

## Methodology and assumptions

### Introduction

The indicators of pension entitlements that follow here in Chapter 4 use the OECD cohort-based pension models. The methodology and assumptions are common to the analysis of all countries, allowing the design of pension systems to be compared directly. This enables the comparison of future entitlements under today's parameters and rules.

The pension entitlements that are presented are those that are currently legislated in OECD countries. Reforms that have been legislated before publication are included where sufficient information is available. Changes that have already been legislated and are being phased in gradually are modelled from the year that they are implemented and onwards.

The values of all pension system parameters reflect the situation in 2022 and onwards. The calculations in this chapter show the pension benefits of a worker who enters the system that year at age 22 – that worker is thus born in 2000 – and retires after a full career. Chapter 5 deals with career break cases due to childcare or unemployment, examines the sensitivity of results to changing economic assumptions or different wage profiles, and compares futures pensions of self-employed workers to the full-career employee. The baseline results are shown for single individuals. All indexation and valorisation rules follow what is legislated.

### Career length

A full career is defined here as entering the labour market at age of 22 and working until the normal pension age (see indicator on “Future retirement ages”). The implication is that the modelled length of the career is country-specific and varies with the normal retirement age: 40 years for retirement at 62, 45 for retirement at 67, etc.

### Coverage

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

Schemes with near-universal coverage are also included, provided that they cover at least 85% of employees. Such plans are called “quasi-mandatory” in this report and are included for Denmark, the Netherlands, Sweden and the United Kingdom.

An increasing number of OECD countries have broad coverage of voluntary, occupational pensions, which play an important role in providing retirement incomes. For these countries, a second set of results for replacement rates is shown with entitlements from these voluntary pension plans.

Resource-tested benefits for which retired people may be eligible are also modelled. These can be means-tested, where both assets and income are taken into account, purely income-tested or withdrawn only against pension income. The calculations assume that all entitled pensioners take up these benefits. However, the only applicable asset or income

included in the model is from the mandatory, and, if applicable, the voluntary pensions that have been accumulated.

Pension entitlements are compared for workers with a range of different earnings levels from 0.5 times the average worker earnings (AW).

### Economic variables

The comparisons are based on a single set of economic assumptions for all the OECD countries and other major economies analysed. In practice, the level of pensions will be affected by economic growth, rates of return on financial assets, price inflation, real-wage growth and discount rates, and these will vary across countries. However, by using common economic assumptions across all countries, the results indicate the differences in pension design rather than the economic performance of a particular country. In this way, differences across countries in pension levels reflect differences in pension systems and policies alone. The baseline assumptions are set out below.

**Price inflation** is assumed to be 2% per year. **Real earnings** are assumed to grow by 1.25% per year on average (given the assumption for price inflation, this implies nominal wage growth of 3.275%). **Individual earnings** are assumed to grow in line with the economy-wide average. This means that the individual is assumed to remain at the same point in the earnings distribution, earning the same percentage of average earnings in every year of the working life. The **real discount rate** (for actuarial calculations) is assumed to be 1.5% per year, lower than 2.0% in the last edition. The net **real rate of return** on funded, defined contribution pensions over the long term has also been changed similarly for this edition and is now assumed to be 2.5% per year, maintaining the 100 basis points gap to discount rate. Administrative charges, fee structures and the cost of buying an annuity are assumed to result in a **defined contribution conversion factor** of 90% applied to the accumulated defined contribution wealth when calculating the annuity.

The baseline modelling uses country-specific projections of **mortality rates** from the United Nations population database for every year from 2022 to 2100. The mortality tables used include projected changes in mortality rates after the retirement age (cohort-based mortality projections).

The calculations assume that benefits from defined contribution plans are paid in the form of a price-indexed life annuity, which is calculated by applying the conversion factor to the actuarially fair price assuming perfect foresight. This is calculated from the mortality projections. Similarly, the annuity rate in notional accounts schemes is calculated from mortality data using the indexation rules and discounting assumptions employed by the respective country.

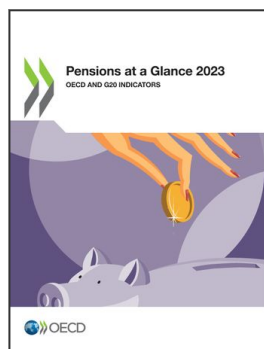
## Taxes and social security contributions

Information on personal income tax and social security contributions paid by pensioners, which were used to calculate pension entitlements, are in the “Country Profiles” available at <http://oe.cd/pag>.

The modelling assumes that tax systems and social-security contributions remain unchanged in the future. This constant policy assumption implicitly means that “value” parameters,

such as tax allowances or contribution ceilings, are adjusted annually in line with average worker earnings, while “rate” parameters, such as the personal income tax schedule and social security contribution rates, remain unchanged.

General provisions and the tax treatment of workers for 2022 can be found in the OECD’s *Taxing Wages* report. The conventions used in that report, such as which payments are considered taxes, are followed here.



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