

### Key results

The base case at the beginning of this chapter concentrates on full-career replacement rates when individuals are at a constant level of earnings relative to the average during their whole career. In the alternative earnings profile shown here individuals start at a lower salary before steadily progressing until age 55 from which the wage remains at a constant share of the average wage. For comparison purposes, this scenario is calibrated such that over the career the average wage is equal to 100% of the average wage for the whole economy. Under this scenario the replacement rate for male workers is 53.1%, slightly higher than for the base case at 51.8%. For women, it is 52.1%, compared to the base case of 50.9%.

Full-career male workers at the average wage throughout their career will have, on average, a gross replacement rate of 51.8%, when they start working at age 22. For the earnings profile shown here the replacement rate as a percentage of average earnings is slightly higher at 53.1%. That is, while under this scenario, the relative wage increases throughout the career – from 60% of the average wage at age 22, ensuring the same lifetime earnings – the pension amount is similar to that of the base case scenario. However, as the final earnings are higher under this specific alternative scenario, this implies 43.1% of final earnings. The equivalent figures for female workers are 50.9% for the base case and 52.1% for the earnings profile, equivalent to 42.3% of final earnings.

In some countries, the pension benefit level is identical in the earnings profile and the base cases, as pension systems that have flat-rate benefits, or points systems or constant accrual rates with wage valorisation of past earnings are not affected, as career average earnings are the same and any ceilings to contributions do not come into play. These countries are Austria, Canada, the Czech Republic, Estonia, Germany, Hungary, Ireland, Japan, Lithuania, Luxembourg, New Zealand and the Slovak Republic.

By contrast, countries that do not use the entire career earnings when calculating pensions have higher benefit values using the earnings profile scenario compared to the base case. The countries in question are Colombia, Costa Rica, France, Portugal, Slovenia, Spain and the United States as only 10, 20, 25, 40, 24, 25 and 35 years of earnings, respectively, are used. For example, in Spain the final 25 years are used to calculate the reference wage for pension calculations. Under the base case this gives a reference wage equivalent to 82% of the average wage in the base case as past earnings are only adjusted for inflation, whereas for the earning profile it is 96%, hence the gross replacement rate increases by 17%, from 74% to 86%. The impact is not as large in Portugal because 40 of the 46 years of career are used, nor in France as there is a ceiling to contributions to the general DB scheme at 108% of the average wage.

For countries that have large defined contribution pension schemes, the lower earnings at the start of the career – while having the same average over the career – has a greater effect

on reducing the future benefit level, assuming the level of returns are higher than wage growth, than is countered by the higher earnings at the end of the career as there is less time for these increased contributions to accumulate. The largest falls are found in Australia, Chile, Denmark, Iceland and the United Kingdom, but even in the highest case in Iceland the effective future replacement rate only falls by 2.4 percentage points with all the others around 1 percentage points – 1.5 percentage points. In Sweden the replacement rate actually increases as the contribution rate to the occupational pension increases from 4.5% to 30% for earnings above 108% of the average.

### 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. The gross replacement rate is defined as gross pension entitlement divided by gross pre-retirement earnings.

Often, the replacement rate is expressed as the ratio of the pension to final earnings (just before retirement). Under the baseline assumptions, workers earn the same percentage of average worker earnings throughout their career. However, although the average wage over the career is maintained at 100% (past wages are uprated based on average-wage growth), the individual starts at 60% of average earnings, increasing to average earnings between 12 and 25 years later – the exact year depends on the retirement age so as to ensure that the career average is equal to 100% of average wage –, then increasing to 123.33% of average earnings at age 55 and remaining at this level until retirement age. Therefore, final earnings are no longer equal to lifetime average earnings revalued in line with economy-wide earnings growth. The replacement rates shown are expressed as a percentage of career average earnings. Given that the wage reference is equal for both the base case and the earnings-profile scenario, comparisons of replacement rates amount to comparing pension benefit levels. However, under this scenario, if replacement rates are expressed in terms of the last earnings, numbers in the below table should be divided by 1.2333.

Table 5.2. **Gross and net pension replacement rates by earnings profile**

Percentage of average earnings throughout the career for men (women where different)

Pension age		GRR		NRR	
		Base case	Earning profile	Base case	Earning profile
Australia	67	31.3 (28.4)	30.3 (27.5)	40.5 (36.8)	39.3 (35.7)
Austria*	65	74.1	74.1	87.1	87.1
Belgium	67	43.4	42.6	61.9	61.3
Canada*	65	38.8	38.8	46.4	46.4
Chile	65	31.2 (28.8)	29.8 (27.9)	38.5 (35.4)	36.8 (34.4)
Colombia	62 (57)	74.8 (73.4)	91.6 (87.0)	73.1 (71.8)	89.6 (85.1)
Costa Rica	65	71.9	81.4	76.0	86.1
Czech Republic*	65	49.0	49.0	65.2	65.2
Denmark	74	80.0	78.9	84.0	82.9
Estonia*	71	27.9	27.9	33.7	33.7
Finland	68	56.6	57.0	63.2	63.5
France	66	60.2	64.7	74.4	78.7
Germany*	67	41.5	41.5	52.9	52.9
Greece	66	72.6	72.9	83.6	83.8
Hungary*	65 (62)	62.5 (58.1)	62.5 (57.1)	94.0 (87.4)	94.0 (69.6)
Iceland	67	51.8	49.4	59.7	57.4
Ireland*	66	29.7	29.7	39.9	39.9
Israel	67 (62)	41.5 (34.1)	40.6 (33.5)	51.2 (42.1)	50.2 (41.3)
Italy	71	74.6	76.0	81.7	83.0
Japan*	65	32.4	32.4	38.7	38.7
Korea	65	31.2	30.6	35.4	34.8
Latvia	65	43.4	43.2	55.3	55.0
Lithuania*	65	19.7	19.7	30.7	30.7
Luxembourg*	62	76.6	76.6	88.7	88.7
Mexico	65	61.2 (58.2)	60.7 (58.2)	68.6 (65.2)	68.1 (65.2)
Netherlands	69	69.7	71.4	89.2	90.3
New Zealand*	65	39.8	39.8	43.3	43.3
Norway	67	46.0	44.6	55.7	54.7
Poland	65 (60)	30.6 (23.4)	31.4 (23.4)	36.5 (28.2)	37.4 (28.2)
Portugal	68	74.9	79.6	90.3	95.1
Slovak Republic*	64	53.1	53.1	69.4	69.4
Slovenia	62	42.0	47.6	63.3	70.9
Spain	65	73.9	86.0	80.3	91.3
Sweden	65	53.3	55.1	56.2	57.9
Switzerland	65 (64)	44.1 (43.5)	43.9 (43.3)	50.7 (49.7)	50.4 (49.4)
Turkey	65 (63)	73.3 (70.3)	74.4 (70.5)	103.3 (99.1)	105.0 (99.5)
United Kingdom	67	49.0	47.7	58.1	56.8
United States	67	39.2	41.8	50.5	53.8
<b>OECD</b>	<b>66 (65.5)</b>	<b>51.8 (50.9)</b>	<b>53.1 (52.1)</b>	<b>62.4 (61.3)</b>	<b>63.8 (62.1)</b>
Argentina	65 (60)	76.1 (72.9)	88.5 (84.6)	88.9 (85.3)	103.2 (98.8)
Brazil	65 (62)	88.4 (93.3)	91.1 (95.4)	97.3 (102.7)	100.3 (105.0)
China	60 (55)	71.6 (55.7)	80.3 (63.3)	92.4 (72.3)	103.3 (81.9)
India	58	56.4 (55.6)	65.4 (64.6)	64.0 (63.1)	74.3 (73.4)
Indonesia	65	55.3 (53.0)	55.3 (53.2)	60.6 (58.1)	60.7 (58.3)
Russian Federation*	65 (60)	47.2 (43.4)	47.1 (43.4)	54.2 (49.9)	54.2 (49.9)
Saudi Arabia	47	59.6	N/A	66.2	N/A
South Africa*	60	14.9	14.9	16.2	16.2

Note: \* Individuals have the same gross benefit under both the base case and earnings profile scenarios.

Source: OECD pension models.

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