

## PART II

# Indicators of Pension Policies

*Part II updates the important indicators of retirement-income systems developed for the first and second editions of Pensions at a Glance. It also offers an expanded range of indicators. This information – presented in a clear, “at a glance” style – provides a comprehensive and consistent framework for comparing and evaluating pension systems and pension policies.*

*The 17 indicators are divided into three categories. The first of these groups comprises indicators of individual pension entitlements under all 30 of OECD member countries’ pension regimes. Along with the familiar measure of pension replacement rates, there are indicators of pension wealth, the progressivity of retirement-income systems and the balance between public and private provision.*

*The second group of indicators looks at retirement-income systems as a whole. These comprise data on contribution rates for public pensions, assets in private pension funds and national pension reserves, coverage of private pensions and expenditure on pension benefits.*

*The third and final category of indicators relate to the background and context in which retirement-incomes systems must operate. These include key demographic measures – such as life expectancy and fertility – and average earnings.*



## Pension Entitlements

*Pension entitlements are calculated using the OECD pension models, based on national parameters and rules applying in 2006. They relate to a worker entering the labour market in that year.*

*The first three indicators show the familiar replacement rate: the ratio of pension to individual earnings. Of these, the first looks at gross (before tax) replacement rates from all mandatory sources, including compulsory private pensions. The second shows public and private schemes separately, including data on voluntary private pensions where these have broad coverage. The third gives replacement rates in net terms, taking account of taxes and contributions paid on earnings and pensions.*

*There follows two indicators of “pension wealth”: the lifetime value of the flow of retirement benefits. This is a more comprehensive measure than replacement rates because it takes account of pension ages, indexation of pensions to changes in wages or prices and life expectancy.*

*The balance between two policy goals – providing adequate old-age incomes and replacing a target share of earnings – is explored in the next pair of indicators. They summarise the progressivity of pension benefit formulae and the link between pensions and earnings.*

*The final two indicators of entitlements summarise the effect of the pension system on people at different levels of earnings, showing average pension levels, pension wealth and the contribution role of each part of the retirement-income system.*

### Key results

The gross replacement rate shows the level of pensions in retirement relative to earnings when working. For workers with average earnings, the gross replacement rate averages 59% in the 30 OECD countries. But there is significant cross-country variation. At the bottom of the range, Ireland, Japan and the United Kingdom offer future replacement rates of less than 35% for new labour market entrants. Iceland and Greece, at the top of the range, offer replacement rates of more than 90%. Other countries with high projected replacement rates (between 70% and 90%) are Austria, Denmark, Hungary, Spain, Luxembourg and the Netherlands while Finland, Norway and Switzerland have gross replacement rates close to the OECD average.

Most OECD countries protect low-income workers from old-age-poverty by providing higher replacement rates for them than for average earners. For example, the table shows that workers earning only half the average receive replacement rates averaging 72%, compared with 59% for average earners. However, in nine countries replacement rates are the same at average and half-average pay: Austria, Germany, Greece, Hungary, Italy, Poland, the Slovak Republic, Spain and Turkey. At the top of the range, there are three countries that provide low earners with pensions equal to their earnings when working or even higher: Denmark (replacement rate of 124.0%), Iceland (108.3%) and Luxembourg (99.4%). At the other end of the scale, Germany and Japan offer replacement rates of 43 and 47% for low earners, respectively. Some countries, such as Canada and New Zealand, pay relatively small benefits to average earners, but are towards the middle of the range for low-income workers.

On average in the 30 OECD countries, the gross replacement rate at 1.5 times average earnings (here called “high earnings”) is 54.3%, somewhat below the 59.0% figure for average earners. For high earners, country variations are again wide. Replacement rates exceed 80% in six countries: Greece, Iceland, Luxembourg, the Netherlands, Spain and Turkey. At the other end of the spectrum, Ireland and New Zealand (which have flat-rate public pensions) and the United Kingdom offer replacement rates of less than 26%.

At median earnings – the level which half of workers lie above and half below – the average gross replacement for OECD countries is 60.8%. In general, it is little different from the gross replacement at average (mean) pay. (Median earnings are between 75% and 90% of the mean; see the indicator on “Average earnings”).

Gross pension replacement rates for women differ (due to a lower pension eligibility age for women than for men) in three countries: Italy, Poland and Switzerland. Differences between the sexes are substantial in Italy and Poland, with replacement rates around one third smaller for women than they are for men. In Mexico, replacement rates for women are also lower than they are for men, but much less than in the Poland and Italy. Finally, in Switzerland, replacement rates are slightly higher for women than for men because women receive a higher accrual than men at certain ages under mandatory occupational schemes.

### Definition and measurement

The old-age pension replacement rate measures how effectively a pension system provides a retirement income to replace earnings, the main source of income before retirement. Often, the replacement rate is expressed as the ratio of the pension to final earnings (just before retirement). Here, however, pension benefits are shown as a share of individual lifetime average earnings (re-valued in line with economy-wide earnings growth). Under the baseline assumptions, workers earn the same percentage of economy-wide average earnings throughout their career. In this case, lifetime average re-valued earnings and individual final earnings are identical. If people move up the earnings distribution as they get older, then their earnings just before retirement will be higher than they were on average over their lifetime and replacement rates calculated on individual final earnings would be lower.

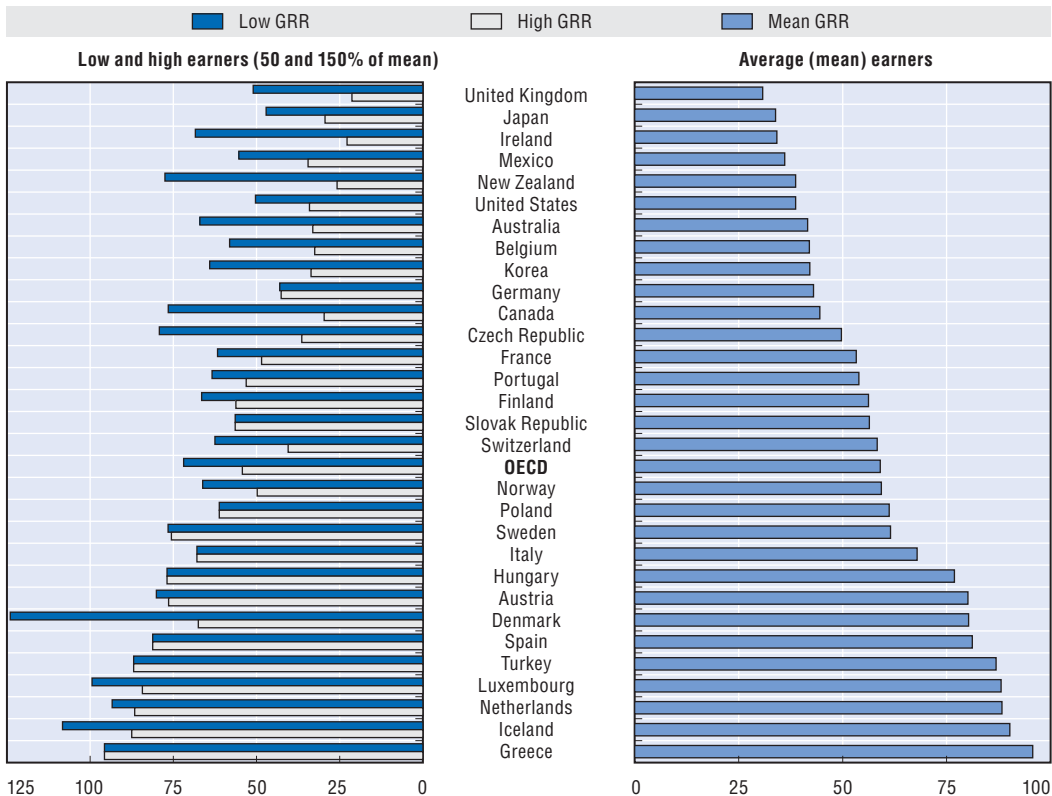
The gross replacement rate is defined as gross pension entitlement divided by gross pre-retirement earnings. It is shown here at median earnings and at 0.5, 0.75, 1, 1.5 and 2 times average earnings levels, using the newly defined OECD “average worker” concept. (See the indicator on “Average earnings”).

Gross pension replacement rates by earnings

	Median earner	Individual earnings, multiple of mean					Median earner	Individual earnings, multiple of mean					
		0.5	0.75	1	1.5	2		0.5	0.75	1	1.5	2	
<b>Men</b>						<b>Men (cont.)</b>							
Australia	45.7	67.0	50.0	41.6	33.1	28.9	New Zealand	45.6	77.5	51.6	38.7	25.8	19.4
Austria	80.1	80.1	80.1	80.1	76.4	57.3	Norway	59.6	66.2	61.0	59.3	49.8	42.2
Belgium	42.4	58.1	43.1	42.0	32.5	24.3	Poland	61.2	61.2	61.2	61.2	61.2	61.2
Canada	50.2	76.5	55.2	44.5	29.7	22.2	Portugal	54.1	63.0	54.3	53.9	53.1	52.4
Czech Republic	54.9	79.2	59.6	49.7	36.4	29.0	Slovak Republic	56.4	56.4	56.4	56.4	56.4	56.4
Denmark	88.0	124.0	94.9	80.3	67.5	63.7	Spain	81.2	81.2	81.2	81.2	81.2	66.7
Finland	56.2	66.5	56.2	56.2	56.2	56.2	Sweden	61.5	76.6	64.6	61.5	75.6	81.3
France	53.3	61.7	53.3	53.3	48.5	46.0	Switzerland	62.0	62.5	62.1	58.3	40.5	30.4
Germany	43.0	43.0	43.0	43.0	42.6	32.0	Turkey	86.9	86.9	86.9	86.9	86.9	86.9
Greece	95.7	95.7	95.7	95.7	95.7	95.7	United Kingdom	33.5	51.0	36.6	30.8	21.3	16.0
Hungary	76.9	76.9	76.9	76.9	76.9	76.9	United States	40.8	50.3	42.6	38.7	34.1	28.8
Iceland	91.7	108.3	93.0	90.2	87.5	86.1	<b>OECD</b>	<b>60.8</b>	<b>72.2</b>	<b>62.7</b>	<b>59.0</b>	<b>54.3</b>	<b>50.0</b>
Ireland	39.8	68.4	45.6	34.2	22.8	17.1	<b>Women</b>						
Italy	67.9	67.9	67.9	67.9	67.9	67.9	Italy	52.8	52.8	52.8	52.8	52.8	52.8
Japan	35.7	47.1	38.3	33.9	29.4	26.6	Mexico	32.5	55.3	36.8	29.9	28.6	28.0
Korea	45.1	64.1	49.4	42.1	33.6	25.2	Poland	44.5	49	44.5	44.5	44.5	44.5
Luxembourg	90.1	99.4	91.9	88.1	84.3	82.5	Switzerland	62.6	62.8	62.6	59.0	41.0	30.7
Mexico	36.9	55.3	37.6	36.1	34.5	33.7							
Netherlands	88.9	93.4	90.0	88.3	86.6	85.8							

Note: Figures are only shown for women where these are different from men's.  
Source: OECD pension models.

Gross pension replacement rates (GRR) by earnings levels



Note: Countries are ranked in order of gross pension replacement rates (GRR) of average earners, i.e. mean GRR in the chart.  
Source: OECD pension models.

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### Key results

Private pensions play a large and growing role in providing for old age. This is illustrated with calculations of gross pension replacement rates that have been separated out between public and private sectors. The OECD average for replacement rates of an average earner from public schemes alone is 46%, compared with 59% with mandatory private pensions included. When voluntary private pensions, under typical rules, are added, the average replacement rate is 68% for an average earner.

For the 11 countries where the calculations cover only public pensions, the replacement rate for an average earner is 67% on average. For the 22 countries with data for public and mandatory private provision, the average replacement rate is 66%. For all 30 OECD countries, including public, mandatory private and voluntary private pensions, the average replacement rate is again 67%.

This shows substitution between different scheme types. Australia, Denmark and Iceland have highly targeted public programmes, so very low public replacement rates for middle and high earners are topped up with mandatory private pensions. In Hungary, Mexico, Poland, the Slovak Republic and Sweden, the substitution was direct: reforms replaced part of public provision with mandatory private pensions. Canada, Ireland, the United Kingdom and the United States have long had relatively low public pensions and widespread voluntary provision.

#### Mandatory private pensions

The first group of 11 countries has mandatory private pensions or private pensions that have near-universal coverage and so are described as “quasi-mandatory” (Denmark, the Netherlands and Sweden).

In Iceland, the Netherlands and Switzerland, private pensions are defined benefit while in other countries, they are defined contribution. Replacement rates from mandatory private schemes for average earners range from 23% to 33% in seven of the 11 countries. But they are significantly above this range in Denmark, Iceland and the Netherlands and much lower in Norway.

In five countries, replacement rates are the same for workers earning between 50% and 150% of the economy-wide average. However, some countries have private pensions designed to cover earnings above the ceiling of the public scheme. This is the reason that replacement rates from private plans increase with earnings across the range in the Netherlands and Norway. It also explains why replacement rates for workers on 150% of average earnings are much higher in Sweden.

The pattern in Switzerland is complex. Again, low earners have a lower replacement rate to take account of public benefits. But the ceiling on earnings that must be covered by the occupational plans is relatively low.

#### Voluntary private pensions

Replacement rates are shown for nine countries where voluntary private pensions are widespread: covering between 40% and 65% of the workforce (see the indicator of “Private pension coverage”). The only country with a comparable proportion of the workforce in voluntary private pensions is Japan, but information is not available on typical rules. It is assumed that workers with voluntary private pensions spend a full career in the scheme. (Evidence on and the implication of shorter contribution histories are discussed in the special chapter on “The pension gap and voluntary retirement savings”.)

The rules that have been modelled are in the “Country profiles” in Part III. In five countries, a defined-contribution plan is modelled. In four – Canada, Ireland, the United Kingdom and the United States – replacement rates for both defined-contribution and defined-benefit plans have been calculated. The information for defined-benefit plans is mainly for illustration: it is unlikely that a private-sector worker entering the labour market in 2006 would be offered a defined-benefit scheme (see Box 1.1 in the special chapter on “Pension systems during the financial and economic crisis”).

In general, the defined-contribution schemes pay a constant replacement rate with earnings. (Data on actual contribution rates by earnings are not available for most countries, and so an average or typical rate is assumed across the earnings range.) Belgium and Germany are exceptions due to ceilings on pensionable earnings that qualify for tax incentives. In Norway, as with the mandatory defined-contribution plan, replacement rates increase with earnings because the private schemes are designed to offset some of the redistribution in public retirement benefits.

### Gross pension replacement rates from public, mandatory private and voluntary private pension schemes

Percentage of individual earnings

	Public			Mandatory private			Voluntary DC			Voluntary DB			Total mandatory			Total with voluntary		
	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5
Australia	40.1	14.6	6.2	26.9	26.9	26.9							67.0	41.6	33.1			
Austria	80.1	80.1	76.4										80.1	80.1	76.4			
Belgium	58.1	42.0	32.5				16.6	16.6	13.0				58.1	42.0	32.5	74.7	58.7	45.4
Canada	76.5	44.5	29.7				33.2	33.2	33.2	26.4	26.4	30.8	76.5	44.5	29.7	93.2	72.6	59.4
Czech Republic	79.2	49.7	36.4				11.6	11.6	11.6				79.2	49.7	36.4	90.8	61.3	48.0
Denmark	61.5	22.9	11.7	62.5	57.4	55.8							124.0	80.3	67.5			
Finland	66.5	56.2	56.2										66.5	56.2	56.2			
France	61.7	53.3	48.5										61.7	53.3	48.5			
Germany	43.0	43.0	42.6				18.3	18.3	18.1				43.0	43.0	42.6	61.3	61.3	60.8
Greece	95.7	95.7	95.7										95.7	95.7	95.7			
Hungary	50.7	50.7	50.7	26.2	26.2	26.2							76.9	76.9	76.9			
Iceland	26.4	8.3	5.5	81.9	81.9	81.9							108.3	90.2	87.5			
Ireland	68.4	34.2	22.8				40.8	40.8	40.8	0.0	15.7	27.1	68.4	34.2	22.8	109.2	75.0	63.6
Italy	67.9	67.9	67.9										67.9	67.9	67.9			
Japan	47.1	33.9	29.4										47.1	33.9	29.4			
Korea	64.1	42.1	33.6										64.1	42.1	33.6			
Luxembourg	99.4	88.1	84.3										99.4	88.1	84.3			
Mexico	23.8	4.6	3.1	31.4	31.4	31.4							55.3	36.1	34.5			
Netherlands	60.5	30.2	20.2	32.9	58.1	66.5							93.4	88.3	86.6			
New Zealand	77.5	38.7	25.8				15.9	15.9	15.9				77.5	38.7	25.8	93.3	54.6	41.7
Norway	60.1	51.9	41.9	6.0	7.4	7.9	9.1	12.8	18.1				66.2	59.3	49.8	75.2	72.1	67.9
Poland	30.0	30.0	30.0	31.3	31.3	31.3							61.2	61.2	61.2			
Portugal	63.0	53.9	53.1										63.0	53.9	53.1			
Slovak Republic	24.0	24.0	24.0	32.4	32.4	32.4							56.4	56.4	56.4			
Spain	81.2	81.2	81.2										81.2	81.2	81.2			
Sweden	52.9	37.8	27.9	23.7	23.7	47.7							76.6	61.5	75.6			
Switzerland	52.4	35.6	23.8	10.1	22.7	16.7							62.5	58.3	40.5			
Turkey	86.9	86.9	86.9										86.9	86.9	86.9			
United Kingdom	51.0	30.8	21.3				39.2	39.2	39.2	38.4	38.4	38.4	51.0	30.8	21.3	89.3	70.0	60.6
United States	50.3	38.7	34.1				40.1	40.1	40.1	30.6	30.6	30.6	50.3	38.7	34.1	90.4	78.8	74.2
<b>OECD</b>	<b>60.0</b>	<b>45.7</b>	<b>40.1</b>										<b>72.2</b>	<b>59.0</b>	<b>54.3</b>	<b>81.1</b>	<b>68.4</b>	<b>63.6</b>

DB = defined benefit; DC = defined contribution.

Source: OECD pension models.

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### Key results

For average earners, the net replacement rate across OECD averages around 70%, which is 11 percentage points higher than the gross replacement rate. This reflects the higher taxes and contributions that people paid on their earnings when working than they pay on their pensions in retirement. Net replacement rates again vary across a large range, from under 40% in Mexico and Japan to well over 100% in Greece and Turkey for average earners.

For low earners (with half of mean earnings), the average net replacement rate across OECD countries is 82%. For high earners (150% of mean earnings) the average net replacement rate is 65%, lower than for low earners. As with gross replacement rates, the differences with earnings reflect progressive features of pension systems, such as minimum benefits and ceilings.

The personal tax system plays an important role in old-age support. Pensioners often do not pay social security contributions and, as personal income taxes are progressive and pension entitlements are usually lower than earnings before retirement, the average tax rate on pension income is typically less than the tax rate on earned income. In addition, most income tax systems give preferential treatment either to pension incomes or to pensioners, by giving additional allowances or credits to older people. Therefore, net replacement rates are usually higher than gross replacement rates.

For average earners the pattern of replacement rates across countries is different on a net rather than a gross basis. The Belgian and German pension systems have considerably higher net replacement rates than gross. This is due, first, to favourable treatment of pension income under social security contributions. Secondly, because replacement rates are relatively low compared with OECD countries and personal income taxes are strongly progressive in these countries, people pay much less in income tax when retired than they did when working. This is despite the fact that the very generous tax treatment of pension income in Germany is gradually being withdrawn.

In contrast, New Zealand and Sweden move lower down the chart on a net basis. This is because these countries tax pension income and earnings at very similar rates (although Sweden re-introduced tax concessions for pensioners in 2009: see the special chapter on “Recent pension reforms” in Part I).

For low-earners, the effect of taxes and contributions on net replacement rates is more muted than for workers higher up the earnings scale. This is because low-income workers typically pay less in taxes and contributions than those on average earnings. In many cases, their retirement incomes are below the level of the standard reliefs in the personal income tax (allow-

ances, credits, etc.). Thus, they are unable to benefit fully from additional concessions granted to pensions or pensioners under the income tax.

The difference between gross and net replacement rates for low earners is 10 percentage points on average. Belgium and the Czech Republic have much higher replacement rates for low earners measured on a net basis.

The net replacement rate for workers earning 150% of the average is highest in Turkey because pension income is not taxable. Not surprisingly, the lowest replacement rates are found in the flat-rate pension systems of New Zealand and Ireland. In both countries, workers earning 150% of the average will receive pensions that amount to less than a third of their previous net earnings.

There are regional differences in the gap between gross and net replacement rates. For median earners in the EU15 countries, net replacement rates are on average 11 percentage points higher than gross rates. In southern Europe, the difference is 13 percentage points whereas for the Nordic countries, the difference is only 7 percentage points. This is due to the fact that income taxes play a more important role in the Nordic countries than elsewhere.

### Definition and measurement

The net replacement rate is defined as the individual net pension entitlement divided by net pre-retirement earnings, taking account of personal income taxes and social security contributions paid by workers and pensioners. Otherwise, the definition and measurement of the net replacement rates are the same as for the gross replacement rate (see previous indicator). The results again cover full-career workers with median earnings and with 0.5, 0.75, 1, 1.5 and 2 times average (mean) earnings.

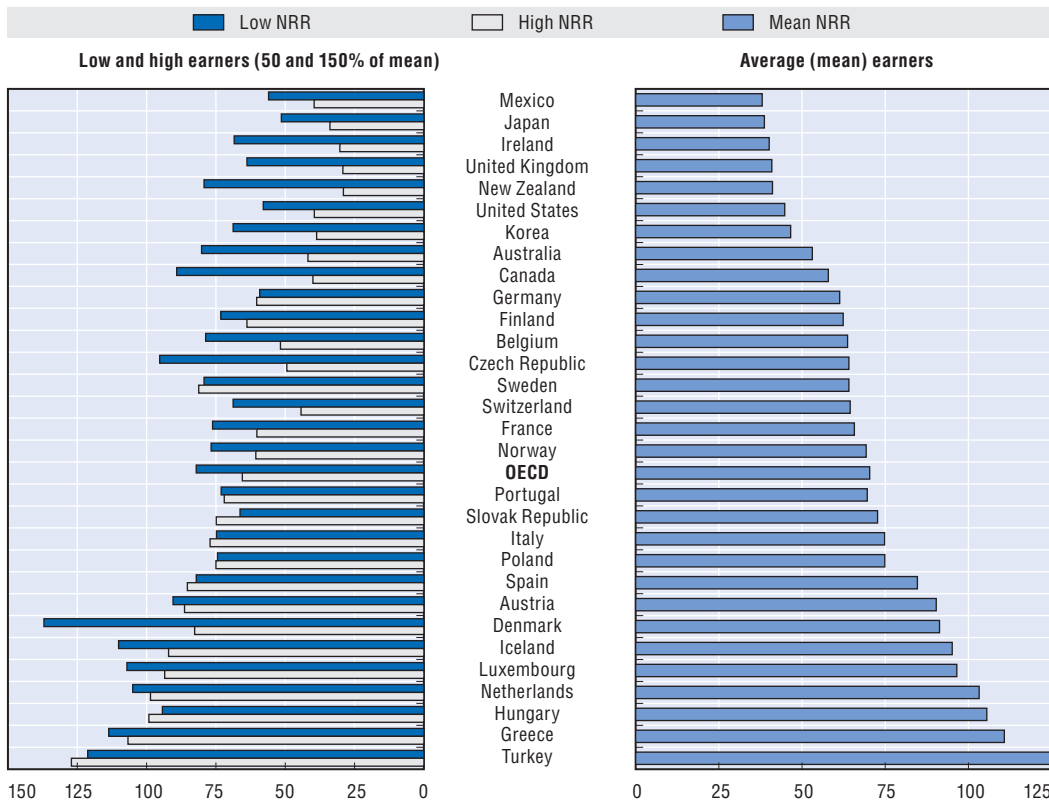


Net pension replacement rates by earnings

	Median earner	Individual earnings, multiple of mean					Median earner	Individual earnings, multiple of mean					
		0.5	0.75	1	1.5	2		0.5	0.75	1	1.5	2	
<b>Men</b>						<b>Men (cont.)</b>							
Australia	59.2	80.2	63.7	53.1	41.8	36.8	New Zealand	47.3	79.3	53.5	41.1	29.0	22.8
Austria	90.3	90.5	90.3	90.3	86.3	64.8	Norway	70.2	76.7	72.3	69.3	60.6	52.8
Belgium	65.3	78.7	69.0	63.7	51.7	41.2	Poland	74.8	74.4	74.7	74.9	75.0	77.0
Canada	63.6	89.1	68.9	57.9	40.0	30.9	Portugal	68.0	73.2	66.7	69.6	72.0	72.6
Czech Republic	69.8	95.3	74.7	64.1	49.4	41.1	Slovak Republic	71.5	66.3	70.4	72.7	74.9	75.9
Denmark	98.7	137.0	106.2	91.3	82.7	77.7	Spain	84.2	82.1	84.1	84.7	85.3	72.2
Finland	62.0	73.2	62.7	62.4	63.8	64.5	Sweden	64.1	79.3	67.4	64.1	81.2	85.9
France	65.3	76.2	65.6	65.7	60.2	57.5	Switzerland	69.5	68.8	79.4	64.5	44.3	33.4
Germany	61.5	59.2	61.1	61.3	60.3	44.4	Turkey	124.0	121.2	123.4	124.7	127.1	130.4
Greece	110.4	113.6	110.1	110.8	106.7	104.2	United Kingdom	44.3	63.8	48.0	40.9	29.2	22.8
Hungary	95.4	94.3	95.4	105.5	99.2	99.2	United States	47.1	57.9	49.2	44.8	39.5	33.3
Iceland	96.5	110.1	97.7	95.1	92.1	90.6	<b>OECD</b>	<b>71.8</b>	<b>82.4</b>	<b>74.0</b>	<b>70.3</b>	<b>65.5</b>	<b>60.8</b>
Ireland	45.6	68.4	50.1	40.1	30.3	24.4	<b>Women</b>						
Italy	74.8	74.8	74.8	74.8	77.1	78.7	Italy	58.1	76.6	58.1	58.1	59.9	63
Japan	40.3	51.4	42.8	38.7	33.9	30.8	Mexico	33.5	56	37.3	31.5	32.8	32.9
Korea	49.2	68.8	53.5	46.6	38.7	29.6	Poland	55.2	60.6	55.3	55.2	55	56.4
Luxembourg	98.1	107.1	99.7	96.5	93.5	91.8	Switzerland	70.2	69.1	67.3	65.3	44.9	33.8
Mexico	38.0	56.0	38.1	38.0	39.6	39.7							
Netherlands	105.5	105.0	107.4	103.2	98.6	95.5							

Source: OECD pension models.

Net pension replacement rates (NRR) by earnings levels



Note: Countries are ranked in order of net pension replacement rates (NRR) of average earners, i.e., mean NRR in the chart.

Source: OECD pension models.

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### Key results

Pension wealth measures the total value of the lifetime flow of pension incomes. Pension wealth for average earners is 9.3 times annual individual earnings on average in the OECD countries. For women, the average is higher – 10.9 times individual earnings – because of women’s longer life expectancy.

Replacement rates give an indication of the size of the pension promise, but they are not comprehensive measures; they measure only the level of benefits at retirement. For a full picture, account must also be taken of life expectancy, retirement age and indexation of pensions. Together, these determine for how long the pension benefit must be paid, and how its value evolves over time. Pension wealth – a measure of the “stock” of future flows of pension benefits – takes all of these into account. It can therefore be thought of as the lump sum needed to buy an annuity giving the same flow of pension payments as that promised by mandatory retirement-income schemes.

For men, gross pension wealth for average earners is highest in Luxembourg at each earnings level, followed by the Netherlands, Greece and Iceland. Pension wealth in these countries averages 15.9 times individual earnings, about 70% higher than the OECD average of 9.3 times. Pension wealth for men with average earnings is lowest in the United Kingdom, due to the relatively low replacement rate and the increase in pension age to 68. The United Kingdom is closely followed by Mexico; in both countries, pension wealth is less than 5.0 times individual earnings.

Higher replacement rates for low earners mean that pension wealth tends to be higher for low than for average earners. For men with half- average earnings, pension wealth is 11.4 times individual earnings on average, compared with 9.3 times for people with average earnings. Similarly, for women with low earnings, pension wealth of 13.4 compares with 10.9 times individual earnings for average earners. For men, in the four countries where pension wealth for low earners is highest (Denmark, Iceland, Luxembourg and the Netherlands), its value is 17.0 times individual earnings or more.

In countries with shorter life expectancies, such as Hungary, Mexico, Poland, the Slovak Republic and Turkey, benefits are paid for a shorter retirement period and so, other things equal, the pension promise becomes more affordable. The effect is the reverse in Switzerland and the Nordic countries, where life

expectancies are high. Unlike measures of replacement rates, the link between affordability and life expectancy is captured by the pension-wealth indicator.

For the same reason, since women’s life expectancy is longer than men’s, pension wealth for women is relatively higher in all countries. This is simply because pension benefits can be expected to be paid over a longer retirement period. Also, some countries still have lower retirement ages for women; this extends the payment period even further.

Pension wealth is also affected by pension ages. Denmark, Germany, Iceland, Norway, the United Kingdom and the United States, for example, all have or plan to have pension ages above age 65, which reduces pension wealth.

Pension wealth is also affected by indexation rules. Although most OECD countries now index pensions in payment to prices, there are exceptions: Luxembourg, for example links pensions to average earnings, while five countries, comprising the Czech Republic, Finland, Hungary, the Slovak Republic and Switzerland, index to a mix of price inflation and earnings growth. In normal times, at least, earnings tend to grow faster than prices, so that pension wealth is higher with these more generous indexation procedures than with price indexation.

Different indexation policies also affect the pension wealth of women relative to men. Women’s longer life expectancy means that they tend to benefit more from more generous indexation procedures (above price inflation, for example).

### Definition and measurement

The calculation of pension wealth uses a uniform discount rate of 2% and country-specific mortality tables. Since the comparisons refer to prospective pension entitlements, the calculations use projections for the year 2040.

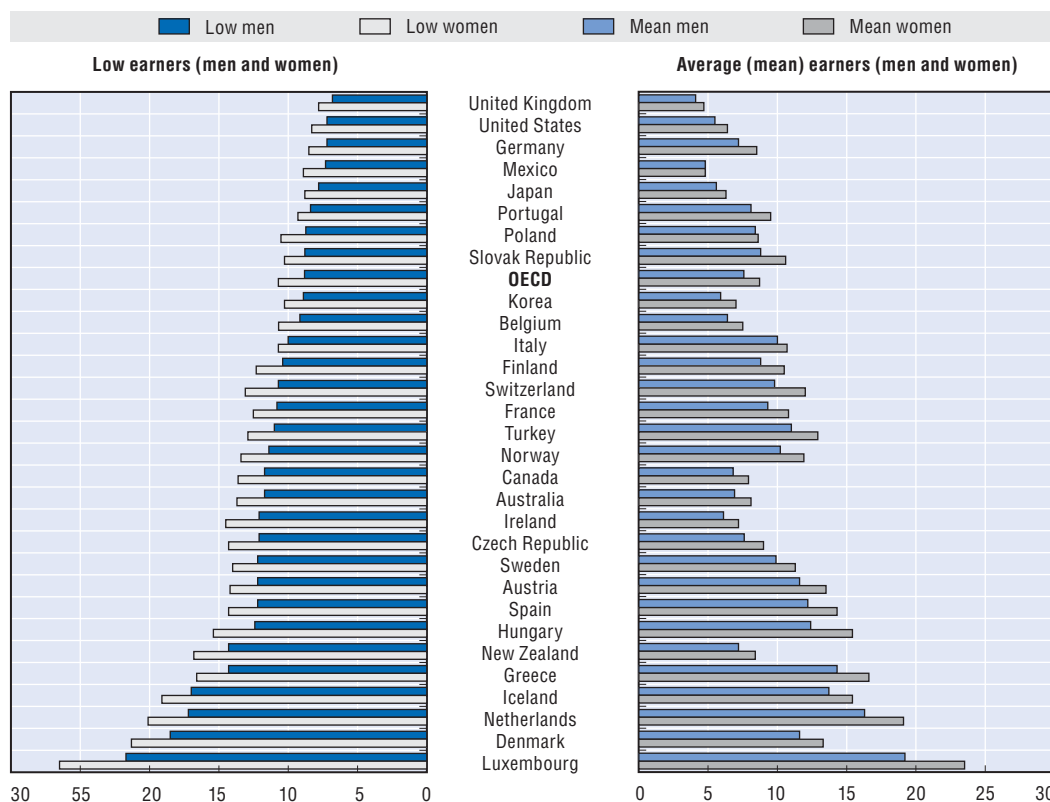
Pension wealth is measured and expressed as a multiple of gross annual individual earnings. It is shown here for workers with earnings of 0.5, 1 and 1.5 times the average, separately for men and women.

## Gross pension wealth by earnings

	Individual earnings, multiple of mean						Individual earnings, multiple of mean								
	0.5			1.0			0.5			1.0			1.5		
	Men			Women			Men			Women					
Australia	11.7	6.9	5.3	13.7	8.1	6.2	Luxembourg	21.7	19.2	18.4	26.5	23.5	22.5		
Austria	12.2	11.6	10.5	14.2	13.5	12.1	Mexico	7.3	4.8	4.6	8.9	4.8	4.6		
Belgium	8.9	6.4	5.0	10.3	7.5	5.8	Netherlands	17.2	16.3	16.0	20.1	19.1	18.7		
Canada	11.7	6.8	4.5	13.6	7.9	5.3	New Zealand	14.3	7.2	4.8	16.8	8.4	5.6		
Czech Republic	12.1	7.6	5.6	14.3	9.0	6.6	Norway	11.4	10.2	8.5	13.4	11.9	9.9		
Denmark	18.5	11.6	9.6	21.3	13.3	11.0	Poland	8.4	8.4	8.4	9.5	8.6	8.6		
Finland	10.4	8.8	8.8	12.3	10.5	10.5	Portugal	9.2	8.1	8.0	10.7	9.5	9.3		
France	10.8	9.3	8.5	12.5	10.8	9.8	Slovak Republic	8.8	8.8	8.8	10.6	10.6	10.6		
Germany	7.2	7.2	7.1	8.5	8.5	8.4	Spain	12.2	12.2	12.2	14.3	14.3	14.3		
Greece	14.3	14.3	14.3	16.6	16.6	16.6	Sweden	12.2	9.9	12.0	14.0	11.3	13.7		
Hungary	12.4	12.4	12.4	15.4	15.4	15.4	Switzerland	10.7	9.8	6.8	13.1	12.0	8.3		
Iceland	17.0	13.7	13.2	19.1	15.4	14.8	Turkey	11.0	11.0	11.0	12.9	12.9	12.9		
Ireland	12.1	6.1	4.0	14.5	7.2	4.8	United Kingdom	6.8	4.1	2.9	7.8	4.7	3.3		
Italy	10.0	10.0	9.9	10.7	10.7	10.7	United States	7.2	5.5	4.9	8.3	6.4	5.7		
Japan	7.8	5.6	4.9	8.8	6.3	5.5									
Korea	8.9	5.9	4.7	10.7	7.0	5.6	<b>OECD</b>	<b>11.5</b>	<b>9.3</b>	<b>8.5</b>	<b>13.4</b>	<b>10.9</b>	<b>9.9</b>		

Source: OECD pension models.

## Gross pension wealth by earnings level and sex



Note: Countries are ranked in order of gross pension wealth of low earners (men).

Source: OECD pension models.

StatLink <http://dx.doi.org/10.1787/651560047608>

### Key results

Net pension wealth, like the equivalent indicator in gross terms, shows the present value of the lifetime flow of pension benefits, but also takes account of taxes and contribution paid on pension incomes. Both figures for pension wealth are expressed as a multiple of individual gross earnings.

For average earners, net pension wealth for OECD countries is on average 7.9 times gross individual earnings for men and 9.2 for women. Values are higher for women than men, due mainly to differences in life expectancy between the sexes.

Net pension wealth, at the left-hand side of the table, will always be less than gross pension wealth (if there is some tax liability during retirement) or the same (if pensions are not taxed or pension income is below tax thresholds). For example, pension wealth is the same net and gross in the Slovak Republic and Turkey because pensions are not taxable.

The right-hand columns of the table show the proportion of pensions paid in taxes and contributions for retirees with different levels of earnings when working. There would be no tax liability for average earners with only mandatory pensions in the Czech Republic, Ireland, Mexico, Portugal and the United States. This is because mandatory replacement rates are low relative to other OECD countries. Therefore, workers on average earnings will not build up sufficient entitlements to be taxed in retirement, due to basic income-tax reliefs and exemption from social security contributions. This is also true of high earners (at 150% of average earnings) in all these countries bar Portugal, where they would pay just 2.2% of their pension in taxes meaning that net pension wealth is a little below the gross figure.

The rankings of pension wealth change significantly when measured on a net rather than a gross basis. For example, the Slovak Republic has the eighth highest net pension wealth for an average earner compared with the 15th highest measured on a gross basis. The situation in Denmark is the reverse, because it levies the highest taxes on mandatory pensions at all levels of earnings when working. It has the seventh highest gross pension wealth but the 14th highest in net terms.

In the five Nordic countries, Austria, Italy, Luxembourg and the Netherlands, retirees face a substantial tax burden. In part, this reflects the high level of the gross replacement rate from the mandatory system. But it also results from high levels of taxation in the economy as whole.

Low earners would not be liable for taxes and contributions in ten countries: Australia, Belgium and Canada, in addition to the seven countries where there was no tax liability on pensions for average earners. In a further four countries – Greece, Hungary, Korea and the United Kingdom – the tax liability for low earners in retirement would be very small: less than 1% of pension.

It is important to note that these calculations look at the benefit side of the pension system only. The impact of taxes and contributions paid by people of working age on living standards during retirement relative to work are discussed above in the indicator of “Net pension replacement rates”.

### Definition and measurement

Net pension wealth is the present value of the flow of pension benefits, taking account of the taxes and social security contributions that retirees have to pay on their pensions. It is measured and expressed as a multiple of gross annual individual earnings in the respective country. The reason for using gross earnings as the comparator is to isolate the effects of taxes and contribution paid in retirement from those paid when working. This definition means that gross and net pension wealth are the same where people are not liable for contributions and income taxes on their pensions.

Taxes and contributions paid by pensioners are calculated conditional on the mandatory pension benefit to which individuals at different levels of earnings are entitled. The calculations take account of all standard tax allowances and tax reliefs as well as concessions granted either to pension income or to people of pension age. Details of the rules that national tax systems apply to pensioners can be found in the on-line country profiles at [www.oecd.org/els/social/pensions/PAG](http://www.oecd.org/els/social/pensions/PAG).

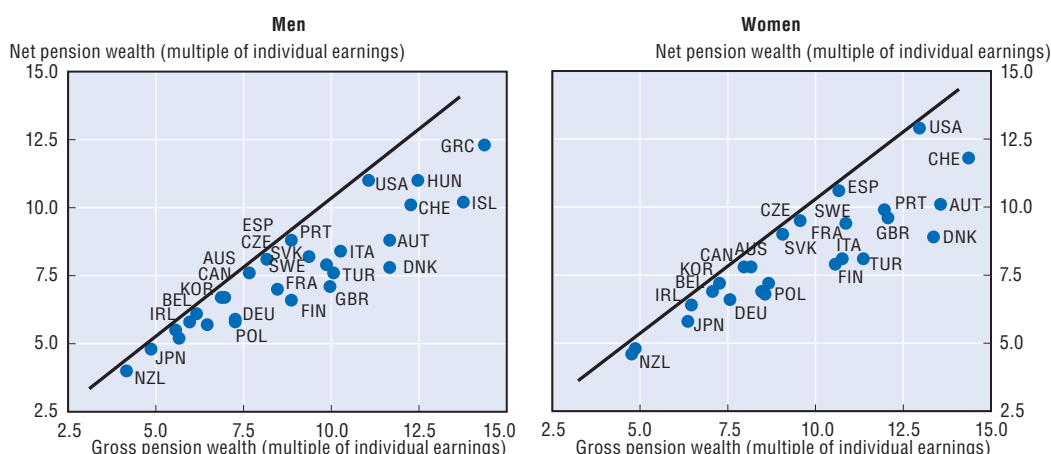
Net pension wealth is shown for workers with pay of 0.5, 1 and 1.5 times the average (mean).

## Net pension wealth and taxes and contributions paid by pensioners

Individual earnings when working	Net pension wealth						Taxes and contributions paid by pensioners (percentage of pension)		
	Multiple of individual annual gross earnings								
	Men			Women			0.5	1	1.5
	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5
Australia	11.7	6.7	4.8	13.7	7.8	5.5	0.0	2.8	10.7
Austria	10.9	8.8	7.4	12.6	10.1	8.5	11.1	24.7	29.7
Belgium	8.9	5.7	4.1	10.3	6.6	4.8	0.0	12.0	16.5
Canada	11.7	6.7	4.5	13.6	7.8	5.2	0.0	1.0	1.0
Czech Republic	12.1	7.6	5.6	14.3	9	6.6	0.0	0.0	0.0
Denmark	12.7	7.8	6.1	14.6	8.9	7	31.5	33.2	36.3
Finland	9	6.6	6.2	10.6	7.9	7.3	13.6	24.9	30.0
France	10.2	8.2	7.1	11.7	9.4	8.2	5.9	12.6	15.7
Germany	6.6	5.8	5.3	7.8	6.8	6.3	8.4	19.6	25.2
Greece	14.3	12.3	11.1	16.5	14.3	12.9	0.3	13.9	22.3
Hungary	12.4	11	9.5	15.3	13.6	11.7	0.2	11.2	23.8
Iceland	13.9	10.2	9.3	15.6	11.4	10.5	18.2	25.6	29.1
Ireland	12.1	6.1	4	14.5	7.2	4.8	0.0	0.0	0.0
Italy	7.6	7.6	7.5	10.7	8.1	8.1	24.1	24.1	24.1
Japan	7.1	5.2	4.4	7.9	5.8	4.9	9.7	8.0	10.7
Korea	8.9	5.8	4.6	10.6	6.9	5.5	0.8	1.6	2.2
Luxembourg	19.2	15.2	13.3	23.5	18.5	16.3	11.3	21.1	27.5
Mexico	7.3	4.8	4.6	8.9	4.8	4.6	0.0	0.0	0.0
Netherlands	14.2	12.1	11	16.6	14.2	12.8	17.4	25.6	31.4
New Zealand	11.8	5.9	3.9	13.9	6.9	4.6	17.6	17.6	17.6
Norway	10.3	8.4	6.8	12.1	9.9	7.9	9.8	17.3	20.1
Poland	7.2	7	6.9	8.3	7.2	7.1	14.1	17.0	18.0
Portugal	9.2	8.1	7.8	10.7	9.5	9.1	0.0	0.0	2.2
Slovak Republic	8.8	8.8	8.8	10.6	10.6	10.6	0.0	0.0	0.0
Spain	10.9	10.1	9.7	12.8	11.8	11.3	10.1	17.1	20.6
Sweden	9.3	7.1	8	10.6	8.1	9.1	23.8	27.9	33.3
Switzerland	10.4	7.9	5.5	12.7	9.6	6.7	2.6	19.6	19.2
Turkey	11	11	11	12.9	12.9	12.9	0.0	0.0	0.0
United Kingdom	6.8	4	2.8	7.8	4.6	3.2	0.9	2.8	3.6
United States	7.2	5.5	4.9	8.3	6.4	5.7	0.0	0.0	0.0
<b>OECD</b>	<b>10.5</b>	<b>7.9</b>	<b>6.9</b>	<b>12.3</b>	<b>9.2</b>	<b>8.0</b>	<b>7.7</b>	<b>12.7</b>	<b>15.7</b>

Source: OECD pension models.

### Gross versus net pension wealth by sex, average earner



Note: The scales of both charts have been capped at gross pension wealth of 15 times individual earnings, which excludes Luxembourg and the Netherlands from both charts and Greece, Hungary and Iceland from the chart for women.

Source: OECD pension models.

StatLink <http://dx.doi.org/10.1787/651566282217>

### Key results

The progressivity index varies from 100 in pure basic schemes (Ireland and New Zealand) to a negative result in Sweden, indicating that the retirement-income system overall is regressive. The average index across OECD countries is 31. The regional differences are striking. The index averages 80 in the Anglophone countries, meaning that their systems are strongly progressive. However, in southern European countries it averages just 6, indicating a very strong link between earnings and pension benefits.

“Pure-basic” pension systems pay the same benefit regardless both of their earnings history and their other sources of income. The relative pension value is independent of earnings and the replacement rate falls with earnings. “Pure-insurance” schemes, in contrast, aim to pay the same replacement rate to all workers when they retire. Defined-contribution plans generally conform to this pure-insurance model as do earnings-related schemes that offer the same accrual rate regardless of earnings, years of service or age.

These two benchmarks underpin the “index of progressivity” used for cross-country comparison of pension benefit formulae. The index is designed so that pure-basic systems score 100% and a pure-insurance schemes, zero. The former is maximally progressive; the latter is not progressive since the replacement rate is constant. A high score is not necessarily “better” than a low score or *vice versa*. Countries with a high score simply have different objectives than countries with a low score.

The first column of the table shows the Gini coefficient for gross pension benefits. The second column shows the index of progressivity of the benefit formula. In addition to the two countries with an index of 100, Australia, Canada, the Czech Republic, and the United Kingdom all have highly progressive pension systems where the index is close to 70 or higher. These countries all have significant targeted or basic pensions.

At the other end of the scale, Finland, Greece, Hungary, Italy, the Netherlands, Poland, Portugal, the Slovak Republic and Turkey have almost entirely proportional systems and so limited progressivity. The index is less than 10. This group includes two countries with notional accounts, which have a close link between contributions and benefits by design. Other countries lie between these two groups. The result for Sweden stands out with a negative progressivity index. This regressivity can be seen in the gross replacement chart in the “Country profile” in Part III, which shows that both low and high earners have higher replacement rates than average earners.

The final two columns explore whether inequality in pension entitlements is explained by inequality in the national earnings distribution or by differences in benefit formulae. The charts show the distribution of earnings for selected countries. In fact, the index of progressivity averages around 40 on both measures for the 18 countries with complete data.

Finally, it is important to note that the index of progressivity of pension benefit formulae measures only the mandatory parts of the pension systems. Some countries have extensive private occupational and personal pension provision. Taking these into account would make the distribution of pensioners’ incomes wider.

### Definition and measurement

OECD countries’ retirement-income systems place differing emphasis on the roles of insurance and redistribution. The progressivity index is designed so that a pure basic scheme would give 100 and a pure insurance scheme, zero. The calculation is based on Gini coefficients, a standard measure of inequality. Formally, the index of progressivity is 100 minus the ratio of the Gini coefficient of pension entitlements divided by the Gini coefficient of earnings, on both cases weighted by the earnings distribution. Calculations were carried out with both national data (where available) and the OECD average earnings distribution.

The indicator is based on the analysis of Musgrave and Thin (1948). It has been adopted by other researchers (see Biggs *et al.*, 2009).

### References

- Biggs, A.G., M. Sarney and C.R. Tamborini (2009), “A Progressivity Index for Social Security”, Issue Paper No. 2009-01, United States Social Security Administration, Washington DC.
- Musgrave, R.A and T. Thin (1948), “Income Tax Progression 1924-48”, *Journal of Political Economy*, Vol. 56, pp. 498-514.

## Gini coefficients on pension entitlements and earnings

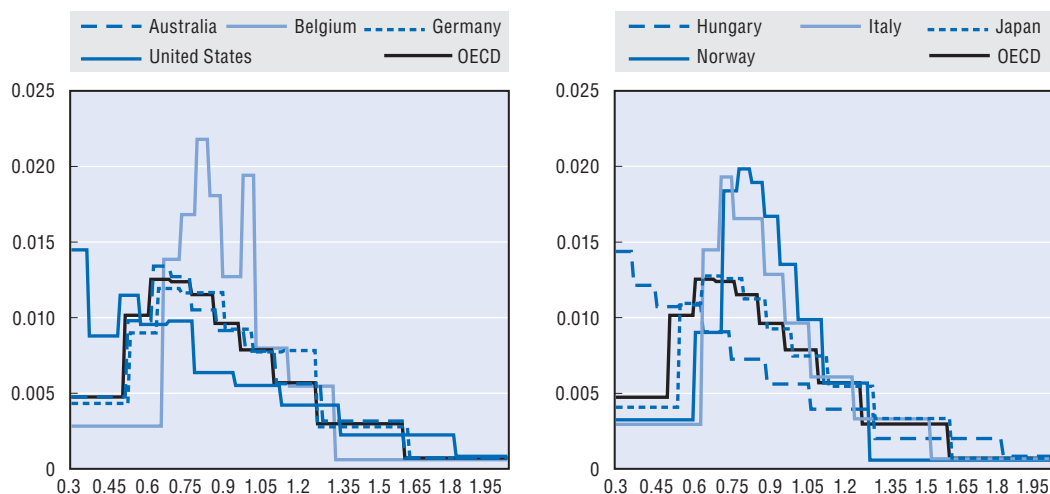
OECD average and national earnings-distribution data

	OECD average distribution		National earnings distribution		
	Pension Gini	Progressivity index	Pension Gini	Progressivity index	Gini wage
Australia	8.1	70.3	8.1	70.1	27.2
Austria	18.7	31.2			
Belgium	11.8	56.7	10.2	52.6	21.6
Canada	3.3	87.7			
Czech Republic	8.5	69	8.8	65.5	25.5
Denmark	12.8	53.1			
Finland	24.9	8.5	22.6	5.9	24
France	21.9	19.5			
Germany	20.6	24.2	19.8	24.7	26.3
Greece	26.1	4.3			
Hungary	27.2	0	33.6	0	33.6
Iceland	22.5	17.2			
Ireland	0	100	0	100	29.6
Italy	26.8	1.6	23.3	1.8	23.7
Japan	14.6	46.5	14.3	46	26.4
Korea	9.3	65.8	10.2	65.5	29.6
Luxembourg	22.5	17.3			
Mexico	18.5	31.9			
Netherlands	25.7	5.8	24.3	5.7	25.7
New Zealand	0	100	0	100	27.7
Norway	16.8	38.4	13.6	38.1	22
Poland	26.3	3.4	29.2	4.1	30.5
Portugal	26.2	3.8			
Slovak Republic	27	0.9			
Spain	22.4	17.9	25.7	17.1	31.1
Sweden	29.6	-8.8	26.4	-14.4	23.1
Switzerland	12.7	53.4			
Turkey	26.5	2.8			
United Kingdom	5.1	81.3	5.1	82.4	28.9
United States	16.1	40.8	16.1	50.8	32.7
<b>OECD average</b>	<b>17.8</b>	<b>34.8</b>			
<b>OECD18</b>	<b>16.3</b>	<b>40.1</b>	<b>16.2</b>	<b>39.8</b>	<b>27.2</b>


Note: OECD18 refers to the countries for which national earnings-distribution data are available.

Source: OECD pension models; OECD Earnings Distribution Database.

## Distribution of earnings: OECD average and selected countries



Source: OECD Earnings Distribution Database.

StatLink  <http://dx.doi.org/10.1787/651571250203>



### Key results

In some countries, such as Hungary, Italy and the Slovak Republic, there is a very strong link between pension entitlements and pre-retirement earnings. In contrast, flat-rate benefits in Ireland and New Zealand mean that there is no link between pension and earnings.

The figure shows relative pension levels in OECD member countries on the vertical axis and individual pre-retirement earnings on the horizontal. Countries have been grouped by the degree to which pension benefits are related (or not) to individual pre-retirement earnings. The grouping is based on the distribution of pension benefits relative to the distribution of earnings, set out in the previous indicator of “Progressivity of pension benefit formulae”.

In the first set of five countries (Panel A), there is little or no link between pension entitlements and pre-retirement earnings. In addition to the flat-rate systems in Ireland and New Zealand, the relative pension level varies little in Canada: from 38% for low earners to 44% for those on average earnings and above. Although Canada has an earnings-related pension scheme, its target replacement rate is very low, its ceiling is set at average economy-wide earnings and a resource-tested benefit is withdrawn against income from this scheme. In the United Kingdom, the earnings-related scheme has a strongly progressive formula and there is also a basic pension programme. In Australia, the relatively flat curve results mainly from the means-tested public pension programme. There is also a limit to the earnings for which employers must contribute to the DC scheme.

At the other end of the spectrum lie five countries with a very strong link between pension entitlements and pre-retirement earnings (Panel F). In the Netherlands, there is no ceiling to pensionable earnings in quasi-mandatory occupational plans. In the Slovak Republic and Italy, ceilings on pensionable earnings are three or more times average earnings. In these countries, relative pension levels increase with earnings in a linear way over most of the range shown.

The five countries in Panel E have a slightly weaker link between individual pre-retirement earnings and pensions than those in Panel F. One explanation is that Luxembourg and Sweden have redistributive

programmes targeting a relatively high minimum retirement income worth 38% of average earnings.

The remaining half of OECD countries represents intermediate cases (between those with little or no link between individual earnings and pensions and those with a strong or very strong link). The ten countries in Panels B and C exhibit stronger links between pensions and pre-retirement earnings than the first group of countries, but their pension systems have much more progressive formulae than those of the five countries shown in Panel F. In the Czech Republic, Norway and the United States this redistribution to low earners is primarily the result of a progressive benefit formula that replaces a larger share of pre-retirement income for poorer workers than for average and higher-income earners. In Iceland, this is done through targeted retirement-income programmes. Denmark has significant basic and targeted schemes.

Panel D shows five countries that lie towards the middle of the OECD countries in terms of the link between pension entitlements and pre-retirement earnings. France and Portugal have redistributive pension programmes – minimum and targeted schemes – at lower-income ranges and strong earnings-benefit links at higher income levels.

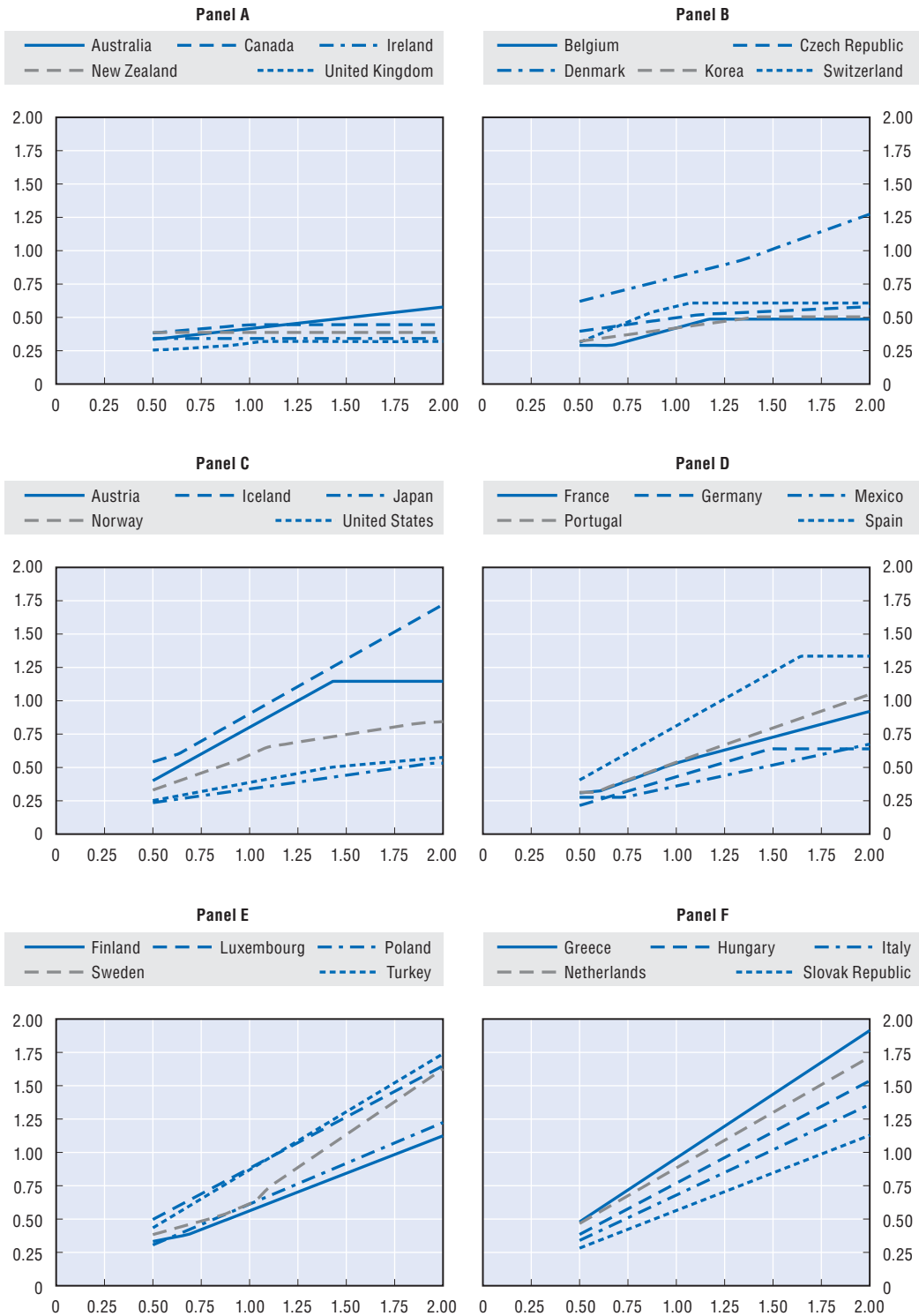
### Definition and measurement

The strength of the link between pension entitlements and individual earnings is measured using the relative pension level, that is, the gross individual pension divided by gross economy-wide average earnings (rather than by individual earnings as in the replacement-rate results). It is best seen as an indicator of pension *adequacy*, since it shows the benefit level that a pensioner will receive in relation to average earnings in the respective country. The relative pension levels illustrate the link between individual pre-retirement earnings and pension benefits, with data for individuals with earnings from 0.5 to 2 times the average (mean).



### The link between pre-retirement earnings and pension entitlements

Gross pension entitlement as a proportion of economy-wide average earnings



StatLink  <http://dx.doi.org/10.1787/651411374141>

### Key results

The indicators so far have shown replacement rates, relative pension levels and pension wealth for people at different levels of earnings. By taking a weighted average of these indicators across the earnings range, the measures presented here show the average for the pension level at the time of retirement and pension wealth. The first is designed to show the level of the average retirement income, taking account of the different treatment of workers with different incomes. The second aims to summarise the total cost of providing old-age incomes.

The weighted average pension level is 57.6% of economy-wide average earnings across the OECD countries. Weighted average pension wealth is an average of 9.8 times mean earnings for men and 11.4 for women.

The measure of weighted average relative pension level combines data on the distribution of earnings with calculations of pension entitlements. The relative pension level is averaged over individuals across the earnings distribution using weights that allow for the fact that there are many more with earnings below the mean than above. The weighted average pension level is expressed as a percentage of economy-wide average earnings. The results are shown in the first and second columns of the table for men and women respectively.

At the top of the range, the weighted average pension levels in Greece and Iceland, followed closely by the Netherlands and Luxembourg are worth more than 86% of average earnings. In another five countries – Denmark, Spain, Austria, Hungary and Sweden – the weighted average pension level is above 70% of the average earnings. At the other end of the spectrum, in seven OECD countries (New Zealand, Belgium, Mexico, the United States, Ireland, Japan and the United Kingdom) the weighted average pension level is less than 40% of average earnings.

The same type of weighting procedure can also be applied to the pension wealth measure which is the most comprehensive measure of the scale of the pension promise made to today's workers (third and fourth column of the table). The averages across OECD are worth USD 407 000 for men and USD 476 000 for women (fifth and sixth column of the table).

Values well above the average for weighted average pension wealth, between 13.6 and 16.5 for men and 15.6 and 19.3 of average earnings for women, are found in Denmark, Greece, Iceland and the Netherlands. Austria, Hungary, Italy, Spain and Turkey are closely clustered with values of this indicator of around 10-12 times average earnings. When converted in USD the pension promises in these nine countries amount to USD 565 000 for men and more than USD 650 000 for

women. These numbers represent the present value of the transfers that societies are promising on average to future retirees under the current pension system rules.

At the other end of the spectrum, in four countries (Japan, Mexico, the United Kingdom and the United States) pension wealth is well below the average for OECD, at less than 6 times average earnings for men and 7 times average earnings for women.

Pension promise measured with the weighted average pension wealth is also lower in countries with shorter life expectancy such as Poland.

### Definition and measurement

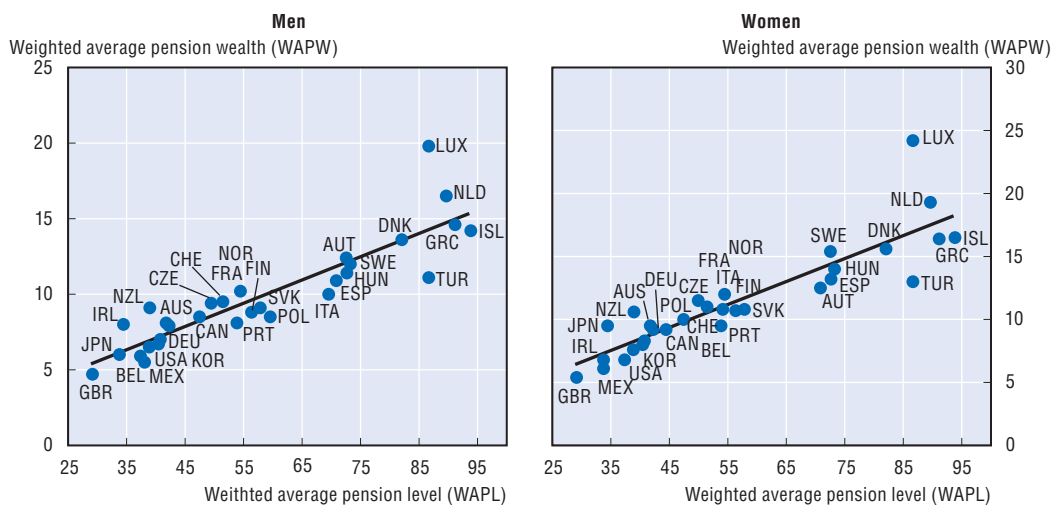
Building on the results for replacement rates and pension levels across the range of individual earnings, it is possible to develop composite indicators of countries' pension systems that aggregate the results for workers at different earnings levels. The indicators are the weighted average pension level and the weighted average pension wealth. The indicators build on the calculations of pension entitlements for people earning between 0.3 and 3 times the economy-wide average.

Each level of individual earnings is given a weight based on its importance in the distribution of earnings. The calculations use the average distribution of earnings based on data for 18 OECD countries. The earnings distribution is skewed. The mode (or peak) of the distribution is at around two-thirds of mean earnings. The median (the earnings level both below and above which half of employees are situated) is typically between 80 and 85% of mean earnings. Two-thirds of people earn less than mean earnings. Thus, there are many people with low earnings, and fewer with high earnings, so low earners are given a larger weight in the calculation of the indicator than high earners.

## Weighted averages

	Weighted average pension level		Weighted average pension wealth		Average pension wealth (USD)	
	Men	Women	Men	Women	Men	Women
Australia	41.5	41.5	8.1	9.5	337 000	395 000
Austria	72.4	72.4	11.4	13.2	474 000	549 000
Belgium	38.6	38.6	6.5	7.6	270 000	316 000
Canada	42	42	7.9	9.2	328 000	382 000
Czech Republic	47.2	47.2	8.5	10	353 000	416 000
Denmark	81.8	81.8	13.6	15.6	565 000	648 000
Finland	57.6	57.6	9.1	10.8	378 000	449 000
France	51.2	51.2	9.5	11	395 000	457 000
Germany	40.5	40.5	7	8.3	291 000	345 000
Greece	93.6	93.6	14.2	16.5	590 000	686 000
Hungary	72.3	72.3	12.4	15.4	515 000	640 000
Iceland	90.9	90.9	14.6	16.4	607 000	682 000
Ireland	34.2	34.2	8	9.5	333 000	395 000
Italy	69.3	53.9	10	10.8	416 000	449 000
Japan	33.5	33.5	6	6.8	249 000	283 000
Korea	40.2	40.2	6.7	8	278 000	333 000
Luxembourg	86.4	86.4	19.8	24.2	823 000	1 006 000
Mexico	37.8	33.5	5.5	6.1	229 000	254 000
Netherlands	89.4	89.4	16.5	19.3	686 000	802 000
New Zealand	38.7	38.7	9.1	10.6	378 000	441 000
Norway	54.2	54.2	10.2	12	424 000	499 000
Poland	59.3	44.2	8.5	9.2	353 000	382 000
Portugal	53.6	53.6	8.1	9.5	337 000	395 000
Slovak Republic	56.1	56.1	8.8	10.7	366 000	445 000
Spain	73	73	12	14	499 000	582 000
Sweden	70.6	70.6	10.9	12.5	453 000	520 000
Switzerland	49.2	49.7	9.4	11.5	391 000	478 000
Turkey	86.4	86.4	11.1	13	461 000	540 000
United Kingdom	28.9	28.9	4.7	5.4	195 000	224 000
United States	37.1	37.1	5.9	6.8	245 000	283 000
<b>OECD average</b>	<b>57.6</b>	<b>56.4</b>	<b>9.8</b>	<b>11.4</b>	<b>407 000</b>	<b>476 000</b>

## Weighted averages compared: pension levels versus pension wealth by sex


 StatLink <http://dx.doi.org/10.1787/651628302721>

### Key results

The retirement-income package is divided into different components using the taxonomy from the “Framework of Pensions at a Glance” above. This divides pension systems into two mandatory tiers: i) a redistributive part, to ensure pensioners achieve an absolute minimum standard of living; and ii) an insurance part, to achieve a target income in retirement compared with earnings when working. This indicator, showing the division of national pension systems between these tiers and between different benefits within the tiers, again demonstrates substantial differences in policies between countries.

The first-tier of redistributive benefits is divided into three types.

First, minimum pensions, significant in 13 countries, aim to prevent pension benefits (often from a single scheme) falling below a certain level. In Belgium and the United Kingdom, minimum pension credits have a similar effect: benefits for workers with low earnings are calculated as if the worker had earned at a higher level. These credits form a very large part of overall benefits in the United Kingdom. Minimum pension are also significant in Belgium, France, Mexico and Sweden.

Another first-tier benefit is basic schemes, whose value does not depend on earnings or the level of other pensions. Basic schemes (or provisions with similar effects in Korea and Mexico) are found in 13 OECD countries. Mandatory pensions in Ireland and New Zealand are entirely from basic schemes. In Japan, Korea, the Netherlands and the United Kingdom, basic pensions contribute 40-60% of the total pension promise. They are also significant in Canada, Denmark and Norway, accounting for 25-35% of resources transferred to pensioners.

All OECD countries have a safety-net for low-income pensioners. But in most of them, full-career workers, even those with low earnings, will not be eligible. There are seven exceptions. Australia is most striking because the whole of its first-tier provision is means-tested and this scheme makes up almost half of the total pension package. In Canada and Denmark, they also play a very important role by providing between 14% and 21% of the pension promise, respectively.

The balance between first- and second-tier schemes in the retirement-income package is shown in the left-hand chart. The second tier accounts for 95% or more in more than the half of OECD countries. In some countries – Austria, Italy, Poland, Spain and Turkey – this reflects high target replacement rates in the second tier. In others, such as Switzerland and the United States, the

benefit formula of the public scheme is progressive: redistribution done by the first tier in other countries is carried out by second-tier plans. At the other end of the spectrum, there are no second-tier, mandatory pensions in Ireland and New Zealand, and in the United Kingdom, most of the earnings-related plan goes into benefits from minimum credits.

The second tier of mandatory benefits is divided in the table between public and private providers and, for the latter, between defined-contribution (DC) and defined-benefit (DB) provision. There are public, earnings-related schemes in 23 OECD countries. They provide almost all of the benefits for full-career workers in nine countries: Austria, Finland, Germany, Greece, Italy, Portugal, Spain, Turkey and the United States.

In 11 countries, private pensions are mandatory or quasi-mandatory. They are DB in Iceland, the Netherlands and Switzerland, but DC in most cases. In five countries – Australia, Denmark, the Netherlands, Poland and the Slovak Republic – they account for 50-60% of the total, mandatory pension package. They are significantly more important in Iceland and Mexico. The balance between public and private provision is shown in the right-hand chart.

### Definition and measurement

The structure of the pension package is illustrated using the indicator of weighted average pension wealth presented above, divided into the different components of the pension system. The weights derive from the earnings distribution.

Empty cells generally indicate that a country does not have that type of retirement-income provision. However, it is important to remember that the calculations cover full-career workers. All of the first-tier programmes will be much more important for people with incomplete contribution histories. But it is hard to obtain information on the distribution of past contribution histories let alone predict them into the future.

## Structure of the pension package

Percentage contribution of components of the pension system to weighted average pension wealth

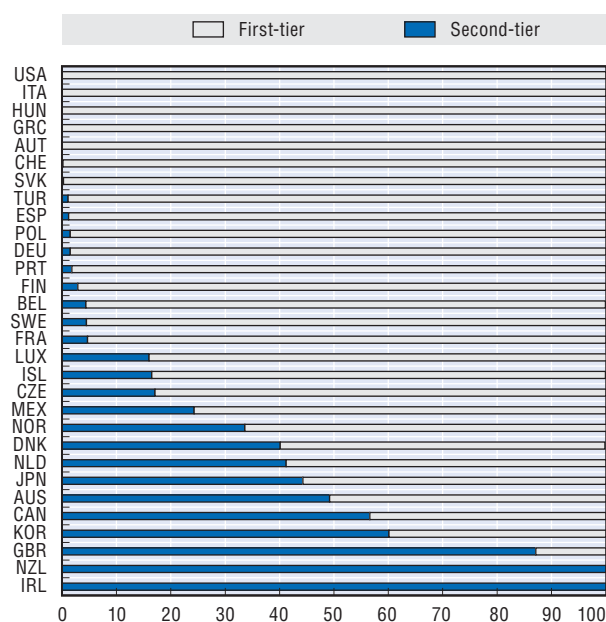
	First-tier			Second-tier			Total		First-tier			Second-tier			Total
	Resource-tested	Basic	Minimum	Public	Private DB	Private DC			Resource-tested	Basic	Minimum	Public	Private DB	Private DC	
Australia	49.2					50.8	100	Korea		60.1 <sup>5</sup>			39.9		100
Austria				100.0			100	Luxembourg		15.8 <sup>6</sup>	0.2		84.1		100
Belgium			4.4 <sup>1</sup>	95.5			100	Mexico		14.0	10.3 <sup>7</sup>			75.7	100
Canada	21.4	35.2		43.4			100	Netherlands		41.2			58.8		100
Czech Republic		17.1		82.9			100	New Zealand		100					100
Denmark	13.8	26.3				59.7 <sup>2</sup>	100	Norway		32.4	1.2		56.5	10.0	100
Finland			2.9	97.1			100	Poland			1.5		48.2	50.3	100
France			4.7	95.3 <sup>3</sup>			100	Portugal			1.8		98.2		100
Germany	1.5			98.5			100	Slovak Republic			0.3		44.9	54.8	100
Greece				100 <sup>4</sup>			100	Spain			1.2		98.8		100
Hungary				65.9		34.1	100	Sweden			4.5		52.6	42.9 <sup>8</sup>	100
Iceland	3.5	13.0			83.4		100	Switzerland	0.2				72.0	27.8	100
Ireland		100					100	Turkey			1.1		98.9		100
Italy				100.0			100	United Kingdom	0.7	50	36.4 <sup>9</sup>		12.9		100
Japan		44.3		55.7			100	United States					100.0		100

DB = defined benefit; DC = defined contribution.

- Belgium: includes both minimum pension and minimum credits.
  - Denmark: private DC plans include both quasi-mandatory occupational (51.0%) and the special pension (5.0%).
  - France: public pensions include both the state scheme (64.2%) and the complementary, occupational scheme (31.1%).
  - Greece: public pension is made up of the main (73.0%) and the supplementary components (27%).
  - Korea: basic component represents the part of the public pension based on average rather than individual earnings.
  - Luxembourg: basic pension also includes the end-of-the-year allowance.
  - Mexico: basic component calculated from the flat-rate government contribution to DC accounts of 5.5% the real minimum wage from 1997.
  - Sweden: private DC includes both DC schemes (12% and 30.9%).
  - United Kingdom: minimum pension relates to minimum credits in public, earnings-related scheme.
- Source: OECD pension models.

### Balance between first-tier, redistributive programmes and second-tier, insurance schemes

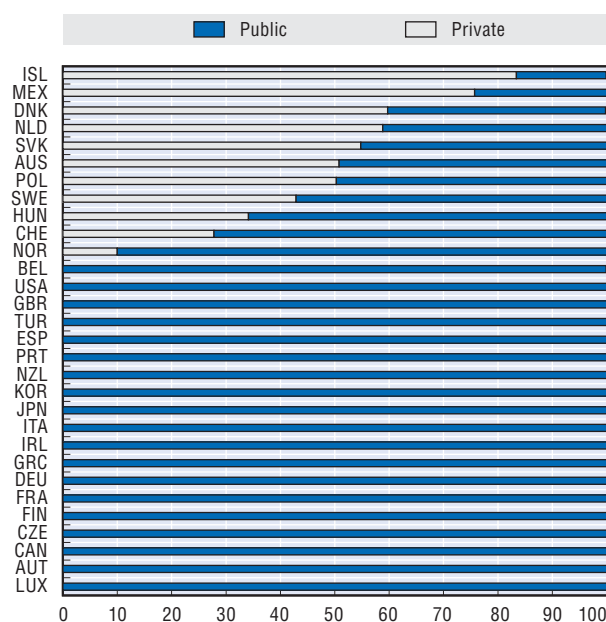
Percentage of weighted average pension wealth



Source: OECD pension models.

### Balance between public and private provision of mandatory pensions

Percentage of weighted average pension wealth



Source: OECD pension models.

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## Retirement-income Systems

*The first set of indicators focused on individual pension entitlements. In contrast, this group looks at retirement-income systems as a whole.*

*The first two indicators look at how pensions are financed: contributions for public pensions and the assets that back both public and private pension promises. Contribution rates for public pensions, where these can separately be identified, are shown for a series of years between 1994 and 2007. The assets of private pension funds are presented for 2007. Data on the value of public pension reserves are also shown for the same year.*

*Expenditure on pension benefits is the third of the indicators of retirement-income systems. This indicator shows how much of national income is needed to pay for pensions. It also shows the importance of public pensions in the overall government budget. In many countries, mandatory private pension schemes and public provision of “in-kind” benefits (for housing, for example) are important sources of support in old age. Where available, data are given for spending on these items as well. The evolution of all these measures of the cost of pensions is shown for the period from 1990 to 2006.*

*The final indicator also looks at private pensions, showing the proportion of the workforce covered by mandatory, quasi-mandatory and voluntary schemes.*

### Key results

Pension contribution rates have remained broadly stable since the mid-1990s. The average contribution rate in the 21 OECD countries that levy separate public contributions increased from 20.0% in 1994 to 21.0% in 2007. This probably reflects governments' concerns over the effect on employment of high labour taxes. Indeed, these concerns seem to have taken precedence over the pressure on pension-system finances from ageing populations and maturing of schemes.

In the 23 countries for which data are available, revenues from these contributions were worth an average of 5.0% of national income, representing 14.1% of total government revenues raised from taxes and contributions.

Most of the measures presented in *Pensions at a Glance* look at the benefits side of the pension system. These indicators look at the contribution side.

The left-hand side of the table looks at the evolution of contribution rates. Around a third of countries with separate pension contributions saw rates unchanged between 2004 and 2007: Austria, Belgium, Greece, Luxembourg, Turkey and the United States. In addition, there were only very small changes in Germany and Switzerland. There were significant increases in contribution rates in the Czech Republic, Canada and Korea, although in the last two, this was from a relatively low base. Among the more modest changes, there were small increases in contribution rates in Finland, France, Italy and Poland, probably reflecting the pressure of growing public pension spending. In contrast, there were cuts in contribution rates in Japan, the Slovak Republic and Spain. These were often motivated by a desire to reduce labour taxes to increase employment.

The right-hand side of the table looks at the money raised from contributions to public pension schemes. The revenue figures complement those for the contribution rate, because they illustrate the effect of other parameters of the pension system. For example, most OECD countries have ceilings on pension contributions, which range from around the level of average earnings to 3.7 times in Italy and 5.9 times in Mexico. A lower ceiling will, of course, reduce revenues for a given contribution rate. In other countries, there are floors to contributions, which can mean that low earners pay little or no contributions. Finally, some countries' revenues may be affected by the size of the informal sector or under-reporting of earnings.

Public revenues from pension contributions are highest in Italy, at 9.4% of gross domestic product (GDP). Despite the contribution rate in Turkey being around the same as the OECD average, it raises just 2.2% of national income in contributions, reflecting the size of the informal sector. Contribution revenues are also low in Canada – 2.7% of GDP – because of the low contribution rate (half the OECD average) and the low ceiling (around average earnings).

On average, employee contributions raise a total of 1.8% of GDP compared with 2.9% of GDP for employers' contributions. Employees pay 36% of the total, on average, compared with 58% of the total paid by employers. (The remainder is mainly accounted for by contributions from the self-employed, although it also includes contributions from other groups, such as the unemployed.) The great bulk of contributions is levied on employers in the Czech Republic, Finland, Hungary, Italy and Spain. However, it is important to bear in mind that levies on employers have been shown in numerous economic analyses to be passed, in part or in full, onto workers. This can take the form of lower wages or fewer jobs. In many countries, the contributions are evenly balanced between employer and employee levies, including Austria, Belgium, Canada, Germany, Japan, Switzerland and the United States.

The final column of the table shows pension contributions as a percentage of total government revenues from taxes and contributions. This time, Italy does not show the highest figure. In Greece, Poland and Spain, pension contributions account for 23-24% of total revenues, compared with 22.4% in Italy. In Australia, Denmark and New Zealand, pensions are financed by general revenues. For the reasons explained above, pension contributions are a relatively small part of government revenues in Canada, Korea and Turkey.



## Public pension contribution rates and revenues

	Pension contribution rate (per cent of gross earnings)				Pension contribution revenues, 2006			
					(per cent of GDP)			(per cent of total taxes)
	1994	1999	2004	2007	Employee	Employer	Total	
Australia	Private pension contributions only				0.0	0.0	0.0	0.0
Austria	22.8	22.8	22.8	22.8	3.5	3.7	7.9	18.9
Belgium	16.4	16.4	16.4	16.4	2.2	2.0	4.6	10.4
Canada	5.2	7.0	9.9	9.9	1.3	1.3	2.7	8.1
Czech Republic	26.9	26	28.0	32.5	1.7	5.7	7.8	21.2
Denmark	Private pension contributions only				0.0	0.0	0.0	0.0
Finland	18.6	21.5	21.4	20.9	1.6	6.9	8.9	20.5
France	21.5	24.0	24.0	24.0				
Germany	19.2	19.7	19.5	19.5	2.6	2.7	5.8	16.4
Greece	20.0	20.0	20.0	20.0	2.9	3.5	7.5	23.9
Hungary	30.5	30.0	26.5	26.5	1.0	4.8	5.8	15.7
Iceland	No separate pension contribution							
Ireland	No separate pension contribution							
Italy	28.3	32.7	32.7	32.7	2.2	7.3	9.4	22.4
Japan	16.5	17.4	13.9	14.6	2.9	2.9	5.9	21.0
Korea	6.0	9.0	9.0	9.0	1.6	1.0	2.6	9.8
Luxembourg	16.0	16.0	16.0	16.0	2.5	2.2	4.8	13.3
Mexico	Private pension contributions only				0.0	0.0	0.0	0.0
Netherlands	33.1	37.7	28.1	31.1				
New Zealand	No contributions				0.0	0.0	0.0	0.0
Norway	No separate pension contribution							
Poland		32.5	32.5	35.0	4.3	3.7	8.1	24.0
Portugal	No separate pension contribution							
Slovak Republic	28.5	27.5	26.0	24.0	1.3	2.3	5.2	17.4
Spain	29.3	28.3	28.3	28.3	1.3	6.6	8.5	23.3
Sweden	19.1	15.1	18.9	18.9	2.5	3.6	6.2	12.7
Switzerland	9.8	9.8	9.8	10.1	2.8	2.7	6.0	20.4
Turkey	20.0	20.0	20.0	20.0	1.1	1.1	2.2	8.8
United Kingdom	No separate pension contribution							
United States	12.4	12.4	12.4	12.4	2.3	2.3	4.6	17.2
<b>OECD</b>	<b>20.0</b>	<b>20.7</b>	<b>20.2</b>	<b>21.0</b>	<b>1.8</b>	<b>2.9</b>	<b>5.0</b>	<b>14.1</b>

Note: All figures are rounded to one decimal place. The OECD average figure for contribution rates excludes the countries for which there are no pension contributions or they are part of contributions to wider social security programmes. The OECD average figure for contribution revenues includes zero for the countries with no contributions in the calculation.

In some cases, pension contribution revenues have been calculated assuming that the revenues are split between different social security programmes in the same proportion as the contribution rates. The total contribution includes payments from people who are not employed (principally the self-employed).

Finland: contribution rates are now higher for employees aged 53 and over. There is an additional levy on employers that varies between 0.8% and 3.9% of payroll, depending on the employer's capital. France and the Netherlands: it is not possible to separate the contribution revenues into those for pensions and for other purposes. Poland: the contribution rate for pensions was cut by 3 percentage points in July 2007; the earlier, higher figure is shown.

Source: OECD (various years), *Taxing Wages*; OECD (2008), *Revenue Statistics*; Social Security Administration, United States (various years), *Social Security Programs throughout the World*; OECD pension models and tax-benefit models.

StatLink  <http://dx.doi.org/10.1787/651685284288>

### Key results

Public spending on cash old-age pensions and survivors' benefits in OECD increased 16.7% faster than the growth in national income between 1990 and 2005, from an average of 6.2% of gross domestic product (GDP) to 7.2%. This is a result of population ageing and the maturing of pension systems.

Italy had the highest public pension spending in 2005: 14.0% of GDP. Public pension spending on cash benefits is also well above 10% of GDP in some other European countries: Austria, France, Germany, Greece and Poland. At the other end of the scale, Korea and Mexico spend only around 1.5% of GDP on old-age and survivors' benefits. In Korea, this reflects the fact that the public pension scheme was only introduced in 1988. But spending grew rapidly between 1990 and 2005 – more than doubling relative to national income – due to the maturing of the scheme and rapid population ageing. In Mexico, low spending reflects relatively low coverage of pensions (only around 35% of employees) and a relatively young population.

Spending also tends to be relatively low in other countries with a favourable demographic profile, such as Australia, Canada, Ireland, New Zealand and the United States. However, this is not always the case: Turkey spends 7.8% of GDP on public pensions – more than the OECD average of 7.2% – despite being the second youngest OECD country in demographic terms.

In some OECD countries, public pension spending is low due to mandatory private provision (first memorandum item in the table). The most important case is Switzerland, where mandatory private pension spending of 6.0% of GDP is not far short of public spending, of 6.8% of GDP. Adding the two together, total pension spending of 12.8% of national income is second only to Italy, and a little above Austria and France. The mandatory defined-contribution scheme in Australia was introduced in 1992, so current retirees have little or no accumulation in these plans. Total payouts in 2005 amounted to just 0.4% of GDP, but this will increase rapidly in coming years. Similarly, mandatory private pensions in Poland and Hungary (introduced in the late 1990s) and the Slovak Republic (in 2005) will see little or no payouts for a decade or more.

Pension spending relative to national income was stable over the period 1990-2005 in five OECD countries: Belgium, Canada, Spain, Sweden and the United States. In six countries, public pension expenditures increased at a slower rate than national income. In Ireland, this reflects the stellar growth in

GDP over the period. In New Zealand, the decline of over 40% in pension spending relative to national income reflects two policies: freezing the value of the basic pension in 1992-94 and increasing the pension age from 60 to 65. The other countries with significant falls in pension spending are Iceland, Luxembourg, the Netherlands and Norway.

In five OECD countries, public pension expenditure more than doubled relative to national income. In the case of Korea and Mexico (and, to a lesser degree, Turkey), this reflected the low starting point for pension spending in 1990. However, Poland and Portugal have moved from having pension spending below the OECD average to well above.

The right-hand columns of the table show spending on cash old-age and survivors' benefits relative to total public spending (rather than national income). Again, Italy has the highest figure, with pensions taking nearly 30% of the budget. In Austria, France, Germany, Greece and Poland, around a quarter of public spending goes on pensions. The risk in these countries is that public pension spending crowds out other desirable expenditure, both in social policy (on benefits for children and parents) and elsewhere (on education, for example).

Public old-age support is not limited to cash benefits. The second memorandum item shows total public spending on older people, including non-cash benefits. The most important is housing benefits and subsidies. These are defined as “non-cash benefits” because they are contingent on particular expenditure by individuals. They are particularly important in the five Nordic countries: non-cash benefits cost an average of 1.8% of GDP. Housing is also an important part of old-age support in the Netherlands and the United Kingdom, while the figures for Australia related mainly to healthcare.

### Definition and measurement

Data and definitions are set out in more detail in the on-line *Social Expenditure Database*: [www.oecd.org/els/social/expenditure](http://www.oecd.org/els/social/expenditure).

## Expenditures on old-age and survivors' benefits

	Per cent of GDP				Change 1990-2005 (%)	Per cent of government spending	
	1990	1995	2000	2005		1990	2005
<b>Public cash benefits</b>							
Australia	3.1	3.7	3.9	3.5	+10.6	8.6	9.9
Austria	11.7	12.6	12.3	12.6	+7.8	22.7	25.3
Belgium	9.1	9.3	8.9	9.0	-0.9	17.4	17.3
Canada	4.2	4.7	4.3	4.1	-2.9	8.7	10.6
Czech Republic	6.1	6.2	7.5	7.3	+20.0		16.3
Denmark	5.1	6.2	5.3	5.4	+6.1	9.2	10.3
Finland	7.3	8.8	7.6	8.4	+16.4	15.1	16.7
France	10.6	12.0	11.8	12.4	+16.3	21.5	23.0
Germany	10.0	10.5	11.0	11.4	+14.0		24.3
Greece	9.9	9.6	10.7	11.5	+16.6		26.6
Hungary			7.3	8.5			17.1
Iceland	2.2	2.4	2.2	2.0	-10.5		4.7
Ireland	3.9	3.5	3.1	3.4	-12.1	9.0	10.0
Italy	10.1	11.4	13.6	14.0	+37.9	19.2	29.0
Japan	4.9	6.2	7.4	8.7	+75.5		22.7
Korea	0.8	1.2	1.4	1.6	+108.5	3.8	5.4
Luxembourg	8.2	8.8	7.5	7.2	-11.2	21.6	17.3
Mexico	0.5	0.8	0.9	1.3	+161.6		
Netherlands	6.7	5.8	5.0	5.0	-26.3	12.2	11.0
New Zealand	7.5	5.8	5.1	4.4	-41.8	14.0	10.9
Norway	5.6	5.5	4.8	4.8	-14.3		11.5
Poland	5.1	9.4	10.5	11.4	+121.6		26.3
Portugal	5.0	7.4	8.2	10.2	+102.1		22.0
Slovak Republic		6.3	6.3	6.2			16.2
Spain	7.9	9.0	8.6	8.1	+1.9		21.0
Sweden	7.7	8.2	7.3	7.7	-0.3		13.9
Switzerland	5.6	6.6	6.6	6.8	+21.6	18.3	19.1
Turkey	3.2	3.7		7.8	+146.1		
United Kingdom	4.9	5.4	5.4	5.7	+15.4	11.9	12.8
United States	6.1	6.3	5.9	6.0	-0.7	16.1	16.2
<b>OECD</b>	<b>6.2</b>	<b>6.8</b>	<b>6.9</b>	<b>7.2</b>	<b>+16.7</b>		
<b>Memorandum: Total spending including mandatory private</b>							
Australia	3.1	4.4	4.8	3.9	+23.5		
Italy	12.9	14.5	14.8	15.1	+17.3		
Japan	5.1	6.4	7.9	9.0	+76.6		
Switzerland	8.7	11.3	12.4	12.8	+47.2		
United Kingdom	5.0	5.6	5.9	6.2	+23.4		
<b>Memorandum: Total public spending including non-cash benefits</b>							
Australia	3.7	4.2	5.1	4.7	+25.1		
Denmark	7.4	8.4	7.1	7.3	-1.5		
Finland	8.0	9.7	8.4	9.4	+17.8		
Hungary			7.8	9.1			
Iceland	3.5	3.7	3.5	3.8	+10.4		
Japan	5.1	6.4	8.1	9.9	+94.4		
Netherlands	7.3	6.3	5.7	5.8	-19.7		
Norway	7.5	7.5	6.8	6.6	-12.4		
Sweden	9.2	10.5	9.8	10.2	+11.0		
United Kingdom	5.2	5.9	5.9	6.3	+19.6		

Note: Countries are only shown in the memorandum items if the relevant value – mandatory private spending or public spending on non-cash benefits respectively – is significant.

Source: OECD Social Expenditures (SOCX) Database, OECD Main Economic Indicators Database.

StatLink  <http://dx.doi.org/10.1787/651748842654>

### Key results

As future public pensions for today's workers have been reduced to try and restore financial sustainability to public pension schemes, the burden of providing for old age has been shifted onto private pensions. In 11 OECD countries, private pensions are mandatory or quasi-mandatory (that is, they achieve near-universal coverage of employees through industrial-relations agreements). In a further eight OECD countries, voluntary private pensions cover a significant part of the workforce: more than 55%.

In Iceland, Norway and Switzerland, occupational pensions are mandatory: employers must operate a scheme and contribution rates are set by the government. In the Netherlands and Sweden, occupational plans are "quasi-mandatory": through industrial-relations agreements, employers establish schemes and employees must join them. As a result, 90% or more of the workforce is covered.

Six OECD countries – Denmark, Hungary, Mexico, Poland, the Slovak Republic and Sweden – have mandatory personal pensions. Coverage is near-universal in Denmark and Sweden. However, in Eastern Europe, the schemes were introduced in the last decade. Older workers tended not to be covered by the new plans. The coverage rate of around 65-75% will therefore increase over time as new workers join personal pensions while workers with only public pensions retire.

In Mexico, the coverage rate for mandatory personal pensions is low because of the size of the informal sector in the economy.

Australia's system combines occupational and personal provision. Originally, employers chose the pension provider, either an industry-wide plan or a financial-services firm. But individuals can now choose to opt out of their employer's chosen provider and pick a different one or invest their retirement savings themselves. It is not easy to separate out the overall coverage of 85% into occupational and personal plans.

Turning to voluntary private pensions, coverage is highest – at 55% or more – in Belgium, Canada, Germany, Ireland, Japan, Norway, the United Kingdom and the United States. Occupational plans are the only or main provider of private pensions. They are "voluntary" in the sense that employers are free to set up an occupational plan or not and employees can often choose whether to join.

Where the OECD has household-survey data, overall coverage of voluntary private pensions is shown to involve much "double-counting": people

with both occupational and personal plans. This effect is strongest in the United States: 46% of employees are members of occupational plans and nearly 35% have personal pensions, whereas overall private-pension coverage is just less than 58%. This implies that two-thirds of people with personal plans also have an occupational pension.

Coverage of voluntary personal pensions is generally quite low: the largest figures are Germany (44%) and the United States (about 35%). In many cases, this is probably because the demand for private pensions is mainly met with occupational provision, which "crowds out" demand for personal pensions.

The effect of the new "KiwiSaver" scheme in New Zealand is apparent (see the special chapters in Part I on "Recent pension reforms" and "The pension gap and voluntary retirement savings"). Private pension coverage had declined substantially after the reduction of tax incentives. In 2007, 13% of employees had an occupational plan and 5.5% were members of personal schemes. KiwiSaver has now enrolled nearly a third of employees through occupational provision and a further 10.7% through personal plans. This is early evidence of the effectiveness of the automatic enrolment arrangements in the scheme.

### Definition and measurement

It is very difficult to get accurate and comparable data on private pensions because of substantial institutional differences between countries in the way that pensions are set up. The table aims, as far as possible, to match the categorisation of the various types of scheme used elsewhere in *Pensions at a Glance*. As a result, the classification of different schemes is not exactly the same as in OECD (2009) *Private Pensions Outlook*. The aim here is to express coverage of employees as a percentage of total employment. However, in some countries, some of the covered may be self-employed or not working and so enter the numerator but not the denominator of the percentage figures shown.

### Coverage of private pension schemes by type of plan


In percentage

	Mandatory/quasi-mandatory		Voluntary		Total
	Occupational	Personal	Occupational	Personal	
Australia		- 85.0 -	18.8	9.7	
Austria			13.9		
Belgium			55.6		
Canada			39.4		57.3
Czech Republic				- 45.0 -	
Denmark	> 90.0/76.1	88.6			
Finland			8.7	7.3	
France			15.0		
Germany			64.0	44.0	
Greece					
Hungary		74.0		- 31.0 -	
Iceland	> 90.0				
Ireland			42.9	14.9	55.0
Italy			10.6	5.1	
Japan			45.0		
Korea					
Luxembourg			5.6		
Mexico		34.5			
Netherlands	> 90.0				
New Zealand			13.0/32.6	5.5/10.7	n.a./43.3
Norway	> 90.0		60.0	3.0	
Poland		71.7		- 1.0 -	
Portugal			4.0		
Slovak Republic		65.8			
Spain			8.7		
Sweden	> 90.0	> 90.0			
Switzerland	> 90.0				
Turkey					
United Kingdom			47.1	18.9	59.1
United States			46.0	34.7	57.7

Note: Empty cells indicate that there is no legal basis for that scheme type in a particular country or that coverage is negligible (less than 1%). The entry "> 90.0" indicates that coverage is near universal. The column for total coverage is only filled where there are adequate data to deal with double-counting of people with both occupational and personal plans.

Australia: the mandatory "superannuation-guarantee" scheme allows individuals to choose between an employer-wide scheme, industry-wide funds, a financial-services firm or to invest the funds themselves: a mix between occupational and personal provision. Czech Republic, Hungary and Poland: voluntary private pensions are provided by both occupational and personal plans: it is not possible to distinguish coverage of each type. Denmark: under mandatory occupational, the first figure relates to ATP and the second to quasi-mandatory DC occupational pensions. The figure under the "mandatory, personal" column relates to the special pension (SP). See the country chapter on Denmark for more details. Germany: coverage of occupational pensions is a percentage of employees covered by the public pension. Korea: the government aims to convert severance-pay schemes into occupational plans (see the special chapter in Part I on "Recent pension reforms") but there have been few conversions so far, although exact figures are not available. New Zealand: the second figure in each cell shows people covered by KiwiSaver (either through their employer – occupational – or a financial-services firm – personal). The first figure shows coverage of traditional occupational and personal pensions (excluding people contributing to personal pensions aged over 65 for tax reasons).

Source: OECD (2009), *OECD Private Pensions Outlook 2008*; OECD (2007), *Pensions at a Glance: Public Policies across OECD Countries*, European Union, Social Protection Committee (2008), *Privately Managed Funded Pension Provision and their Contribution to Adequate and Sustainable Pensions*; Antolín, P. and E.R. Whitehouse (2009), "Filling the Pension Gap: Coverage and Value of Voluntary Retirement Savings", Social, Employment and Migration Working Paper No. 69, OECD, Paris; *World Bank Pensions Database*; national authorities.

StatLink  <http://dx.doi.org/10.1787/651756380648>

### Key results

Substantial assets have been accumulated in most OECD countries to help meet future pension liabilities. The total assets in private pensions were the equivalent of nearly 75% of gross domestic product (GDP) in 2007. Half of OECD countries have built up public pension reserves to help pay for pensions. In these countries, public pension reserves are worth nearly 15% of GDP.

However, it is important to bear in mind that these figures relate to 2007, before the impact of the financial crisis on asset values.

In 2007, private pension assets exceed annual national income in four OECD countries: Australia, Iceland, the Netherlands and Switzerland. Private pension funds were also significant in the United Kingdom and the United States, worth around 75% or more of GDP.

Because of the weight of the United States in the OECD economies as a whole, aggregate private pension assets are the equivalent of more than 75% of aggregate OECD GDP. However, weighting OECD countries equally, the average for private pension assets is just 33% of GDP.

Again, it is important to stress that these numbers are “pre-crisis”, since they mainly refer to 2007. The impact of the financial crisis on pension funds’ investments, explored in the special chapter in Part I on “Pension systems during the financial and economic crisis”, has been profound. Pension funds’ investments in OECD countries lost 23% of their value during 2008, with particularly large losses in Australia, Iceland, Ireland and the United States. In 2009, asset prices have fallen further.

The countries with the largest pension funds relative to their economies all have mature private pension schemes that have been in place for a long time. Along with the six mentioned above, this also includes Canada, Denmark and Ireland.

In other countries, private pension provision was developed much more recently. Hungary, Mexico, Poland and the Slovak Republic, for example, all introduced mandatory private pension as a substitute for part of public pensions in the late 1990s and early 2000s. Assets have grown rapidly since that point, reaching around 11-12% of GDP in Hungary, Mexico and Poland. These figures will grow rapidly over coming years and decades as more people join the new retirement-income system and existing members make further contributions.

New Zealand could also see such rapid growth. Although there was a long history of private, occupational plans, coverage declined significantly from the early 1980s onwards, falling to around 13% currently. However, the new KiwiSaver voluntary private scheme covered more than 40% of employees

after its first year of operation. This suggests that private pension assets will increase significantly in coming years.

Some 15 OECD countries have public pension reserves. Many of these are relatively small: in only eight countries were public pension reserves worth more than 5% of national income in 2007. The fund in the United States is invested entirely in government bonds. Some have argued that this is simply a circular way of financing pensions on a pay-as-you-go basis, whereby current contributions pay for current benefits. This is because the contributions that go into the reserve are merely lent to the government to finance current spending on other programmes.

Government bonds also make up over 80% of the portfolio of Korea’s public pension reserve and over 60% of Japan’s.

However, the government bond share is just 35-40% in Norway and Sweden and less than 20% in New Zealand and Ireland. These are also relatively large funds.

Similar arguments to those about the maturity of recently established private pension schemes apply to public pension reserves. Those in Australia, Ireland and New Zealand – three demographically young OECD countries – have been established relatively recently. Assets should build up over the coming years, but will be drawn down once the population begins to age significantly.

### Definition and measurement

The OECD has established a set of guidelines for classifying private pensions (see OECD, 2004). The analysis uses this framework. For details see OECD (2008 and 2009).

### References

- OECD (2005), *Private Pensions: OECD Classification and Glossary*, OECD, Paris.
- OECD (2008), “Pension Markets in Focus”, *Newsletter*, No. 5, OECD, Paris.
- OECD (2009), *OECD Private Pensions Outlook 2008*, OECD, Paris.


## Assets in private pension funds and public pension reserves

	Value of assets (% of GDP) 2007	
	Private pension funds	Public pension reserves
Australia	105.4	4.9
Austria	4.8	
Belgium	4.0	
Canada	55.3	7.9
Czech Republic	4.7	
Denmark	32.4	0.3
Finland	71.0	
France	1.1	1.9
Germany	4.1	
Greece	0.0	
Hungary	10.9	
Iceland	134.0	
Ireland	46.6	11.5
Italy	3.3	
Japan	20.0	26.2
Korea	3.1	23.9
Luxembourg	1.0	
Mexico	12.1	0.9
Netherlands	138.1	
New Zealand	11.1	7.8
Norway	7.0	5.2
Poland	12.2	0.3
Portugal	13.7	4.3
Slovak Republic	4.2	
Spain	7.5	4.5
Sweden	8.7	31.7
Switzerland	119.2	
Turkey	1.2	
United Kingdom	78.9	
United States	76.7	16.6
<b>Total OECD</b>	<b>74.5</b>	<b>14.5</b>
Unweighted average	33.1	9.9

Note: Data on public pension reserve funds for Norway, Mexico and Portugal are from 2006. For Norway, the Government Pension Fund – Global, which was previously a sovereign wealth fund called the Government Petroleum Fund, draws its funding from oil revenues and has a mandate that goes beyond financing pension expenditures; so it is not classified as a sovereign pension reserve fund. The figure in this table, therefore, only refers to the Government Pension Fund – Norway, formerly the National Insurance Scheme Fund (5.2%). By contrast the total assets of the larger Government Pension Fund – Global, would amount to 79.7% of GDP.

“Total OECD” aggregates member countries. Unlike the “unweighted average”, it therefore reflects difference in the size of GDP between countries. The “total OECD” and “unweighted average” figures for public pension reserves cover only the 15 countries for which data are shown.

Source: OECD (2008), “Pension Markets in Focus”, Newsletter, No. 5, Figure 6, OECD, Paris; OECD (2009), *OECD Private Pensions Outlook 2008*, Table 3.1, national sources.

StatLink  <http://dx.doi.org/10.1787/651840117352>





## Demographic and Economic Context

*Population ageing has been one of the main driving forces behind pension policies and reforms in the past two decades. Ageing is the result of two demographic changes.*

*The first factor pushing population ageing is increasing life expectancy. Changes in life expectancy – at birth and at age 65 – over time are shown. There is also a brief discussion of how life expectancy might change in the future. The second is a decline in the number of births. Fertility rates and how they have changed over time are explored in the first indicator in this section, along with a brief discussion of explanations for the trends.*

*Population ageing is directly addressed by the third indicator. The degree of ageing is measured with the dependency ratio: the number of people of pension age relative to the number of working age. The old-age dependency ratio is shown for a century: historical data back to 1950 and projections forward to 2050.*

*The final indicator shows the economic context. It gives data on average earnings, calculating using the OECD's "average-worker" measure, for 2006. These data are used widely in the report: many values for parameters and results for pension entitlements are reported as percentages of national average earnings.*

### Key results

The remarkable increase in life expectancy is one of the greatest achievements of the last century. Lives continue to get longer. Since 1960, women's life expectancy has increased by nearly 11 years, to 81.7 years. For men, the increase is a little over ten years, to 76.0 years. In 2006, life expectancy at birth among women was highest in Japan (85.8 years), followed by France, Spain, Switzerland and Italy. For men, life expectancy was highest in Iceland (79.4 years) followed by Switzerland, Japan, Australia and Sweden. Life expectancy at older ages – which is more relevant for pension systems – has also increased substantially.

The general increase in life expectancy in OECD countries was accompanied by convergence between countries. In Korea and Turkey, life expectancy at birth for women and men combined increased by 26.7 and 23.3 years respectively between 1960 and 2006, while in Mexico the gain exceeded 18 years. Catch-up gains in life expectancy by these countries mainly reflect lower infant mortality.

There is little evidence that increases in life expectancy are approaching a ceiling. Gains in life expectancy at birth for Japanese women halved after the period of catching-up, but have since continued at a rate of around 3% per year.

The gender gap in life expectancy has widened slightly: from 5.0 years in 1960 to 5.7 years in 2006. However, there have been different trends between earlier and later decades. While the gender gap in life expectancy increased substantially during the 1960s and 1970s (to a peak of 6.7 years, on average, in 1980), it has narrowed during the past 25 years. This narrowing reflects, in part, the lower differences in the prevalence of risky behaviour (such as smoking) between men and women and fewer deaths from cardiovascular disease among men.

Old people are living longer. In 2006, on average, women aged 65 could expect to live an additional 20.1 years, up by 5.3 years since 1960. Men of the same age could expect to live 16.7 more years, with a gain of 4.0 years since 1960. Gender gaps in longevity of older people have narrowed in several OECD countries since the mid-1980s.

Overall longevity gains are due to rising living standards, but also greater access to quality health services. However, gains in life expectancy have been smaller among people from lower socioeconomic groups (OECD, 2004).

Analysts differ on how life expectancy is likely to develop in the future. Optimists point to developments in biotechnology and so on. Pessimists stress the dangers of a global influenza pandemic, increasing obesity and the failure to tackle chronic conditions of old age, such as Alzheimer's disease. Some OECD calculations, based on the experience of changes in

mortality rates since 1945, are shown in the table. Starting in 2002, the central projection is an increase in life expectancy at age 65 of around 3.5 years over the next 50 years. This would increase pension costs, all other things being equal, by around 20%. However, the worst case shows an increase of only around two years, while the best case is an increase of five years. Given this uncertainty, most OECD countries now have elements of their retirement-income provision that automatically adjusts pensions to reflect changes in life expectancy.

#### Life expectancy at age 65 in 2002: distribution of 50-year projections

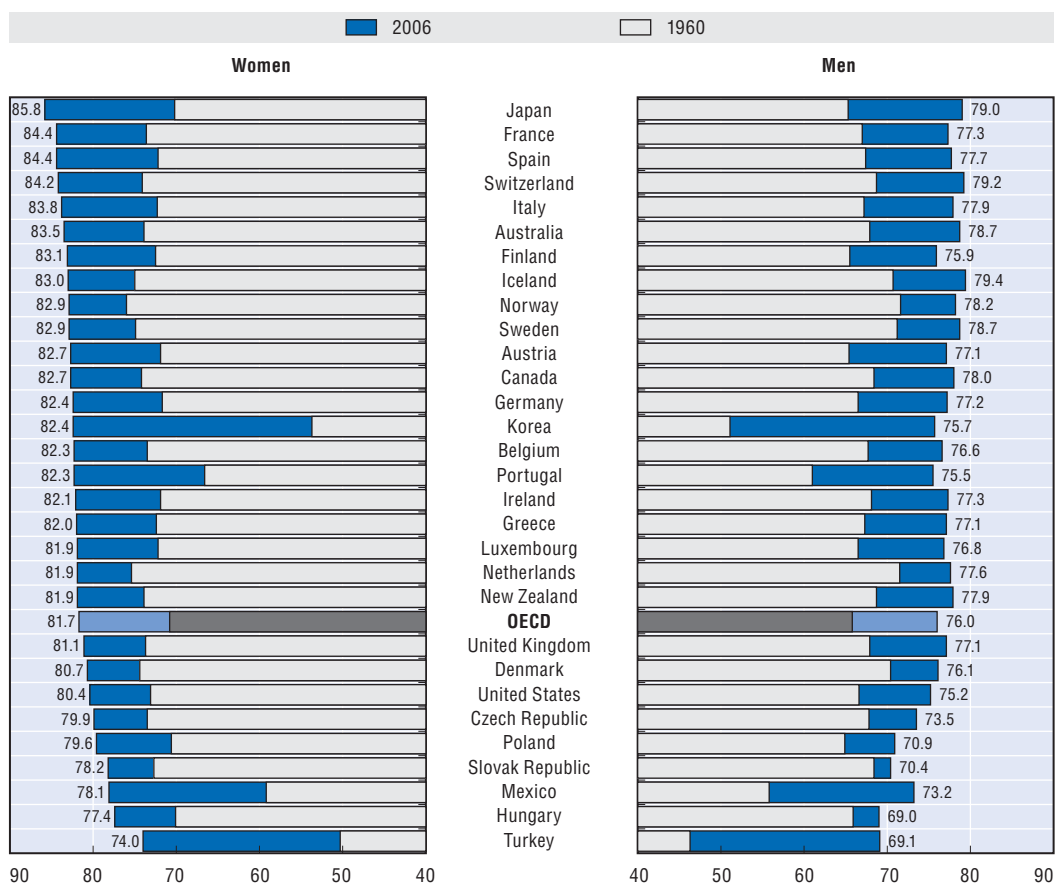
	Base	5%	25%	50%	75%	95%
Life expectancy (years)						
Men	15.1	20.1	19.1	18.5	18.0	17.1
Women	18.7	23.7	22.8	22.2	21.7	20.9
Change (years)						
Men	0.0	+5.0	+4.0	+3.4	+2.9	+2.0
Women	0.0	+5.0	+4.1	+3.5	+3.0	+2.2

Source: Whitehouse, E.R. (2007), "Life-expectancy Risk and Pensions: Who Bears the Burden?", Social Employment and Migration Working Paper, No. 60, OECD, Paris. Calculations use the *Human Mortality Database* (University of California, Berkeley and Max Planck Institute for Demographic Research). Baseline mortality rates for 2002 are from the *United Nations/World Bank Population Database*.

#### Definition and measurement

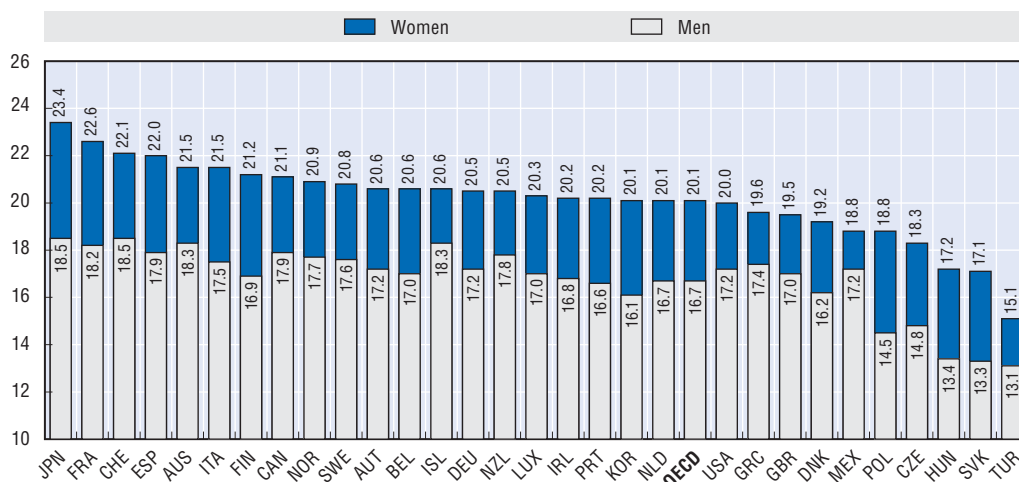
The indicators presented here, life expectancy at birth and at age 65, are defined as the average number of years that a person could expect to live if he or she experienced the age-specific mortality rates prevalent in a given country in a particular year: in this case, 1960 and 2006. Each country calculates its life expectancy using methodologies that vary. However, the impact of these methodological differences is relatively small, altering measured life expectancy by only a fraction of a year.

### Life expectancy at birth, in years, men and women, in 1960 and 2006



Source: OECD (2008), OECD Health Data 2008, OECD, Paris ([www.oecd.org/health/healthdata](http://www.oecd.org/health/healthdata)) and OECD (2009), Society at a Glance.

### Life expectancy at 65, in years, men and women, in 2006



Note: Data are from 2005 for Canada, the United Kingdom and the United States and 2004 for Italy.

Source: OECD (2008), OECD Health Data 2008, OECD, Paris ([www.oecd.org/health/healthdata](http://www.oecd.org/health/healthdata)) and OECD (2009), Society at a Glance.

StatLink <http://dx.doi.org/10.1787/651413351581>

### Key results

The total fertility rate is below the replacement level – the number of children needed to keep the total population constant – in 26 out of 30 OECD countries. The only exceptions are Mexico and Turkey (with 2.2 children per woman) and Iceland and the United States (with fertility rates of around 2.1). However in more than two-thirds of OECD countries there has been a moderate increase in fertility rates since 2002.

Fertility rates have a profound implication for pension systems because they, along with life expectancy, are the drivers of population ageing.

In 2006, fertility rates averaged 1.65 across OECD countries, well below the level that ensures population replacement. The trend to fewer children has been going on since the 1970s. The fall in fertility rates reflects changes in both individuals' life-style preferences and in the constraints of everyday living, such as labour-market insecurity, difficulties in finding suitable housing and unaffordable childcare.

The positive (and widening) gap between the number of children women declare that they want and the number that they actually have shows the influence of these constraints (D'Addio and Mira d'Ercole, 2005).

Another effect comes from the changing marital status of women. The larger share of women that are unmarried may have depressed fertility rates, particularly in countries where there is a strong link between marriage and maternity. The strongest link is in Japan and Korea, although it is also significant in several European countries, such as Greece, Italy, Poland and Switzerland. However, the childbearing patterns of unmarried women have also changed. For example, half or more of births now occur outside of marriage in France, Iceland, Norway and Sweden (according to *Society at a Glance*). The OECD average proportion of births outside marriage is now one third of the total.

In recent years, there have been reversals of the decline in the number of children in some OECD countries. The biggest rebounds have occurred in the United Kingdom, France, Sweden, Spain, and the Czech Republic. The reasons for this reversal differ: policy measures, including more support for families and working women, may have played a role. But the rebound may also be due to more births to women who had postponed motherhood until their thirties or later.

Low fertility rates have a number of wider social and economic consequences. First, the decline in population can become self-reinforcing, as the number of women of childbearing age falls. Secondly, there are

fewer family carers to help people in old age. Thirdly, there is a growing tax burden for people of working age who have to finance pensions and health care for older people. Fourthly, the workforce will also age and so might be less adaptable to technological change, thereby reducing productivity and economic growth. Finally, ageing may result in a smaller pool of savings to finance investment in the economy as older people use their savings to support their consumption.

The trend towards lower fertility rates has been accompanied by (and is partly explained by) the postponement of childbirth to later ages. The average age at birth of first child has risen from around 24 in 1970 to nearly 28 in 2005. Postponing childbearing has lasting consequences. First, it increases the probability that women remain childless or have fewer children than desired. Secondly, it raises the risk of morbidity for both mothers and their children.

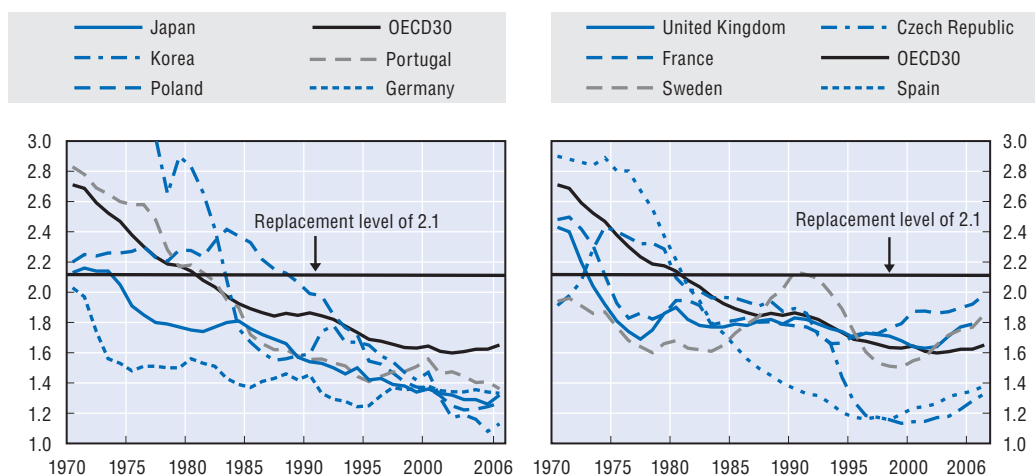
### Definition and measurement

The total fertility rate in a specific year is the number of children that would be born to each woman if she were to live to the end of her child-bearing years and if the likelihood of her giving birth to children at each age was the currently prevailing age-specific fertility rates. It is generally computed by summing up the age-specific fertility rates defined over a five-year interval. A total fertility rate of 2.1 children per woman ensures broad stability of the population, on the assumptions of no migration flows and unchanged mortality rates.

### References

- D'Addio, A.C. and M. Mira d'Ercole (2005), "Trends and Determinants of Fertility Rates in OECD Countries: The Role of Policies", Social, Employment and Migration Working Paper No. 27, OECD, Paris.
- OECD (2009), *Society at a Glance*, OECD, Paris.

## Total fertility rates from 1970 to 2006



## First time mothers are getting older

Mean age of mothers at first childbirth

	1970	1995 <sup>1</sup>	2000 <sup>2</sup>	2005 <sup>3</sup>
Australia	23.2	26.8	..	28.0
Austria	..	25.6	26.4	27.2
Belgium	24.3	27.3	..	27.4
Czech Republic	22.5	23.3	25.0	26.6
Denmark	23.8	27.4	27.7	28.4
Finland	24.4	27.2	27.4	27.9
France	24.4	28.1	27.9	28.5
Germany	24.0	27.5	28.2	28.1
Greece	25.0	26.6	27.5	28.5
Hungary	22.8	23.8	25.1	26.7
Iceland	21.3	25.0	25.5	26.3
Ireland	..	27.3	27.6	28.5
Italy	25.0	28.0	..	28.7
Japan	25.6	27.5	28.0	29.1
Korea	..	..	..	29.1
Luxembourg	24.7	27.4	28.4	29.0
Mexico	..	20.9	21.0	21.3
Netherlands	24.8	28.4	28.6	28.9
New Zealand	..	..	28.0	28.0
Norway	..	26.4	26.9	27.7
Poland	22.8	23.8	24.5	25.8
Portugal	..	25.8	26.5	27.4
Slovak Republic	22.6	23.0	24.2	25.7
Spain	..	28.4	29.1	29.3
Sweden	25.9	27.2	27.9	28.7
Switzerland	25.3	28.1	28.7	29.5
United Kingdom	..	28.3	29.1	29.8
United States	24.1	24.5	24.9	25.1
<b>OECD16</b>	<b>24.0</b>	<b>26.2</b>	<b>26.8</b>	<b>27.7</b>

1. 1992 for Mexico.

2. 2001 for New Zealand; 2003 for Mexico.

3. 2003 for Finland, Greece, Spain and United Kingdom; 2002 for United States; 2004 for New Zealand; and 2006 for Mexico.

Source: OECD (2009), *Society at a Glance*.StatLink  <http://dx.doi.org/10.1787/651441476388>

### Key results

Population ageing is one of the main driving forces behind the wave of pension reforms in recent years. The old-age dependency ratio is an important indicator of the pressures that demographics pose for pension systems. It measures how many people there are of pension age (65 plus) relative to the number of working age. On average in OECD countries, there are 24 people of pension for every 100 of working age. Or, put another way, there were 4.2 people of working age for every pensioner.

OECD countries have been ageing for some time: between 1950 and 1980, the dependency ratio increased from 14% to 21%. However, the current period and recent history has been relatively benign. In 2010, for example, the dependency ratio is expected to be 25%, a much slower rate of growth than 1950-80. From 2010, ageing is expected to accelerate, with the dependency ratio doubling to 50% or more from 2047 onwards. At that point, there will be just two people of working age for every person of pension age.

In 2007, the demographically oldest OECD country was Japan, with a dependency ratio of 36%. Germany, Greece and Italy also had dependency ratios above 30%. The youngest countries in 2007 were Mexico and Turkey, with dependency ratios of just 10%, followed by Korea, at 15%. Four of the five mainly English-speaking OECD members – Australia, Canada, Ireland and the United States – all have a relatively favourable demographic situation. Dependency ratios range between 17 and 22%. This is probably a result of immigration of workers. Many of the other countries that are currently young are in eastern Europe: the Czech and Slovak Republics and Poland have dependency ratios of 18-22%.

The evolution of dependency ratios depends on mortality rates, fertility rates and migration. As shown in the previous two indicators, OECD countries have seen continual increases in life expectancy, which most expect to continue in the future. This increases the number of older people and so the number of pensioners. There have also been substantial declines in fertility, which, of course, will reduce the number of workers entering the labour market. Since the babies have already been born, we know the scale of the change in the number of people of working age for the next two decades. For example, fertility rates fell below the replacement level on average in OECD countries around 1980, meaning that each new generation will be smaller than that of its parents. By 2000, for example, the number of births implies that the cohort of “millennium babies” will be 20-25% smaller than its parents’ generation. In the future, however, there is a great deal of uncertainty over how fertility rates will evolve.

For the OECD as a whole, the rate of population ageing will accelerate from a low point in 2006 to a peak in 2013. The dependency ratio will reach 30% by 2018, from its current level of 24%. From 2030 onwards, the process of demographic ageing will slow down. Nevertheless, dependency ratios will continue to rise, reaching an average of 52% in 2050. At this point, there will be just less than two people of working age for each of pension age, compared with over four currently.

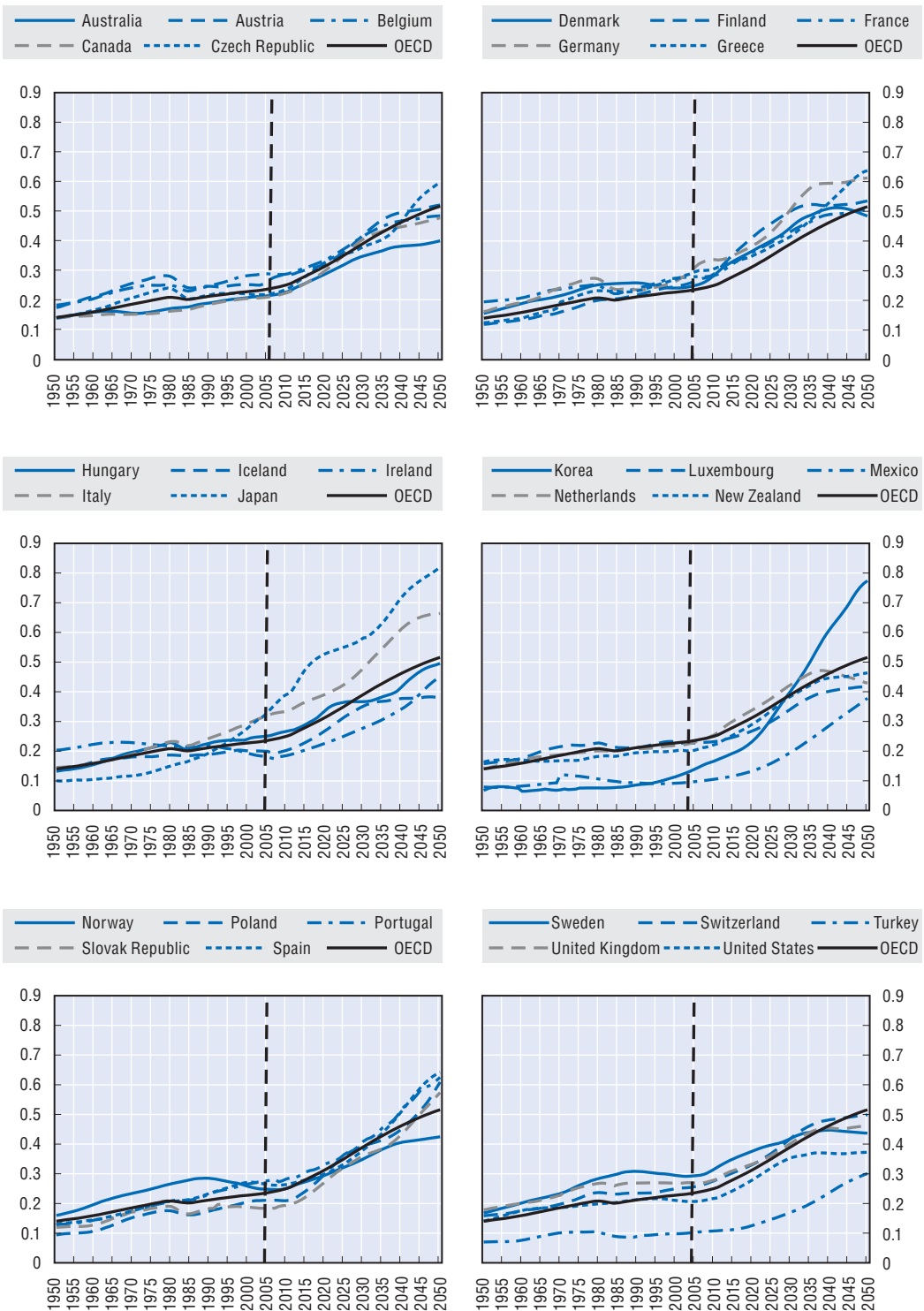
The most rapid population ageing among OECD countries by far will be in Korea. The dependency ratio is projected to grow from 15% in 2007 to 77% by 2050. Korea will move from being the third youngest country in the OECD to the second oldest, after Japan. The other OECD countries that are currently demographically young – Mexico and Turkey – will also age more rapidly as their demographics converge on that of other OECD countries. However, unlike Korea, they will remain among the youngest OECD countries in 2050, with dependency ratios of 38% and 30% respectively.

Some of the OECD countries that are currently old in demographic terms – Belgium, France, the Netherlands, Norway, Sweden and the United Kingdom, for example – are projected to see relatively small increases in dependency ratios over the next 40 years or so. Again, this illustrates a degree of convergence in the extent of population ageing in OECD countries.


### Definition and measurement

The projections for old-age dependency ratios used here are based on the most recent “medium-variant” population projections. They are drawn from the *OECD Demographic and Labour-Force Database*.

Old-age dependency ratios – historical and projected values, 1950-2050



Source: OECD Demographic and Labour Force Database.

StatLink  <http://dx.doi.org/10.1787/651454560624>



### Key results

“Average earnings” are an important metric underlying the presentation of system parameters and the results of pension modelling. However, it is very difficult to obtain reliable and comparable data for different countries.

The OECD developed a method of calculating average earnings in the 1970s that could produce comparable results for member countries. However, this comparability was bought at the price of results that were not representative of all workers, and this has become more unrepresentative over time.

A new measure, adopted from 2004, calculates average earnings using a broader base of employees but retains the comparability of the previous measure.

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

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.

The table reports average earnings levels according to the new average-earnings definition, for the year 2006. Only two countries (Ireland and Turkey) are not yet able to supply earnings data on the broader basis and so the modelling is based on the old, APW measure of average earnings. Average earnings are displayed in national currencies and in US dollars (both at market exchange rates and at purchasing power parities, PPP). The PPP exchange rate adjusts for the fact that the purchasing power of a dollar varies between countries: it allows for differences in the price of a basket of goods and services between countries. *The Economist* regularly produces a popular and easy-to-understand version of PPP – the “Big-Mac” index – which shows how currencies differ from the level that would mean the burger cost the same worldwide.

Earnings across the OECD countries averaged USD 35 800 in 2006 at market exchange rates. At PPP, average earnings were USD 32 800. The lower figure for PPP earnings suggests that many OECD countries exchange rates with the US dollar were higher than the rate that would equalise the cost of a standard basket of goods and services.

### Mean and median earnings

Most of the results presented in this report are based around mean earnings. However, many of the key indicators are shown also using estimates of “median” earnings, that is the level below and above which half of workers’ earnings lie. The table at the bottom of next page, drawn from the OECD earnings-distribution database, shows median earnings as a percentage of mean earnings. There is significant variation between countries, The broad distribution of earnings in Hungary and the United States means that the median is only around three-quarters of mean earnings. In contrast, the median is nearly 90% of the mean in Belgium, Germany, the Netherlands and Sweden. The table also shows the lowest decile of earnings: 10% of workers earn less than this. For the countries shown, this averages around 50% of mean earnings, a level which is used as the case of a “low earner”. The top decile – 10% of workers earn more than this – averages nearly 160%. In the main results, a “high earner” is assumed to be an individual with 150% of mean earnings.

### Revisions to 2004 earnings data

Since the second edition of *Pension at a Glance*, estimates of average-worker earnings have been revised. The results for only eight countries are affected, and, apart from Turkey and the United Kingdom, the effect is relatively small. For the United Kingdom, average earnings were revised upwards from GBP 27 150 (USD 49 747) to GBP 29 312 (USD 53 708). Since the basic pension is an important part of mandatory provision for old age, this significantly reduces the replacement rate for the average earner.

### References

- OECD (2007), *Benefits and Wages*, OECD, Paris.
- OECD (2007), *Pensions at a Glance – Public Policies across OECD Countries*, OECD, Paris.
- OECD (2008), *Taxing Wages 2006-2007*, OECD, Paris.



## OECD measures of average earnings, 2006

National currency and USD at market price and purchasing-power-parity exchange rates

	OECD measures of average earnings			Exchange rate with USD			OECD measures of average earnings			Exchange rate with USD	
	National currency (AW)	USD, market exchange rate	USD, PPP	Market rate	PPP		National currency (AW)	USD, market exchange rate	USD, PPP	Market rate	PPP
Australia	55 200	41 600	39 100	1.33	1.41	Luxembourg	43 600	54 800	45 900	0.8	0.95
Austria	36 700	46 100	42 600	0.8	0.86	Mexico	73 200	6 700	10 600	10.9	7.22
Belgium	37 700	47 300	42 400	0.8	0.89	Netherlands	39 700	49 900	44 800	0.8	0.888
Canada	40 600	35 800	33 700	1.13	1.2	New Zealand	43 000	27 500	28 200	1.54	1.52
Czech Republic	234 800	10 400	16 500	22.59	14.19	Norway	397 800	62 000	43 200	6.41	9.21
Denmark	330 900	55 700	39 200	5.94	8.44	Poland	29 300	9 400	15 700	3.1	1.87
Finland	33 500	42 100	34 800	0.8	0.97	Portugal	15 300	19 300	21 700	0.8	0.706
France	31 000	38 900	34 200	0.8	0.91	Slovak Republic	231 200	7 800	13 500	29.65	17.13
Germany	42 400	53 200	48 700	0.8	0.87	Spain	21 200	26 500	27 300	0.8	0.774
Greece	23 000	28 900	32 800	0.8	0.7	Sweden	324 600	44 000	35 600	7.37	9.12
Hungary	1 988 700	9 500	15 400	210.4	129.19	Switzerland	72 400	57 800	42 200	1.25	1.71
Iceland	3 480 000	49 800	34 000	69.9	102.49	Turkey	15 600	10 900	16 700	1.43	0.939
Ireland	30 000	37 600	29 500	0.8	1.01	United Kingdom	31 500	58 000	49 200	0.54	0.645
Italy	24 600	30 900	27 100	0.8	0.86	United States	39 400	39 400	39 400	1	1
Japan	4 988 900	42 900	40 100	116.35	124.46						
Korea	30 440 200	32 000	40 000	951.82	762	<b>OECD</b>		<b>35 800</b>	<b>32 800</b>		

Note: AW = average wage. PPP = purchasing power parity. Average earnings are not available on the AW measure for Ireland and Turkey, for which the APW (average production worker) definition is used. Monetary values for Turkey divided by 1 000 000. Average earnings are rounded to the nearest 100 and exchange rates rounded to decimal places.

Source: OECD (2008), *Taxing Wages 2006-2007*; and OECD Main Economic Indicators.

Points of earnings distribution  
(% of mean earnings)


	Lowest decile	Median	Top decile
Australia	51.1	86.1	159.3
Belgium	65.5	88.7	132.6
Czech Republic	52.5	87.1	153.9
Finland	61.6	87.9	148.7
Germany	53.0	89.3	161.1
Hungary	36.9	74.4	180.4
Ireland	43.9	85.6	172.7
Italy	63.6	87.7	152.2
Japan	54.4	88.0	160.2
Korea	44.0	88.0	170.0
Netherlands	53.6	89.1	156.4
New Zealand	48.5	86.4	165.2
Norway	60.7	87.4	128.3
Poland	41.2	81.7	168.4
Spain	39.9	80.3	168.5
Sweden	63.7	88.1	147.3
United Kingdom	46.5	82.9	162.5
United States	36.9	77.4	179.1
<b>OECD18</b>	<b>51.0</b>	<b>85.3</b>	<b>159.3</b>

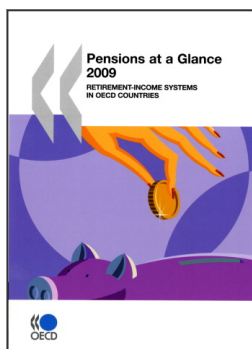
Source: OECD Earnings Distribution Database.

## Effect on gross replacement rates for average earners of revisions to earnings data, 2004

	Replacement rate (%)		Difference
	Before	After	
Iceland	77.5	77.1	-0.4
Ireland	32.5	31.9	-0.6
Luxembourg	88.3	87.9	-0.4
Mexico	35.8	36.6	+0.8
Portugal	54.1	54.0	-0.1
Turkey	72.5	80.9	+8.4
United Kingdom	30.8	29.9	+0.9
United States	41.2	38.7	-2.5

Source: OECD pension models.

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