

Part of the analysis presented in Chapter 1, the indicators of pension entitlements that follow here in Chapter 3 and the results presented in Chapter 4 use the OECD pension models. The methodology and assumptions are common to the analysis of all countries, allowing the design of pension systems to be compared directly. Future entitlements are computed under today's parameter and rules.

The pension entitlements that are presented are those that were legislated in the LAC countries at the time of writing. Changes in rules that have already been legislated, but are being phased-in gradually, are assumed to be fully in place from the start. Reforms that have been legislated since 2010 are included where sufficient information is available.

The values of all pension-system parameters reflect the situation in the year 2010. Where reforms have taken place more recently, parameters have been re-calculated for 2010 values assuming that the changed rules were already in place.

The calculations show the pension entitlements of a worker who enters the system today and retires after a full career. The main results are shown for a single person.

### Career length

A full career is defined here as entering the labour market at age 20 and working until the standard pension-eligibility age, which, of course, varies between countries. 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, 47 with 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.

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 These can be means-tested, where both assets and income are taken into account, purely income-tested or withdrawn only against pension income.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 times and four times the economy-wide average. This range permits an analysis of future retirement benefits of both the poorest and richer workers.

### Economic variables

The comparisons are based on a single set of economic assumptions for all countries and other major economies analysed. In practice, the level of pensions will be affected by economic growth, wage growth 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 2.5% per year. In practice, this assumption has little effect on the results because of indexation.

**Real earnings growth** of 2% per year (given the assumption for price inflation, this implies nominal wage growth of 4.55%). **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* after administrative charges on funded, defined-contribution pensions is assumed to be 3.5% per year.

The discount rate (for actuarial calculations) is assumed to be 2% per year. The discount rate is set at the same rate as real earnings growth, which is a common finding of growth models and other dynamic economic models (see Queisser and Whitehouse, 2006 for a discussion of the discount rate).

The baseline modelling uses country-specific projections of *mortality rate* from the *United Nations population Database* for the year 2055.

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. This calculation is based on the mortality projections. 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.

### **Taxes and social security contributions**

The modelling assumes that tax systems and social-security contributions remain unchanged in the future. This implicitly means that “value” parameters, such as tax allowances or contribution ceilings, are adjusted annually in line with average earnings, while “rate” parameters, such as the personal income tax schedule and social security contribution rates, remain unchanged.

### **Caveats and interpretation of indicators**

A number of caveats are necessary when using the indicators presented below. First, these indicators are not meant to serve as projections. This is especially important to emphasize in LAC countries where the standardised assumptions clearly do not reflect the actual experience of many, if not most countries. Among the most important deviations are those related to coverage or contribution patterns. The empirical evidence (see Chapter 1) shows that the minority of workers would have the kind of complete contribution histories assumed in the modelling. Moreover, “contribution density” is positively correlated with income level. This reality should be kept in mind when referring to the replacement rate and pension wealth figure.

Another important caution in interpreting the data regards the mortality tables that are used. While there is little evidence, it is very likely that mortality rates of workers contributing to pension schemes and working in the formal sector are lower than those of agricultural workers or those that spend their careers in the informal sector. (Given the focus of this edition on coverage, simulations based on variants on the standard coverage assumption were provided in Chapter 1) This tends to understate pension wealth estimates and annuities in the case of defined-contribution schemes which use these tables to convert an accumulated balance to a stream of payments.

The prevalence of defined-contribution schemes in the region also means that the assumption regarding rates of return on individual accounts plays an important role in generating the indicator. The effect of compounding over forty years or more is powerful and small changes in this variable will have major effects on the pension levels in many LAC countries. The actual experience in some countries (e.g. Chile and Mexico) over relatively long periods of time has significantly exceeded the return assumed here even after taking into account costs. The experience is less positive in some countries or the extent of the experience to date is too short to assess.

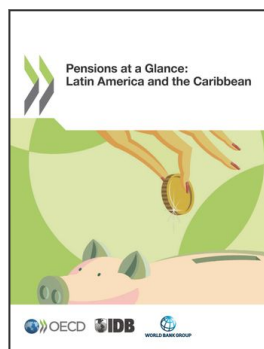
It is also important to note that unlike most OECD countries, the non-contributory pension in LAC is the only source of pension income for the bottom part of the income distribution where there is often negligible coverage from the contributory scheme. This is especially true in the lower income countries. This should be taken into consideration when looking at the figures below and particularly, the lowest wage workers. In fact, many of them would not be eligible for any contributory pension income.

Finally, regardless of country or region, these indicators refer specifically to workers entering the labour force today. This allows the results to reflect reforms that are being phased in gradually but that will only have an impact in the long run. In a comprehensive analysis, the outcomes for different cohorts would be required.

The indicators presented here are meant to capture the implicit objectives of the pension system designs. They cannot, nor do they aspire, to predict the outcomes for workers.

### **Further reading**

Queisser, M. and E.R. Whitehouse (2006), “Neutral or Fair? Actuarial Concepts and Pension-System Design”, *OECD Social, Employment and Migration Working Papers*, No. 40, OECD Publishing, <http://dx.doi.org/10.1787/351382456457>.



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