

Sensitivity of replacement rates to changes in the economic assumptions

Key results

The base case in Chapter 4 concentrates on showing full-career replacement rates under the standard economic parameters that apply within the report, with some changes from those used in previous editions. This indicator focuses on two different sets of economic assumptions: one that may better reflect the possibility of an extended period of low growth and low interest rates (alternative scenario); and the one used in the last edition of the publication (old assumptions). For workers with average earnings and a full career from age 22, the future gross replacement rate at the normal retirement age averages 52.7% for men and 52.1% for women in the 38 OECD countries under the alternative scenario, which is around 2 percentage points higher than the base case figures. Compared with the old assumptions, the revision of economic assumptions generates over a 1 percentage point fall in the average replacement rate, with some countries being significantly affected.

Full career male workers at the average wage throughout their career will have, on average, a gross replacement rate of 50.7%, when they start working at age 22. These estimates are based on the standard economic parameters described in Chapter 4. As an alternative these standard parameters have been lowered to account for the possibility of a low economic growth and low interest rates scenario over the long term, which might be partly related to population ageing (Table 5.3). In addition, as the discount rate and the rate of return have changed within this edition, replacement rates are also reported based on the old values (OECD, 2021) of economic assumptions.

Table 5.3. Annual economic assumptions

Economic assumptions that apply every year from 2022

	Base case assumptions	Alternative scenario	Old assumptions (Pensions at a Glance 2021)
Real discount rate	1.5%	1.0%	2.0%
Price inflation	2.0%	1.0%	2.0%
Real wage growth	1.25%	0.75%	1.25%
Real rate of return	2.5%	2.0%	3.0%
GDP growth	Country specific based on projections of working-age population	Adjusted downward by 0.50%	Country specific based on projections of working-age population

Alternative scenario

The gross replacement rate for male workers at average earnings increases slightly from 50.7% to 52.7%, with similar increases for women under the alternative scenario.

There are six OECD countries, Czechia, Germany, Ireland, Japan, New Zealand and Slovenia that have the same replacement rate under both the alternative scenario and the base case. In all these countries there is either just a basic pension linked to earnings growth, or the relevant parameters of the pension system are unaffected by discount rate or the rate of return, resulting in a steady state replacement rate if the earnings are at a constant proportion of the average. Although the replacement rates are the same in both cases for Japan, this will not hold for all economic conditions.

The largest increases in replacement rates are found in Belgium, Mexico, Portugal, Spain, Türkiye and the United Kingdom, with increases of between 5.0 percentage points and 8.8 percentage points. In these countries past earnings are valorised to prices (Belgium, Portugal and Spain) or partially to GDP (Türkiye), or the basic pension is indexed to prices (Mexico), which generate higher pension value relative to future wages as a result of lower real-earnings growth. In the

United Kingdom the triple lock commitment of a minimum of 2.5% increase in the basic pension comes into effect significantly increasing the value of the pension relative to average earnings and counteracting a 1.3 percentage points drop in the FDC. Conversely, the replacement rates fall by 2 percentage points in the Netherlands and by 1 percentage point in Latvia. In FDC schemes, the lower real rates of return by 50 basis points in the alternative scenario is offset by lower real-wage growth in the accumulation phase, but the lower real discount rate raises the price of price-indexed annuities, lowering replacement rates.

Old assumptions

Trends over the last decades towards lower real financial rates have required lowering the discount rate and the rate of return by 50 basis points compared with the last edition of *Pensions at a Glance*. If the assumptions had not been changed since the last edition, the gross replacement rate for men would be 1.3 percentage points higher at 52.0% with women being 1.2 percentage points higher at 51.3%. As the rate of return under the old assumptions was 1.75 percentage points higher than real wage growth, the countries with FDC schemes are those affected. The largest fall can be found in Iceland and the Netherlands at around 9 percentage points as both have big FDC schemes being modelled, with Australia and Sweden also over 4 percentage points at the average-wage level.

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. Therefore, final earnings are equal to lifetime average earnings revalued in line with economy-wide earnings growth. Replacement rates expressed as a percentage of final earnings are thus identical to those expressed as a percentage of lifetime earnings.

Further reading


OECD (2021), *Pensions at a Glance 2021: OECD and G20 Indicators*, OECD Publishing, Paris, <https://doi.org/10.1787/ca401ebd-en>.

Table 5.4. Gross pension replacement rates by different economic assumptions
 Percentage of average earnings

Full career male workers at average earnings (women where different)														
	Pension age		Base case		Alternative scenario		Difference (p.p.)			Base case		Difference (p.p.)		
Australia	67		26.0	(23.8)	25.1	(22.9)	-0.8	-0.9	30.8	(28.3)	26.0	(23.8)	-4.8	-4.5
Austria	65		74.1		75.2		1.1		74.1		74.1		0.0	
Belgium	67		43.5		48.5		5.0		43.5		43.5		0.0	
Canada	65		36.8		39.1		2.3		36.8		36.8		0.0	
Chile	65		37.1	(34.9)	38.4	(36.2)	1.3	1.3	38.7	(36.5)	37.1	(34.9)	-1.6	-1.6
Colombia	62	(57)	74.8		76.8		2.0		74.8		74.8		0.0	
Costa Rica	65	(63)	64.1	(61.5)	67.5	(63.9)	3.3	2.4	66.6	(62.7)	64.1	(61.5)	-2.4	-1.2
Czechia*	65		47.4		47.4		0.0		47.4		47.4		0.0	
Denmark	74		73.1		73.5		0.4		74.9		73.1		-1.8	
Estonia	71		28.1		29.6		1.5		28.1		28.1		0.0	
Finland	69		58.4		59.8		1.4		58.4		58.4		0.0	
France	65		57.6		61.5		3.9		57.6		57.6		0.0	
Germany*	67		43.9		43.9		0.0		43.9		43.9		0.0	
Greece	66		80.8		83.8		3.0		84.3		80.8		-3.4	
Hungary	65	(62)	52.4	(49.0)	55.3	(51.7)	2.9	2.7	52.4	(49.0)	52.4	(49.0)	0.0	0.0
Iceland	67		43.1		46.8		3.6		51.7		43.1		-8.6	
Ireland*	66		26.2		26.2		0.0		26.2		26.2		0.0	
Israel	67	(65)	38.0	(35.2)	40.4	(37.5)	2.4	2.3	41.8	(38.3)	38.0	(35.2)	-3.8	-3.1
Italy	71		76.1		76.0		-0.1		76.1		76.1		0.0	
Japan*	65		32.4		32.4		0.0		32.4		32.4		0.0	
Korea	65		31.2		34.0		2.8		31.2		31.2		0.0	
Latvia	65		39.8		38.8		-1.0		43.0		39.8		-3.2	
Lithuania	65		18.2		18.1		-0.2		18.2		18.2		0.0	
Luxembourg	62		74.8		76.3		1.5		74.8		74.8		0.0	
Mexico	65		55.5		60.9		5.4		57.5	(55.5)	55.5	(55.5)	-2.0	0.0
Netherlands	70		74.7		72.5		-2.2		83.9		74.7		-9.2	
New Zealand*	65		39.7		39.7		0.0		39.7		39.7		0.0	
Norway	67		44.5		44.2		-0.3		45.5		44.5		-1.1	
Poland	65	(60)	29.3	(22.9)	29.5	(23.1)	0.2	0.2	29.3	(22.9)	29.3	(22.9)	0.0	0.0
Portugal	68		73.9		82.7		8.8		73.9		73.9		0.0	
Slovak Republic	69		54.9		57.0		2.1		54.9		54.9		0.0	
Slovenia*	62		42.1		42.1		0.0		42.1		42.1		0.0	
Spain	65		80.4		88.0		7.6		80.4		80.4		0.0	
Sweden	70		62.3		63.4		1.1		66.4		62.3		-4.1	
Switzerland	65		39.9		43.8		3.9		41.3		39.9		-1.4	
Türkiye	65	(63)	70.3	(67.6)	76.6	(73.4)	6.2	5.8	70.3	(67.6)	70.3	(67.6)	0.0	0.0
United Kingdom	67		41.9		47.9		6.0		44.3		41.9		-2.4	
United States	67		39.1		40.7		1.6		39.1		39.1		0.0	
OECD	66.3	(65.8)	50.7	(50.1)	52.7	(52.1)	2.0	2.0	52.0	(51.3)	50.7	(50.1)	-1.3	-1.2
Argentina	65	(60)	78.7	(75.8)	85.4	(82.5)	6.7	6.7	84.0	(81.1)	78.7	(75.8)	-5.3	-5.3
Brazil	65	(62)	88.4	(93.3)	97.8	(102.6)	9.4	9.3	88.4	(93.3)	88.4	(93.3)	0.0	0.0
China	60	(55)	68.3	(53.8)	68.3	(53.8)	0.0	0.0	67.2	(52.4)	68.3	(53.8)	1.1	1.4
India	58		38.9	(37.8)	34.3	(33.5)	-4.6	-4.3	41.7	(40.4)	38.9	(37.8)	-2.8	-2.6
Indonesia	65		53.5	(50.6)	56.2	(53.3)	2.6	2.7	57.2	(53.9)	53.5	(50.6)	-3.6	-3.3
Saudi Arabia	47		59.6		60.9		1.3		59.6		59.6		0.0	
South Africa*	60		8.0		8.0		0.0		8.0		8.0		0.0	

Note: * Individuals have the same gross benefit under both the base case and alternative economic assumption scenarios.

Source: OECD pension models.

StatLink  <https://stat.link/2d8lzp>



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