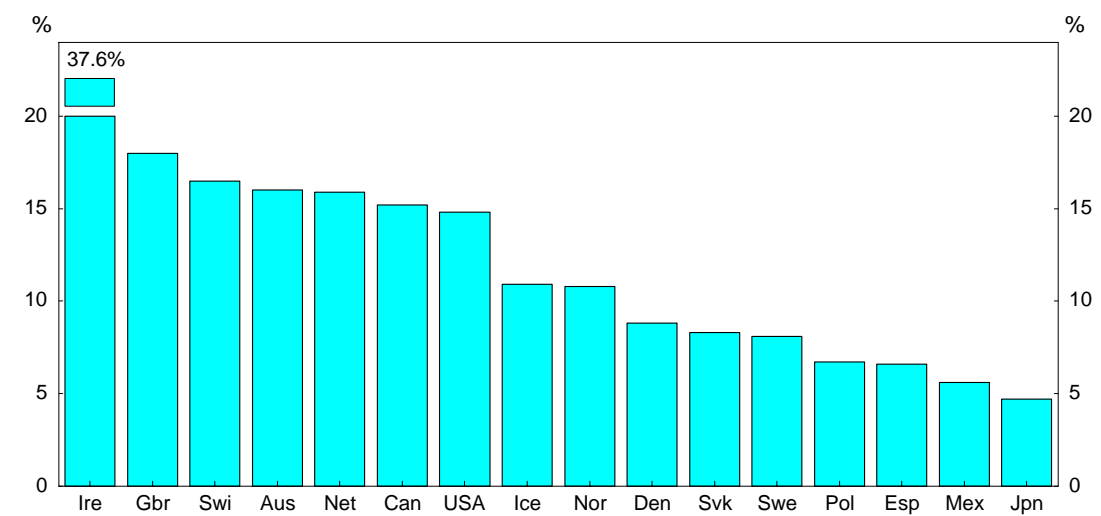
Figure 4. Overall budgetary cost arising from contributions made in 2000



1. The figures are obtained by first calculating the product of the age-group specific net fiscal cost per unit of contributions times contributions in each group in 2000 and then by aggregating the products across age-groups. Given that the net fiscal cost per unit of contributions is estimated on the basis of the tax treatment prevailing in 2003, these estimates should be interpreted with caution.

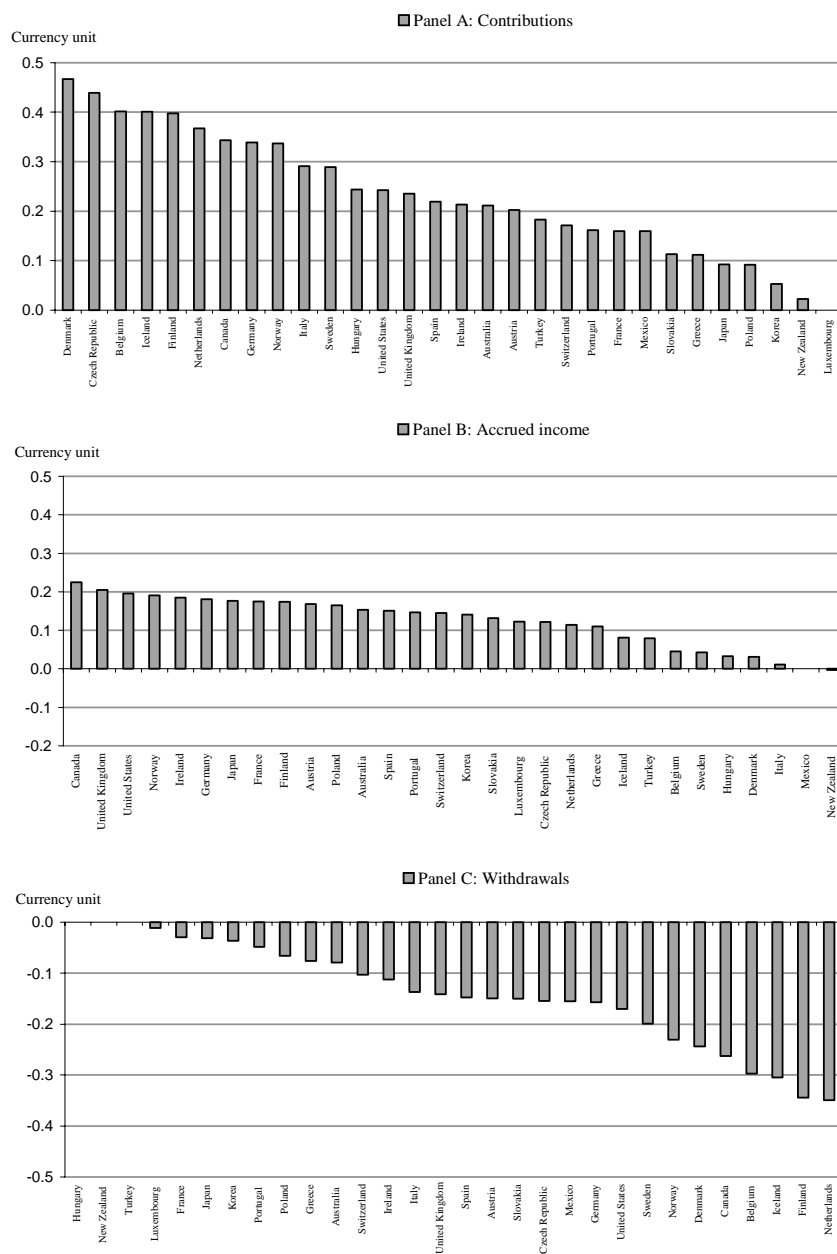
Source: National sources and OECD.

Figure 5. Average contribution per participant
As a % of the average wage of employees



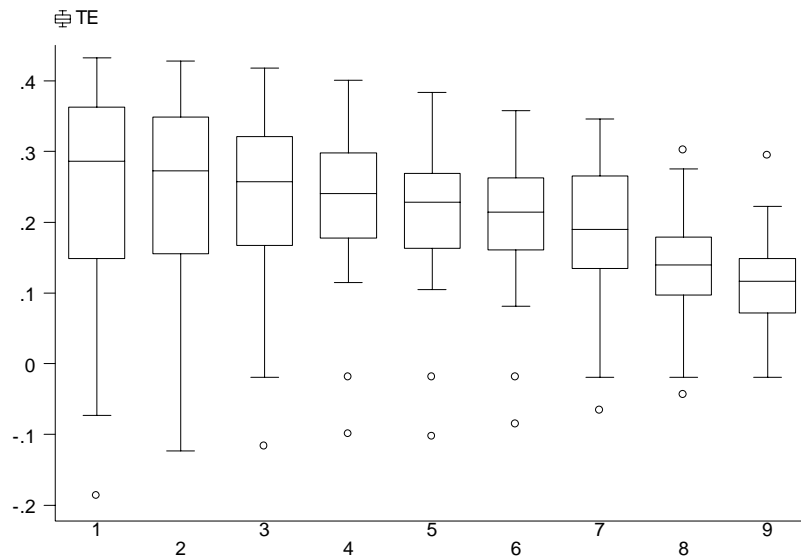
Source: National sources and OECD.

Figure 6. The net tax cost per unit of contribution in tax-favoured schemes by component^{1,2}
(Average across age-groups)



1. Based on the employer-sponsored schemes (except Italy and Korea) and annuity pension. However, for countries in which tax treatment between the employer's and employee's contributions is the same, the distinction between employer-sponsored and individual pension schemes is meaningless.
 2. The outcomes in New Zealand and Mexico are driven by following factors. In New Zealand, employers' contributions are taxed at 21%, the rate lower than the marginal tax rate. Mexico exempt income accruing to regular investment from taxation.
- Source: OECD

Figure 7. The net tax cost (TE) per unit of contribution in tax-favoured schemes by age-groups ¹

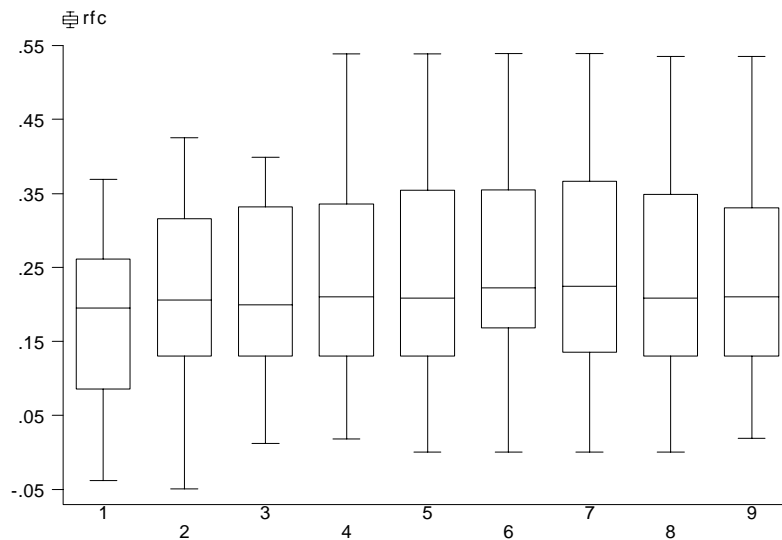


1. The box plot shows the median OECD value of the net tax cost per a dollar of contribution, second and third quartiles of the cross-country distribution (the edges of each box), and the extreme values (the two whiskers extending from the box) for each age-group (1-9). Dots identify outlier observations.

Source: OECD

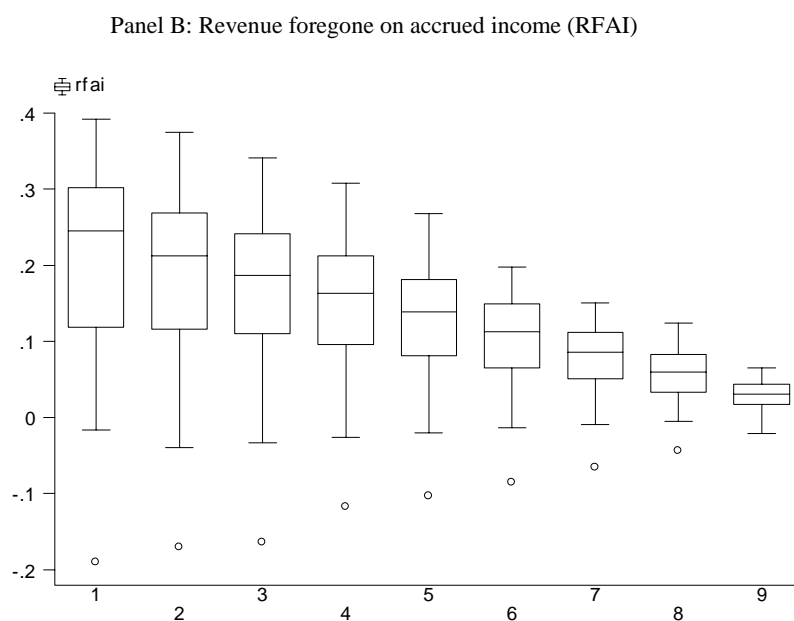
Figure 8. Decomposition of the net tax cost per unit contribution by age-groups ¹

Panel A: Revenue foregone on contribution (RFC)



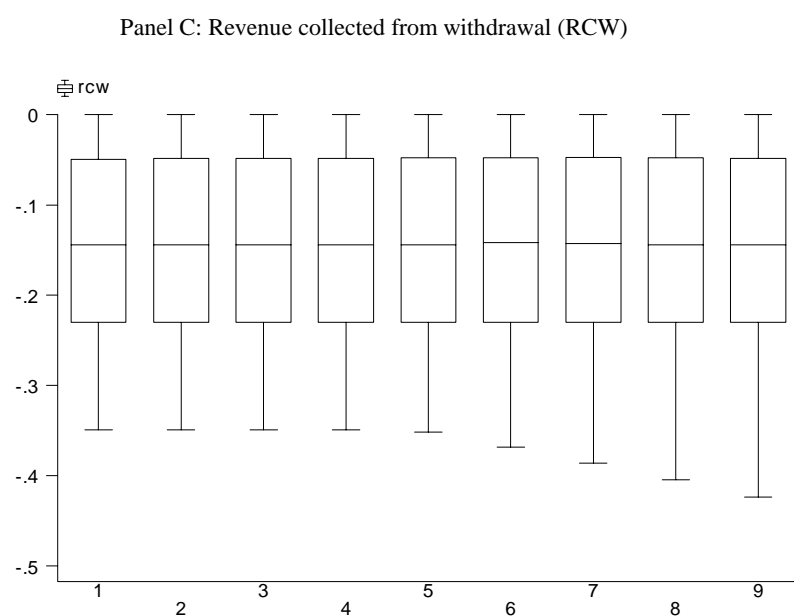
1. The box plot shows the median OECD value of the net tax cost per a dollar of contribution, second and third quartiles of the cross-country distribution (the edges of each box), and the extreme values (the two whiskers extending from the box) for each age-group (1-9). Dots identify outlier observations.

Source: OECD

Figure 8. Decomposition of the net tax cost per unit contribution by age-groups ¹

1. The box plot shows the median OECD value of the net tax cost per a dollar of contribution, second and third quartiles of the cross-country distribution (the edges of each box), and the extreme values (the two whiskers extending from the box) for each age-group (1-9). Dots identify outlier observations.

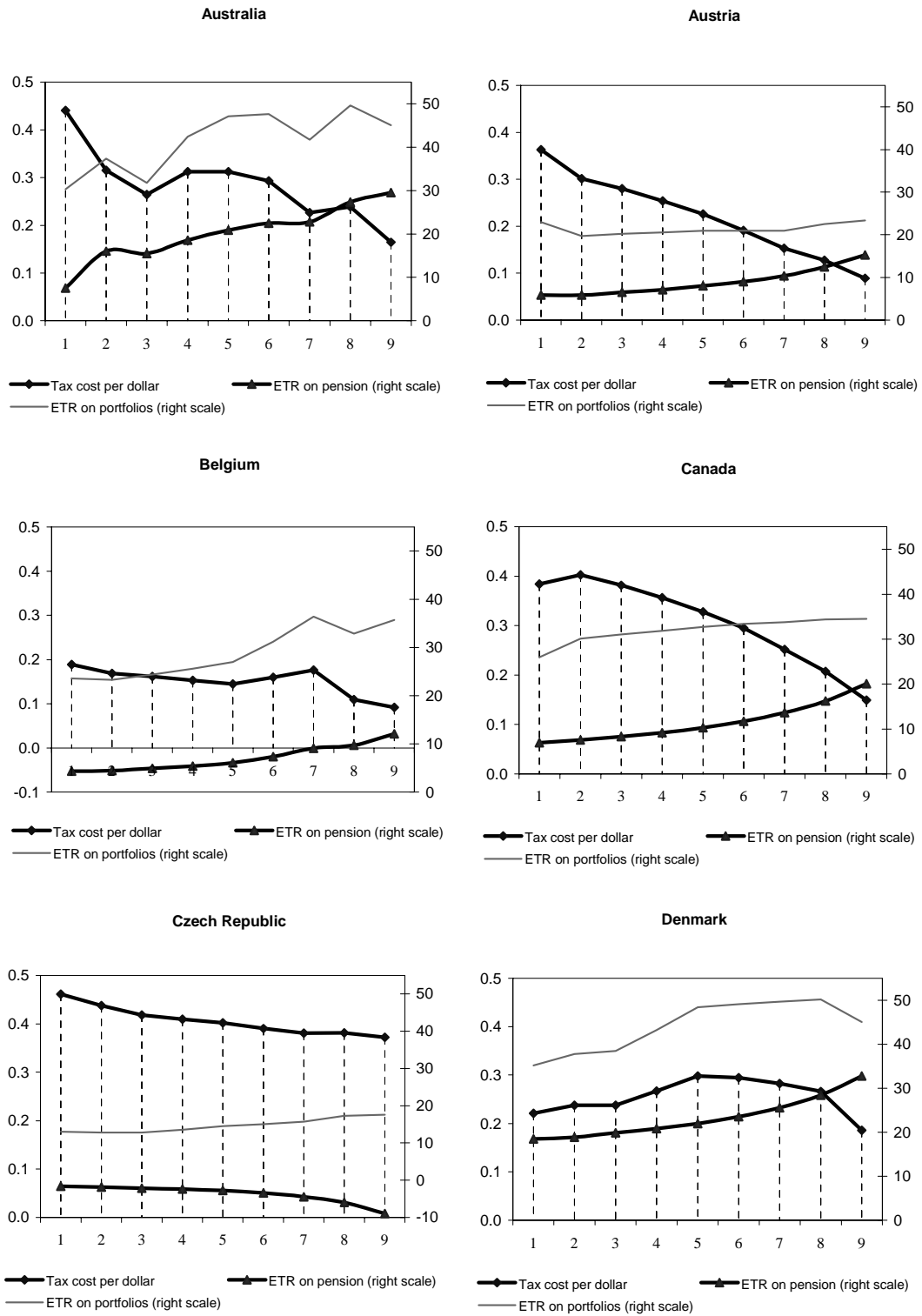
Source: OECD



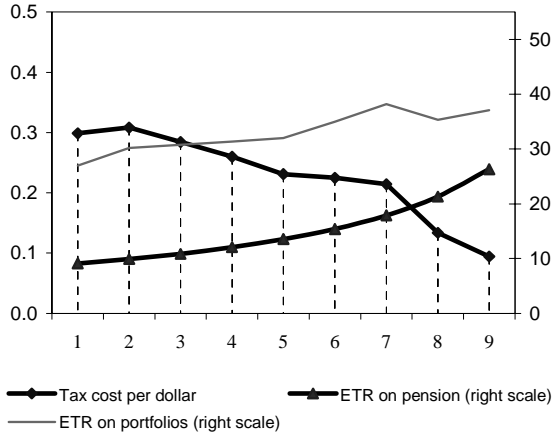
1. The box plot shows the median OECD value of the net tax cost per a dollar of contribution, second and third quartiles of the cross-country distribution (the edges of each box), and the extreme values (the two whiskers extending from the box) for each age-group (1-9). Dots identify outlier observations.

Source: OECD

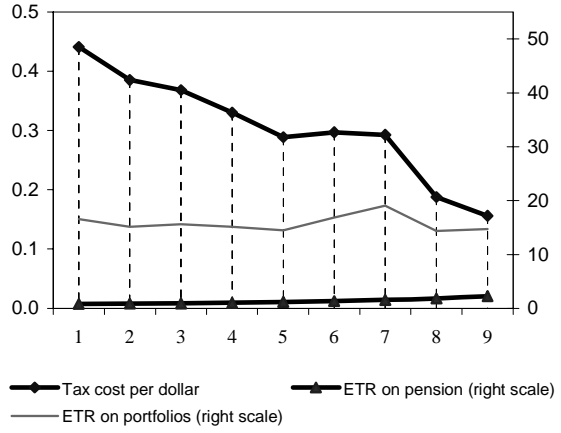
Figure 9. Tax cost and the effective tax rates on pension savings by age-groups



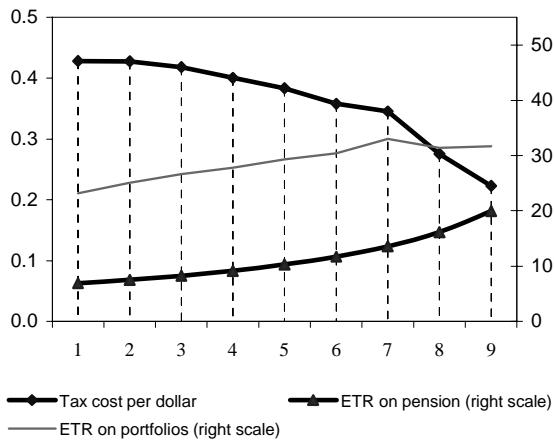
Finland



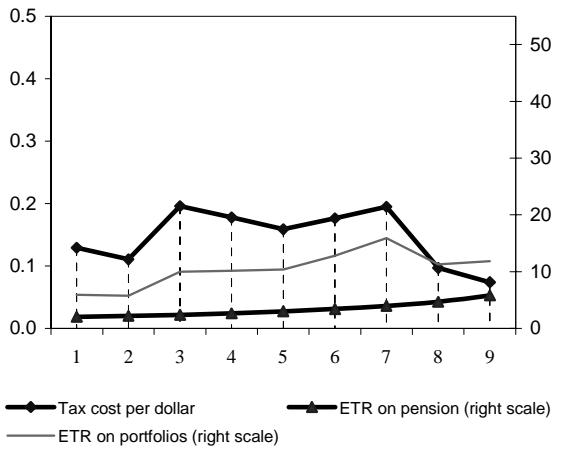
France



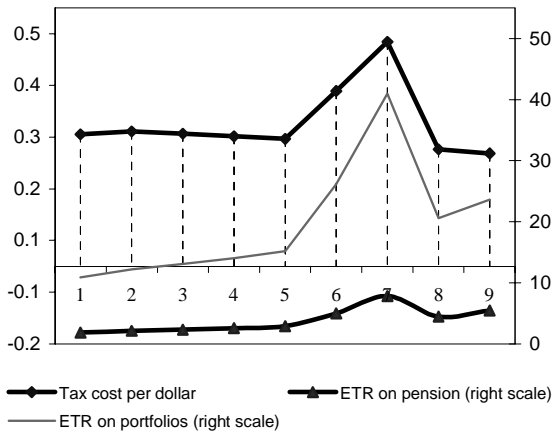
Germany



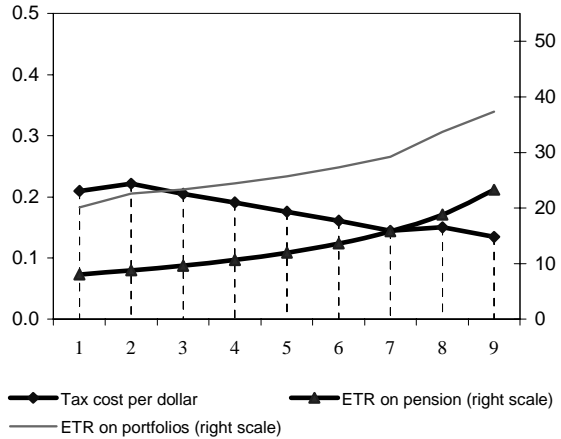
Greece



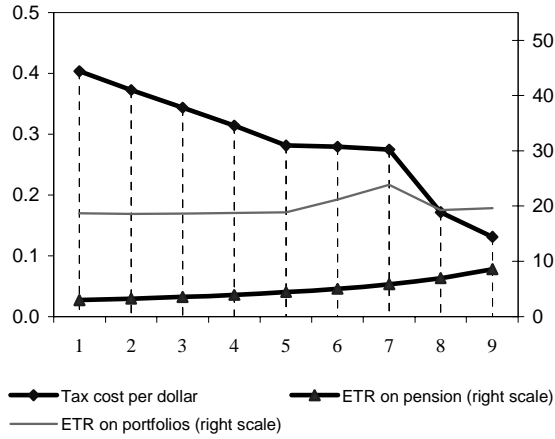
Hungary



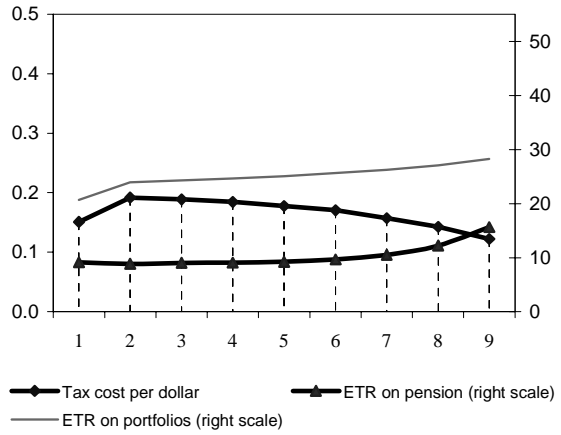
Iceland



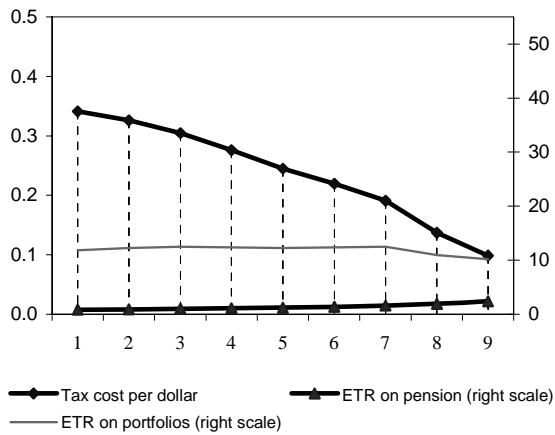
Ireland



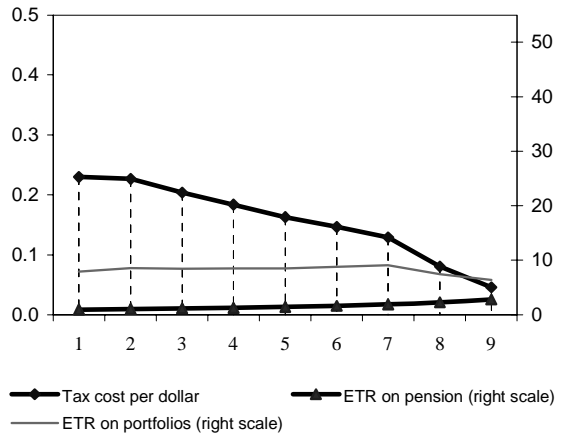
Italy



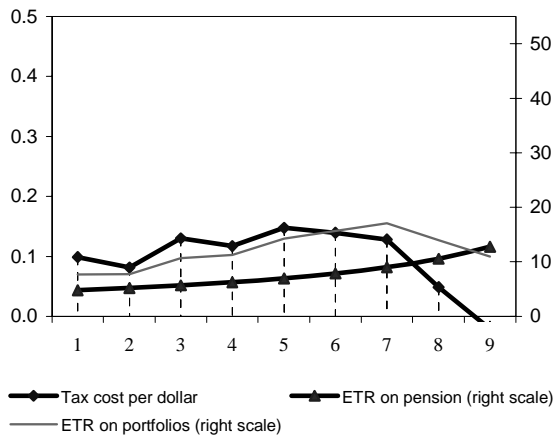
Japan



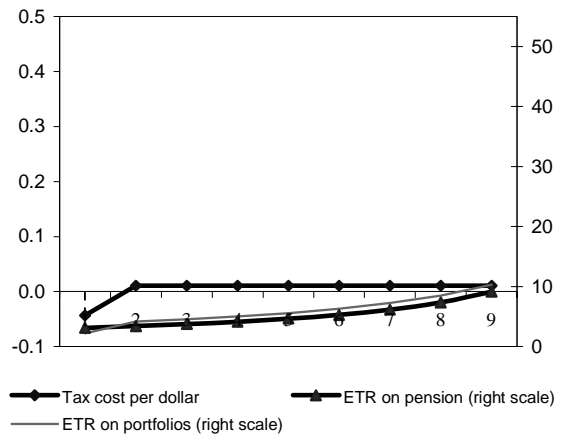
Korea



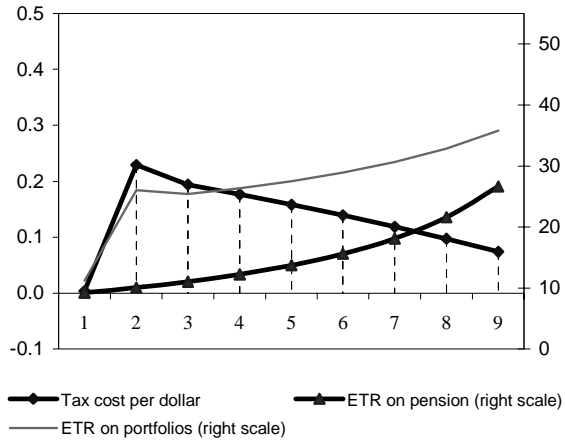
Luxembourg



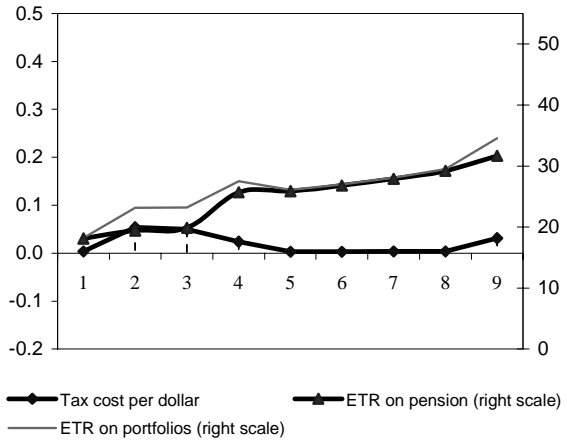
Mexico



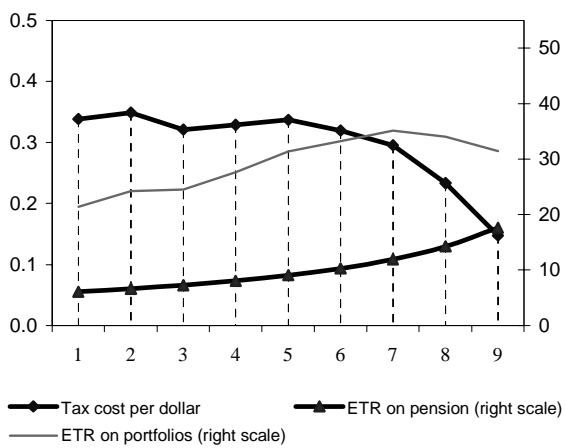
Netherlands



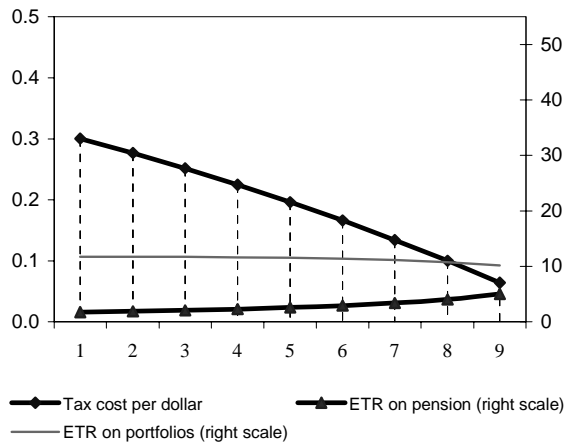
New Zealand



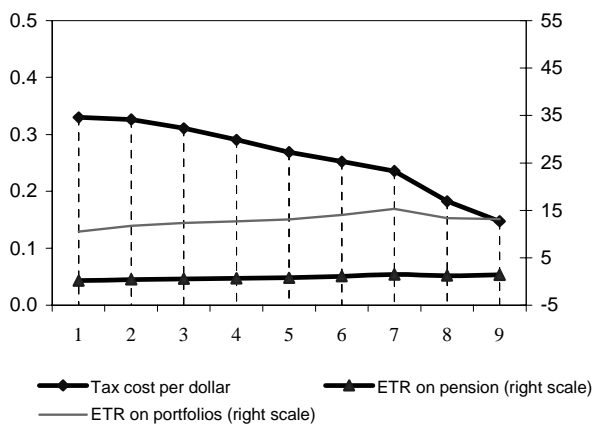
Norway



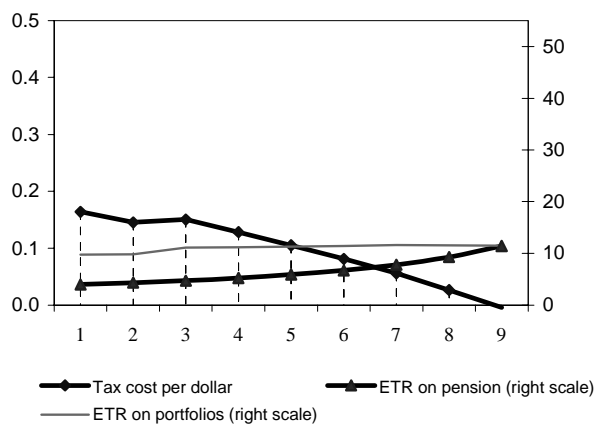
Poland

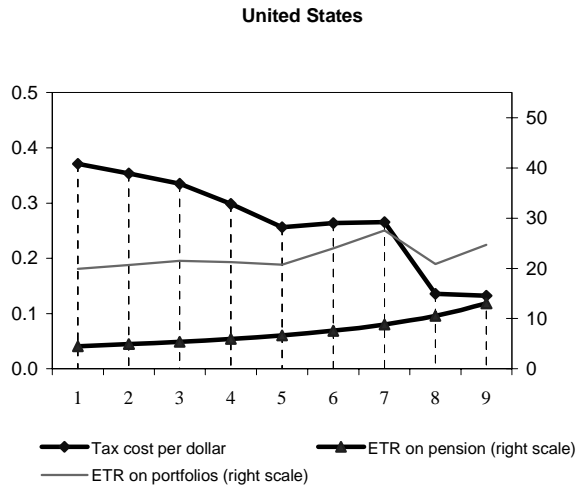
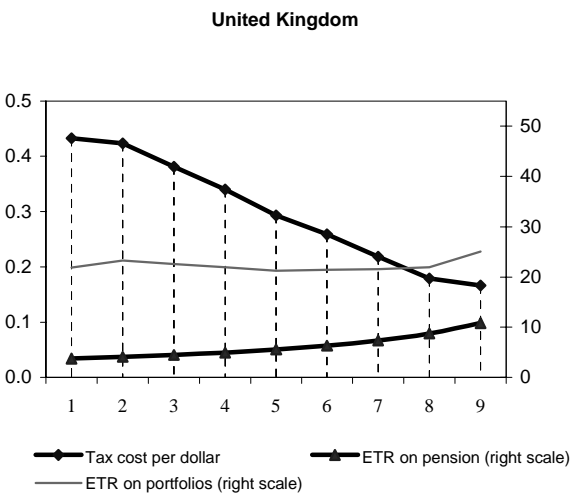
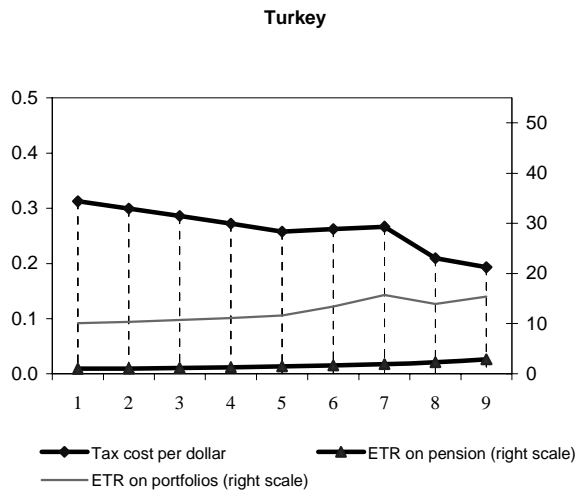
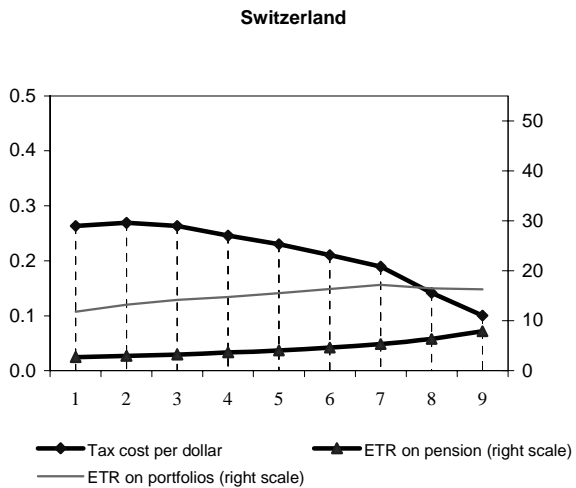
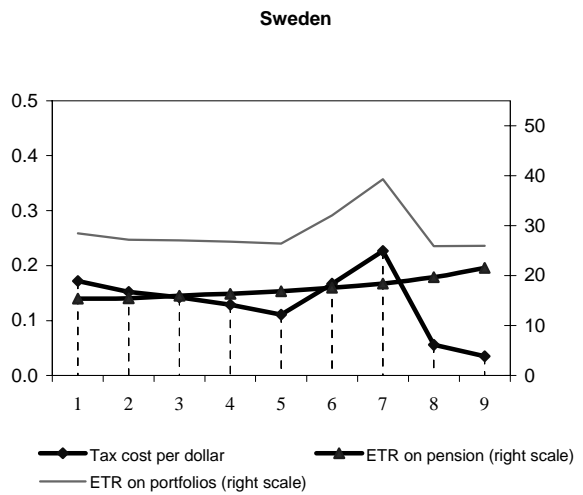
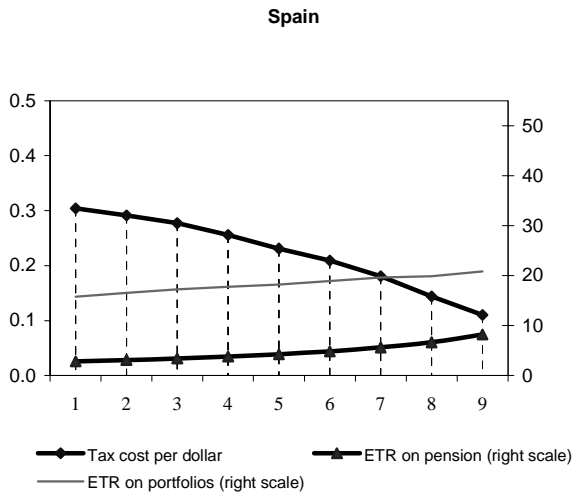


Portugal



Slovakia

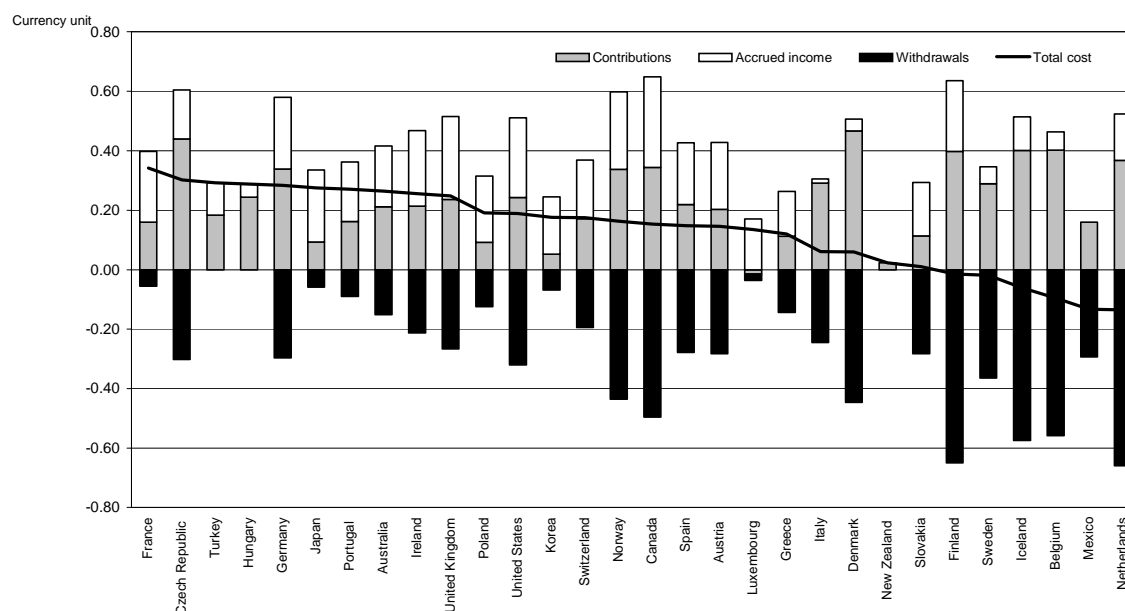




Source: OECD

Figure 10. Net tax cost per unit of contribution in tax-favoured schemes, 4.5 per cent discount rate^{1,2}

Panel A: Lower discount rate, average across age-groups

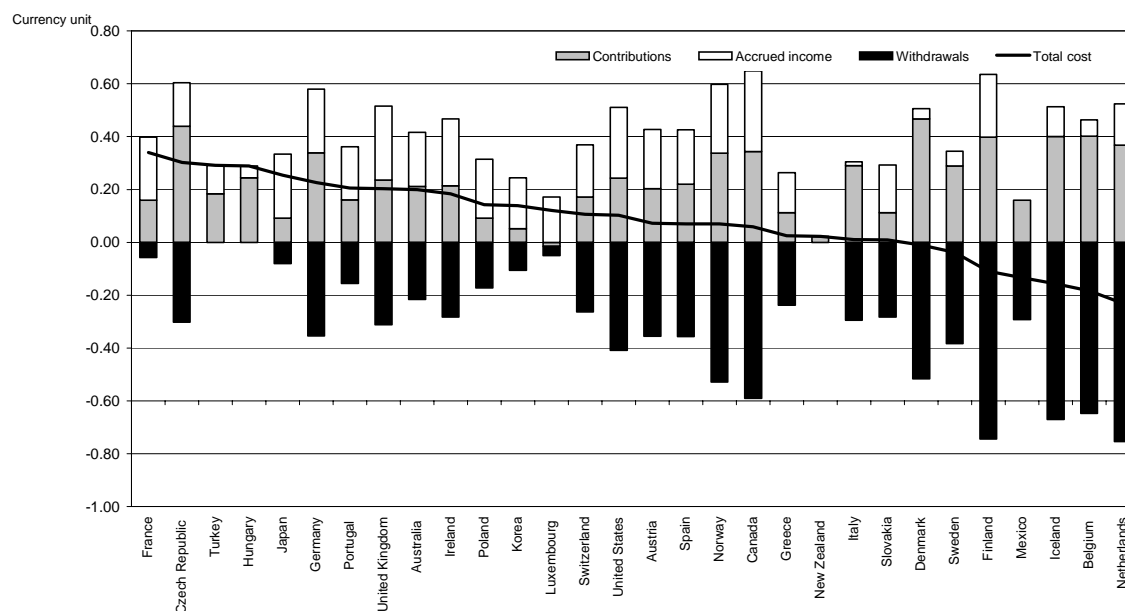


1. Based on the employer-sponsored schemes (except Italy and Korea) and lump-sum withdrawal at 65. However, for countries in which tax treatment between the employer's and employee's contributions is the same, the distinction between employer-sponsored and individual pension schemes is meaningless.

2. The outcomes in New Zealand and Mexico are driven by following factors. In New Zealand, employers' contributions are taxed at 21%, the rate lower than the marginal tax rate. Mexico exempt income accruing to regular investment from taxation.

Source: OECD

Panel B: Both lower discount rate and withdrawals subject to the marginal tax rate, average across age-groups

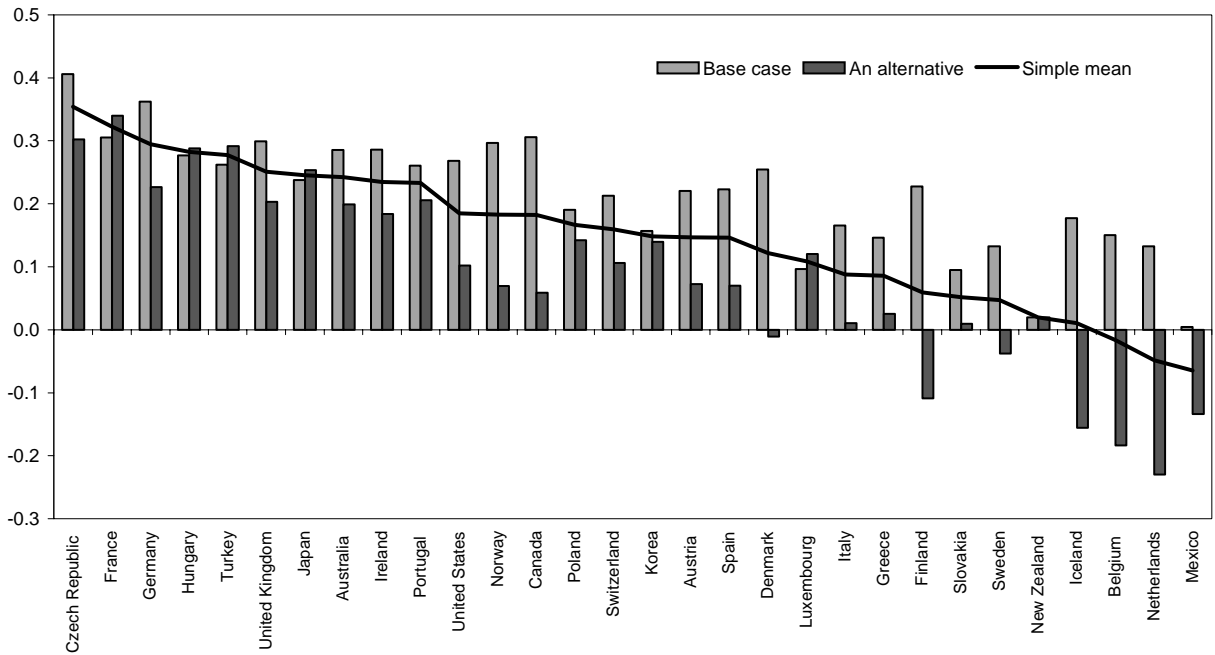


1. Based on the employer-sponsored schemes (except Italy and Korea) and lump-sum withdrawal at 65. However, for countries in which tax treatment between the employer's and employee's contributions is the same, the distinction between employer-sponsored and individual pension schemes is meaningless.

2. The outcomes in New Zealand and Mexico are driven by following factors. In New Zealand, employers' contributions are taxed at 21%, the rate lower than the marginal tax rate. Mexico exempt income accruing to regular investment from taxation.

Source: OECD

Panel C: A range of net tax cost estimates, average across age-groups



1. The base case assumes 6.5 per cent discount rate and the mid-point between the marginal and average tax rate corresponding to 100% APW income as the tax rate on withdrawals.
2. An alternative case assumes 4.5 per cent discount rate and the marginal tax rate corresponding to 100% APW income as the tax rate on withdrawals.

BIBLIOGRAPHY

- ANTOLIN, P., A. de Serres and C. de la Maisonneuve (2004), *OECD Economics Department Working Paper (forthcoming)*
- BURMAN, L. E. and P. D. Ricoy (1997), “Capital gains and the people who realize them”, *National Tax Journal* Vol. 50, No. 3
- CONGRESSIONAL BUDGET OFFICE (2003), *Utilization of Tax Incentives for Retirement Savings*, Washington D.C.
- DILNOT, A. and P. Johnson (1992), *The Taxation of Private Pensions*, The Institute of Fiscal Studies
- DUSSEAULT, B. and J. Skinner (2000), “Did individual retirement accounts actually raise revenue?”, *Tax Notes*.
- FINANCE, Canada (2001), *Tax Expenditures and Evaluations*, Ottawa
- FRANCO, D. (1996), “The taxation of funded pension schemes and budgetary policy”, *European Commission Economic Papers* No. 117
- INSTITUTE FOR SOCIAL AND ECONOMIC RESEARCH (1998), *British Household Panel Study*, University of Essex
- INTERNATIONAL SOCIAL SECURITY ASSOCIATION AND INTERNATIONAL NETWORK OF PENSION REGULATORS AND SUPERVISORS (2003), *Complementary and Private Pensions Throughout the World*, Geneva, Switzerland
- OECD (2003), *Taxing Wages*, Paris
- OECD (1996), *Tax Expenditure: Recent Experiences*, Paris
- OECD (1994), *Taxation and Household Savings*, Paris
- OECD (2002a), “Revised taxonomy for pension plans, pension funds and pension entities”, DAF/AS/PEN/WD(2001)5/REV4, Paris.
- OECD (2003a), *OECD Economic Outlook*, No.74, Paris.
- OECD (2003b), “Recent developments in funding and benefit security”, DAF/AS/PEN/WD(2003)25, Paris.
- PECHMAN, J. (1980), *What Should Be Taxed: Income or Expenditure?*, Washington DC: Brookings Institution.
- US GOVERNMENT (2003), *Analytical Perspectives*, Washington D.C.

ECO/WKP(2004)29

WHITEHOUSE, E. (1999), "Tax treatment of funded pensions", *Social Protection Discussion Paper* No. 9910, World Bank, Washington, D.C.

WHITEHOUSE, E. (2002), "Pension systems in 15 countries compared: the value of entitlements", *Center for Pensions and Superannuation Discussion Paper* 02/04.

ANNEX 1. MEASURING ABSOLUTE TAX BURDEN ON PENSION SAVINGS

51. The previous discussion indicated that the net tax cost not only depends on the tax system generosity with respect to private pension, but also the tax system generosity with respect to the benchmark savings. This section complements the previous discussion by constructing an *absolute* measure of tax burden on pension savings, *i.e.* the effective tax rate (ETR) on pension savings.

52. Many OECD countries provide a varying degree of tax favour to dividend income and capital gains accruing to regular investment, for example, by allowing imputation credits or applying a low flat-rate tax or exempting them from taxation. Moreover, factors affecting overall tax payments on investment income, such as the level of the marginal income tax rate and the progressivity of income tax schedules, vary significantly across countries. As a consequence, a large size of the net tax cost in a country may simply reflect heavy taxation on the benchmark savings rather than large tax incentives given to pension savings.

53. The effective tax rate on pension savings is constructed by applying the same approach used to construct the net tax cost per a dollar of pre-tax contribution. The effective tax rate (ETR) on each asset is defined as the difference between the net present value of the pre-tax assets and the post-tax assets (*i.e.* the net present-value of taxes paid) in proportion to the net present value of the pre-tax balance in each asset. The pre-tax assets are measured as the sum of the initial pre-tax investment (say, 1 dollar) and the net present value of a pre-tax stream of accrued investment income, and the post-tax assets are measured as the post-tax amount of initial investment plus the net present value of a post-tax stream of accrued income. The post-tax balance differs across the type of assets, largely reflecting cross-country differences in taxing savings instruments. The pre-tax balance also differs across assets. For example, in the case of TTE-type ordinary savings, investment income in each period accrues from the balance taxed in the previous periods, so the pre-tax balance in the TTE-type savings is lower than the pre-tax balance in the EET-type savings whose accumulated investment income is tax-exempt throughout its investment horizon.

Assumptions

54. The effective tax rate on each asset is computed using a *pre-tax nominal return of 6.5 per cent.* The tax system in each country determines the amount of taxes paid on returns from each savings instrument as well as the tax wedge. The pre-tax and post-tax balances are calculated by discounting a stream of future tax payments at the same rate as the nominal rate of return.⁴¹ Other assumptions, including the holding period for assets and the relevant tax rates, are assumed to be the same as in the previous section. The ETR on the benchmark portfolio is then calculated by weighting the effective tax rates on equities and interest-bearing assets by the assumed asset shares. Figure 4 plots the effective tax rates on pension and the benchmark savings.

55. Two points merit attention. First, the effective tax rate on savings is age-group-specific by construction, as the relevant marginal tax rate used in calculating the overall tax burden from each savings

⁴¹ Relaxing this assumption may result in a change in the ranking of countries, because the timing of tax receipts from pension savings differs across tax systems. In general, the net present value of taxes paid under the EET-type pension schemes tend to be larger in the case where a discount rate is assumed to be lower than the nominal rate of return.

vehicle differs across age groups. Second, the age-group-specific effective tax rate is not “marginal” in the sense that one dollar of pre-tax investment does not necessarily generate net returns just sufficient to make the investment worthwhile. In other words, the post-tax rate of return implicit in the effective tax rate is different from the post-tax “required” return or the internal rate of return that generates *zero* net present value (*i.e.* that equates the net expected return from the asset to the cost of investment). Therefore, the effective tax rate should not be used to measure tax incentives to save in different forms at the margin or the degree to which savings incentives are affected by taxation. Instead, the effective tax rate is relevant in measuring the age-group-specific tax burden on savings, *given a pre-tax rate of return and the discount rate*. Box A1.1 describes the difference between this measure and the tax rates reported in OECD (1994).

Box A1.1. The methodological difference with OECD (1994)

OECD (1994) defined the effective “marginal” tax rate on savings as the tax wedge between the pre-tax real rate of return and the post-tax real rate of return in proportion to the pre-tax rate of return. Under the assumption that the pre-tax real rate of return on each asset is 5 per cent across all assets, the post-tax nominal rate of return is then measured as the internal rate of return (ρ) such that the net present value of investment is equal to zero. The post-tax return is marginal in the sense that it produces net returns sufficient to make the investment attractive. The reduced-form solution of ρ is then adjusted to reflect that a certain fraction (β) of marginal investment is debt-financed. The real post-tax rate of return is then derived by dividing ρ by the rate of inflation. In the case of pension savings, the calculation of the effective tax rate involves a two-stage process: the taxation of the pension fund and the taxation of the contributor. First, the pension fund’s internal rate of return on each asset (bond and equity) is calculated in a similar fashion, and the fund’s overall internal rate of return is obtained by weighting each asset’s internal rate of return by the assumed asset share. Assuming that the fund’s internal rate of return is the individual’s pre-tax rate of return and that pension savings are held for 15 years, the contributor’s post-tax rate of return consistent with a zero present value of investment is calculated and fed into the tax wedge formula in order to produce the effective marginal tax rate on pension savings.

The approach taken in this paper is much simpler and straightforward. It calculates the tax wedge by measuring the net present value of the pre-tax and post-tax balance, for given pre-tax rate of return and discount rate. While the resulting effective tax rate is not a marginal tax rate, it incorporates the complexity of the tax system and the difference in the marginal income tax rates across age-groups in a simple way. Assuming a different discount rate, however, is likely to affect the effective tax rate by changing the net present value of the stream of tax revenues collected from private pension savings.

The effective tax rate on savings

56. The following paragraphs set out the formulae according to which the age-group-specific effective tax rates for each asset are measured (age is denoted by m). Most terms in each formula are analogous to terms used in the stylised model measuring the net tax cost per a dollar of contribution.

57. For the EET-type private pension savings, the age-group-specific effective tax rate ($\tau_{m,EET}$) in the case of lump-sum withdrawal at the age of 65 is computed as follows:⁴²

$$\tau_{m,EET} = \frac{C(1+i)^{65-m} t_{y,65}}{(1+\rho)^{65-m}} / \left\{ C + C \sum_{j=m+1}^{65} \frac{[\prod_{k=m+1}^{j-1} (1+i)^{k-m-1}] i}{(1+\rho)^{j-m}} \right\} \quad (7)$$

⁴²

Due to the difficulty in defining the total pre-tax balance when pension income is an annuity, the effective tax rate is based on the assumption that retirees receive pension benefits as a lump-sum. For countries which treat the annuity and lump-sum differently, however, the effective tax rate can over- or underestimate the actual tax burden.

58. For the ETT-type private pension savings, the age (m) or age-group-specific effective tax rate ($\tau_{m,ETT}$) at the age of 65 is computed as follows:

$$\tau_{m,ETT} = \frac{C \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1 + i(1 - t_{p,k})] \} it_{p,j}}{(1 + \rho)^{j-m}} + \frac{C[1 + i(1 - t_{p.})]^{65-m} t_{y,65}}{(1 + \rho)^{65-m}}}{C + C \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1 + i(1 - t_{p,k})] i \}}{(1 + \rho)^{j-m}}} \quad (8)$$

59. For the TET-type private pension savings with partial tax-exemption at both ends of the transaction (v , w), the age-group-specific effective tax rate ($\tau_{m,TET1}$) at the age of 65 is computed as follows:

$$\tau_{m,TET1} = \frac{C(1-v)t_{c,m} + [C - C(1-v)t_{c,m}] \frac{(1+i)^{65-m} (1-w)t_{b,65}}{(1+\rho)^{65-m}}}{C + [C - C(1-v)t_{c,m}] \sum_{j=m+1}^{65} \frac{[\prod_{k=m+1}^{j-1} (1+i)^{k-m-1}] i}{(1+\rho)^{j-m}}} \quad (9)$$

60. Similarly, for the TET-type private pension savings with tax credit (t_{cred}) on contributions, the age-group-specific effective tax rate ($\tau_{m,TET2}$) at the age of 65 is computed as follows:

$$\tau_{m,TET2} = \frac{C(t_{c,m} - t_{cred}) + C(1 - t_{c,m} + t_{cred}) \frac{(1+i)^{65-m} t_{b,65}}{(1+\rho)^{65-m}}}{C + C(1 - t_{c,m} + t_{cred}) \sum_{j=m+1}^{65} \frac{[\prod_{k=m+1}^{j-1} (1+i)^{k-m-i}] i}{(1+\rho)^{j-m}}} \quad (10)$$

61. For the TTT-type private pension savings (e.g. Australia), the age-group-specific effective tax rate ($\tau_{m,TTT}$) at the age of 65 is computed as follows:

$$\tau_{m,TTT} = \frac{0.15C + C(1-0.15) \times \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1 + i(1 - t_{p,k})] \} it_{p,j}}{(1 + \rho)^{j-m}}}{C + C(1-0.15) \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1 + i(1 - t_{p,k})] i \}}{(1 + \rho)^{j-m}}}$$

$$\begin{aligned}
& + C(1-0.15) \times \frac{[1+i(1-t_{p.})]^{65-m}(1-w)t_{ls}}{(1+\rho)^{65-m}} \\
& \frac{C + C(1-0.15) \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1+i(1-t_{p.k})] i \}}{(1+\rho)^{j-m}}}{(11)}
\end{aligned}$$

62. For the TEE-type private pension savings, the age-group-specific effective tax rate ($\tau_{m,TEE}$) at the age of 65 is computed as follows:

$$\tau_{m,TEE} = \frac{Ct_f}{C + C(1-t_f) \sum_{j=m+1}^{65} \frac{[\prod_{k=m+1}^{j-1} (1+i)^{k-m-1}] i}{(1+\rho)^{j-m}}} \quad (12)$$

63. For the ordinary (benchmark) savings (l) that are subject to the TTE regime, the age-group-specific effective tax rate ($\tau_{m,l}$) at the age of 65 is computed as follows:

$$\tau_{m,l} = \frac{Ct_{c,m} + C(1-t_{c,m}) \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1+i(1-t_{l,k})] \} it_{l,j}}{(1+\rho)^{j-m}}}{C + C(1-t_{c,m}) \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1+i(1-t_{l,k})] \} i}{(1+\rho)^{j-m}}} \quad (13)$$

64. Finally, the age-group-specific effective tax rate ($\tau_{a,m}$) on a stream of “investment earnings” accruing to private pension savings up to the age of 65 in the case of the EET system is measured by:

$$\bullet \quad \tau_{a,m} = \frac{C(1-t_{c,m}) \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1+i(1-t_{l,k})] \} it_{l,j}}{(1+\rho)^{j-m}}}{C(1-t_{c,m}) \sum_{j=m+1}^{65} \frac{\{ \prod_{k=m+1}^{j-1} [1+i(1-t_{l,k})] \} i}{(1+\rho)^{j-m}}}$$

ANNEX 2. MARGINAL INCOME TAX RATES BY FAMILY STATUS

65. The marginal tax rates faced by contributors depend on their family status as worker with dependents tend to receive tax relief in terms of allowance or tax credits. In order to derive the marginal tax rates adjusted for family status, it is assumed that the family status of participants to private pension schemes in the US is broadly the same as that of participants in other countries except the UK in which information is available. This is because the family status of participants to private pension schemes is not available in most of OECD countries. The final weight in all OECD countries except the US and the UK is then measured by taking into account both the country-specific family status of workers and the US family status of participants. Table A2.2 reports the family status of participants to private pension schemes in the US and UK.

Table A2.2. Family status of participants to private pension schemes

1. United States**A. Share of workers in each family-status**

Age groups	Single earner (A1)	Married/ sole earner (A2)	Married/ 2 earners (A3)	All earners (A=A1+A2+A3)
19-24	72.7	4.9	22.3	100.0
25-29	72.7	4.9	22.3	100.0
30-34	40.4	13.9	45.7	100.0
35-39	40.4	13.9	45.7	100.0
40-44	40.4	13.9	45.7	100.0
45-49	33.5	18.3	48.2	100.0
50-54	33.5	18.3	48.2	100.0
55-59	33.5	18.3	48.2	100.0
60-64	35.8	38.9	25.3	100.0

B. Percentage of Workers Participating in Any Tax-Deferred Plan, 1997

	Single earner (B1)	Married/ sole earner (B2)	Married/ 2 earners (B3)	All earners (C)
19-24	28.1	44.8		34.8
25-29	28.1	44.8		34.8
30-34	52.0	56.4		57.9
35-39	52.0	56.4		57.9
40-44	52.0	56.4		57.9
45-49	58.5	61.4		64.0
50-54	58.5	61.4		64.0
55-59	58.5	61.4		64.0
60-64	35.3	39.8		41.5

C. Weight across family status of participants to pension savings

	Single earner (D1=A1*B1/C)	Married/ sole earner (D2=A2*B2/C)	Married/ 2 earners (D3=A3*B3/C)	All earners (D=D1+D2+D3)
19-24	58.7	6.3	35.0	100.0
25-29	33.5	3.6	62.9	100.0
30-34	34.5	12.9	52.7	100.0
35-39	34.5	12.9	52.7	100.0
40-44	34.5	12.9	52.7	100.0
45-49	32.2	18.4	49.4	100.0
50-54	32.2	18.4	49.4	100.0
55-59	47.2	27.1	25.7	100.0
60-64	30.5	37.3	32.2	100.0

Source: Utilization of tax incentives for retirement saving (CBO, 2003)

2. United Kingdom

A. Share of workers in each family-status

Age groups	Single earner (A1)	Married/ sole earner (A2)	Married/ 2 earners (A3)	All earners (A=A1+A2+A3)
19-24	78.1	2.2	19.7	100.0
25-29	34.5	9.0	56.5	100.0
30-34	34.5	9.0	56.5	100.0
35-39	34.5	9.0	56.5	100.0
40-44	34.5	9.0	56.5	100.0
45-49	34.5	9.0	56.5	100.0
50-54	34.5	9.0	56.5	100.0
55-59	30.6	19.5	49.9	100.0
60-64	30.6	19.5	49.9	100.0

B. Percentage of Workers Participating in Any Tax-Deferred Plan, 1998

	Single earner (B1)	Married/ sole earner (B2)	Married/ 2 earners (B3)	All earners (C)
19-24	28.1	44.8		34.8
25-29	55.3	58.9		61.0
30-34	55.3	58.9		61.0
35-39	55.3	58.9		61.0
40-44	55.3	58.9		61.0
45-49	55.3	58.9		61.0
50-54	55.3	58.9		61.0
55-59	35.5	39.8		41.5
60-64	35.5	39.8		41.5

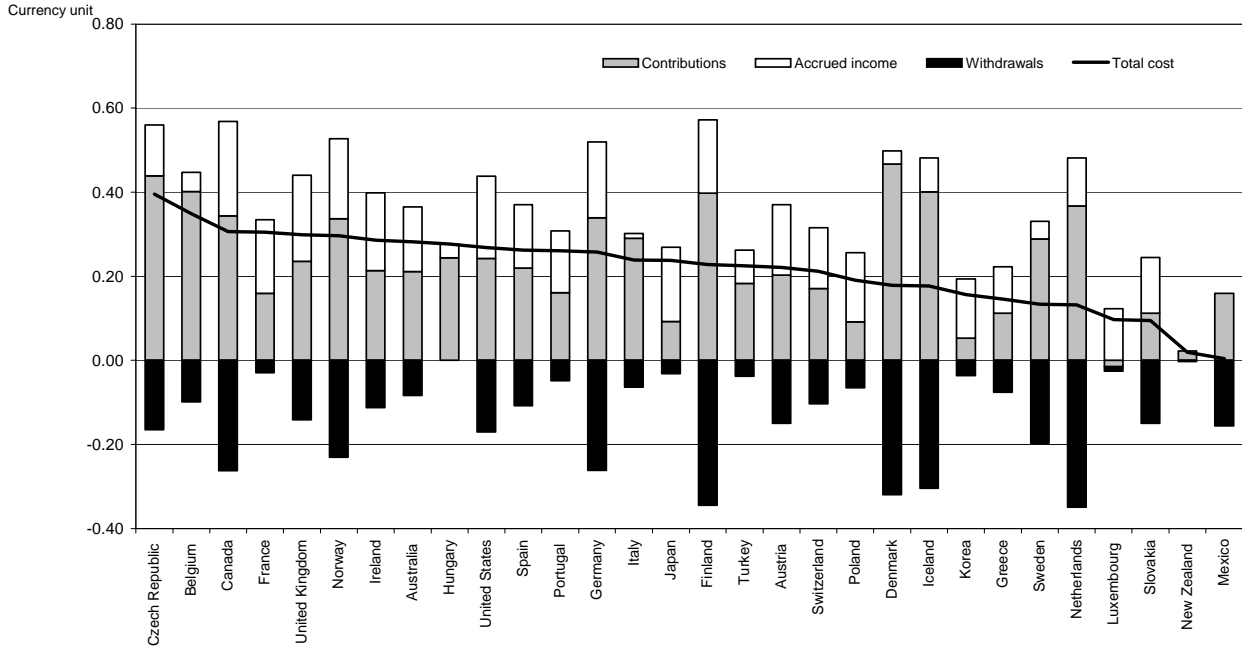
C. Weight across family status of participants to pension savings

	Single earner (D1=A1*B1/C)	Married/ sole earner (D2=A2*B2/C)	Married/ 2 earners (D3=A3*B3/C)	All earners (D=D1+D2+D3)
19-24	63.1	2.8	34.1	100.0
25-29	31.3	8.7	60.0	100.0
30-34	31.3	8.7	60.0	100.0
35-39	31.3	8.7	60.0	100.0
40-44	31.3	8.7	60.0	100.0
45-49	31.3	8.7	60.0	100.0
50-54	31.3	8.7	60.0	100.0
55-59	26.2	18.7	55.1	100.0
60-64	26.2	18.7	55.1	100.0

Source: British Household Panel Survey (1998)

66. Figure A2.1 presents the net tax cost of a dollar of contribution to private pension schemes when pension payments are made in the form of lump-sum, although some OECD countries prohibit the withdrawal of accumulated pension wealth as a lump-sum, so relying on this figure for the purpose of cross-country comparison may not be realistic. The overall country ranking is not affected very much. But the net tax cost changes in several countries, notably Germany, Turkey, Denmark and Belgium. A fall in the net tax cost in Germany and Denmark reflects a less favourable tax treatment of lump-sum pension as opposed to annuity pension. On the other hand, a rise in the net tax cost in Belgium stems from the fact that lump-sum withdrawal of pension wealth is treated more favourably than annuity pension.

Figure A2.1. Net tax cost per unit of contribution in tax-favoured schemes, lump-sum withdrawal ^{1,2}
 (Average across age-groups)



1. Based on the employer-sponsored schemes (except Italy and Korea) and lump-sum withdrawal at 65. However, for countries in which tax treatment between the employer's and employee's contributions is the same, the distinction between employer-sponsored and individual pension schemes is meaningless.
 2. The outcomes in New Zealand and Mexico are driven by following factors. In New Zealand, employers' contributions are taxed at 21%, the rate lower than the marginal tax rate. Mexico exempt income accruing to regular investment from taxation.
 Source: OECD

ANNEX 3: STRUCTURE OF PENSION SYSTEMS IN OECD COUNTRIES

67. This annex provides a descriptive overview of the main components of the pension system in OECD countries. The purpose is not to give a complete and exhaustive description of the whole system in place in every country but to provide a broad characterisation of the key elements. The amount of details provided varies across countries depending on the availability of information, which was obtained from various sources, including national sources, OECD studies (*e.g.*, country reviews), as well as ISSA-INPRS (2003).⁴³

68. The pension regimes are classified according to whether they are mandatory or voluntary. Where a relevant distinction can be made, the mandatory plans are further decomposed into earnings-related and non-earnings related (or highly redistributive regimes). The latter category includes schemes with benefits that are usually set in the form of a flat rate and that are often incomes-tested and financed from general taxation. The earnings-related mandatory category includes plans whose primary aim is not to redistribute but to ensure adequate income at retirement, at all levels of earnings. The third category covers all forms of voluntary pension schemes, be they occupational or personal, public or private. These are generally earnings-related in the sense that even in the case of personal pension plans, contribution limits are typically set in relation to earnings, subject to an absolute ceiling.

69. The shaded area provides an indication of the pension plans covered in this study. In the majority of cases, those are found in the third category, although in a number of countries, mandatory or quasi-mandatory schemes are also included. Throughout the annex the following abbreviations are used:

PAYG	=	pay-as-you-go
DB	=	defined benefit
DC	=	defined contributions
EET	=	exempt-exempt-taxed schemes (see main text)
ETT	=	exempt-taxed-taxed schemes (see main text)
TEE	=	taxed-exempt-exempt schemes (see main text)
TTE	=	taxed-taxed-exempt schemes
EEE	=	fully exempt schemes
APW	=	average production worker

⁴³ ISSA-INPRS (2003), "Complementary & Private Pensions throughout the World" *International Social Security Association and International Network of Pension Regulators and Supervisors*, Geneva.

Non-earnings related (redistributive) Mandatory	Earnings-related / occupational Mandatory	Earnings-related Voluntary
<p>Age pension:</p> <p>A flat-rate means-tested benefit to men of at least 65 years old and to women of at least 61 years old.</p> <p>The maximum rate of age pension for a single person is set at 25 per cent of male gross average weekly earnings and it is indexed to CPI.</p> <p>Benefits gradually phased-out as income rises above 57% of average weekly earnings (1997). Benefits are also subject to the assets test.</p> <p>PAYG system financed by general revenues.</p>	<p>Employment-based pension:</p> <p>Australia</p> <p>Under the occupation superannuation, the employer's mandatory contribution to individual accounts for his employee amounts to 9 per cent of earnings (2003).</p> <p>This fully-funded scheme applies to all employees other than those earning less than \$450 a month (15 per cent of male average weekly earnings)</p> <p>Predominantly DC schemes for private sector workers, while unfunded DB schemes for public sector workers. A majority of benefits are paid as lump-sum</p> <p>Post-tax income for retirees amounts to around 70% of equivalent income for non-retired population</p> <p>Austria</p>	<p>Employment-based pension or personal plans:</p> <p>Individuals can top up occupational superannuation. It amounts to 5-10 per cent of earnings.</p> <p>Personal contributions are made by around half of those covered by mandatory occupational superannuation.</p> <p>Australia is unique among OECD countries in taxing superannuation at all three possible points, contributions, fund income and withdrawal.</p>
<p>National pension:</p> <p>The Austrian statutory old-age pension system covers almost the total working population.</p> <p>For low-income pensioners, the system provides an income-tested allowance to ensure a minimum pension.</p> <p>The standard retirement age is 65 for men and 60 for women.</p>	<p>Employment-based pension:</p> <p>The PAYG DB scheme is mandatory for employees and self-employed and civil servants.</p> <p>The contribution rate is 22.8% of which the employer and the employed pay 12.55% and 10.25%, respectively.</p> <p>The benefit accrues at 1.78 per cent of the assessment base and the maximum replacement rate is 80 per cent for workers with 45 years of career.</p>	<p>Employment-based or Individual pension:</p> <p>Due to the high replacement rate of the public pension system, the third-pillar is not well developed and only 11 per cent of working population is covered by a voluntary occupational pension.</p> <p>Fully-funded DC- or DB-type private pensions. Depending on methods of financing, four types of plans exist in the employer-sponsored schemes and individual schemes, respectively. All schemes except "book reserve" are fully funded.</p>

Non- earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
Belgium		
<p>Social security</p> <p>Benefits are indexed to consumer price inflation</p> <p>Retirement age for women will increase to that for men (65 years) in January 2009</p>	<p>Employment-based plans:</p> <p>The public PAYG system has an earnings-related component.</p> <p>From 1, January, 2003, full retirement pension is payable after a contribution period of 45 years for men and 43 years for women.</p> <p>The full pension is equal to 60% of adjusted career average earnings for a single person and 75% for a married person.</p> <p>Early retirement is possible from the age of 60.</p>	<p>Employment-based plans:</p> <p>Occupational DC- or DB-type plans covering salaried employees are fairly widespread (ETT scheme).</p> <ul style="list-style-type: none"> - DB plans target 60 to 70% of average pensionable earnings (including social security), representing an accrual rate of 1.5 to 1.75% for each year of service. - DC plans become increasingly popular. <p>Coverage is around 35% of the workforce in the private sector, but accounts for around 10% of total pensions.</p>
Canada		
<p>Old age security: basic taxable pension to most residents 65 and over.</p> <p>Guaranteed income supplement: non-taxable benefit for those with little or no income other than the OAS.</p> <p>Around 25% of income</p>	<p>Canada/ Quebec pension plan (CPP/QPP): 9.9 % contributions on earnings up to around 100% of APW. Evenly split between employers and employees.</p> <p>Public PAYG system to become public, fully-funded program. Normal age for eligibility: 65 +</p> <p>Replacement rate of about 25 per cent of earnings (up to the aforementioned maximum). Benefits are indexed and taxable.</p> <p>Around 20% of income</p>	<p>Registered Pension Plans (RSP) and Registered Retirement Saving Plans (RRSP):</p> <p>Private, occupational (RSP) and personal (RRSP) tax-favoured retirement schemes (EET):</p> <p>Occupational plans cover 30% of labour force and are mostly defined benefit (over 80%)</p> <p>Accumulated assets in RPPs and RRSPs amount to around 75% and 25% of GDP respectively</p> <p>Around 30% of income</p>

Non- earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
Czech Republic		
<p>Social security pension:</p> <p>The state-run PAYG universal system covers 90 per cent of the labour force.</p> <p>Flat-rate benefit regardless of earnings</p> <p>The retirement age is projected to rise to 62 for men and 57 to 61 for women in 2007.</p> <p>Employers contribute 6.5 per cent of wages while the employees pay 19.5 per cent.</p>	<p>Employment-based pension:</p> <p>The PAYG system also has an earnings-related component. Overall replacement rate is estimated at 45 per cent of the final salary of individuals.</p> <p>Benefits are indexed to both prices (2/3) and wages (1/3).</p>	<p>Personal pension:</p> <p>Fully-funded DC-type private pensions. The individuals' contributions are limited to below 3% of earnings.</p> <p>The state provides partially matching (30-50%) subsidies to individuals' contributions.</p>
Denmark		
<p>Public old-age pension:</p> <p>Flat rate benefit equivalent to around 33% of APW for most residents aged 65 and over (25% of APW in cases of two cohabiting pensioners).</p> <p>ATP (Labour market supplementary fund):</p> <p>Contributory supplement to old-age pension, mandatory for all workers and transfer recipients. Contributions are set as a fixed amount that varies according to individual's status (unemployed / part-time or full-time employee). The fixed amount for full-time employees is equivalent to less than 1% of APW (2/3 employers, 1/3 employees)</p> <p>Fully-funded DC plan. Benefits linked to contributions and taxable as ordinary income. (ETT scheme).</p>	<p>Labour market pension schemes:</p> <p>Major occupational earnings-related scheme.</p> <ul style="list-style-type: none"> - Contribution rate varies from 8 to 16% of earnings. 2/3 paid by employers. Covers 82% of the workforce. <p>Fully-funded DC and ETT plans. Benefits linked to accrual returns on contributions and taxable as ordinary income.</p> <p>Special Pension Savings Schemes (SP)</p> <p>Pure earnings-related supplementary pension schemes, covering all workers between age 16 and 64 (incl. self-employed and some groups of transfer recipients).</p> <p>Low contribution rate (1% of earnings).</p> <p>Fully-funded DC plan (ETT scheme).</p>	<p>Personal pension savings plans:</p> <p>Voluntary contributions in individual accounts with banks, life insurance companies or pension institutions.</p> <p>Around 1.1 million contributors or 42% of the labour force and 20% of population.</p>

Non- earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
<p>National pension:</p> <p>Social assistance means-tested benefit for elderly guaranteeing a minimum income equivalent to around 20% of APW per person.</p> <p>Benefits gradually phased-out as income rises and disappears for income higher than around 40% of APW.</p> <p>PAYG system financed by employer contributions varying from 2.4% to 4.9% of salaries.</p> <p>Normal retirement age is 65. But benefits adjusted if retirement before or after 65.</p>	<p>Finland</p> <p>Employment-based pension:</p> <p>PAYG system that is partly funded (30% of pension liabilities must be funded).</p> <p>Combined employers and employees contributions equal to 21.5% of earnings. Mostly paid by employers.</p> <p>DB plan with benefits based on average salaries over entire working life, with wages earned previously indexed partly on total wages (80%) and partly on prices (20%).</p> <p>Pension benefits accrue at the rate of 1.5% per year worked until the age of 53, 1.9% between age 54 and 63, and 4.5% for each working year above 63. Benefits are taxable.</p>	<p>Employment-based pension:</p> <p>Employer can offer voluntary pension plans if it covers at least 300 members.</p> <p>-Contributions are fully tax-deductible up to maximum of 10% of salary as long as this does not exceed around 10% of APW.</p> <p>-Above that threshold, 60% of contributions are deductible up to a maximum of around 20% of WPW.</p> <p>Personal pension plans:</p> <p>Individual contributions to pension plans have recently grown rapidly, mostly via life insurance policies. However, coverage remains small (less than 10%). No tax deductions.</p>
<p>Private-sector employees:</p> <p>Two earnings-related mandatory schemes: <i>General regime</i> and <i>complementary pensions</i>:</p> <ul style="list-style-type: none"> - The general regime (CNAVTS) is a public PAYG system financed by (employer and employee) contributions equal to 17% of the wage bill. Full pension equivalent to 50% of reference wage (average over 25 best years) for 40 years of contributions. - Complementary regimes (ARRCO for blue-collars) and (AGIRC for managers and executives) are government backed mandatory private PAYG systems based on notional DC. Contribution rates of around 10% (ARRCO) and 24% (AGIRC), respectively. <p>Public-sector employees:</p> <p>Specific schemes for civil servants and employees of large public sector enterprises (railways, electricity, etc.)</p> <ul style="list-style-type: none"> - Scheme for civil servants: Public PAYG system financed by overall contributions equal to around 50% of wage bill. Full benefits equal to 75% of wages of last six months for 37.5 years of contributions. <p>Self-employed:</p> <p>Covered by PAYG schemes that vary according to professional branch. In most cases, benefits include a basic allowance, based on the number of years of contributions.</p>	<p>France</p> <p>Voluntary employment-based or personal plans:</p> <p>Various EET schemes available to specific groups:</p> <ul style="list-style-type: none"> - PPESVR is an employment-based retirement saving plan for private sector workers. - PREFON is a voluntary scheme for civil servants and their spouses. - PERP is a new personal voluntary scheme introduced in 2004 and available to all residents. Contribution limit equal to 10% of earnings up to a ceiling (and including contributions made to occupational scheme). <p>Life insurance remains the most popular vehicles for long-term saving: TEE (or partial T).</p>	

Non-earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
<p>Introduction of minimum social security guarantee for old age</p>	<p>Social security system: 19.5% contributions on earnings up to 61,200€ (around 200% of APW). Evenly split between employers and employees. Will rise to just below 22% by 2030.</p> <p>Public, PAYG system. Age for eligibility:</p> <p>Replacement rate of 70%; will be gradually reduced to around 64% by 2010.</p> <p>Benefits are indexed and non-taxable.</p>	<p>Supplementary funded pensions: Pension provision contracts</p> <p>Private, occupational or personal pensions encouraged by direct savings subsidies or tax deductible (EET) allowances.</p> <p>4 tax-favoured schemes:</p> <ul style="list-style-type: none"> - Individual life insurance (TEE) - Occupational pension plans I (EET) - Occupational pension plans II (EET) - Individual pension plans: Direct subsidies or EET tax allowance
Greece		
<p>National pension:</p> <p>Public PAYG system.</p> <p>Welfare-based part of the means-tested public schemes covers the minimum pensions, including the agricultural insurance fund (OGA)</p> <p>The retirement age is 65 for men and 60 for women with the minimum years of contributions being 15 years.</p>	<p>Employment-based pension:</p> <p>Employment-based pensions are PAYG DB schemes in which payments are guaranteed by the state.</p> <p>Workers usually have at least one primary, but also supplementary pensions.</p> <p>The maximum replacement rate of the primary pension is 60% while auxiliary pensions can top up 20%.</p> <p>The lump-sum separation payments are also available.</p>	<p>Employment-based or personal pensions:</p> <p>The occupational or personal pension plans are not well developed but often found in multinational firms.</p> <p>The pension reform in 2002 resulted in the EET tax treatment of occupational pension savings.</p>

Non- earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
Hungary		
<p>Social security pension:</p> <p>PAYG universal system. Employers contribute 18 per cent of wages while employees contribute only 8.5 per cent. (Those who participate in the pure PAYG system, pay all contributions to the social security pension, whereas employees who are members of the new mixed system pay 8 per cent of their own contributions to mandatory private pension funds)</p> <p>Pensioners below a certain minimum level receive means-tested benefits financed out of general revenues.</p> <p>Pension accrual rate varies from 1-2% per year, depending on years of service, and pension is indexed to the average of wage and consumer price index.</p> <p>The retirement age is 62 years for both men and women, pension eligibility is granted after 20 years of contributions.</p>	<p>Employment-based pension</p> <p>The fully-funded DC plans</p> <p>Employees contribute 8 per cent of wages.</p> <p>Membership in a pension fund is mandatory for employees and self-employed persons younger than age 42 who enter the labour force for the first time.</p> <p>The participation rate is about 60% of workers in 2004</p>	<p>Employment-based or personal pensions</p> <p>Fully-funded DC plans</p> <p>Both employers and employees may pay additional voluntary contributions up to a total of 2% of gross salary.</p> <p>The employer's contributions are tax-exempt (EEE), but the employee's contributions are subject to tax (TEE)</p> <p>Accumulated assets of the mandatory and voluntary private pillar amount to 3.9 and 2.9 per cent of GDP respectively at the end of 2003</p>
Iceland		
<p>Public basic pension:</p> <p>The public pension scheme pays a basic pension from the age of 67. It amounts to 13 per cent of the average earnings of the unskilled workers.</p> <p>A means-tested supplementary pension is also available. The maximum total old age pension is around 52 per cent of the average earnings of the unskilled workers.</p> <p>There is a significant redistribution built into the public pension system.</p>	<p>Employment-based pension</p> <p>The fully-funded mandatory occupational DB pension funds</p> <p>At least 10 per cent of wages and salaries are contributed in order to acquire pension rights.</p> <p>The contribution splits into two parts. The first part gives a lifelong pension amounting to 56 per cent of wages, while the second part goes toward acquiring the additional pension rights, including defined contribution schemes.</p>	<p>Employment-based or personal pensions</p> <p>Fully-funded DC plans</p> <p>The pension saving is redeemable until the age of 60 and has to be paid in equal instalments over a period of at least seven years.</p> <p>The tax-deductible contribution limit is 4 percent (for employees) and 0.4 per cent (for employers)</p> <p>20 per cent of wage earners pay into such schemes (1999).</p>

Non- earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
Ireland		
<p>Social welfare pension:</p> <p>Social welfare pensions comprise a contributory scheme and a non-contributory scheme.</p> <p>The old-age non-contributory pension, financed by tax revenues, guarantees the flat-rate benefits to people with limited means aged 66 or older</p>	<p>Employment-based pension</p> <p>Contributory old-age pension schemes provide earning-related retirement benefits.</p> <p>PAYG occupational pensions are compulsory for public sector workers.</p>	<p>Employment-based or individual plans:</p> <p>Fully-funded DB (68%) or DC (32%) plans</p> <p>DB schemes provide one sixtieth of final salary per year of service inclusive of the contributory old-age pension.</p> <p>The average contribution in DC schemes amount to 11% of the wage, and a half of the workforce has supplementary pension cover.</p> <p>A personal retirement savings account (PRSA) is a low-cost DC schemes that are often co-contributed by the employers.</p>
Italy		
<p>Social allowance:</p> <p>Social assistance benefit for elderly guaranteeing a minimum income equivalent to 17% of APW per person (couples receive double the amount).</p>	<p>Social security system:</p> <ul style="list-style-type: none"> - Employee contribution rate of 9% on earnings of between 40% and 168% of APW and around 10% on earnings above this threshold up to an earnings ceiling of 350% of APW - Standard employers' contribution rate is around 24% <p>Public PAYG system based on notional DC. Benefits are function of accumulated contributions and accrued returns on contributions based on GDP performance.</p> <p>In principle, replacement rate of around 70% that will likely decrease significantly as of 2015.</p>	<p>Private pension:</p> <p>Pension plans must be managed through the establishment of a closed pension fund or collective adherence of covered employees to an open pension fund</p> <p>Until 1993, complementary pensions were not explicitly regulated.</p> <p>Only starting to develop in Italy, owing partly to the generosity and coverage of public system but also to the existence of substantial severance pay (TFR).</p>

Non- earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
<p>National Basic Pension Scheme:</p> <p>Flat rate benefit equivalent to around 20% of APW for most residents aged 60 who have contributed for 40 years (eligibility for full pension). On average, the benefit is around 13% of APW. Benefits are indexed on prices. Minimum age will be raised to 65 by 2013.</p> <p>PAYG system financed in part from employees and employers contributions raised on pillar 2 pension, in part from general taxation. A fixed contribution rate equivalent to around 3.8% of APW is paid by self-employed. Low-income workers (less than 25% of APW) and non-working spouses are exempted from contributions.</p> <p>99% of residents aged between 20 and 59 subscribe to the plan.</p>	<p>Japan</p> <p>Employee's pension insurance:</p> <ul style="list-style-type: none"> - Occupational scheme for most private sector workers (covers 50% of the workforce). <p>Mutual aid pension:</p> <ul style="list-style-type: none"> - Occupational scheme for public sector employees and from agriculture, fisheries and forestry organisations. (covers 8% of the workforce) - Public, fully-funded DB schemes. - Overall contribution rate of 17.35% of earnings up to a ceiling of around 170% of APW. Shared equally by employers and employees. - Benefits amount to 0.71% of average (adjusted) monthly wage over full career (0.91% for mutual aid pension) times the number of months of contribution. Average benefit around 55% of average participants' wage. - Contributions and accrued income are tax-exempt. Benefits are also exempted except for a 20% tax on lump-sum withdrawals (EEp I). 	<p>Employee's Pension Fund:</p> <ul style="list-style-type: none"> - For large companies (more than 500 employees). Covers around 17% of workforce. - Semi-private, funded DB scheme. - Contribution rates of 3.5% of salary paid by both employers (1.6%) and employees (1.9%). - Average benefit around 90% of APW. <p>Tax-Qualified Pension Plan:</p> <ul style="list-style-type: none"> - Covers around 15% of workforce. - Private, funded DB scheme <p>Occupational and personal DC pension plans:</p> <ul style="list-style-type: none"> - Newly introduced (2001) DC scheme. 20% of workforce participates in individual plans. EET plans but with relatively low contribution limits if employee already covered by other plans. Contribution limits to individual plans of 20% and 10% of APW for self-employed and employees not covered, respectively.
<p>National Pension Scheme:</p> <p>PAYG universal system.</p> <p>Contributions amount to 9% of gross wage income (4.5% employer, 4.5% employee)</p> <p>The minimum basic level of pension is guaranteed for all insured.</p>	<p>Korea</p> <p>Employment-based pension</p> <p>The benefit accrual rate of those PAYG DB schemes is 1.5 per cent, leading to 60 per cent replacement rate.</p> <p>Eligible pension age will rise from 60 to 65 over the period 2013 to 2033</p> <p>Three partially-funded occupational pensions exist: civil servants, military personnel and private school teachers.</p> <p>In addition, there are mandatory non-portable lump-sum severance allowances fully financed by the employers, giving participants one month's wages for each year of employment.</p>	<p>Personal pension plan</p> <p>Introduced in 1994.</p> <p>A minimum of ten years of contributions is required to receive an annuity that cannot be paid before the age of 55.</p> <p>Contributions should stay in the scheme at least for five years.</p> <p>Accumulated assets amount to 3.9 per cent of GDP.</p> <p>Tax treatment changes from EEE to EET in 2001.</p>

Non-earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
Luxembourg		
<p>National pension:</p> <p>PAYG Public pension system includes old-age, early retirement, disability and survivors' pensions.</p> <p>The flat part of public pensions guarantees 270.87 euros per month (in 2001) for a pensioner with 40 years of insurance periods.</p>	<p>Employment-based pension</p> <p>Both the employer and employee contribute to the public PAYG pension schemes at 8 per cent of total remunerations.</p> <p>The government adds 8% of the wages to the employer's and employee's contributions.</p> <p>The proportional part of PAYG public pension entitlement is determined by wages of workers and the cost of living.</p> <p>There is a limit on the maximum that one can claim as pension benefits (5,130 euros per month in 2001).</p> <p>At present, the overall replacement ratio is around 50%</p>	<p>Employment-based plans:</p> <p>Employers can also establish a complementary occupational pension plans for their employees.</p> <p>Plans can be in the form of pension fund, group insurance with an insurance company or book reserve.</p> <p>The employer's contributions are taxed at 20% but withdrawals are tax-exempt, while the employee's contributions are tax deductible up to 1,200 euros, but subject to tax at withdrawal.</p>
Mexico		
<p>National pension:</p> <p>The first pillar consists of a minimum pension guarantee (a lifetime annuity equal to the minimum salary) that individuals receive if the second pillar resources are not sufficient to purchase annuity equal to minimum wage.</p> <p>It is managed by the private financial institution (ISSSTE), even though the contract is made between the government and the workers.</p> <p>The retirement age is 65 for men and women.</p>	<p>Employment-based pension</p> <p>DC schemes with private administration in individualised accounts (pension reform in 1997)</p> <p>Contributions are at 6.5 per cent of the salary. The government supplements this contribution with a fixed amount (Equal to 5.5 per cent of the worker's salary for minimum wage earners, and decreasing for higher wages)</p> <p>- On average, contribution amounts to 8 per cent, including the employer's contributions</p>	<p>Personal plans:</p> <p>Personal pension plans have a sub-account for voluntary contributions.</p>

<p>Non- earnings related (redistributive) Mandatory</p>	<p>Earnings-related Mandatory</p>	<p>Earnings-related Voluntary</p>
<p>The Netherlands</p>		
<p>Public old-age pension (AOW): flat rate benefit to most residents aged 65 and over.</p> <p>Taxable benefit equivalent to net minimum wage (55% of APW) for two persons living together or 70% for a single pensioner.</p> <p>Financed on a PAYG basis by 17.9% contribution rate on taxable income up to a ceiling of around 90% of APW.</p> <p>Contributions paid entirely by employees and self-employed (excluding those whose earnings are in the lowest tax bracket) and any shortfalls are met through general tax revenues.</p>	<p>Industry-wide occupational pensions: Quasi-mandatory scheme.</p> <p>Even though no general statutory obligation for employers to provide pension, 98% do so covering 90% of employees. 95% of occupational pension schemes are defined-benefit.</p> <p>Combined employee/ employer contribution rates recently raised to around 20.0% of earnings to restore coverage ratio of funding requirements.</p> <p>Combined pillar I and pillar II replacement rate of 70% of final year salary after 40 years of contribution. No maximum on earnings. Normal retirement age: 65.</p> <p>Funded, privately-managed EET DB schemes.</p>	<p>Personal pension plans:</p> <p>Individual can join private pension arrangement in the form of annuity or endowment insurance.</p> <p>Annuity insurance receives an EET tax treatment but tax-deductible contributions can not exceed the level required to ensure a total pension entitlement of 70% of final salary.</p> <p>Endowment insurance receives a TEE tax treatment (up to a certain limit).</p>
<p>New Zealand</p>		
<p>National Basic Pension Scheme:</p> <p>New Zealand Superannuation (NZS) is a flat-rate, universal taxable benefit PAYG plan. The age of eligibility is 65. There is no separate social security tax or contributions for NZS.</p> <p>The net replacement rate for a married couple is 67 per cent of the net average earnings (1997)</p>		<p>Employee's Pension Fund:</p> <p>Around 15 per cent of individuals over 65 have income from an occupational pension scheme.</p> <p>Contributions are often made by employers on behalf of the employees.</p> <p>Occupational pension schemes are not popular and shift to defined contribution schemes.</p> <p>Due to the tax reform in 1987, pension savings is subject to the TTE regime.</p>

Non- earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
Norway		
<p>National insurance scheme:</p> <p>The old-age PAYG NIS pension system consists of a basic pension and a supplementary pension.</p> <p>The standard employer's contribution is 14.1% of wages, while individuals contribute up to 7.4%.</p> <p>The minimum pension is equivalent to 1.8 G (G amounts to a sixth of the average full time wage) for single pensioners.</p> <p>All individuals with at least three years of residence between the age of 16 and 66 are entitled to a reduced minimum pension.</p>	<p>Employment-based pension:</p> <p>A person is entitled to an earnings-related NIS pension if his annual income exceeds one G for three years.</p> <p>With minimum old-age pension providing a floor and upper limits on pension point providing a ceiling, the replacement rate ranges from above 100 per cent for workers with 2 to 3G level of previous earned income to less than a third for high-income workers.</p> <p>Old-age pension benefits are granted only when reaching the official age of retirement at 67.</p>	<p>Employment-based pension:</p> <p>Fully-funded DB-type occupational pension funds in the private and local administration sector, invested through pension funds or insurance companies. Also DC schemes in the private sector exist.</p> <p>The average employer's contribution is 8% of the wage bill, while the employee usually does not contribute.</p> <p>Total replacement rate, including NIS pension, is typically between 60 and 70 per cent of final pay.</p> <p>Personal pension plan:</p> <p>People may also take out personal pension plans.</p>
Poland		
<p>Social security pension:</p> <p>The state-run PAYG system covers all employees and self-employed. There are special systems for farmers (KRUS).</p> <p>The retirement age is 65 for men and 60 for women.</p> <p>Employers contribute 9.76 per cent of wages while the employees pay 2.46 per cent.</p> <p>Pension is indexed on wages (20%) and prices (80%).</p>	<p>Employment-based pension:</p> <p>Contributions are divided between the accounts of the PAYG scheme based on a notional defined contribution (NDC) and the funded scheme.</p> <p>Employees contribute 7.3 per cent of wages to occupational/private pension funds.</p> <p>There are 21 open-ended pension funds and more than 10 million workers (60 per cent) participate in the schemes.</p> <p>The first pension will be paid from the revised first and second pillars in 2009.</p>	<p>Employment-based pension:</p> <p>Fully-funded DC-type private pensions. The employer's contribution to the voluntary pillar is limited to 7% of earnings.</p> <p>Individuals may additionally contribute to the program.</p> <p>In addition, group life insurance plans are widely available and used by employers. About one half of companies provide this kind of benefit with coverage between 12 and 18 months base salary.</p>

Non-earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
Portugal		
<p>National pension:</p> <p>The public system consists of two regimes.</p> <ul style="list-style-type: none"> - The old-age non-contributory regime covers all citizens that are not integrated in the general regime or in any other legally established regime. - The general regime is mandatory for employees and the self-employed. <p>The retirement age is 65 for men and women, though early retirement is possible.</p>	<p>Employment-based pension</p> <p>PAYG DB scheme has an earnings-related component.</p>	<p>Occupational or personal plans:</p> <p>The complementary fully-funded occupational schemes were established in 1985.</p> <p>The contributions to the non-vested employment-based plan are tax-deductible, while those to the vested plan receive tax credits (25% of contributions).</p> <p>The personal plan that attracts tax benefits includes the PPR (Individual saving plan for retirement).</p>
Slovak Republic		
<p>Public basic pension:</p> <p>The PAYG public pension scheme includes a redistributive element. The 2002 reform introduced a form of notional DC system.</p> <p>The standard retirement age is 62 for men, while women's retirement age will gradually increase to that of men (following the reform in 2002).</p> <p>Pensions are indexed to the average of CPI and wage increase.</p>	<p>Employment-based pension</p> <p>The PAYG income-related DB public pension is still the dominant income source of the elderly, though the recent reform proposals intend to introduce mandatory private pension accounts.</p> <p>At present, the contribution rate is 28 per cent.</p> <p>Average gross old-age pensions amount to over 45 per cent of the average gross salary. The net replacement rate is higher due to the tax exemption of pension income.</p>	<p>Personal pension plans</p> <p>Fully-funded voluntary DC plans have recently been introduced (1996) and coverage extended (2000).</p> <p>Participation is still low around 10% but expected to rise.</p> <p>EET Scheme:</p> <ul style="list-style-type: none"> - Employee contributions tax deductible up to 10% of salary. Employer contribution deductible up to 3%. - Pensions and lump sums taxed at a rate of 10%.

Non- earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
Spain		
<p>National Basic Pension:</p> <p>Two types of minimum pensions: contributory and non-contributory.</p> <ul style="list-style-type: none"> - The non-contributory scheme guarantees 20% of the average wage to low-income persons over 65. - The contributory scheme guarantees a minimum benefit for workers with at least 15 years of contribution. <p>The normal retirement age is 65 for both men and women. Early retirement is allowed between 60 and 64.</p>	<p>Employment-based pension:</p> <p>This PAYG pension scheme's accrual rate is 2.9% and this scheme provides a 88% replacement rate for retirees that contributed to pensions for 35 years.</p> <p>Contributions to the general scheme are 23.6% for employers and 4.7% for employees.</p> <p>Separate schemes exist for several categories of workers including self-employed, farmers and public sector workers.</p>	<p>Employment-based or personal pensions:</p> <p>The legislation permits three types of pension plans: occupational, associational and personal pension plans.</p> <p>In addition to pension funds, another two ways of financing are allowed: a group insurance contract with an insurance company and book reserve.</p> <p>This EET-type private pension is fully-funded DC or DB scheme.</p>
Sweden		
<p>Guaranteed pension:</p> <p>Starting in 2003.</p> <p>Means-tested flat rate benefit that will guarantee all residents of age 65 and over a minimum pension income of around 33% of APW (30% for a married pensioner).</p>	<p>Income pension (since 2001):</p> <p>Major occupational earnings-related scheme.</p> <ul style="list-style-type: none"> - PAYG system based on notional DC. Contribution rate is 16% of pensionable income, <i>i.e.</i> on earnings up to around 120% of APW. - Benefits linked to amount of contributions credited in individual account and accrual returns accumulating at the imputed real rate of 1.6%. <p>Premium pensions (since 2001):</p> <ul style="list-style-type: none"> - Fully-funded DC scheme. Contribution rate is 2.5% of pensionable income (subject to same floor and ceiling as income pension). Individual accounts administered and insured by Premium Pension Authority which also purchases funds shares from participating pension funds. <p>For both income and premium pensions, minimum retirement age at 61 but system close to actuarial fairness.</p>	<p>Private occupational pensions:</p> <ul style="list-style-type: none"> - Voluntary, albeit with wide coverage by virtue of central collective agreement. 90% of workforce covered. They are ETT schemes - Four broad schemes: private-sector manual workers, private-sector non-manual workers, employees from local authorities and from central government. Public sector workers' schemes are only partly funded. - Contribution rates vary across schemes but on average amount to around 7-8% of earnings. <p>Private personal pensions:</p> <ul style="list-style-type: none"> - Individuals can also contribute into personal pension schemes in addition to contributions to occupational plans. Around 20% of population or near 50% of labour force contribute.

Non- earnings related (redistributive) Mandatory	Earnings-related Mandatory	Earnings-related Voluntary
Switzerland		
<p>Old-age pension scheme (AHV/IV): earnings-related benefit with a redistributive benefit rate structure: - Benefits based on average lifetime earnings combined with a minimum flat rate. - Minimum and maximum benefits equivalent to 20% and 40% of APW, respectively. - Maximum reached at earnings of 120% of APW.</p> <p>Public PAYG system financed by employer (7%) and employee (6.5%) contributions. funds are around 7% of GDP.</p> <p>Occupational pensions (BV): Compulsory scheme for all employees whose income is between 40% of APW and 120% of APW, although most extend coverage beyond that upper limit. Covers around 80% of workforce.</p> <p>Privately managed, fully funded EET schemes, mostly defined-contribution. Contribution rates vary from 7% to 18% according to age and gender but employers can apply a flat schedule as long as financial compliance is achieved.</p> <p>Replacement rate of around 36% on full pension. Combined (Pillar I and II) replacement rate of between 60 to 70%.</p>	<p>Bounded personal private pension: Individuals not eligible for occupational plans (mainly self-employed, unemployed, disabled workers and those working less than three months) can join private schemes.</p> <p>Tax treatment: EET with a ceiling on tax-exempt contributions.</p> <p>Employees eligible for occupational plans can also make additional voluntary contributions to over and above the mandatory requirements specified under mandatory pillar. The amount deductible is subject to an overall ceiling.</p>	
Turkey		
<p>National pension: Old-age non-contributory regime provides a flat-rate basic pension for the elderly over 65 years old</p> <p>Benefits are indexed to wage growth and consumer price index</p>	<p>Employment-based pension: Public PAYG earnings-related schemes</p> <p>There exist mandatory occupational schemes. Workers can opt out of public schemes to subscribe to occupational schemes provided that a benefit is equal to at least that of public scheme.</p> <p>Contributions are 20 per cent of the salary, including 11-13% of the employer's contributions.</p>	<p>Employment-based or personal pensions: The voluntary supplementary occupational pension plans can be established by firms.</p> <p>DC-type fully funded personal retirement savings also exist.</p> <p>In both cases, tax treatment is EET but with partial taxation of benefits.</p>

<p>Non- earnings related (redistributive) Mandatory</p>	<p>Earnings-related Mandatory</p>	<p>Earnings-related Voluntary</p>
<p>Basic state pension: flat rate pension benefit linked to the number of qualifying years.</p> <p>Number of qualifying years for full pension is 44 for men (65 years of age) and 39 for women (60 years of age).</p> <p>Full benefit is around 4000€ or 20% of APW (30% for a couple). Indexed on prices (hence will gradually fall in % of APW).</p> <p>Public PAYG system financed by contributions to National Insurance (NICs)</p> <p>Minimum Income Guarantee: Means-tested benefit providing additional income support to pensioners whose basic pension falls short of a statutory minimum level set at around 25% of APW for single pensioners (40% for couples). Indexed on earnings.</p>	<p>United Kingdom</p> <p>State second pension (formerly SERPS): earnings-related benefit with a strong redistributive benefit rate structure:</p> <ul style="list-style-type: none"> - 20% of APW on earnings lower than 50% of APW - 10% of accrued income on earnings between 50% and 100% of APW - 20% of accrued income on earnings between 100% and 130% of APW <p>Public PAYG system financed by NICs. Joint employee and employer contribution rates on global state pension (both basic and second) are around 20% of earned income.</p> <p>Contracting-out option: Provided they join a scheme that guarantees a retirement income at least equivalent to second state pension, employees can opt-out of the state pension and join a private pension scheme in return for lower NICs rates (in the case of occupational schemes) or for a contributions rebate paid to the fund (in the case of personal schemes).</p>	<p>Private occupational or personal pensions:</p> <p>In addition to joining private pension schemes as an option to contract-out from the State second pension, workers can also make voluntary contributions to such schemes over and above the mandatory requirements.</p> <p>Three broad types of private funded EET schemes:</p> <ul style="list-style-type: none"> - Approved occupational-based pensions: 80% of occupational schemes are defined-benefit. - Personal pensions: Existing individual DC schemes - Stakeholder pensions: New scheme similar to personal pensions (DC) with different rules and more broadly accessible.
<p>Supplemental security income:</p> <p>Means-tested benefit for people aged over 65 whose assets are worth no more than \$2000 for singles or \$3000 for couple.</p> <p>Benefits are equivalent to around 21% and 32% of APW for singles and couples, respectively.</p> <p>Small portion of overall retirement income</p>	<p>United States</p> <p>Social security system: earnings-related benefit with a strong redistributive benefit rate structure:</p> <ul style="list-style-type: none"> - Replacement rate of 40% for earnings at 100% of APW - Replacement rate of 60% for earnings at 33% of APW - Replacement rate of 28% for earnings at 200% of APW <p>Public, partly funded (Social Security Trust Fund), PAYG system financed by contributions rates of 12.4% evenly split between employers and employees up to a ceiling of around 225% of APW. Normal retirement age: 65 but gradually rising to 67 by 2027.</p> <p>Around 44% of income including SSI</p>	<p>Private (tax-favoured) retirement saving plans:</p> <p>2 Types of EET retirement saving plans:</p> <ul style="list-style-type: none"> - Occupational-based plans: 401(k)-type plans for all employees. - Personal plans: Individual retirement accounts: IRAs (or Keogh plans for self-employed). <p>Occupational covers around 45% of workers, over 50% of which covered by defined-contribution plans. IRAs cover 7% of workers. Overall contributions around 8% of gross earnings.</p> <p>Around 20% of income</p>

ANNEX 4: COUNTRY TABLES ON TAX TREATMENT OF PENSION SAVINGS

Table A.1. Tax treatment of different forms of savings in Australia

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets		Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g. withholding tax, wealth tax)	Personal income tax	Capital gains tax	
1. Bank deposits	N		Y (1)		N	N	
2. Government bonds	N		Y (1)		N	Y (2)	
3. Equity share	N		Y (3)		N	Y (2)	
4. Private pensions							
- Employer sponsored	N (4, 5)		N	Y (6)	Y (7)	N	
- Individual arrangement	N (5)		N	Y (6)	Y (7)	N	

1. Interest income is taxed as ordinary income

2. Capital gains on shares are taxed as ordinary income. But the acquisition cost is generally adjusted for inflation and real gains are added to global income which is taxed at the marginal rate

3. Dividends received by individual shareholders from Australian companies are grossed up by the corporate tax paid and the grossed up amount is taxable as a shareholder's income.

And the shareholder receives full tax credit equal to corporate taxes paid

4. The employer's contribution is subject to a 15% contribution tax. A surcharge is applied from zero on gross income of A\$90,527 (close to 200% of APW earning) to maximum 15% on the amount over A\$109,924 (2003)

5. An individual's contribution is not tax deductible, but the government co-contribution is available for employees earning less than A\$40,000. A maximum A\$1,000 is given to at least A\$1,000 of contribution made by employees earning A\$27,500 or less. It phases out by 8 cents per dollar of income up to an income of A\$40,000 (2003)

6. Earnings from the fund are in general taxed at 15%. Long-term capital gains (more than a year) are taxed at 10%, while imputation credits are available for dividend income. The effective tax rate on fund income is estimated at 7.1% in our model.

7. Pension annuities are included in the pensioner's income and taxed at the marginal rate, but 15% rebate is available. Lump-sums taken after the age of 55 are exempt up to the first A\$112,405 and 16.5% is applied in excess of this threshold (2003). When the system matures fully, pensioners with 35 years of contribution are estimated to be subject to the effective tax rate of 12%.

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A1. Tax treatment of different forms of savings in Austria

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g. withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		Net wealth tax was abolished from January 1994
2. Government bonds	N		Y (1)		N	N (2)		
3. Equity share	N		Y (3)		N	N (2)		
4. Private pensions								
- Employer sponsored ^a	Y/N (4, 5)		N	N	Y (6)	N		
- Individual arrangement ^b	N (5)		N	N	Y (6)	N		

1. Interest income is subject to a 25% withholding tax which is final

2. Capital gains are not included in taxable income except capital gains from the sale of a substantial shareholding (more than 1% in a company)

3. Dividends to resident individuals are subject to a final withholding tax of 25%

4. The employer's contributions are tax free up to 10% of total wage and salary (in the defined contribution scheme)

5. The employee (or individual's) voluntary contributions not higher than EUR 1,000 per annum are treated as *special expenses* and a quarter of *special expenses* are deductible from income tax.

6. Only 25% of pension benefits are taxable under the personal income tax if the employees contributed to the pension fund himself. The employer's part of annuity pension is fully taxable

a. There are four types of the employer-sponsored pension schemes in Austria. The description above concerns *Pensionskassen* which is the most popular one with EUR 470 million of contributions and EUR 8 billion of accumulated capital. Other schemes include *Direct employer's pensions* (ET treatment with EUR 200-300 million of pension provision), *Severance funds* (EEpartialE), and *Employers' expenses for securing the future of their employees* (EEEE).

b. There are four types of individual-based private pensions in Austria. The description above concerns *Private life insurance* whose contributions amount to EUR 5,711 millions (2002) and whose payouts amount to EUR 3,667 millions. Other schemes are new or minor. *Pension supplement insurance* and *pension investment fund* (both are introduced in 2000) receive the state subsidy per individual's contribution (SEE schemes).

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Belgium

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	N (2)		
3. Equity share	N		Y (3)		N	N (2)		
4. Private pensions								
- Employer sponsored	Y (4, 5)		N	Y (6)	Y (7)	N		
- Individual arrangement	Y (5)		N	Y (6)	Y (7)	N		

1. Interest payments are subject to 15% withholding tax. The tax can be final or credited against personal income tax (PIT)

2. Capital gains are not taxed when they come from the normal management of a private patrimony

3. Dividends are subject to 15% (for Belgian firms listed in the stock exchange) or 25% withholding tax, which can be final at a taxpayer's option

4. The employer's contributions are tax deductible up to 80% of the last regular gross annual salary

5. An individual's contributions are entitled to a tax rebate called *special average tax rate* between 30 and 40% (35% is assumed in the calculation)

6. An asset value tax of 0.17% is payable annually if the fund is established in the form of ASBL (self-administered pension funds).

7. Taxable amount at the time of withdrawal is the notional amount obtained by applying a capitalisation rate of 4.75% (6.25% to premiums paid from 1992 (until the end of 1991) and the estimated capital is subject to the advance taxation at the age of 60.

Withdrawals in the form of lump-sums are taxed at 16.5% for the employer's contributions and at 10% for the employee's contributions (from 1993).

Annuity pension is subject to the progressive income tax schedule with a tax credit up to EUR 1612.27 (single) or EUR 1882.54 (married).

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Canada

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		Overall personal income tax rate will decline from 36.1% in 2003 to 31.9% in 2006
2. Government bonds	N		Y (1)		N	Y (2)		
3. Equity share	N		Y (3)		N	Y (2)		
4. Private pensions								
- Employer sponsored	Y (4)		N		Y	N		
- Individual arrangement	Y (5)		N		Y	N		

1. Interest income is taxed as ordinary income

2. A half of realised gains are taxable under the personal income tax

3. Dividends are grossed up by 25% and included in the taxable income. A dividend tax credit of 13.33% of the grossed amount is then provided

4. For defined contribution or money purchase (MP) registered pension plans (RPPs) and the deferred profit sharing plans (DPSPs), annual contributions are limited to 18% of earnings.

5. Contributions to the registered retirement savings plans (RRSPs) are subject to an annual limit of 18% of earnings less a amount saved in RPPs and DPSPs in the year.

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in the Czech Republic

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	N (2)		
3. Equity share	N		Y (3)		N	N (2)		
4. Private pensions								
- Employer sponsored	Y (4, 5)		N	N	Y (6)	N		
- Individual arrangement	Y (5)		N	N	Y (6)	N		

1. Interest income is subject to a final withholding tax of 15%

2. Capital gains on shares and securities are tax exempt after a 6-month holding

3. Dividends are subject to a final withholding tax of 15%

4. The employer's contributions are tax exempt up to 5% of the gross earnings. The state grants subsidies of 30-50% of total contributions (30% is assumed in the model)

5. The planholder's contributions are tax deductible up to a maximum of 12,000 CZK per year, but the amount that can be deductible equals to annual total contributions reduced by 6,000 CZK

(Since the average contribution is smaller than 6,000 CZK, the individual's contributions are treated as taxed in this paper)

6. Annuity pension is subject to a withholding tax of 15% and the base is reduced by proportional amounts of paid sum of contributions and state contributions. Lump-sum benefits are not

reduced by contributions of the employer in determining the taxable base

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Denmark

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets		Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	
1. Bank deposits	N		Y (1)		N	N	
2. Government bonds	N		Y (1)		N	Y (2)	
3. Equity share	N		Y (3)		N	Y (2)	
4. Private pensions							
- Employer sponsored	Y (4)		N	Y (5)	Y (6)	N	
- Individual arrangement	Y (4)		N	Y (5)	Y (6)	N	

1. Interest income is taxed as ordinary income

2. Long-term capital gains (on investment held 3 years and more) are taxed at a 28% withholding tax rate and this is final if the income from shares does not exceed DKK 41,000

If the market value of shares held by individuals did not exceed DKK 129,500 and shares are held more than 3 years, capital gains are not taxable

3. Dividends are subject to a 28% withholding tax rate and this is final if the income from shares does not exceed DKK 41,000

4. Contributions are fully deductible in the annuity pension schemes while the tax-deductible limit in the lumps-sum scheme is DKK 38,900. The same limit applies to the employer's contribution to the lump-sum scheme. Contributions are subject to a labour market contribution of 8% while the withdrawal is exempt from the labour market contribution.

5. The fund income is taxed at 15% annually

6. Benefits in annuity is taxed as ordinary income while lump-sums are taxed at a tax rate of 40%

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Finland

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (net wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)	Y (2)	N	N		Occupational pension is mandatory
2. Government bonds	N		Y (1)	Y (2)	N	Y (3)		
3. Equity share	N		Y (4)	Y (2)	N	Y (3)		
4. Private pensions								
- Employer sponsored	Y		N	N	Y	N		
- Individual arrangement	Y		N	N	Y	N		

1. Interest income is taxed as capital income and is subject to the national income tax rate of 29%

2. The net wealth tax is EUR 80 on net wealth of EUR 185,000 and 0.9% on the excess. No tax is due on net wealth below EUR 185,000

3. Capital gains are subject to a capital income tax rate of 29%

4. Dividends are grossed up by an imputation credit of 29/71 equal to the corporate tax paid. The imputation system effectively leaves shareholders to receive dividends tax-free.

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in France

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (net wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)	Y (2)	N	N		
2. Government bonds	N		Y (1)	Y (2)	N	Y (3)		
3. Equity share	N		Y (4)	Y (2)	N	Y (3)		
4. Private pensions								
- Employer sponsored	Y (5)		N	N	Y (6)	N		
- Individual arrangement	Y (5)		N	N	Y (6)	N		

1. Interests on bonds and deposits are taxed at a final levy of 15%. Taxpayers can elect to be taxed at progressive income tax schedules. The generalised social contribution (CSG, 7.5%), the social security deficit contribution (CRDS, 0.5%) and social levy (2%) are payable on those sources of income.

2. A progressive net wealth tax up to a maximum of 1.8% is applied to the market value of the asset exceeding EUR 720,000.

3. Capital gains on shares and bonds are subject to a reduced tax rate of 16%. The CSG, the CRDS and the social levy also apply.

4. The sum of distributed dividends and tax credit (*avoir fiscal*) of 50% of distributed dividends is added to shareholder's taxable income and the amount of *avoir fiscal* is credited against total liability. The first EUR 1,220 (for a single worker) are exempt. In addition, the CSG, the CRDS and the social levy are payable.

5. The employer's and employee's contributions are tax deductible up to 19% of 8 times the annual social security ceiling (EUR 44,360, 2003)

6. When the first payment of benefits is made at the age of 60-69 (69 and over), 40% (30%) of annuity pension is taxed under the progressive income schedule. The same taxation applies to lump-sum benefits. Pension income is further subject to the CSG at a rate of 6.2%.

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Germany

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g. withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		Pension reform in 2001 promoted
2. Government bonds	N		Y (1)		N	N (2)		voluntary private pension through
3. Equity share	N		Y (3)		N	N (2)		tax advantage.
4. Private pensions								
- Employer sponsored	Y (4)		N	N	Y (5)	N		
- Individual arrangement	Y (4)		N	N	Y (5)	N		

1. Interest income is taxed as ordinary income

2. Capital gains on the sale of securities that sold after a six-month holding period are exempt

3. Only half of dividend income is taxable under the personal income tax

4. Tax treatment depends on the type of private pension plans. For most popular schemes (book-reserve financed pension and pension fund), the employer's and/or employee's contributions are deductible up to a certain limit

5. In the case of pension annuity, a tax-free allowance amounting to 40% of pension payments is granted up to a maximum of EUR 3,072 if a taxpayer reaches the age of 63.

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Greece

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	N		
3. Equity share	N		N		N	N		
4. Private pensions								
- Employer sponsored	Y		N		Y	N		

1. Interest income on bank deposits is subject to 15% final withholding tax. Interest income from government bonds are subject to 10% final withholding tax.

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Hungary

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		N (1)		N	N		
2. Government bonds	N		N (1)		N	N (2)		
3. Equity share	N		Y (3)		N	N (2)		
4. Private pensions								
- Mandatory schemes	Y/N (4)		N		N	N		
- Voluntary schemes	N (5)		N		N	N		

1. Interest income is tax exempt

2. Capital gains from the transaction in the Hungarian stock exchange are treated as interest income and are tax exempt

3. A tax is levied at a rate of 20% on 30% of dividend income and at a rate of 35% on the remaining 70% of dividends

4. The employer's contributions are tax deductible. The employee's contributions are fully taxable in 2004

5. A tax credit amounting to 25% of contributions is granted

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Iceland

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (net wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)	Y (2)	N	N		
2. Government bonds	N		Y (1)	Y (2)	N	Y (3)		
3. Equity share	N		Y (4)	Y (2)	N	Y (3)		
4. Private pensions								
- Mandatory occupational	Y (5)		N	N	Y	N		
- Voluntary schemes	Y (6)		N	N	Y	N		

1. Interest income is subject to a flat tax of 10%

2. A net wealth tax of 0.6% applies to the net wealth exceeding ISK 4,720,000

3. Capital gains from the sale of securities are included as investment income and subject to a flat tax of 10%

4. Dividends are subject to a flat tax of 10%

5. The employer's contributions, amounting to more than 6 per cent of the employee's wages, are fully tax deductible. The employee's contributions to mandatory occupational pensions are deductible up to 4 per cent of his (her) wages from 1998.

6. Tax-free contributions by the employee to voluntary schemes are allowed up to 4 per cent of his (her) wages. The employer can contribute 0.4 per cent to voluntary pensions tax-free

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Ireland

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	Y (2)		
3. Equity share	N		Y (3)		N	Y (2)		
4. Private pensions								
- Employer sponsored	Y		N		Y (4)	N		
- Individual arrangement	Y		N		Y (4)	N		

1. Deposit interest retention tax (DIRT) at a standard rate of 20% is withheld on source on interest payments made by banks, building societies and the tax withheld is final

DIRT on interest income can be aggregated with other income for the purpose of computing total taxable base

2. Capital gains are taxed at a rate of 20%. The acquisition cost is generally adjusted for inflation

3. Dividends distributions are subject to a withholding tax of 20%, but te resident individuals may credit the tax withheld against their income tax liability

4. A 25% of the value of the pension fund (or 150% of the final salary) can be taken as tax-free lump sum

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Italy

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	Y (2)		
3. Equity share	N		Y (3)		N	Y (2)		
4. Private pensions								
- Employer sponsored	Y (4)		N	Y (5)	Y (6)	N		
- Individual arrangement	Y (4)		N	Y (5)	Y (6)	N		

1. Interest income (on current accounts and on bonds with a maturity less than 18 months) is subject to a final withholding tax of 27%

2. Capital gains on shares and bonds not pertaining to business are subject to a substitute tax of 12.5%

3. Dividends received by individuals are subject to a final withholding tax of 12.5%

4. The employer's and employee's contributions are exempt up to 2% of the gross earnings, respectively

5. The pension fund pays 12.5% tax on the income it earns on its asset

6. Lump-sum payments that was not taxed previously is subject to separate taxation by which taxable base is limited to the part over the employee's contributions to the fund. Annuities are taxed only for 87.5% of their gross amount.

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Japan

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets		Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	
1. Bank deposits	N		Y (1)		N	N	
2. Government bonds	N		Y (1)		N	Y (2)	
3. Equity share	N		Y (3)		N	Y (2)	
4. Private pensions							
- Employer sponsored	Y		N	N (4)	Y (5)	N	
- Individual arrangement	Y		N	N	Y (5)	N	

1. Interests on bonds and deposits are taxed at a final levy of 20% (including 5% local inhabitant tax). Taxpayers can elect to be taxed at progressive income tax schedules

2. Capital gains on the share of listed stocks held more than 1 year are subject to a reduced tax rate of 7% (from 2003-2005)

3. Dividends are taxed as ordinary income, but taxpayers may opt for separate taxation at the source at a final withholding tax of 35%

4. Tax Qualified Pension Plan (TQPP) are subject to a special annual tax of 1.73% of assets over the portion exceeding a limit (2.7 times the funding required to meet the substitutional benefits).

However, temporary abatement was given to the TQPP from 1999 to 2004.

5.A 50% of pension benefits are subject to personal income tax after a special deduction

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Korea

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		Taxation on private pension
2. Government bonds	N		Y (1)		N	Y (2)		shifted from EEE to EET in 2001.
3. Equity share	N		Y (3)		N	Y (2)		
4. Private pensions								
- Employer sponsored	Y		N	N	Y (5)	N		There exist unfunded, lump-sum mandatory severance systems
- Individual arrangement	Y (4)		N	N	Y (5)	N		for private sector employees.

1. Interest income is subject to a final withholding tax of 15%

2. Capital gains realised by an individual taxpayer on the transfer of shares in a company listed on the Korean Stock Exchange or on the transfer of bonds are exempt from income tax.

3. Dividends are subject to a final withholding tax of 15%

4. Tax-free contributions are up to 2.4 million won

5. Pension income benefits from pension income relief (varying from 1 million won to 2.5 million per year)

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Luxembourg

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (net wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)	Y (2)	N	N		
2. Government bonds	N		Y (1)	Y (2)	N	N (3)		
3. Equity share	N		Y (4)	Y (2)	N	N (3)		
4. Private pensions								
- Employer sponsored	Y/N (5)		N	N	N/Y (5)	N		
- Individual arrangement	Y (6)		N	Y (2)	Y (7)	N	Y (8)	

1. Interest income is included in taxable income and subject to the personal income tax. The first EUR 1,500 are tax exempt.

2. Resident individuals are subject to net wealth tax on worldwide property at the rate of 0.5%. An exemption of EUR 75,000 is available for bank deposits, bonds and shares.

3. Capital gains are not subject to income tax if shares and securities are held more than 6 months

4. Dividends are subject to a 20% withholding tax, but it may be credited against the individual's income tax due, but 50% exemption applies to dividends from fully taxable resident companies

5. The employer's contributions are taxed at a 20% final withholding tax rate, but the employer's portion of pension income at retirement is tax exempt

Employee's contributions are tax-deductible up to EUR 1,200.

6. A tax-deductible contribution is up to EUR 3,200 per year.

7. The lump-sum portion (assumed to be 25% of total pension value in this paper) of pension income is taxed at half the average rate

8. Pension income is subject to net wealth tax.

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Mexico

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g. withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (2)		N	N (3)		
3. Equity share	N		N		N	N (3)		
4. Private pensions								
- Employer sponsored	Y (4)		N		Y (5)	N		
- Individual arrangement	Y (4)		N		Y (5)	N		

1. A real interest (nominal interest minus inflation rate) from the balance in excess of 5 minimum yearly wages (US\$80,000) is taxed as ordinary income. The withholding tax amounting to 0.5% of the average balance of the account is charged and later credited to the annual tax due.

2. The real interest from government bonds are taxed at ordinary taxable income. Tax exemption is possible for some government bonds issued before Jan, 2003.

3. Capital gains derived from shares sold on the Mexican stock exchange and bonds are tax exempt

4. The individual's contributions are deductible up to 10% of yearly taxable income up to 5 minimum yearly wages. The government provides a subsidy amounting to 3.5 per cent of total mandatory contributions. The government also pays 2.44 peso (so called "social quota") to individual accounts for each day of work (This element is not incorporated in the stylised model)

5. Approved lump-sum and annuity pension are exempt up to 9 times the annual minimum salary (which is assumed to be close to 25% of lump-sums). The rest will be subject to a 20% tax.

Additional pension income in excess of benefits corresponding to accumulated mandatory contributions to individual capitalisation accounts (i.e. voluntary portion) are subject to 0.5% tax

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in the Netherlands

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		Net wealth tax was abolished from January, 2001
2. Government bonds	N		Y (1)		N	N		Occupational pension is arranged as a part of collective agreement.
3. Equity share	N		Y (1)		N	N		Thus it is practically mandatory.
4. Private pensions								
- Employer sponsored	Y		N		Y	N		
- Individual arrangement	Y		N		Y	N		

1. Income from savings and investments, assumed to be 4 per cent for tax purpose, are taxed at a flat rate of 30%

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in New Zealand

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	N		
3. Equity share	N		Y (2)		N	N		
4. Private pensions								
- Employer sponsored	N (3)		N	Y (4)	N	N		
- Individual arrangement	N		N	Y (4)	N	N		

1. Interest income is subject to a 19.5% resident withholding tax, but interest income is included in global income and taxes paid are credited against total tax liability

2. Shareholders are taxed on the combined amount of dividend plus the imputation credit (taxes paid by the company on underlying profits from which dividends are passed on to shareholders) And shareholder receive a tax credit for the amount of imputation credit

3. The employer's contributions on behalf of the employee are taxed at 21 per cent (from April, 2004) if gross earnings are under \$38,900 per annum (slightly lower than that of the APW)

4. Earnings from the pension fund are subject to a tax rate of 33%. But dividend imputation credits are also applicable.

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Norway

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (net wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)	Y (4)	N	N		
2. Government bonds	N		Y (1)	Y (4)	N	Y (2)		
3. Equity share	N		Y (3)	Y (5)	N	Y (2)		
4. Private pensions								
- Employer sponsored	Y		N	N	Y (6)	N		
- Individual arrangement	Y		N	N	Y (6)	N		

1. Interest income is taxed as capital income and is subject to a flat tax of 28%

2. Capital gains are subject to capital income tax rate of 28%

3. Dividends received are included in the taxable income of shareholders and the shareholders are entitled to a full tax credit. The imputation system is a net system, i.e. the dividends received, but not the credit, is added to the income of the shareholders, so shareholders receive dividends tax-free

4. The progressive net wealth tax of 0.2-0.4% are levied on the net value of the taxpayer's assets in excess of NOK 120,000

5. For the purpose of net wealth tax, unquoted shares and quoted shares of small companies are valued at 65% of market value.

6. A standard allowance of NOK 18,360 (2002) is available for old-age pensioners

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Poland

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	N		
3. Equity share	N		Y (2)		N	N		
4. Private pensions								
- Employer sponsored	Y		N		Y	N		
- Individual arrangement	Y		N		Y	N		

1. Interest income is subject to a final withholding tax of 20% (from March, 2002)

2. Dividends are subject to a final withholding tax of 15%

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Portugal

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g. withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (2)		N	N (3)		
3. Equity share	N		Y (4)		N	N (3)		5% inheritance and gift tax on dividends are abolished from 2004
4. Private pensions								
- Employer sponsored (non-vested)	Y (5)		N	N	Y (8)	N		
- Employer-sponsored (vested)	N (6)		N	N	Y (9)	N		
- Individual arrangement	N (7)		N	N	Y (9)	N		

1. Interest income is subject to a 20% withholding tax which is final. Taxpayers can elect to include interest income in his taxable income. The rate is reduced for long-term (over 5 years) deposits

2. Interest income from bonds is taxed at a final withholding tax rate of 20%

3. Capital gains from the transfer of bonds and shares owned for more than 12 months are tax exempt

4. Dividends are subject to a 15% withholding tax which is credited against the taxpayer's final liability. Individuals include 50% of dividends in their taxable income for progressive income tax

5. The employer's contributions to non-vested pension plans are considered as deductible costs up to 15% of the payroll.

6. The employer's contributions are fully taxable and the employee's contributions receive a tax credit amounting to 25% of their contributions.

7. Tax credit equal to 25% of contributions to individual pension plans is given up to a limit of at least 5% of the annual family gross income or EUR 661.41 (2003). The limit varies by age.

8. A third of pension income can be converted into lump-sums and is tax exempt up to a limit of EUR 11,704.7 (2003)

9. If the payment is made in the form of lump-sums, only one-fifth is taxed at a final withholding tax of 20%. Annuity pension is taxed as ordinary income with a tax-free amount of EUR 7,961 per annum.

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Slovak Republic

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	N (2)		
3. Equity share	N		Y (3)		N	N (2)		
4. Private pensions								
- Employer sponsored	Y		N		Y (4)	N		
- Individual arrangement	Y		N		Y (4)	N		

1. Interest income is subject to a final withholding tax of 15%

2. Gains from the sale of securities after a holding period of at least 3 years are tax exempt

3. Dividends are subject to a final withholding tax of 15%

4. Most of private pension benefits are taxed at a final withholding tax of 15%

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Spain

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (net wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)	Y (2)	N	N		
2. Government bonds	N		Y (1)	Y (2)	N	N		
3. Equity share	N		Y (3)	Y (2)	N	Y (4)		
4. Private pensions								
- Employer sponsored	Y		N	N	Y (6)	N		
- Individual arrangement	Y (5)		N	N	Y (6)	N		

1. Interest income is taxed as ordinary income

2. A net wealth tax of 0.2-2.5% is levied on the worldwide assets of resident individuals in excess of EUR 108,182

3. Dividends received must be grossed up by 40% and an imputation credit of 28.57% of the grossed amount is then granted against his income tax liability

4. Capital gains from the disposal of assets owned for more than 1 year constitute the special taxable base and the special taxable base is subject to a 15% tax

5. Total contributions to private pension schemes are tax deductible up to EUR 8,000. Individuals over 52 years old are allowed to deduct additional amounts.

6. A 40% of lump-sum withdrawals is tax exempt

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Sweden

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (net wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)	Y (2)	N	N		
2. Government bonds	N		Y (1)	Y (2)	N	Y (3)		
3. Equity share	N		Y (4)	Y (2)	N	Y (3)		
4. Private pensions								
- Employer sponsored	Y		Y (6)	N	Y	N		
- Individual arrangement	Y (5)		Y (6)	N	Y	N		

1. Interest income is taxable as capital income and capital income is subject to a flat tax of 30%

2. Net wealth over SEK 1.5 millions (SEK 2 millions for taxpayers filing a joint tax return) is subject to a net wealth tax of 1.5%

3. Capital gains on the sale of securities are subject to a flat tax of 30%

4. Dividends are subject to a flat tax of 30%

5. A 0.5 base amount is SEK 39,000 in 2003) is tax-deductible regardless of a contributor's income, but additional 5 per cent of wage is tax-deductible to individuals earning up to 20 base amount per year

6. Pension fund earning is subject to a 15% per cent of yield tax

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Switzerland

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (net wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)	Y (2)	N	N		
2. Government bonds	N		Y (1)	Y (2)	N	N (3)		
3. Equity share	N		Y (4)	Y (2)	N	N (3)		
4. Private pensions								
- Employer sponsored	Y		N	N	Y	N		
- Individual arrangement	Y		N	N	Y	N		

1. Interest income is subject to a withholding tax of 35%, and the withholding tax is credited against the individual's income tax liability

2. A net wealth tax is levied by cantons, based on market values. In Zurich, the rates are in the range of 0.05-0.3%

3. Capital gains are not subject to the federal income tax, unless they are derived in the course of business

4. A 35% withholding tax on dividends is creditable against the taxpayer's final tax liability

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in Turkey

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	Y		
3. Equity share	N		Y (3)		N	N (2)		
4. Private pensions								
- Employer sponsored	Y		N	N	Y (4)	N		
- Individual arrangement	Y		N	N	Y (4)	N		

1. Interest income on Lira-denominated bank deposits is subject to a final withholding tax of 11% when bank deposits are held up to a year.

Interest income on corporate bonds are subject to a final withholding tax rate of 13.2%

2. Capital gains on shares of resident companies held more than 3 months are tax exempt

3. Dividends are grossed up by an imputation credit amounting to a one-fifth of dividends received and the grossed-up amount is subject to the income tax schedules Shareholders then receive a credit equal to the imputation credit.

4. Annuity payment is tax exempt. Lump-sums are subject to a final withholding tax of 5% after the deduction of a 25% tax-free lump-sums

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in the United Kingdom

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g. withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	Y (2)		
3. Equity share	N		Y (3)		N	Y (4)		
4. Individual savings account	N		Y		N			
5. Life insurance	N		Y (5)		Y (6)			
6. Private pensions								
- Employer-sponsored	Y (7)		N	N	Y (9)	N		The overall limit on contributions and benefits will be set at 100% of earnings and £1.4 million (from 2005)
- Individual arrangement	Y (8)		N	N	Y (9)	N		

1. There is a 20% withholding tax on interest income. Then the withholding tax is credited against the taxpayer's income tax liability

2. Gains above the annual exemption amount (AEA) from government bonds are exempt from capital gains tax (CGT). Otherwise, they are subject to CGT as gains from the share transfer (footnote 4).

3. A tax credit of 10% is added to received dividends to generate taxable income. And a 10% tax credit is set off against the taxpayer's tax liability. Dividends and credit below £28,000 is taxed at 10%, while the excess of this amount is subject to 32.5%

4. Capital gains above the AEA £7,900 are integrated with the taxpayer's income and taxed under the personal income tax. For non-business assets, 95% of gains are taxable after 3 years of ownership. For each following year of ownership, the taxable gain is reduced by 5% and a maximum reduction is reached after 10 years (60% of the gains are taxable)

5. Income from equity shares are not taxable in the hands of life insurance company while income from interest-bearing assets is taxable at 22% at the company level. Individuals are allowed to withdraw 5 per cent of invested premium. No tax will be payable until the policy matures.

6. For qualified policy plans, individuals are taxed at a basic tax rate of 20%.

7. Contributions to approved schemes by employers qualify for corporate tax deduction. They do not attract primary or secondary national insurance contributions (NICs)

8. The maximum tax-deductible contributions to personal pension schemes vary by ages of contributors (e.g. 17.5% of earnings for 35 years or less to 40% for 61 years old and above)

9. Tax-free lump-sum amounting to 25% of the fund value (or 1.5 times of final salary) is available. Pension payments are subject to income tax with personal allowances (e.g. £6,610 for 65-75 years)

Source: OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA ~~OPRS~~ (2003), European Tax Handbook (2003)

Table A.1. Tax treatment of different forms of savings in the United States

Type of assets	a. Acquisition of assets		b. Holding of assets		c. Disposal of assets			Remarks
	Personal income tax (Amount of acquisition deductible?)	Other taxes	Personal income tax (on annual return)	Other taxes (e.g withholding tax, wealth tax)	Personal income tax	Capital gains tax	Other taxes	
1. Bank deposits	N		Y (1)		N	N		
2. Government bonds	N		Y (1)		N	Y (2)		
3. Equity share	N		Y (3)		N	Y (2)		
4. Private pensions								
- Employer sponsored	Y (4)		N		Y	N		
- Individual arrangement	Y (5)		N		Y	N		

1. Interest income is taxed as ordinary income

Interests received on bonds issued by the US states and municipalities for qualified public purposes are tax exempt

2. Long-term capital gains (on investment held more than 12 months) are taxed at a top rate of 15% (until the end of 2008)

3. Dividends are taxed at a top rate of 15% (until the end of 2008)

4. The employer's and employee's contributions to the 401(k) plan are tax exempt up to \$12,000

5. The contributions to the traditional IRA is tax exempt with a limit of \$3,000 in 2003 to \$5,000 in 2008, and after 2008, the limit will be indexed to the inflation.

Contributions to Roth IRA (established in 1998) are not tax deductible, but the withdrawals in excess of the participant's contributions are tax exempt.

Source : OECD Tax database (various years), Country responses to the secretariat's questionnaires, ISSA-INPRS (2003), European Tax Handbook (2003)

WORKING PAPERS

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

405. *The Reform of the Health Care System in Portugal*
(October 2004) Stéphanie Guichard
404. *Accounting for Russia's Post-Crisis Growth*
(October 2004) Rudiger Ahrend
403. *Restructuring Russia's Electricity Sector: Towards Effective Competition or Faux Liberalisation?*
(October 2004) William Tompson
402. *Russia's Gas Sector: The Endless Wait for Reform?*
(September 2004) Rudiger Ahrend and William Tompson
401. *One Money, One Cycle? Making Monetary Union a Smoother Ride*
(September 2004) Peter Hoeller, Claude Giorno and Christine de la Maisonneuve
400. *Modelling Cyclical Divergence in the Euro Area: The Housing Channel*
(September 2004) Paul van den Noord
399. *Product Market Competition and Economic Performance in Korea*
(August 2004) Yongchun Baek, Randall Jones and Michael Wise
398. *Product Market Competition and Economic Performance in the United States*
(July 2004) Hannes Suppanz, Michael Wise and Michael Kiley
397. *Saving Behaviour and the Effectiveness of Fiscal Policy*
(July 2004) Luiz de Mello, Per Mathis Kongsrud and Robert Price
396. *The impact of exchange rate regimes on real exchange rates in South America, 1990-2002*
(June 2004) Anne-Laure Baldi and Nanno Mulder
395. *How Market Imperfections and Trade Barriers Shape Specialisation: South America vs. OECD*
(June 2004) Joaquim Oliveira Martins and Tristan Price
394. *Housing Markets, Wealth and the Business Cycle*
(June 2004) Pietro Catte, Nathalie Girouard, Robert Price and Christophe André
393. *Long-Term Budgetary Implications of Tax-Favoured Retirement Saving Plans*
(June 2004) Pablo Antolin, Alain de Serres and Christine de la Maisonneuve
392. *Enhancing Income Convergence in Central Europe after EU Accession*
(June 2004) Patrick Lenain and Lukasz Rawdanowicz
391. *Asset Price Cycles, "One-Off" Factors and Structural Budget Balances*
(June 2004) Nathalie Girouard and Robert Price
390. *Channels for Narrowing the US Current Account Deficit and Implications for Other Economies*
(May 2004) Anne-Marie Brook, Franck Sédillot and Patrice Ollivaud
389. *Product Market Competition and Economic Performance in Norway*
(May 2004) Jens Høj and Michael Wise.

388. *Product Market Competition and Economic Performance in Sweden*
(May 2004) Deborah Roseveare, Martin Jørgensen and Lennart Goranson
387. *Product Market Competition and Economic Performance in Japan*
(May 2004) Jens Høj and Michael Wise
386. *Migration and Integration of Immigrants in Denmark*
(May 2004) Deborah Roseveare and Martin Jørgensen
385. *Factors Driving Risk Premia*
(April 2004) Torsten Sløk and Mike Kennedy
384. *Rationalising Public Expenditure in the Slovak Republic*
(March 2004) Rauf Göneng and Peter Walkenhorst
383. *Product Market Competition and Economic Performance in Switzerland*
(March 2004) Claude Giorno, Miguel Jimenez and Philippe Gugler
383. *Concurrence sur les Marchés de Produits et Performance Économique en Suisse*
(Mars 2004) Claude Giorno, Miguel Jimenez and Philippe Gugler
382. *Differences in Resilience between the Euro-Area and US Economies*
(March 2004) Aaron Drew, Mike Kennedy and Torsten Sløk
381. *Product Market Competition and Economic Performance in Hungary*
(March 2004) Carl Gjersem, Philip Hemmings and Andreas Reindl
380. *Enhancing the Effectiveness of Public Spending: Experience in OECD Countries*
(February 2004) Isabelle Joumard, Per Mathis Kongsrud, Young-Sook Nam and Robert Price
379. *Is there a Change in the Trade-Off between Output and Inflation at Low or Stable Inflation Rates? Some Evidence in the Case of Japan*
(February 2004) Annabelle Mourougane and Hideyuki Ibaragi
378. *Policies bearing on product market competition and growth in Europe*
(January 2004) Carl Gjersem
377. *Reforming the Public Expenditure System in Korea*
(December 2003) Young-Sook Nam and Randall Jones
376. *Female Labour Force Participation: Past Trends and Main Determinants in OECD Countries*
(December 2003) Florence Jaumotte
375. *Fiscal Relations Across Government Levels*
(December 2003) Isabelle Joumard and Per Mathis Kongsrud
374. *Health-Care Systems: Lessons from the Reform Experience*
(December 2003) Elizabeth Docteur and Howard Oxley
373. *Non-Tariff Measures Affecting EU Exports: Evidence from a Complaints-Inventory*
(December 2003) Peter Walkenhorst and Barbara Fliess
372. *The OECD Medium-Term Reference Scenario: Economic Outlook No. 74*
(November 2003) Peter Downes, Aaron Drew and Patrice Ollivaud