Introduction

The indicators of pension entitlements that follow here in Chapter 6 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 June 2015 are included where sufficient information is available. Changes that have already been legislated and are being phased-in gradually and yearly are modelled from the year that they are implemented and onwards.

The values of all pension-system parameters reflect the situation in the year 2014 and onwards. The calculations show the pension benefits of a worker who enters the system today at ag 20 and retires after a full career. The main results are shown for a single person. All indexation and valorisation rules follow what is legislated in the baseline scenario.

Career length

A full career is defined here as entering the labour market at age of 20 and working until the normal pension age defined by this entry age (see indicator on "Future retirement ages" in Chapter 5). The implication is that the length of career varies with the statutory retirement age: 40 years for retirement at 60, 45 with retirement age at 65, etc.

People often spend periods out of paid work in unemployment, full-time education, caring for children, disabled or elderly relatives, etc. However, most OECD countries have mechanisms in place to protect the pension entitlements for such periods. The impact of interrupted careers is shown in Chapter 3: "How incomplete careers affect pension entitlements".

Rules for periods of unemployment and caring for children, which are often very complex, are set out in the "Country profiles" towards the end of this report.

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. They are particularly significant in Denmark, the Netherlands and Sweden.

An increasing number of OECD countries have broad coverage of voluntary, occupational pensions and these play an important role in providing retirement incomes. For these countries, a second set of results 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. Where there are broader means tests, taking account also of assets, the income test is taken as binding. It is assumed that the whole of income during retirement comes from the mandatory pension scheme (or from the mandatory plus voluntary pension schemes in those countries where the latter are modelled).

Pension entitlements are compared for workers with a range of different earnings levels: between 0.5 and three times the average worker earnings (AW). This range permits an analysis of future retirement benefits of both the poorest and richest workers.

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, rate of return on financial assets, real wage growth, the discount rate and inflation, and these will vary across countries. A single set of assumptions, however, ensures that the outcomes of the different pension regimes are not affected by different economic conditions. In this way, differences across countries in pension levels reflect differences in pension systems and policies alone. The baseline assumptions are 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 rate of return*** on funded, defined-contribution pensions is assumed to be 3% per year. Administrative charges, fee structures and the cost of buying an annuity are assumed to result in a ***defined contribution conversion factor*** of 85% applied to the accumulated defined contribution wealth when calculating the annuity. The ***real discount rate*** (for actuarial calculations) is assumed to be 2% per year.

The baseline modelling uses country-specific projections of ***mortality rate*** from the United Nations population database for every year from 2014 to 2080.

Changes in these baseline assumptions will obviously affect the resulting pension entitlements. The impact of variations in the economic variables is shown in the Chapter 4: "Sensitivity of replacement rates to the model parameters".

The calculations assume that benefits from defined-contribution plans are paid in the form of a price-indexed life annuity at an actuarially fair price assuming perfect foresight. This is calculated from the mortality projections once the conversion factor is taken into account. If people withdraw the money in alternative ways, the capital sum at the time of retirement is the same: it is only the way that the benefits are spread that is changed. Similarly, the notional annuity rate in notional accounts schemes is (in most cases) calculated from mortality data using the indexation rules and discounting assumptions employed by the respective country.

Legislated policy versus constant policy

In some schemes, the safety-net in the pension system may be tied to some general index that is different than that of average wages (most often consumer price index or a mixture of the two). Discrepancies to the income distribution (current wage level) may therefore occur over long simulation periods (such as 40 years). In these cases an alternative scenario assuming full-wage indexation of safety nets is produced. The alternative scenario is only presented if relevant in the country chapter. The aim here is to emphasise the importance of indexation in the longer-term. The results should therefore not be seen as an attempt to forecast what policies will be implemented in practice in the future but rather as a prospective comparison of the current legislation and a constant policy scenario.

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 available in the on-line "Country profiles" from the website: *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 2014 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.

Further reading

OECD (2015), *Taxing Wages 2015*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/tax_wages-2015-en*.