

## Japan

The public pension system has two tiers: a basic, flat-rate scheme and an earnings-related plan (employees' pension scheme).

### Qualifying conditions

The old-age, basic pension is paid from age 65 with a minimum of 25 years' contributions. The full basic pension requires 40 years of contributions, with benefits adjusted proportionally for shorter or longer contribution periods.

The earnings-related pension is paid in addition to basic pension, with a minimum of one month's contribution, provided a pensioner is entitled to the basic pension. The pension age is gradually being increased from 60 to 65 years (between 2001 and 2013 for men and between 2006 and 2018 for women) for the flat-rate component and from 60 to reach 65 years for men in 2025 and for women in 2030 for the earnings-related component. The earnings-related component of the employees' pension scheme is adjusted for shorter or longer contribution periods.

### Benefit calculation

#### **Basic**

The full basic pension for 2004 was JPY 794 500 per year, corresponding to 16% of average earnings. The basic pension is price indexed.

#### **Earnings-related**

The employees' pension scheme has a flat-rate and an earnings-related component, of which the earnings-related part is by far the most important. The accrual rate was 0.75% of earnings excluding bonuses until fiscal year 2002. From fiscal year 2003, the base for calculating pension was extended to include bonuses. With the extension of the base for calculating the pension, the accrual rate has been reduced to 0.5481% of earnings (including bonuses).

Earlier years' earnings are valorised in line with economy-wide average net earnings.

There is a ceiling on earnings subject to contributions of JPY 620 000 a month equivalent to 150% of average earnings.

The flat-rate benefit depends on year of birth. In 2004, it ranged between JPY 1 676 and JPY 3 143 per month of contributions. This is paid only to pensioners between 62 and 64 years and this benefit will be phased out by 2013.

The employees' pension in payment is price indexed.

#### **Contracting out**

Employers who have at least 1 000 employees, may "contract out" of a portion of the earnings-related pension (known as the "substitution part") if they cover their employees themselves; around 15% of employees participate in these schemes. Contracting-out requires that employers offer at least 150% (before 2005: 110%) of the benefit that the public earnings-related scheme would have provided. The calculation of the pension required for contracting out is based on lifetime average nominal earnings. Indexation of pensions in payment and valorisation of past earnings is financed by the government.

The contribution rate in contracted-out schemes is determined by the government depending on the age structure of the covered employees and actuarial assumptions. Until 1996, however, the rate was uniform across plans. Since 2005, the rate ranges between 2.4% and 5% of total remuneration.

Since 2001, the government has also been promoting DC pension schemes and DB occupational pension schemes. As a consequence, several employees' pension funds have been dissolved.

### **Early retirement**

Until 2001, a "specially provided" employees' pension was available at age 60. This is being phased out and retirement with a full benefit will not be possible before age 65.

Early retirement at a reduced benefit is possible in both the basic and earnings-related schemes. The benefit is reduced by 0.5% per month of early retirement, i.e. 6% per year. Individuals can claim the flat-rate component of the employees' pension between 60 and 65. The pension in payment is indexed to net average earnings until the pensioner reaches age 65 and price-indexed after age 65.

### **Late retirement**

It is possible to defer receipt of the basic and earnings-related pensions. Deferral increases the pension benefit by 0.7% per month, i.e. 8.4% per year. Pension rights continue to accrue for each year of contributions beyond 65.

From 2006, combining work and pension after age 65 will be possible provided total income (from earnings and pension) does not exceed JPY 480 000. Above this limit, half of the excess is reduced from the full earnings-related pension payment but basic pension is paid in full. From April 2007, the reduction will also apply to the workers over 70 but they do not need to pay contributions.

## **Pre-reform scenario**

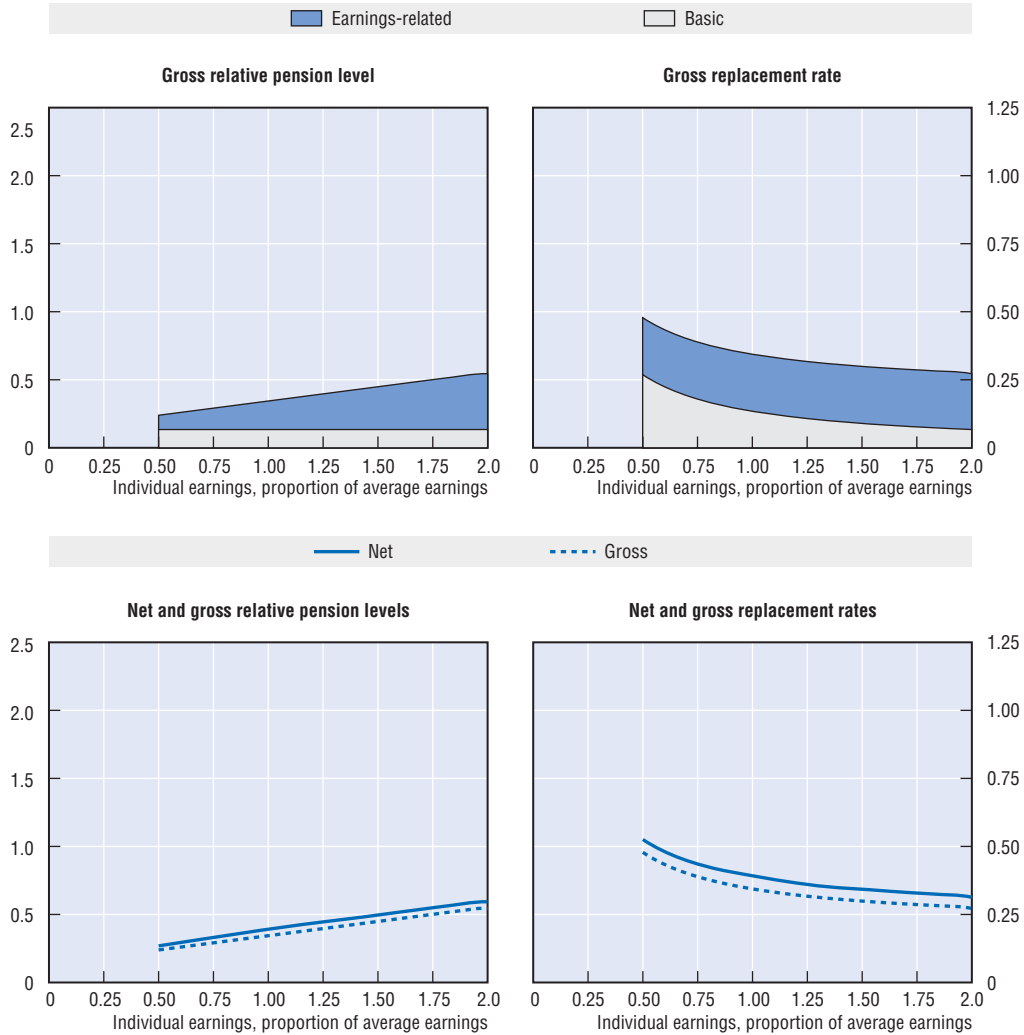
In 1994, the increase in pension age (as set out above) for the flat-rate component of the employees' pension scheme was introduced. The rate of growth of gross earnings was formerly used for valorisation while the current system uses net earnings. In 2000, the pension age in the earnings-related component was increased. The base for contribution was extended to include the bonus and the contribution rate for the earnings-related scheme was reduced.

The most recent reform took place in 2004. The contribution rate will be fixed after 2017 at 18.3% for the earnings-related scheme while the contribution for the basic scheme will be fixed at JPY 16 900 plus inflation.

This reform also introduced a link to projected changes in life expectancy risk into the benefit formula. For about 20 years, until the moment when pension revenues are equal to expenditures, a special adjustment factor will be used for valorisation. This factor is calculated as the sum of the average decrease of the number of contributors in the public pension schemes over three years and the growth rate of life expectancy. The latter is assumed to grow at a constant rate of 0.3%. The factor is subtracted from the net earnings growth (for valorisation) and from price inflation (for indexation), but some ratchets are built in to prevent negative valorisation and indexation. The target minimum replacement rate for a single-earner couple at average earnings with 40 years of contributions is 50%.

If the replacement rate falls below 50% as a result of the adjustment, the mechanism will be suspended and further measures will be introduced to ensure the level of the replacement rate. According to government estimates the adjustment factor will be 0.9% until 2025. Afterwards, the system will return to valorisation to net earnings and inflation indexation.

### Pension modelling results: Japan



Men	Median earner	Individual earnings, multiple of economy-wide average				
		0.5	0.75	1	1.5	2
Women (where different)						
Gross relative pension level (% average gross earnings)	31.3	23.9	29.2	34.4	44.9	54.4
Net relative pension level (% net average earnings)	35.6	26.9	33.1	39.2	49.6	59.3
Gross replacement rate (% individual gross earnings)	36.8	47.8	38.9	34.4	29.9	27.2
Net replacement rate (% individual net earnings)	41.5	52.5	43.5	39.2	34.3	31.3
Gross pension wealth (multiple of individual gross earnings)	6.1 6.9	7.9 8.9	6.4 7.3	5.7 6.4	5.0 5.6	4.5 5.1
Net pension wealth (multiple of individual gross earnings)	5.6 6.3	7.2 8.2	5.9 6.7	5.3 5.9	4.5 5.0	4.0 4.5

### Pension modelling results: Japan, pre-reform scenario

Men	Median earner	Individual earnings, multiple of economy-wide average				
		0.5	0.75	1	1.5	2
Women (where different)						
Gross relative pension level (% average gross earnings)	37.0	28.4	34.6	40.7	53.1	64.3
Net relative pension level (% net average earnings)	42.4	32.2	39.5	46.5	60.4	72.3
Gross replacement rate (% individual gross earnings)	43.6	56.8	46.1	40.7	35.4	32.2
Net replacement rate (% individual net earnings)	49.4	62.9	51.9	46.5	41.7	38.2
Gross pension wealth (multiple of individual gross earnings)	7.2 8.1	9.4 10.6	7.6 8.6	6.8 7.6	5.9 6.6	5.3 6.0
Net pension wealth (multiple of individual gross earnings)	6.7 7.6	8.7 9.8	7.1 8.0	6.3 7.1	5.4 6.1	4.9 5.5

## Foreword

**T**his report provides indicators for comparing pension policies across OECD countries. It gives estimates of the level of pension people will receive if they work for a full career and if today's pension rules stay unchanged.

Monika Queisser and Edward Whitehouse of the Social Policy Division of the OECD's Directorate for Employment, Labour and Social Affairs prepared the report. Rie Fujisawa and Edward Whitehouse were responsible for the pension modelling and the analysis of the tax position of pensioners. Anna Cristina D'Addio and Jongkyun Choi assisted in finalising the report.

National officials provided invaluable, active assistance in collecting information on their countries' pension and tax systems. The results have been confirmed by national authorities with the exception of those for Italy, which are based on the OECD's interpretation of parameters and rules provided by the government.\*

Numerous OECD colleagues provided guidance and information, particularly Mark Pearson, Martine Durand and John Martin. The OECD private-pensions team in the Directorate of Financial and Enterprise Affairs – particularly Fiona Stewart and Juan Yermo – provided useful input to the special feature on private pensions. Delegates to the OECD Working Party on Social Policy advised on modelling procedures and development of indicators for cross-country comparisons of pension systems. They also gave constructive comments on earlier drafts.

The report is the product of a joint project co-financed by the European Commission and the OECD; the project also benefited from a financial contribution made by the government of Switzerland.

The OECD pension models use the APEX (Analysis of Pension Entitlements across Countries) infrastructure originally developed by Axia Economics, with the help of funding from the OECD and the World Bank.

\* Italy has expressed serious doubts about the adequacy of data used in the report, and consequently about the comparability of results. In particular, baseline assumptions about labour market entry ages and career length (respectively, 20 and 45 years) are different from those agreed in a comparable exercise undertaken at the EU level, and differ from current Italian labour market norms. Italy thinks interpretations based on these data may be misleading.

## Structure of the Report and Methodology

The general approach of *Pensions at a Glance* is a “microeconomic” one, looking at prospective individual entitlements under all 30 of OECD member countries’ pension regimes. This method is designed to complement alternative comparisons of retirement-income systems: long-term fiscal and financial projections (for example, Dang *et al.*, 2001; and European Union, 2006) and analysis of income-distribution data (such as Förster and Mira d’Ercole, 2005; and Disney and Whitehouse, 2001).

The report is divided into three main parts. Part I presents the information needed to compare pension policies in a clear, “at a glance” style. It starts by showing the different schemes that together make up national retirement-income provision. Next, there is a summary of the parameters and rules of pension systems.

This is followed by eight main indicators that are calculated using the OECD pension models.

- The first two are the most familiar to pension analysts. Both are replacement rates, *i.e.*, the ratio of pension benefits to individual earnings. These are given in gross and net terms, taking account of taxes and contributions paid on earnings and on retirement incomes. Two analyses of the sensitivity of the gross replacement rate follow. The first looks at individuals who enter the pension system later than the baseline assumption, while the second considers the importance of investment returns in pension systems with defined-contribution (DC) components.
- The next two indicators are pension wealth, again given in gross and net terms. Pension wealth is a more comprehensive measure of pension entitlements than replacement rates because it takes account of pension ages, indexation of pensions to changes in wages or prices and life expectancy.
- Countries differ in the way that their pension systems aim to provide an old-age safety-net or replace a target share of pre-retirement income. The balance between these two is explored by the next pair of indicators: the first on the progressivity of the pension benefit formula and the second on the link between pension and earnings.
- The final two indicators aim to summarise the pension system as it affects individuals across the earnings distribution, showing the average pension level, pension wealth and the contribution of each component of the retirement-income system to overall benefits.

Two special chapters form Part II of this report. They cover pension reforms and private pensions, respectively. Both of these analyses use the OECD pension models to explore more deeply the central issues of pension policy in national debates. The framework of *Pensions at a Glance* is forward-looking, focusing on future pension entitlements of today’s

workers. However, the past decade has seen intense reform activity in the world of pensions and retirement. The first special chapter looks at what countries did and how this is likely to affect future benefits. A number of these reforms have increased the role of the private sector in pension provision. The second special chapter identifies the complex range of private retirement arrangements and quantifies the savings effort individuals will have to make to maintain standards of living in retirement.

Finally, Part III provides detailed background information on each of the 30 countries' retirement-income arrangements. These include pension eligibility ages and other qualifying conditions; the rules for calculating benefit entitlements; the treatment of early and late retirees; and more detailed information on the pre-reform scenarios explored in the special chapter on pension reforms. The country studies summarise the national results in standard charts and tables.

The remainder of this section describes the methodology used to calculate pension entitlements. It outlines the details of the structure, coverage and basic economic and financial assumptions underlying the calculation of future pension entitlements on a comparative basis.

### **Future entitlements under today's parameters and rules**

The pension entitlements which are compared are those that are currently legislated in OECD countries. Changes in rules that have already been legislated, but are being phased-in gradually, are assumed to be fully in place from the start. Reforms that have been legislated since 2004 are included where sufficient information is available (in Portugal, for example). Some changes (such as the increase in pension age in Germany and the reform package in the United Kingdom) have not been finalised or were finalised too late for inclusion.

The values of all pension system parameters reflect the situation in the year 2004. The calculations show the pension entitlements of a worker who enters the system today and retires after a full career. The results are shown for a single person only.

### **Career length**

A full career is defined here as entering the labour market at age 20 and working until the standard pension-eligibility age, which, of course, varies between countries. The implication is that the length of career varies with the statutory retirement age: 40 years for retirement at 60, 45 years for retirement at 65, etc. As the results can be sensitive to the career-length assumption, calculations are also made for situations where workers enter at age 25 and so retire with five years less than a full career.

### **Coverage**

The pension models presented here include all *mandatory* pension schemes for private-sector workers, regardless of whether they are public (i.e. they involve payments from government or from social security institutions, as defined in the System of National Accounts) or private. For each country, the main national scheme for private-sector employees is modelled. Schemes for civil servants, public-sector workers and special professional groups are excluded.

Systems with near-universal coverage are also included provided they cover at least 90% of employees. This applies to schemes such as the occupational plans in Denmark, the Netherlands and in Sweden. An increasing number of OECD countries have broad coverage of voluntary, occupational pensions and these play an important role in providing retirement incomes. For these countries, a second set of results is shown with voluntary pension schemes in the special chapter on private pensions.

Resource-tested benefits for which retired people may be eligible are also modelled. These can be means-tested, where both assets and income are taken into account, purely income-tested or withdrawn only against pension income. The calculations assume that all entitled pensioners take up these benefits. Where there are broader means tests, taking account also of assets, the income test is taken as binding. It is assumed that the whole of income during retirement comes from the mandatory pension scheme (or from voluntary pension schemes in those countries where they are modelled).

Pension entitlements are compared for workers with earnings between 0.5 times and twice the economy-wide average. This range permits an analysis of future retirement benefits of both the poorest and richer workers.

### Economic variables

The comparisons are based on a single set of economic assumptions for all 30 countries. In practice, the level of pensions will be affected by economic growth, wage growth and inflation, and these will vary across countries. A single set of assumptions, however, ensures that the comparisons of the different pension regimes are not affected by different economic conditions. In this way, differences across countries in pension levels reflect differences in pension systems and policies alone.

The baseline assumptions are:

- real earnings growth: 2% per year (given the assumption for price inflation, this implies nominal wage growth of 4.55%);
- individual earnings: assumed to grow in line with the economy-wide average. This means that the individual is assumed to remain at the same point in the earnings distribution, earning the same percentage of average earnings in every year of the working life;
- price inflation: 2.5% per year;
- real rate of return after administrative charges on funded, defined-contribution pensions: 3.5% per year;
- discount rate (for actuarial calculations): 2% per year (see Queisser and Whitehouse, 2006 for a discussion of the discount rate);
- mortality rates: the baseline modelling uses country-specific projections (made in 2002) from the United Nations/World Bank population database for the year 2040;
- earnings distribution: composite indicators use the OECD average earnings distribution (based on 18 countries), with country-specific data used where available.

Changes in these baseline assumptions will obviously affect the resulting pension entitlements. The indicators are therefore also shown for alternative assumptions regarding the rate of return on funded defined-contribution schemes. The impact of variations in economy-wide earnings growth, and for individual earnings growing faster or slower than the average, was shown in the first edition of *Pensions at a Glance* (OECD, 2005)



The real rate of return on defined-contribution pensions is assumed to be net of administrative charges. In practice, this assumption might disguise genuine differences in administrative fees between countries (see Whitehouse, 2000 and 2001 for an analysis).

The calculations assume the following for the pay-out of pension benefits: when DC benefits are received upon retirement, they are paid in the form of a price-indexed life annuity at an actuarially fair price. This is calculated from mortality data. Similarly, the notional annuity rate in notional accounts schemes is (in most cases) calculated from mortality data using the indexation rules and discounting assumptions employed by the respective country.

## Taxes and social security contributions

Information on taxes and social security contributions which were used to calculate the net indicators for 2002 were included in the country chapters in the first edition of *Pensions at a Glance* (OECD, 2005). The tax and social security contribution rules and parameters have been updated to 2004 but are not repeated in this volume for reasons of space (Fujisawa and Whitehouse, forthcoming 2007, provides more information).

The modelling assumes that tax systems and social-security contributions remain unchanged in the future. This implicitly means that “value” parameters, such as tax allowances or contribution ceilings, are adjusted annually in line with average earnings, while “rate” parameters, such as the personal income tax schedule and social security contribution rates, remain unchanged. General provisions and the tax treatment of workers for 2004 can be found in the OECD report *Taxing Wages* (OECD, 2006). The conventions used in that report, such as which payments are considered taxes, are followed here.

## Average earnings

Starting with this edition, *Pensions at a Glance* uses a new and more comprehensive measure of average earnings corresponding to an “average worker” (AW). This is broader than the previous benchmark of the “average manual production worker” (APW). This new concept was introduced in the report *Taxing Wages* (OECD, 2006) and also serves as benchmark for *Benefits and Wages* (OECD, 2007).

The reasoning behind the change was that a manual worker in the production sector is not representative of the “typical taxpayer”, given the steady decline in manual employment in manufacturing in most OECD countries. The new base for calculating average earnings includes more economic sectors and both manual and non-manual workers. The concept and definition of earnings, however, remains the same: gross wage earnings paid to average workers, measured before deductions of any kind, but including overtime pay and other cash supplements paid to employees.

Table 0.1 reports average earnings levels under the old (APW) and new (AW) definition, for the year 2004. Only three countries (Ireland, Korea and Turkey) are not yet able supply earnings data on the broader basis and so the modelling is based on the old, APW measure of average earnings.

The effect of broadening the types of workers covered has very different effects on measured average earnings in different OECD countries. In 19 of the 27 countries for which new, AW data are available, these are *higher* than average earnings under the previous, APW definition but the size of the difference varies greatly (see Figure 0.1). The change in definition increases measured average earnings by 30% or more in six countries (Austria,

**Table 0.1. OECD measures of average earnings, 2004**  
National currency and USD at market price and purchasing-power-parity exchange rates

	OECD measure of average earnings				Exchange rates with USD	
	Old – National currency (APW)	New – National currency (AW)	New – USD, market price	New – USD, PPP	Market price	PPPs
Australia	52 777	48 827	35 922	35 917	1.36	1.36
Austria	24 946	32 872	40 842	37 872	0.80	0.868
Belgium	32 281	35 578	44 205	41 151	0.80	0.865
Canada	40 912	38 945	29 933	31 269	1.30	1.25
Czech Republic	213 573	209 489	8 153	14 936	25.69	14.03
Denmark	323 900	316 500	52 860	37 684	5.99	8.40
Finland	29 152	31 539	39 186	32 372	0.80	0.974
France	23 087	29 549	36 713	32 199	0.80	0.918
Germany	34 088	41 046	50 998	45 898	0.80	0.894
Greece	12 525	17 360	21 569	24 996	0.80	0.695
Hungary	1 262 712	1 697 268	8 377	13 682	202.61	124.05
Iceland	2 849 554	2 770 000	39 463	29 461	70.19	94.02
Ireland	30 170	n.a.	37 485	30 321	0.80	1.00
Italy	23 044	22 053	27 400	25 628	0.80	0.861
Japan	4 223 100	4 943 208	45 708	37 139	108.15	133
Korea	27 356 688	n.a.	23 888	34 974	1 145.20	782
Luxembourg	32 586	39 171	48 668	42 649	0.80	0.918
Mexico	66 432	76 332	6 767	10 446	11.28	7.31
Netherlands	32 457	37 026	46 003	41 300	0.80	0.897
New Zealand	41 778	39 428	26 129	26 793	1.51	1.47
Norway	314 523	366 161	54 332	41 005	6.74	8.93
Poland	26 745	29 263	8 015	15 858	3.65	1.85
Portugal	9 372	12 969	16 113	18 344	0.80	0.707
Slovak Republic	190 000	200 722	6 228	11 679	32.23	17.19
Spain	17 913	19 828	24 635	26 215	0.80	0.756
Sweden	251 282	300 814	40 949	32 773	7.35	9.18
Switzerland	64 419	70 649	56 849	40 900	1.24	1.73
Turkey	13 959	n.a.	9 789	16 788	1.43	0.831
United Kingdom	20 560	27 150	49 747	43 881	0.55	0.619
United States	34 033	30 355	30 355	30 355	1.00	1.00

n.a.: Not available.

AW = average wage.

APW = average production worker.

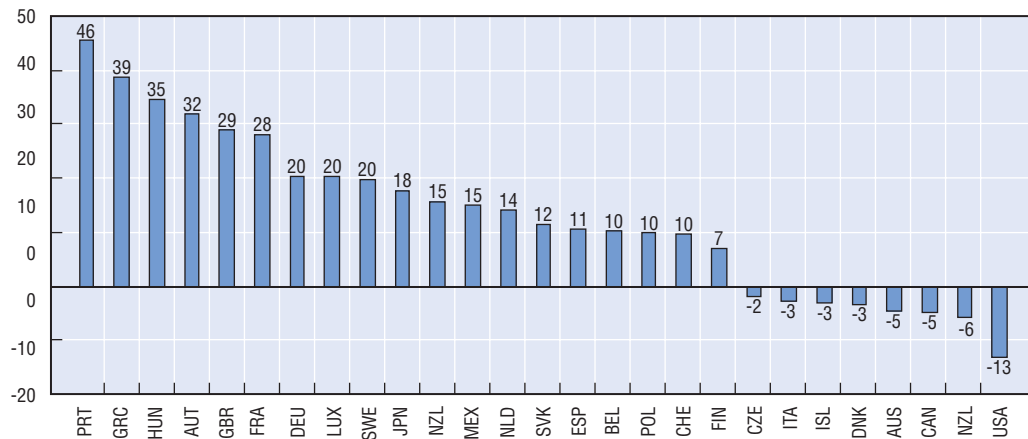
PPP = purchasing power parity.

Note: Monetary values for Turkey divided by 1 000 000. Average earnings are not available on the AW measure for Ireland, Korea and Turkey.


Source: OECD (2006), p. 13; and OECD Main Economic Indicators.

France, Greece, Hungary, Portugal and the United Kingdom). For three additional countries the increase was 20% (Germany, Luxembourg and Sweden). In contrast, a sizeable decrease occurred only in the United States (13%), with more modest declines (of around 5% or less) in seven further countries.\*

\* Countries have endeavoured to supply data based on the new Average Wage concept. However, as when any new series is introduced, there are teething problems and different interpretations of guidelines need to be reconciled. It appears possible, for example, that the US data excludes some groups that are included in other countries' estimates of the average wage, which may partly explain the surprisingly low US average wage estimate. This issue is subject of ongoing work, and updates to the wage series will be posted on the OECD website as and when they become available.

Figure 0.1. **Percentage difference of average earnings AW levels with regard to previous APW levels, 2004**

Source: OECD (2006), p. 13.

StatLink  <http://dx.doi.org/10.1787/886456570455>Table 0.2. **Total life expectancy at age 65, 2040 projected mortality rates**

	Men	Women
Australia	84.0	87.4
Austria	83.7	87.3
Belgium	83.8	87.3
Canada	83.8	87.4
Czech Republic	82.5	86.0
Denmark	83.1	86.0
Finland	83.6	87.5
France	83.9	87.6
Germany	83.2	86.6
Greece	83.3	86.6
Hungary	80.8	85.0
Iceland	84.8	87.5
Ireland	82.8	86.2
Italy	83.0	87.0
Japan	85.8	88.7
Korea	81.8	85.6
Luxembourg	83.0	87.2
Mexico	80.9	84.8
Netherlands	83.5	86.7
New Zealand	83.6	86.8
Norway	84.2	87.5
Poland	81.5	85.6
Portugal	82.8	86.2
Slovak Republic	81.1	85.1
Spain	83.4	87.0
Sweden	84.3	87.5
Switzerland	84.5	88.2
Turkey	80.0	83.0
United Kingdom	83.3	86.4
United States	83.8	87.3
<b>OECD average</b>	<b>83.1</b>	<b>86.6</b>

Note: These projections build on recent national census data. The assumptions for future changes in mortality rates vary between countries but nonetheless use a consistent methodology. The resulting mortality rates can differ from national projections because of differences in assumptions.

Source: OECD calculations based on United Nations/World Bank population database.

## Demographics and life expectancy

Table 0.2 shows the country-specific total life expectancy, separately for men and women, conditional on surviving until age 65. Given that pension entitlements are projected into the future, the calculations use the projections for 2040 from the United Nations/World Bank population database. Workers who enter the labour market in 2004 will retire between 2044 and 2051. Unfortunately, mortality-rate projections are available only for 2040 and 2075.

Citizens of poorer OECD member states are projected to retain lower life expectancies than their counterparts in richer economies. In Hungary, Mexico, Poland, the Slovak Republic and Turkey, life expectancy at age 65 is 1½-3 years shorter than the OECD average. Japan and Switzerland have significantly longer life expectancy than the OECD mean today and are projected to remain at the top in 2040. Other countries are clustered around the OECD average.

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## Table of Contents

<b>Editorial: Pension Reform – The Unfinished Agenda</b> .....	6
<b>Executive Summary</b> .....	8
<b>Structure of the Report and Methodology</b> .....	11

### Part I

#### Comparing Pension Policies of OECD Countries

<b>Overview of Retirement-Income Provision</b> .....	21
<b>Key Features of Pension-System Design</b> .....	24
<b>Retirement-Income Indicators</b> .....	31
Gross Pension Replacement Rates .....	32
Net Pension Replacement Rates .....	34
Gross Pension Replacement Rates with Entry at Age 25 .....	36
Gross Pension Replacement Rates with Different Investment Returns .....	38
Gross Pension Wealth .....	40
Net Pension Wealth .....	42
Progressivity of Pension Benefit Formulae .....	44
Pension-Earnings Link .....	46
Weighted Averages: Pension Levels and Pension Wealth .....	48
Structure of the Pension Package .....	50
References .....	52

### Part II

#### Pension Reforms and Private Pensions

<b>1. A Decade of Pension Reforms: The Impact on Future Benefits</b> .....	55
1.1. Overview of pension reforms in OECD countries .....	55
1.2. Impact of pension reforms in selected OECD countries .....	64
1.3. Conclusions .....	74
Notes .....	75
<b>2. The Role of Private Pensions in Providing Future Retirement Incomes</b> .....	76
2.1. Coverage of private pensions .....	76
2.2. Types of voluntary private pension provision .....	79
2.3. Mandatory replacement rates and the pension savings gap .....	80
2.4. Mandatory replacement rates and private-pension coverage .....	81
2.5. Filling the retirement-savings gap .....	82
2.6. Contribution density and the retirement-savings gap .....	85
2.7. Real rates of return on investments and the retirement-savings gap .....	86
2.8. Indicative gross replacement rates including voluntary pensions .....	86
2.9. Conclusions and future developments .....	88

Notes .....	89
Annex. Gross Replacement Rates Including Defined-Benefit Occupational Plans .....	90
References .....	92

## Part III

## Country Studies

<b>Introduction</b> .....	97
<b>Australia</b> .....	99
<b>Austria</b> .....	102
<b>Belgium</b> .....	105
<b>Canada</b> .....	108
<b>Czech Republic</b> .....	111
<b>Denmark</b> .....	114
<b>Finland</b> .....	118
<b>France</b> .....	122
<b>Germany</b> .....	127
<b>Greece</b> .....	130
<b>Hungary</b> .....	133
<b>Iceland</b> .....	137
<b>Ireland</b> .....	140
<b>Italy</b> .....	142
<b>Japan</b> .....	146
<b>Korea</b> .....	150
<b>Luxembourg</b> .....	153
<b>Mexico</b> .....	156
<b>Netherlands</b> .....	159
<b>New Zealand</b> .....	162
<b>Norway</b> .....	165
<b>Poland</b> .....	168
<b>Portugal</b> .....	172
<b>Slovak Republic</b> .....	177
<b>Spain</b> .....	181
<b>Sweden</b> .....	184
<b>Switzerland</b> .....	190
<b>Turkey</b> .....	194
<b>United Kingdom</b> .....	198
<b>United States</b> .....	202

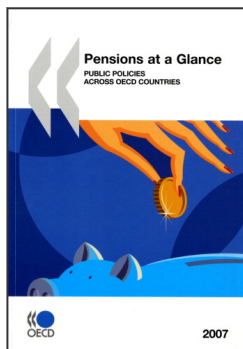
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