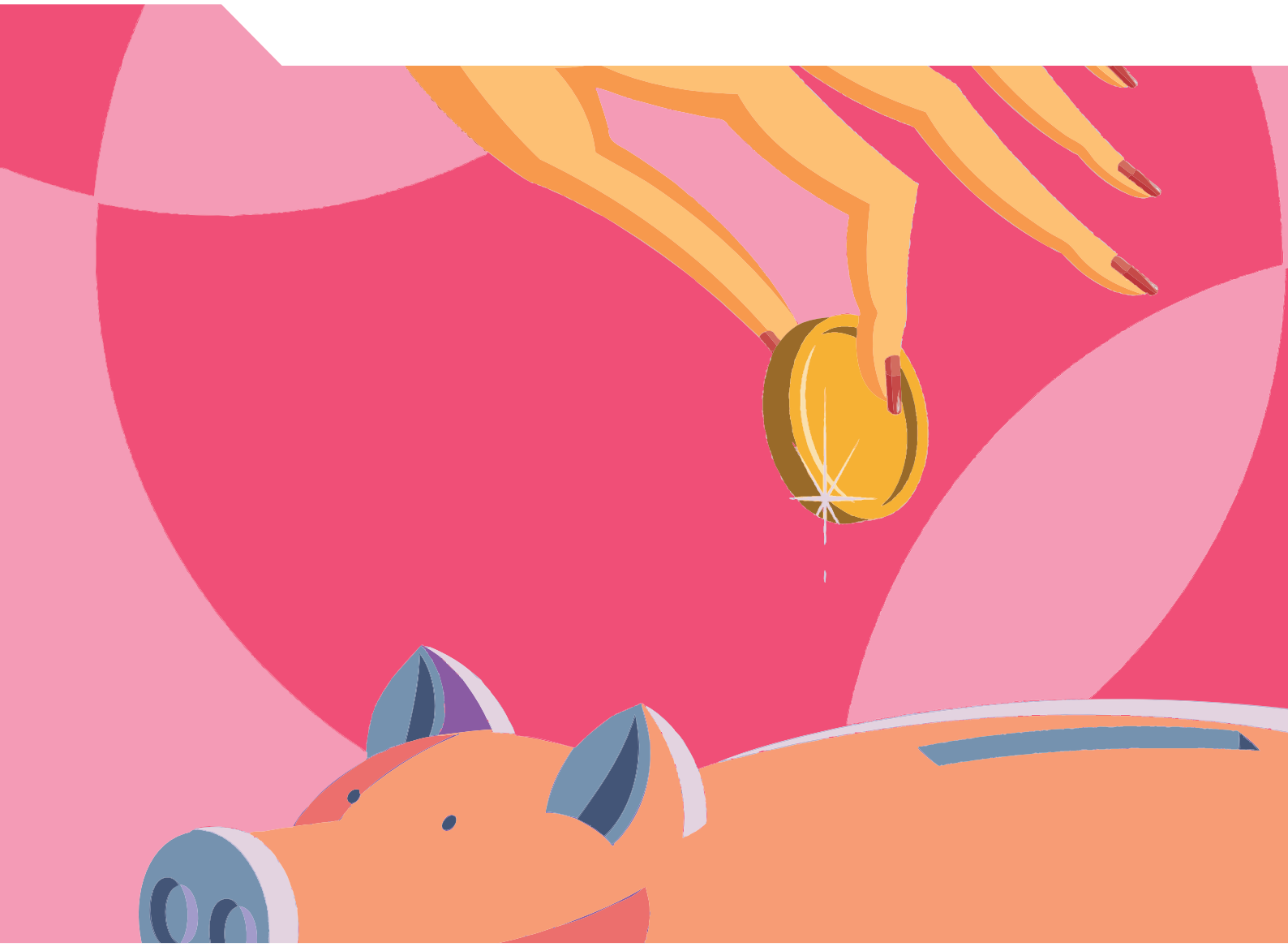
# Pensions at a Glance 2013

## OECD AND G20 INDICATORS



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# Pensions at a Glance 2013

OECD AND G20 INDICATORS

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# *Foreword*

*This fifth edition of* Pensions at a Glance *provides a range of indicators for comparing pension policies and their outcomes between OECD countries. The indicators are also, where possible, provided for the other major economies that are members of the G20. Two special chapters (Chapters 1 and 2) provide deeper analysis of recent pension reforms and their impact and of the role of housing, financial wealth and public service for retirement income adequacy.*

*This report was prepared by the pensions team in the Social Policy Division of the OECD Directorate for Employment, Labour and Social Affairs. The team comprises Anna Cristina D'Addio, Andrew Reilly, Kristoffer Lundberg and Maria Chiara Cavalleri. National officials – particularly delegates to the OECD Working Party on Social Policy and members of the OECD pension expert group – provided active and invaluable input to the report. For OECD countries, the results of the OECD pension models have been confirmed and validated by national authorities.*

*Chapter 1 on "Recent pension reforms and their distributional impact" was written by Andrew Reilly, Maria Chiara Cavalleri and Anna Cristina D'Addio. Chapter 2 entitled "The role of housing, financial wealth and public services for adequate living standards in old-age" was written by Anna Cristina D'Addio and Monika Queisser. Both chapters were edited by Ken Kincaid. Marlène Mohier prepared the manuscript for publication.*

*The indicators related to private pensions were mainly provided by the OECD's private-pensions unit in the Directorate for Financial and Enterprise Affairs: Pablo Antolín, Stéphanie Payet and Romain Despalins.*

*The report has benefited from the commentary of many national officials and colleagues in the OECD Secretariat, notably Monika Queisser and Stefano Scarpetta. It is a joint project co-financed by the European Commission and the OECD. The OECD pension models, that underpin the indicators of pension entitlements, use the APEX (Analysis of Pension Entitlements across Countries) models developed by Axia Economics.*

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# *Editorial*
# *Pensions under stress*

In OECD countries, the pension landscape has been changing at an astonishing pace over the past few years. After decades of debate and, in some cases, political standstill, many countries have launched significant pension reforms, including higher retirement ages, changes in the way entitlements are calculated and other measures to introduce savings in their pension systems.

OECD countries have very different pension schemes, but this new wave of reforms faces remarkably similar challenges: how to ensure that pension systems are financially sustainable and how to give citizens an adequate income in retirement. Tension between these two objectives is not new, but the economic crisis with its impact on public deficits and debts and thus the need for fiscal consolidation has added urgency. In large pay-as-you-go systems, especially in continental Europe, *financial sustainability* is the primary concern: how can the large success of past decades in reducing old-age poverty be maintained while ensuring that the costs of pension provision do not become too high for the next generations in the context of population ageing? Other countries with smaller public pension systems, such as the English-speaking countries, are more concerned with ensuring *adequate retirement incomes* by expanding the coverage of private pension schemes and raising contribution rates.

While many reforms had been in the making even before the crisis, a major accelerator of pension reform was the economic crisis and the resulting need for fiscal consolidation. In the 2009 edition of *Pensions at a Glance*, the OECD noted that, although private pension assets had taken a hit, pensioners had been largely spared from benefit cuts and sometimes even saw their public pension benefits increased as part of economic stimulus programmes. By 2013, this is no longer the case. Given their large incidence in overall public spending – about 17% on average across OECD countries (ranging from 3% in Iceland to 30% in Italy) – pensions are now also being targeted in fiscal consolidation programmes.

Reforms have addressed a number of key elements of pension systems. One of the most visible and politically contested measures has been raising the retirement age. Pension ages have increased in most OECD countries. A retirement age of 67 is now becoming more common, rather than the exception as was still the case a few years ago. Some countries have gone even further, moving to 68 or 69 years, though no other country has gone as far as the Czech Republic which decided on an open-ended increase of the pension age by two months per year.

More and more countries are also introducing automatic adjustment mechanisms or sustainability factors; these aim to rebalance pension systems in line with the evolution of demographic, economic and financial parameters. In order to address shorter-term budget constraints, several countries are adopting, or considering, freezes of benefit levels, in

particular of higher-level pensions. In most cases, exceptions are made for low-income retirees by maintaining or increasing old-age safety net benefits. More recently, special pension schemes are also coming into focus, such as those for civil servants or for other groups of the population which may still be enjoying more favourable conditions for retirement. Decisions are particularly complicated as they raise broader issues, such as employment and pay conditions in the public versus the private sector.

Looking forward, the challenge of balancing sustainability and adequacy will become more pronounced in most countries. Governments will be forced to answer tough questions of both intra- and intergenerational fairness. As the baby boomer generation retires and pension systems continue to be reformed, the focus on preventing old-age poverty will become sharper and sources of income in old-age other than those from pension systems would have to be considered. This edition of *Pensions at a Glance* shows that homeownership and the financial wealth of older people, as well as services such as health and long-term care, are important factors influencing people's living standards in old age. Homeownership, in particular, can make a big difference for many pensioners, both reducing the need for cash and providing a way to generate income later in life. Accounting for these assets is likely to play a role in the policy debate on adequacy of incomes and inequalities in retirement.

Taking a broader view on living standards in retirement, however, raises other difficult questions. In countries where youth unemployment is high, for example, the pension benefit may be the only income households have to support a whole family, including jobless young people who live with their parents. The solution, however, cannot be to pay pensions to support a large family or for pensions to solve all problems, but to provide social and labour market policies that address the needs of every group of the population.

Private pension systems also need to be strengthened to ensure that they contribute effectively to retirement income adequacy. Retirement savings took a hit in the initial phase of the global financial crisis but now pension funds' asset and solvency levels have largely recovered. Nevertheless, private pensions have come under strong pressure in a climate of distrust in the financial sector and in a prolonged low interest-rate environment. For example, enthusiasm for funded private pillars has waned in some of the Central European countries: Hungary and Poland have abolished or significantly scaled down their mandatory private pension systems. Partly, this was a consequence of underestimating the fiscal costs associated with the introduction of mixed public-private, partially funded systems. But another reason was growing public discontent with the results of private pension funds due to high administrative fees and disappointing returns of pension funds. Even in Germany where individual private retirement savings are strongly promoted and subsidised, questions are being asked as to whether public support for private pensions is the right way to go. Sometimes, it is suggested that public money should rather be used to bolster public pay-as-you-go systems.

At the same time, other countries have been moving in the opposite direction, promoting low-cost, well-managed pension organisations that are better oriented to the needs of low income households. A good example is the recently launched National Employment Savings Trust (NEST) in the United Kingdom, which acts as the default in the new national automatic enrolment programme. The UK government expects this new system to address the major benefit adequacy gap that lower and middle income households are exposed to, because of the relatively low public pension benefits and the

voluntary nature of private pension provision. This follows an earlier reform in New Zealand which also introduced auto-enrolment for new employees. Other countries with smaller public systems, such as Ireland, are also recognizing that private pension saving on a purely voluntary basis will not result in high coverage rates and sufficient contributions. They are therefore considering either soft compulsion, such as auto-enrolment in private pensions, or even mandatory participation in private pensions. Other countries that stand out for their prudent and effective management of private pension systems include Denmark and the Netherlands, where, despite the crisis, investment returns have remained positive over the last five-year period in real terms.

While unhappiness with private pensions is understandable in the current economic context, it is important to recall the reasons why countries started to diversify the sources of retirement income in the first place. Private pensions were intended to limit the burden on younger generations by pre-funding at least part of the future pension obligations in a context of often rapid population ageing. This latter demographic challenge persists and moving back to pay-as-you-go systems will not help address the looming pension crisis. Middle-earners will be the group of people who are at highest risk of not having sufficient retirement income; indeed most countries protect low earners through minimum pensions and old-age safety nets, while most high-income people complement their public pension benefit with income from other sources, including personal savings and investments. Encouraging private provision for retirement, both through occupational and personal pension plans, thus remains important. But the current debate does highlight the urgency of dealing with the cost issue of running private schemes. It is indeed hard to justify obliging workers to put money into retirement income arrangements in which in the end only the provider makes a profit.

Addressing population ageing will require a much broader view than most governments currently seem to be taking. Retirement incomes are the reflection of employment and social conditions over the life course of each individual. Pension systems alone will not be able to correct inequalities and breaks during working lives. Ageing societies will therefore need much more policy action than just pension reform, and much more strategic thinking: what should our societies of the future look like? How will we deal with the old-age care challenge? What will be the fiscal impact of ageing and what will this mean for social protection systems and the sharing of responsibilities between the individual and the state, between public and private service providers? And how can we maintain solidarity in a context of rising inequalities between and within generations? Answering these questions will require comprehensive discussions and the design of holistic plans to which the OECD will continue to contribute through its work on public and private pensions and on a range of social and economic policies more broadly.

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# Executive summary

This edition of *Pensions at a Glance* examines the distributional impact of recent pension reforms and analyses how housing, financial wealth and publicly provided services may affect living standards in old age. It also contains a comprehensive selection of pensions policy indicators, covering: the design of pension systems; future pension entitlements for men and women at different earnings levels; finances of retirement-income systems as a whole; the demographic and economic context in which retirement-income systems operate; private pensions and public-pension reserve funds. The publication also includes profiles of the pension systems for all OECD and G20 countries.

## *Later retirement ages and increased private pensions arrangements*

Reforms vary between countries, but there are two main trends. First, reforms of pay-as-you-go public pension systems, aimed at postponing retirement, have introduced higher pension ages, automatic adjustment mechanisms and modified indexation rules. These should improve financial sustainability of pension provision. Retirement ages will be at least 67 years by around 2050 in most OECD countries. Some others are linking the pension age directly to the evolution of life expectancy. Second, governments have been looking at funded private pension arrangements. While the Czech Republic, Israel and the United Kingdom have introduced defined-contribution pension schemes, Poland and Hungary have reduced or closed these.

Pension reforms made during the past two decades lowered the pension promise for workers who enter the labour market today. Working longer may help to make up part of the reductions, but every year of contribution toward future pensions generally results in lower benefits than before the reforms. While future pensions will decline across the earnings range, most countries have protected the lowest earners from benefit cuts; everywhere, except in Sweden, pension reforms will hit the highest earners most.

## *Adequate living standards in old age*

The reduction of old-age poverty has been one of the greatest social policy successes in OECD countries. In 2010, the average poverty rate among the elderly was 12.8%, down from 15.1% in 2007, despite the Great Recession. In many OECD countries, the risk of poverty is higher at younger ages. Incomes of people aged 65 years and older in OECD countries reach, on average, about 86% of the level of disposable income of the total population, ranging from almost 100% in Luxembourg and France to less than 75% in Australia,

Denmark and Estonia. However, to paint a more complete picture of pensioners' retirement needs, other factors – such as housing wealth, financial wealth and access to publicly-provided services – also need to be considered.

In OECD countries, on average more than three-quarters of those aged 55 and above are homeowners. Housing can make a major contribution to pensioners' living standards, because they save on rent and can, when necessary, convert their property into cash through sale, rent, or reverse mortgage schemes. Nevertheless, homeowners may still be income-poor and may find it difficult to pay for both home maintenance and their daily needs.

Financial wealth can complement other sources of retirement income. Unfortunately, recent internationally comparable data is lacking in this area, making comprehensive assessment difficult. The extent to which financial wealth can help reduce the risk of poverty in old age depends on its distribution; as wealth is strongly concentrated among the top of the income distribution, its impact on poverty among the elderly is limited.

Access to public services, such as health care, education and social housing, also affects older people's living standards. Long-term care is very important as care costs associated with greater needs (i.e. 25 hours a week), may exceed 60% of the disposable income for all but the wealthiest one-fifth of the elderly. Women, who live longer than men, have both lower pensions and less wealth, are at a particular risk of old-age poverty when long-term care is needed. Public services are likely to benefit the elderly more than the working-age population: adding their value to incomes, about 40% of older people's extended income is made up of in-kind public services, compared to 24% for the working-age population.

## *Key findings*

Population ageing means that in many OECD countries, pension expenditures will tend to increase. Recent reforms have aimed at maintaining or restoring financial sustainability of pension systems by reducing future pension spending. The social sustainability of pension systems and the adequacy of retirement incomes may thus become a major challenge for policy makers.

- Future entitlements will generally be lower and not all countries have built in special protection for low earners. People who do not have full contribution careers will struggle to achieve adequate retirement incomes in public schemes, and even more so in private pension schemes which commonly do not redistribute income to poorer retirees.
- It is essential that people should continue paying in contributions to build future pension entitlements and ensure coverage. However, increasing pension age alone will not suffice to ensure people stay effectively on the labour market. A holistic approach to ageing is needed.
- Retirement incomes come from different sources and are subject to different risks, related to labour markets, policy, economic conditions and individual circumstances. Unemployed, sick and people with disabilities may not be able to build adequate pension entitlements.
- Current retirees have high incomes relative to the total population: 86% on average in OECD. This outcome and the reduction of old-age poverty are policy successes of the last decades.
- Because of stigma, lack of information on entitlement, and other factors, not all elderly people who need last-resort benefits claim them. There is thus a certain degree of hidden old-age poverty.

- The retrenchment of public pension systems, trends towards working longer and more reliance on private pensions may increase inequality among retirees.
- Housing and financial wealth supplement public pension benefits. They do not, in their own right, appear to be sources of income that can be expected to replace a proper pension income. Better internationally comparable data are urgently needed to explore in greater detail how housing and financial wealth can contribute to the adequacy of retirement incomes.
- Public services are retirement-income enhancers. This is especially true of healthcare and long-term care services. Services benefit the poorest retirees much more than they do richer elderly households. Public support is set to play an increasingly important role in preventing old-age poverty among people requiring health and long-term care services.

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*Chapter 1*

# Recent pension reforms and their distributional impact

*This chapter first sets out the most important elements of pension reform in the 34 OECD member countries between January 2009 and September 2013. It thus updates and continues the analysis in the 2009 edition of* Pensions at a Glance *which examined pension reforms from 2004 to the end of 2008. The second part of the chapter examines the distributional impact of pension reforms over the last 20 years, looking only at those countries which have undertaken reforms that go beyond solely raising the retirement age.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## Introduction

For a decade pension reform has been high on the agenda of many governments. Population ageing and declining fertility rates require reforms which also need to pre-empt, where possible, adverse social and economic effects of making pension systems more financially sustainable. Although the recent economic crisis has heightened the pressure for decisive action, it is important to consider long-term scenarios rather than short-term views.

Pension expenditure is forecast to increase in the vast majority of OECD countries over the next 40 years (see Table 6.7 in Chapter 6). Such a development is unsurprising as the predicted five-year rise in life expectancy at the age of 65 for the next half-century will lead to much higher numbers of pensioners than currently. By now it is widely accepted in most countries that pension systems and rules need to change over time. Reforms will, of course, vary from country to country and will be determined by the structure of the pension systems in place.

This chapter is divided into two separate parts. The first sets out the most important elements of pension reform in the 34 OECD member countries between January 2009 and September 2013. It thus updates and continues the analysis in the 2009 edition of *Pensions at a Glance* which examined pension reforms from 2004 to the end of 2008. The second part of the chapter examines the distributional impact of pension reforms over the last 20 years, looking only at those countries which have undertaken reforms that go beyond solely raising the retirement age.[1]

## Recent pension reforms

### *Key goals of pension reform*

This section examines pension reform against six of its key objectives:

1. Pension system *coverage* in both mandatory and voluntary schemes.
2. *Adequacy* of retirement benefits.
3. *The financial sustainability* and *affordability* of pension promises to taxpayers and contributors.
4. *Incentives* that encourage people to work for longer parts of their lifetimes and to save more while in employment.
5. *Administrative efficiency* to minimise pension system running costs.
6. *The diversification* of retirement income sources across providers (public and private), the three pillars (public, industry-wide and personal), and financing forms (pay-as-you-go and funded).

A seventh, residual, category covers other types of change, such as temporary measures and those designed to stimulate economic recovery.

Trade-offs and synergies between the objectives are frequent. For example, increasing fiscal sustainability by lowering the generosity of the pension promise is likely to have adverse effects on the adequacy of pension incomes. On the other hand, widening the coverage of occupational pensions eases the pressure on the state budget to provide a pension and helps to diversify risk and improve the adequacy of retirement incomes.

### *Overview of pension reforms*

Table 1.1 below shows the type of reform package adopted in each of the 34 OECD countries between 2009 and 2013. Table 1.2 considers reform in much greater details.

Table 1.1. **Overview of pension reform measures in 34 OECD countries, 2009-13**

| | Coverage | Adequacy | Sustainability | Work incentives | Administrative efficiency | Diversification/ security | Other |
|---|---|---|---|---|---|---|---|
| Australia | x | x | x | x | x | | x |
| Austria | x | x | x | | | | x |
| Belgium | | | | x | | | |
| Canada | x | | x | x | | x | x |
| Chile | x | x | | | x | x | x |
| Czech Republic | | | x | x | | x | |
| Denmark | | | | x | x | | |
| Estonia | | x | x | x | x | x | |
| Finland | x | x | x | x | | x | |
| France | x | x | x | x | | | x |
| Germany | | x | x | x | | | |
| Greece | | x | x | x | x | | |
| Hungary | | x | x | x | | x | x |
| Iceland | | | | | | | x |
| Ireland | x | | x | x | | x | x |
| Israel | x | x | | | | x | |
| Italy | | x | x | x | x | | |
| Japan | x | x | x | | x | | x |
| Korea | x | | x | | x | | |
| Luxembourg | x | | x | x | | | |
| Mexico | | x | | | x | x | |
| Netherlands | | | | | | x | |
| New Zealand | | x | x | | | | x |
| Norway | | x | x | x | | | |
| Poland | x | | x | x | | x | |
| Portugal | x | x | x | x | | x | |
| Slovak Republic | | | x | | x | x | |
| Slovenia | | | x | x | | | |
| Slovenia | x | x | x | x | x | x | x |
| Spain | | x | x | x | | | |
| Sweden | | x | x | x | x | x | |
| Switzerland | | | x | | | x | |
| Turkey | | | | x | | x | x |
| United Kingdom | x | x | x | x | x | x | x |
| United States | x | x | x | | | | |

*Note:* See Table 1.2 for the details of pension reforms.

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All 34 OECD countries have made reforms to their pension systems in the period under scrutiny. In some countries, like Belgium and Chile, reform entails phasing in measures under the terms of legislation passed in the previous five-year period (2004-08). Since then, reform has increasingly focused on improving financial sustainability and administrative efficiency in response to the consequences of the economic crisis and ageing populations. Countries, like Greece and Ireland, that have revised the way in which they calculate benefits have been the worst affected by the economic downturn. Italy, too, stepped up the pace of its transition from defined benefit public pensions to notional defined-contribution (NDC) accounts in 2012.

Between 2004 and 2008 many countries – Chile, Italy and New Zealand, for example – undertook reform to improve pension coverage and safety net benefits as part of their efforts to fight poverty in old age more effectively. While some have continued in that direction, many others have concentrated on offering the incentive of an adequate retirement income to longer working lives. Most OECD countries are thus increasing their retirement ages, albeit gradually.

The following sections review and compare in detail the reform measures enacted or implemented by OECD countries between 2009 and 2013 to meet the six objectives identified above.

### *Coverage*

Ensuring coverage of workers through one or more pension plans is fundamental to fighting income poverty in old age. All OECD countries have set up mandatory or quasi-mandatory pension plans, either public or private, to achieve quasi-universal coverage. Nevertheless, there is still a significant share of workers who are not covered – even by public or national schemes – or who are informally employed, particularly in low-income countries. In Mexico, for example, less than 40% of the workforce is covered by a statutory pension scheme, the rest being either employed in the informal sector or unemployed.

In four OECD countries, recent policy measures sought to increase participation rates in public pension plans among specific categories of workers: family-carers (Austria), recipients of maternity benefits (France) and recipients of research grants (Finland). Since 2009, new employees in Portugal's banking sector have been automatically enrolled in the national public scheme rather than in industry-wide, private pension plans as their predecessors were. The measure was driven by growing concern about the future sustainability of bank employees' pension funds, severely hit by the economic crisis.

In 2011, Chile ushered in the last phase of its 2008 reform to cover 60% of the poorest elderly people in its public solidarity pension system (SPS), a new pillar that provides means-tested benefits to those who receive no, or very little, pension. Many countries have introduced schemes to promote participation in occupational or voluntary pension plans. Because of public pension retrenchment, such schemes are expected to play a major role in ensuring future retirees an income. Policy interventions in this area have taken three main forms:

1. Private pension provisions in addition to public schemes, as in Poland and Austria.
2. The introduction or extension of mandatory occupational pensions, as in Israel and Korea.
3. Automatic enrolment in voluntary schemes, as in the United Kingdom.

Some policy initiatives aim to increase coverage among specific groups of workers. The United States, for example, offers tax relief to encourage participation in and continuous contribution to private plans among low earners. With a similar goal in mind, Luxembourg has lowered the minimum monthly contribution to voluntary pension plans. The Chilean government, too, has made a great effort recently to phase in a variety of measures to widen coverage, especially of young and low-paid workers. Actions include providing an annual public subsidy to match individual contributions, introducing an efficient new regulatory framework for voluntary plans, and stimulating competition among plans to lower operating costs. The Chilean government's objective is not only to increase voluntary participation or spread savings, but to optimise fund management efficiency.

A significant number of countries have taken measures to institute automatic enrolment in private voluntary plans. In the wake of Italy and New Zealand in 2007, the United Kingdom introduced a nationwide automatic enrolment retirement savings system in 2012 for all workers not already covered by a private pension plan. Ireland proposes to follow suit from 2014.

### *Adequacy*

Reforms to improve the adequacy of retirement incomes may address income replacement, redistribution, or both.

Between 2009 and 2013, Greece and Mexico introduced new means-tested benefits, while Australia followed a different tack. It enhanced its existing targeted schemes to provide higher benefits to the elderly most at risk of poverty. Chile and Greece modified their income tests for the allocation of earnings-related benefits. A new minimum pension was available in Finland from March 2011 as a supplement to the income-based universal allowance. The benefit is payable to all pensioners below a minimum income level (EUR 687.74 per month in 2011). The minimum income security for pensioners is now significantly higher than it was under the previous arrangement.

Measures to improve the adequacy of pensions have also involved reforms to pension benefit formulae. Norway, for instance, modified its rules for calculating old-age benefits in 2011, choosing an income-tested pension to replace its flat-rate contributory public benefit.

A number of other countries have also sought to improve the progressive nature of their social security systems. Portugal has tightened rules for eligibility to Income Support Allowance as of 2013, while Spain has increased survivor benefits for those without a pension. Chile, for its part, abolished healthcare contributions for low earners, and Mexico has exempted pensions from tax. In Estonia, a new income supplement has been available since January 2013 to all pensioners who provide care for a child aged 3 years old or less. The amount of the Estonian monthly allowance varies according both to the number of children cared for and their dates of birth.

Greece, the United Kingdom and the United States granted one-off payments to pensioners in 2009 in a move to temper hardship stemming from the economic crisis. In Greece, where the bonus targeted low-income pensioners, the intention was to maintain it through subsequent years. However, fiscal consolidation saw it dropped in 2010, together with other lump-sum payments to high-income pensioners and seasonal bonuses to workers. Austria also made occasional transfers to lower-income pensioners in 2010 as part of its efforts to reduce old age poverty. In contrast, Portugal has stopped 13th- and 14th-month pension payments, so lowering the income expectations of many retirees.

The level of pensions for higher earners has also been affected by recent reforms, introduced chiefly as part of fiscal consolidation packages. In Greece, for example, the progressive cut of between 5% and 19% in monthly benefits and the taxation of pensions above a certain level have particularly affected high pension earners and thereby increased the redistributive capacity of the system. Korea has recently passed a pension bill that gradually brings the replacement rate of public sector pensions down from 49% to 40% between 2009 and 2028.

### *Financial sustainability*

Many OECD countries have passed reforms to improve the long-term financial sustainability of their pensions systems, principally to secure greater savings for the state budget.

A particularly frequent measure has been the reform of pension indexation mechanisms, although the goals and effects of such action vary across countries and income levels. Some new indexation rules move towards less generous benefits, an especially sought-after effect in countries grappling with fiscal problems. For example, the Czech Republic, Hungary and Norway no longer index pensions to wage growth, while Austria, Greece, Portugal and Slovenia have frozen automatic adjustments for all but the lowest earners. In Luxembourg, the expected upward adjustment of benefits has been scaled back by 50%, while in 2010 Germany amended its planned increase in pension levels to avoid pressure on the federal budget and suspended the cut it had scheduled in contribution rates in 2009.

In Australia, Finland and the United States, by contrast, the freezes on pensions and changes in indexation rules were meant to offset the drop in benefit levels that the standard, inflation-based index would have involved. Policy action in the three countries was actually designed to preserve pensioners' purchasing power.

Greece and Ireland have taken some of the most far-reaching fiscal consolidation measures. Ireland now levies pensions from public sector wages and has limited both early withdrawals from pension funds and other tax privileges. Portugal, too, has enacted pension levies. In Greece, the government has lowered the average annual accrual rate and tied pension indexation to the variability of the consumer price index (CPI) rather than to civil servants' pensions. In addition, Greece now calculates pension benefits on the basis of lifetime average pay rather than final salary and, since January 2013, it has cut monthly pensions greater than EUR 1 000 by between 5% and 15% depending on pension income.

To lower the government's financial obligations in private plans, New Zealand has slashed tax credits for contributions by 50% up to a ceiling of NZD 521 and suspended tax exemptions for both employers and employees. Similarly, Australia halved the caps allowed on concessionally-taxed contributions to private plans (2009) and the tax rate for wealthier contributors to private pensions has been increased in order to better fund pension reforms in progress (2013). From July 2013, a higher cap allowed on concessionally-taxed contributions has been legislated for people aged 50 and over.

Significant changes to the pension formula are now effective in Norway, where benefit levels for younger workers have been linked to life expectancy and are now based on full contribution histories rather than on the best 20 years. Finland, too, now also ties earnings-related pensions to life expectancy and Spain will do the same for all pensions in

the near future. A reform proposal is currently under discussion in Spain (September 2013) that should anticipate the moment since when pensions will be linked to life expectancy: from 2027 to 2019.

Some Central European countries have altered the equilibrium between private and public schemes in order to divert financing from private funds and increase inflows to the state budget. Hungary has gradually dismantled the mandatory second pillar since the end of 2010 and transferred accounts to the first pillar. In Poland, contributions to private schemes are to be progressively reduced from 7.3% to 3.5% to allow an increase in contributions to its new pay-as-you-go public financing pillar. Finally, the Slovak Republic allowed workers to move back to the state-run scheme from private DC plans in June 2009 and made occupational pensions voluntary for new labour market entrants. However, the move was short-lived: in 2012, private pensions were again made compulsory.

### *Work incentives*

Many OECD countries' pension reforms are aimed at lengthening working lives so that people build higher pension entitlements and improve the adequacy of their retirement income.

Measures adopted have been of three main types: *i)* increases in the statutory retirement age; *ii)* improved provision of financial incentives to work beyond retirement age, e.g. through work bonuses and increases in pension benefit at retirement; and *iii)* less or no early retirement schemes.

In the last decade, most of the 34 OECD countries have passed legislation that raises the retirement age or the contribution requirements that earn entitlement to full pension benefits. Many countries have raised the bar above 65 years of age to 67 and higher. Others, such as Norway and Iceland, were already on 67, and a few – such as Estonia, Turkey and Hungary – will not exceed 65 years of age.

Slovenia enacted a reform in January 2013 that gradually increased women's statutory retirement age to 65 by 2016, when it will be the same as men's. Likewise, legislation in Poland in June 2012 increased the age to 67 for both sexes, albeit on different timelines: retirement at 67 will be effective for men in 2020, but only by 2040 for women. Australian women's Age Pension age rose to 65 in July 2013 and will again rise – to 67 – for both men and women by 2023. In late 2011, Italy also introduced a reform that gradually increased the age at which both sexes start drawing a pension to age 67 by 2021 – a significant hike for women in the private sector who, until 2010, retired at 60. Similarly, in Greece women will stop working at the same age as men – 65 – as of December 2013. The retirement age will then gradually rise to 67 for men and women alike over the next decade.

These examples reveal a clear trend across countries towards the same retirement age for men and women. Only in Israel and Switzerland are projected retirement ages still different. In addition, some OECD countries – Denmark, Greece, Hungary, Italy, Korea and Turkey – have also opted to link future increases in pension ages to changes in life expectancy, meaning that retirement ages in both Denmark and Italy, for example, will go well beyond age 67 in the future. However, automatic adjustment is scheduled to run only from 2020 at the earliest. In the Czech Republic there will be a flat increase of two months per year in the retirement age from 2044, by which time the retirement age will already have reached age 67.

In France, pensions are generally determined by age and the number of years during which a worker contributes. Workers may retire with no penalty from the age of 62 at the earliest and should have paid in to a pension scheme for at least 42 years – a minimum requirement that will increase in the future. The age at which workers can retire – irrespective of the duration of their contribution period – will rise to 67 by 2022.

Some countries have used financial incentives to encourage people to continue working. Australia and Ireland have offered bonuses to older workers, while France and Spain award pension increments to workers who defer their pension take-up. The Swedish government increased its Earned Income Tax Credit (EITC) in two steps in 2009 and 2010. The EITC is designed to stimulate employment and increase incentive to work and is higher for workers above 65. The employer's social security contribution is also lower for workers over 66. However, a larger number of OECD countries have introduced benefit penalties for retirement before the statutory or minimum age – Denmark, Italy, Poland and Portugal are some examples. Poland and Portugal have abolished and suspended, respectively, their early retirement schemes, while Italy replaced its arrangement by a less generous one, tying eligibility criteria to specific age and contribution requirements in response to projected rises in life expectancy.

Other types of reform that encourage late retirement are, for example, the removal of upper age limits for private pension compulsory contributions in Australia. Luxembourg, by contrast, has lowered its rates of increase in pension savings. The effect of the measure is that, if workers are to enjoy pensions at pre-reform levels, they will need to contribute for an extra three years or accept an average pension entitlement in 2050 that will be approximately 12% less than the present one.

Some countries have directly addressed the labour market to lengthen working lives. They have taken measures to ensure older workers retain their employment status and/or that they are not discriminated against on the job market. The United Kingdom, for example, has abolished the default retirement age (DRA) in order to afford workers greater opportunities for, and guarantees of, longer working lives (the OECD series on *Ageing and Employment Policies* offers more detailed analysis of the issue of older workers, building on the work from (OECD, 2006).

### *Administrative efficiency*

The high costs of administering private pension plans that are passed on to members have been a policy concern for many OECD countries in recent years – especially where systems are mandatory or quasi-mandatory. However, administrative efficiency is also a policy priority in voluntary plans. High fees discourage workers from joining voluntary plans and make mandatory ones very costly. In fact, cost inefficiencies are a threat to the sustainability and suitability of plans themselves. Estimates suggest, for example, that the fees a worker is charged for belonging to a private pension plan can account for up to 20% or 40% of his or her contribution.[2]

Several countries – Australia, Chile, Japan and Sweden – have made policy reforms to render national pension schemes more cost efficient. Australia introduced a simple, low-cost new scheme – MySuper – in July 2013 with the aim of providing a default superannuation product with a standard set of features for comparability. Similarly, the Chilean government has been fostering competition among plan managers to courage the emergence of affordable, cost-efficient schemes. In Sweden a new low-cost fund, AP7, has

been competing with expensive investment options since 2010. In the same vein, Japan set up a new authority in 2010 to run public schemes at a lower cost, while centralised private pension management is a policy objective in Mexico and the United Kingdom.

Denmark, Greece, Italy and Sweden have merged the different authorities in charge of managing and paying social security benefits. In Greece, for example, the number of plans had dropped from 133 to just three by the end of 2010. The Greek government has also unified all workers' benefit contributions in a single payment to simplify matters and prevent evasion. Greece (again) and Korea have set up information systems for managing social security records in order to keep their pension systems accessible and efficient. Finally, Estonia recently enforced caps on the fees passed on to contributors, while the Slovak Republic has tied fees to pension funds' returns on investment rather than to their asset value.

### *Diversification and security*

Policies to diversify and secure savings have taken four main forms:

1. Voluntary pension plans to improve investment options for workers and increase competition among funds. Canada, the Czech and Slovak Republics, Poland and the United Kingdom have introduced such schemes.
2. Regulations that allow individuals greater choice over the way their retirement savings are invested in private plans. Canada, Estonia, Hungary, Israel, Mexico and Poland, for example, have adopted this policy, supported by measures to move people automatically into less risky investments as they get closer to retirement, a policy recommended in earlier OECD analysis (OECD, 2009).
3. The relaxing of restrictions on investment options to foster greater diversification of pension funds' portfolios. Chile, Finland, Switzerland and Turkey have followed this path, with Chile and the Slovak Republic allowing pension funds to take larger shares in foreign investments in order to hedge the risk of national default.
4. Action to improve pension funds' solvency rates. Canada, Chile, Estonia and Ireland have introduced stricter rules on investment in risky assets in order to protect pension plans' members more effectively. In Canada and Ireland, state direct intervention has helped financially insolvent funds to recoup losses in their asset values caused by the financial crisis. Finally, Finland and the Netherlands temporarily relaxed solvency rules to allow funds a longer time to recover.

### *Other reforms*

The "other reforms" category covers a mixed bag of policy measures. Although their objectives differ from those typical of pension systems, they nonetheless affect pension parameters.

Helping people to ride the financial crisis has been a priority in many OECD countries and policy packages implemented to that effect have often involved pension systems. For example, Iceland has allowed early access to pension savings so that people hit hard by the economic downturn have some financial support. The Australian government issued new benefit packages designed to assist people in meeting such needs as home care and the payment of utility bills. Public contribution to the New Zealand Superannuation Fund was discontinued in 2009. The measure has accelerated the gradual run down of this fund which was originally scheduled from 2021 onward.

The purpose of all these measures has been to induce people to spend money to support domestic demand and thus speed up economic recovery. In many cases, they have also been part of action plans to prevent low earners and pensioners slipping below the poverty line.

Some countries have also retreated from earlier commitments to pre-finance future pension liabilities through reserve funds. Ireland, for example, has used part of its public pension reserves to recapitalise the country's banking sector teetering on the brink of financial default. The country has suspended any further contributions to the National Pension Reserve Fund in response to its large budget deficit. Similarly, the French government began to draw on its national pension reserve (*Fonds de réserve pour les retraites*) much earlier than originally envisaged – in 2011 rather than in 2020. Other countries, like Australia and Chile, however, have maintained their commitment to pre-funding, although it should be said that they have not been as badly affected by the economic crisis as Europe.

## Distributional impact of pension reforms

The most widely discussed component of a pension system is the age at which workers can retire. It is also the easiest to change. Most OECD countries have done precisely that. Action may have involved planning comprehensively for the future either through legislation or by tying the retirement age to life expectancy. Alternatively, it may have entailed raising the age threshold by a set amount every year, as in the Czech Republic which is to increase its retirement age by two months annually from 2044. Some countries simply pass legislation to adjust women's retirement age upwards in line with men's or, like the United Kingdom, to align increases in both.

Historically, pensions were introduced at a time when life expectancy was just above the statutory retirement age. As people have come to live longer, however, they have also started to retire earlier across the OECD: men stopped working at 64.3 years old in 1949 and 62.4 in 1999. Women retired even earlier at 62.9 years in 1949 and 61.1 in 1999 (OECD, 2011). Not until the middle of this century will the average retirement age exceed 65 years old, with long-term forecasts indicating that in most OECD countries it will be 67 or higher (see Table 3.7 on normal, early and late retirement).

The age of retirement is only one component of a pension system and, although possibly the most politically sensitive, it is only a part of any reform package. The first section of this chapter outlined the reforms that the 34 OECD countries have actually enacted and implemented. This section concentrates on the results of modelled reform.

The first part of this section details the impact of reforms on gross replacement rates and gross pension wealth over the last 20 years. A more theoretical approach, examining the impact of reforms while maintaining a constant retirement age across the period under scrutiny is then examined. Otherwise, results of system reform simulation would be distorted by longer working lives and shorter retirement, as the modeling still assumes that workers enter the labour market at the same age. Finally some conclusions and policy implications that emerge from the chapter as a whole are highlighted.

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013**

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Australia | Abolition of age limit (70 years) on compulsory contributions to private pension schemes (2013). | Mandatory DC contributions will increase from 9% to 12% between 2013 and 2020 (2013 reform).[1]<br>Increase in targeted benefits (Age Pension) of 12% for single pensioners and 3% for couples from September 2009. The increase in the single person's rate is 66.3% of a couple's.<br>New indexation arrangements for the base pension (since March 2010). The benchmark for single pensioners increased from 25% to 27.7% of Male Total Average Weekly Earnings (41.76% for retired couples.<br>Changes to the income test for earnings-related benefits (September 2009). | Increased superannuation taxes on contributions for high earners and raised threshold for tax free contributions by older workers. Effective from 2013.<br>Private pension contribution rate increased gradually from 9% of basic wages to 12% in 2013-20 (2013 reform).[1]<br>Decrease of 50% in both the government maximum entitlement and contribution to private pension schemes of low-earners employees (2013). | Gradual increase in pension age for both men and women born after 1952 from age 65 to 67, starting from 2017 until 2023.<br>Abolition of age limit (70 years) for private pension compulsory contribution (2013).<br>From July 2013, retirement age for women born between 1 January 1949 and 30 June 1952 has increased to 65 years.<br>New, more generous work bonus to Age Pension recipients introduced in July 2011 that replaces the (now closed) Pension Bonus Scheme.<br>Phase-out of mature age workers tax offset – from 1 July 2012, this offset is only available to people born before 1 July 1957. | New clearing house for firms with < 20 workers from July 2010; measures to cut charges for DC pensions by 40% (December 2010).<br>New "MySuper" – simple, cost-effective DC product, which commenced in July 2013 and will cover new default contributions as of 1 January 2014.<br>The minimum obligation required by employers is set to increase to 12% gradually from 2013 to 2020.[1]<br>New "SuperStream" reform package to improve management of Superannuation schemes and consolidation of multiple accounts from 2011. | | Tax bonus of up to AUD 900 for eligible taxpayers in 2009, as part of Nation Building Economic Stimulus Plan.<br>Introduction of a new Pension Supplement, which combines the GST Supplement, Pharmaceutical Allowance, Utilities Allowance and Internet rate of Telephone Allowance and of a Senior Supplement.<br>Enhancements to Advance Payment for pensioners from 1 July 2010 with an increase in the amount of pension that can be advanced and multiple advances made each year.<br>Carer Supplement for Carer Payment and Carer Allowance recipients and an increase for Carer Allowance recipients. |
| Austria | Extension of state payment of pension contributions for family carers to lower-level long-term care benefits (from January 2009).<br>Two new types of benefits from DC plans created with a view to increasing pension options to so as to supplement the public pension system (2012). | One-off lump-sum payments to lower-income pensioners (2010). | Only monthly pensions of up to EUR 2 000 were fully indexed in 2011. | | | | |

1. Prior to the recent federal election, the government – when in opposition – announced that it will keep the rate of mandatory DC contributions unchanged at 9.25% until 30 June 2016 and then gradually increase the rate to 12% by 2021-22).

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Belgium | | | | Legal pension age for women increased to 65 in January 2009. Since January 2013, age limit for early (old age) retirement benefit is 60.5 (instead of 60) + 38 years of service. These requirements will increase to 62 + 40 years in 2016.<br>Discouragement of employer's use of early retirement schemes by increasing the contribution rate for participating employers (effective from April 2010). The measure aims at preventing employers relying too early or too much on this system to dismiss older workers. | | | |
| Canada | Introduction of a new voluntary retirement savings plan (called Pooled Registered Pension Plan) that is expected to increase coverage in the federal jurisdiction (2012), in Alberta (2013) and in Saskatchewan (2013).<br>Proposal (2013) to auto-enroll (with possibility to opt-out) all employees of employer with five employees or more in Quebec into a new voluntary retirement savings plan (called the Voluntary Retirement Savings Plan) (2013). | | Increase (2011) of the contribution rate for Quebec's public contribution second-tier programme (the Quebec Pension Plan) (funded equally by employers and employees) from 9.9% in 2011 to 10.8% in 2017. As of 2018, an automatic mechanism will be implemented to ensure stable plan funding. | In the public contributory programmes (Canada/Quebec Pension Plan), increase accrual rate from 0.5% per month to 0.7% for workers who delay retirement up to 5 years after the retirement age (65), to a maximum of 36%. For early pension take-up (age 60 to 65), pensions are reduced at a rate of 0.6% per month instead of 0.5%. | Starting in 2013, a proactive enrolment regime for Old Age Security benefits is being implemented, which reduces the burden on seniors to apply for benefits and reduces administrative costs. | Introduction of new voluntary retirement savings plans (the Pooled Registered Pension Plans), in industries and territories under federal jurisdiction (2012), as well as in Alberta (2013) and Saskatchewan (2013). Other provinces are expected to pass similar legislation. | The Quebec government takes over the pension plans of companies that go bankrupt from January 2009 to January 2012, and manage them for five years. The government will guarantee that pensions will be at least equal to the reduced pensions that would have been payable upon termination of the pension plans. |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Chile | Last phase of incorporating 60% of the poorest elderly people into the first-pillar solidarity pension system (SPS) began in July 2011.<br>New rules for employer-sponsored voluntary private pension arrangements (APVC) to incentivise adhesion (2011). State to provide annual subsidy of 15% of total contributions to voluntary retirement savings plans (2011). | Healthcare contribution for low-income pensioners abolished and reduced for middle-to-high income retirees (2011).<br>From 2010, new way of measuring poverty, which includes modified definition of family and per capita income and use of different sources to verify income. | | | New *Modelo* plan won contract to manage DC accounts for new entrants 2010-12: fees 24% lower than existing average; also won 2012-14 contracts with 30% lower fees.<br>Disability and survivors' insurance contracted through bidding (effective from 2011). | Permitted foreign assets increased from 60% to 80% of portfolios of DC plans in 2010-11.<br>Investment choice between five funds per manager made easier by renaming funds "A" to "E" in a more informative way: riskier to conservative. Members can choose their fund allocation beforehand for their remaining time in the workforce. | Women and men to be charged the same premium for the disability and survivorship insurance (SIS). Since men are expected to have higher risk rates, the difference in premiums will be deposited in women's DC accounts. |
| Czech Republic | | | New ceiling on pensionable earnings at 400% of average earnings (2010).<br>Temporary change to indexation rules for old age, survivor and disability pensions between 2013 and 2015 that will lower pension increases. | Progressive increase to the retirement age by two months each year, with no prescribed endpoint; a bridging of the gap of the retirement age for men and women by 2041 (2011).<br>Contribution requirement for full benefit increasing from 20 to 35 years by 2019 (effective from 2010). | | Option to divert 3% of contributions to a DC plan conditional on individuals making an extra 2% contribution, subject to a reduction in public-pension benefits from January 2013.<br>Creation of a second pillar of voluntary individual accounts, effective from 2013. | |
| Denmark | | | | Voluntary early retirement scheme (VERP or eferlon) scaled back since January 2012: increase in eligibility age from 60 to 64 during 2014-23 reducing pay-out period from five to three years; during 2012, choice between early-retirement benefits and a tax-free lump sum at eligibility age of DKK 143 300. | Creation of a centralised institution (Payment Denmark – Udbetaling Danmark), to handle the management and payment of several social security benefits, thus shifting communal responsibilities and improving responsiveness (2012). | | |
| Estonia | | From 1 January 2013, a new pension supplement from public pillar is available to pensioners having cared for a child up to age 3. | Cut in employer contributions to DC accounts (0% contributions in 2010, 2% in 2011, returning to 4% in 2012). Cuts to allow an equivalent rise in contributions to the state's first pillar (2009). | Pension age to increase gradually from 63 to 65 for men, from 60.5 to 65 for women between 2017 and 2026 (2010). | Since 2011, pension fund managers can no longer charge a unit-issue fee. Since 2011 annual management fees are also subject to a ceiling set in relation to the amount of assets under management. | Stricter investment limits on the conservative (least risky) of three funds in DC plans; members able to switch funds three times (rather than once) a year from August 2011. | |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Finland | Coverage of earnings-related scheme extended to recipients of research grants (January 2009). | New minimum pension supplements earnings-related universal pension from March 2011.<br>Indexation rule for minimum pensions temporarily changed in 2010 so as not to go below zero.<br>Earnings-related pensions linked to increases in life expectancy (applies from 2010). | Combined employer/employee contributions to earnings-related plans (TyEL) due to rise annually by 0.4% between 2011 and 2014. | Possibility of putting pension on hold while working (max. two years) extended to earnings-related pensions. Currently, temporary legislation covering 2010-13 (January 2010 – current government proposal to extend this period until the end of 2016).<br>To stimulate employment, employer contributions to universal public plan lowered by 0.8% in 2009 and eliminated in 2010. | | Temporary relaxation of solvency rules until 2012 to let DB plans hold on to riskier, higher-return assets (first time January 2009, validity extended April 2010). | |
| France | Cash maternity benefits count as earnings for pension purposes (November 2010). | Pension age stays at 60 for hazardous, arduous jobs leading to 10%+ permanent disability. The age requirement is dropped if the 10%+ disabled person has stayed into the arduous job for at least 17 years or if the permanent work-related disability is 20%+. In the latter case, the tenure requirement does not apply (November 2010). | Civil servants' contribution rates gradually rise from 7.85 to 10.55% by 2020 (2010). | Minimum pension age (subject to contribution conditions) increasing from 60 to 62 by 2017 (2012 amendment); restored possibility for early workers to retire at 60 with full contributory periods (2012); age for full rate pension increasing from 65 to 67 (November 2011); increment for late retirement increasing to 5% from 2009; employers must have an action plan for employing workers aged 50+ by January 2010. Public-sector workers contribution years for full pension increased in 2012. The new requirement depends on the year of birth of the civil servant and currently varies between 40 and 41.5 years. | | | Withdrawals from *Fonds de réserve pour les retraites* began in 2011 instead of 2020 to subsidise economic recovery. |
| Germany | | Pension increase of 2.41% in 2009 (rather than 1.76% under 2005 rules) but no increase in 2010 (-2.1%). | Legislated reduction in contribution rates suspended in 2009 to preserve sustainability. | Increase in normal pension age from 65 to 67 for workers born after 1964 between 2012 and 2029 (2007). | | | |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Greece | | New means-tested, non-contributory pension of EUR 360 for older people (2010).<br>New flat bonus of EUR 800 replaces seasonal bonuses for pensioners receiving under EUR 2 500 per month (2010).<br>Establishment of a solidarity fund for the self-employed (June 2011).<br>One-off, means-tested, tax-free benefit (solidarity benefit) for low-income pensioners offered in 2009 (but then abolished in 2010 as austerity measure).<br>Assets introduced in addition to income test for solidarity benefits;<br>Reduction in monthly pensions greater than EUR 1 000 by 5% to 15%, depending on income (2011).<br>Pensions greater than EUR 1 400 per month will be taxed by 5-10% (from August 2010). | Increase in mandatory public pensions frozen 2011-15 – extension of two years over original measure (June 2011).<br>Pensions indexed to CPI from 2014 instead of changes in civil servants' pensions (2010 reform).<br>Seasonal bonuses for largest 10% of pensions stopped from 2011 and bonuses for lower pensioners reduced from 2013.<br>Lump-sum retirement payments reduced by at least 10% for civil servants and public enterprise employees from 2011.<br>Increase in contribution rates (details to be announced) for social security funds (June 2011).<br>Average annual accrual rate reduced from 2 to 1.2% (2010), resulting in less generous earnings-related pensions. | Retirement age for women increased from 60 to 65 between 2011-13 (2010 reform).<br>Increase in pension age from 65 to 67 for all to receive full pension (November 2012).<br>Contribution period required for full pension from 37 to 40 years from 2015 and actuarial reduction of 6% per year of early retirement (July 2010 reform).<br>Early retirement age increases from 53 to 60 from 2011.<br>Pension age linked to life expectancy from 2020. | Merge of 13 pension plans into three (July 2010).<br>Implementation of a single unified payroll and insurance contribution payment method intended to reduce evasion and to collect more social security contributions (June 2011).<br>Mandatory possession of social security record (AMKA) from January 2009 for all workers. | | |
| Hungary | | Workers allowed to opt out of private pillar, but those who do not opt into the public pillar face penalties (i.e. no longer entitled to state pension from 1 January 2012).<br>13th month pension abolished from 1 July 2009 and replaced with bonus if GDP growth is 3.5% or above. | Pensions indexed to prices if GDP growth is 3% or less. In 2010-11, indexed to average wages and prices. Indexed to inflation from 2012.<br>Taxation of pension benefits from 2013. | Pension age increasing gradually from 62 to 65 between 2012 and 2017.<br>Proposal to reduce and eventually withdraw the early retirement system for law enforcement professionals and tighter conditions for other workers (2011). | | From 2009, mandatory requirement for private pension funds to establish a voluntarily life-cycle portfolio. This system offers members the option to choose between three different portfolios (conventional, balanced and growth). However, nationalisation of pension funds makes this largely irrelevant. | Diversion of contributions from mandatory DC plans to public scheme from November 2010 to December 2011. Transformation of the state pension from a PAYG to a funded system (by January 2013). Closure of mandatory DC schemes in December 2011, transfer of assets (USD 14.6 billion) to government. |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Iceland | | | | | | | Members of voluntary pension plans were allowed to withdraw money from their accounts after the 2008 crisis (January 2009).<br>Large DB pension funds (34% of total assets) establish Iceland Investment Fund (IIF) to stabilise domestic economy and help recovery from the crisis (December 2009). |
| Ireland | Automatic enrolment in DC plan of young employees above a certain income threshold. Applies from 2014 (March 2010). | | Tax levy of 0.6% on assets in private pension funds every year (2011-14). Pension levy on public sector wages average 7.5% from March 2009.<br>Tax relief on private-pension contributions for high earners reduced from 41% to 20% between 2012 and 2014. Employer contributions no longer tax deductible. Earnings ceiling on tax deductible contributions lowered from EUR 150 000 to EUR 115 000 from 2011. End of exemption from public pension contributions with earnings of EUR 18 300 or less. Lifetime limit on tax privileges reduced from EUR 5.4 million to EUR 2.3 million (December 2010). Limitation of tax-free lump-sum withdrawals from pension accounts to EUR 200 000 and taxation of withdrawals above this ceiling (December 2010). Exemption from contributions to public pension scheme for people earning less than EUR 352 per week abolished (December 2010).<br>Lowering of employer contribution rate from 8.5% to 4.25% between July 2011 and 2013 (2011). | Pension age increasing from 65 to 66 from 2014; to 67 from 2021 and to 68 from 2028 (2011 amendments). | | Pension insolvency payment scheme (PIPS) to help insolvent DB plans with insolvent sponsoring employers (2009).<br>Re-establishing the funding standard of DB plans over a three-year period, starting June 2012, to protect benefits against volatility in the financial markets (2012).<br>DB plans have to hold additional assets, from 2016, in a risk reserve intended to help absorb shocks and to bring stability (2012).<br>Require trustees of DB plans to periodically submit an actuarial funding reserve certificate to the Pension Board (2012). | EUR 24 bn National Pension Reserve Fund, started in 2001, transferred to Ministry of Finance, largely used to recapitalise banks; contributions (1.5% of GDP) suspended (December 2010). |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Israel | Mandatory DC occupational plans from January 2009 with extended coverage from January 2010. Employee contribution rate up from 2.5% to 5% and employer rate from 2.5% to 10% from 2013. | Compensation of 50% of crisis-related losses in voluntary private plans to a ceiling of potential coverage of 15% of over-55s (January 2009). | | | | Individuals who began saving after January 1995 can switch retirement savings between life insurance policies and provident funds without paying fines or taxes (2009). | |
| Italy | | Public pension contribution rates increased for the self-employed in the NDC, which will involve higher benefits (2011). | More rapid transition to NDC system from 2012.<br>Introduction in 2012 of a new early retirement scheme with tight access requirements in replacement of the seniority pension. | Pension age increase for women from age 60 to 66, to match that of men by 2018; pension age for both sexes due to increase in line with life expectancy after that time. Pension age for women in the public sector increased from 61 to 65 in 2012 (2011). | Merger of three agencies managing public pensions (INPDAD and EMPALS accounts transferred to INPS by 31 March 2012). | | |
| Japan | For corporate pensions, employees can contribute directly to employer-provided DC plans without having to go through their employers (effective from January 2012).<br>Extension of coverage of voluntary DC plans to workers aged 60 and above (from January 2012).<br>Shorten the period needed to be eligible for the national pension from 25 to 10 years (2012, effective from October 2015).<br>Extend employees' pension insurance to more part-time workers (2012, effective from October 2016).<br>Extend the basic pension for surviving family to motherless families (2012, effective from April 2014). | Provide low-income, old age pensioners with welfare benefits (2012, effective from October 2015).<br>Exempt mothers on maternity leave from payment of employees' pension insurance contribution (2012, effective from April 2014). | The exceptional level of the amount of pension (2.5%) will be abolished from October 2013 to April 2015 (2012 policy measure).<br>Permanently fixing the national government's burden regarding the basic pension at 50% by increasing the consumption tax rate (2012, effective from April 2014). | | New Japan Pension Service to run public schemes at lower cost from January 2010.<br>Unify employees' pension systems: inclusion of public servants and private school employees in the employees' pension (2012, effective from October 2015). | | Possibility for different categories of workers to make up gaps in contribution records of 2-10 years by paying between October 2012 and September 2015.<br>Legislation passed for dissolution of employees' pension funds (EPFs). EPFs that fall short of the liability for contracted-out benefits must be dissolved within five years. The others can continue, but must pass an asset test every year. No new EPFs can be set up. It is encouraged that financially sound EPFs switch to other types of pension plans (June 2013, effective April 2014). |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Korea | Extend mandatory occupational/severance-pay plans to firms with 5 or less workers from December 2010 (about 1.5 m people). | | Target replacement rate of public scheme to decrease from 49.5% to 40% between 2009 and 2028 (July 2007). | | Set up of an integrated, electronic information system for collection of social security contributions and monitoring (2010). | | |
| Luxembourg | Minimal monthly contribution for voluntary insurance drop from EUR 300 to EUR 100 (2012-13). | | Pension adjustments reduced to 50% (2012).<br>The combined contribution rate (employee, state and employer) will be gradually increased from 24% to 30% of covered wage by 2052 (2012). | Contribution requirement for a full pension increases from 40 to 43 years by 2052 (2013).<br>Reduced rates of increase are adopted to encourage people to work longer. To obtain a pension at current levels, insured persons will have to work for approximately three years more (2012). | | | |
| Mexico | | In March 2013, a new non-contributory pension established for Mexicans older than 65 years and with no other pension.<br>Income tax exemption for pensioners with income up to 25 minimum wages. | | | Re-organisation of pension funds (SIEFOREs) within the system of individual accounts (2013). | New rules were implemented in 2011 that allowed retirement account holders more fund choices and promoted competition among management companies (2012). | |
| Netherlands | | | | | | Recovery period for underfunded DB plans temporarily increased from three to five years (February 2009). | |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| New Zealand | | Default contribution rate for KiwiSaver cut from 4% to 2% of wages in 2009, but increased to 3% from April 2013.<br>From April 2013, minimum required contribution for employees and employers will rise from 2% to 3% of earnings (2011). | From July 2011, 50% reduction in tax credit for KiwiSaver members, up to a ceiling of NZD 521.<br>Tax credits for employer contributing to KiwiSaver accounts eliminated in 2009. In April 2012, both employee and employer contributions no longer tax free. | | | | Suspension of contributions to public reserve fund (New Zealand Superannuation Fund) in 2009, projected to resume payments in 2016-17 (three years earlier than originally planned).<br>Retirement Commission recommended (December 2010): *i)* pension age to increase from 65 to 67 by 2023 with new means-tested benefit at age 65-66; *ii)* shift from wage indexation to 50:50 wages and prices; and *iii)* concern over cost of KiwiSaver tax incentives, about 40% of contributions so far.<br>Treasury review recommends (October 2009): *i)* pension age to increase from 65 to 69; or i*i)* shift from wage to price indexation; or *iii)* means-testing basic pension. |
| Norway | | New income-tested pension to replace the current flat-rate contributory public pension. New pension is guaranteed to be at least as high as the minimum pension payable under current law. | Notional accounts scheme from January 2011: fully for cohort 1963+ and partly for cohorts 1954-62; pensions linked to life expectancy, based on full-career earnings not 20 best years (2011).<br>Indexation of pensions in payment to wages – 0.75% rather than wages. | Flexible retirement age 62-75 with adjustments of benefit to be effective age of retirement (2011).<br>Individuals can combine work and pension receipt and no necessary to defer pension. | | | |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Poland | New third-pillar, voluntary savings vehicle (IKZE) introduced in 2012, to complement current voluntary retirement accounts (IKEs). | | From May 2011, a portion of employee contributions from second-pillar individual accounts, managed by open pension funds, were diverted to newly created first-pillar subaccounts, managed by Poland's social insurance institution (ZUS). As a result, the contribution rate for DC accounts was lowered from 7.3% to 2.3%; but will gradually increase to 3.5% between 2013 and 2017. The residual 5% (declining to 3.8%) goes to the new subaccounts, indexed according to the average of the previous five years' nominal GDP growth. The diversion has been considered necessary to lower Poland's budgetary deficit. | Retirement ages of 60 (women) and 65 (men) gradually increase to 67 for both from 2013 until 2020 (men) and 2040 (women). Early retirement (at 62 for women and 65 for men) possible with pension reduced by 50% (2012).<br>Several early retirement schemes were abolished at beginning of 2009. | | Fewer investment restrictions on DC accounts, including permitted equity share rise from 40% to 62% from 2020 (2011). | |
| Portugal | Workers in banking sector recruited after March 2009 automatically covered by the public pension system. | Eliminating the 13th and 14th month payments to pensioners with incomes of more than EUR 1 100 per month.<br>Those with over EUR 100 000 in bank accounts not eligible for income support allowance (2013); other tighter conditions to be introduced for renewal of benefits. | Public pensions frozen in 2011.<br>Increase in contribution rate from 11% to 18% for private sector but employer contribution will be reduced in exchange (2013). The aim is to lower labour cost.<br>Introduction of a special contribution levy on pensions of more than EUR 1 500 per month (2010-12). | Lower social security contribution rate for workers aged 65+, as a means to encourage extension of working life (September 2009).<br>In 2012, suspension of early retirement for employees covered by public scheme until 2014. | | New rules for the Social Security Reserve Fund (FEFSS) that ensures liabilities are appropriately hedged and some investment flexibility (2009). | |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Slovak Republic | | | Until June 2009, workers could switch contribution back from DC accounts to public scheme. DC scheme made optional for new entrants in employment but compulsory again from April 2012. | | Cut fees as a percentage of assets and link them to investment returns from July 2009. | Introduction of three funds types – conservative, mixed and growth – supplemented by a new equity-index fund from April 2012.<br>Principal guarantee on investment performance introduced, but will be restricted to the least risky (bond) fund from April 2012.<br>Reduction in ceiling on foreign mutual fund investment from 50% to 25% in 2009. | |
| Slovenia | | | Pensions frozen in 2011 (and 2012 if inflation less than 2%) (September 2010). | Proposal to increase normal pension age from 63 to 65 for men, and 61 to 63 for women between 2021 and 2024; and eligibility for early retirement on full pension to increase from 40 to 43 years for men and 37.25 to 41 years for women was rejected by referendum in June 2011. | | | |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Spain | | Increase in survivors' benefits from January 2012 for retirees and the over 65s with no public pension entitlement of their own from 52% to 60% of deceased's pensionable earnings (subject to income limits). | Adjustment of relevant parameters of the pension system to change in life expectancy every five years from 2019 instead of 2027 [2011 reform; the anticipation of the linking moment is contained in a reform proposal currently under discussion (September 2013)]. | Normal pension age to increase from 65 to 67 between 2013 and 2027 but full benefit available at age 65 with 38.5 years of contributions (2011 reform, effective from 2013); sustainability adjustment to be anticipated to 2019 instead of 2027 (reform proposal of September 2013); early pension age increasing from 61 to 63 (but 61 in times of economic crisis); contributions for full benefit increasing from 35 to 37 years; contribution for early retirement increasing from 30 to 33 years.<br>Amendment in April 2011 allows partial retirement: workers close to retirement age work part time and receive a proportionally reduced pension. However, social security contributions must be paid based on a full-time position.<br>Incentives for work after retirement age: pension increase of 2-4% for each year of deferred pension (2011 reform). | | | |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| Sweden | | Enhanced basic deduction for people over 65 years of age introduced in 2009 and increased in 2010 and 2011. | Change to the balancing mechanism underlying the NDC scheme: from 2009, calculation of balance based on average value of the buffer fund at the end of the last three years rather than the last year. This implies cuts in the pension of 3% in 2010 instead of 4.5%. | Earned Income Tax Credit enhanced in 2009 and 2010, as part of the 2007 reform to encourage labour supply among workers. The EITC is higher for workers over 65. Simplification of the formula of the EITC for older workers from 2009. In 2011, maximum credit for under 65s of SEK 21 249, compared with SEK 30 000 for over 65s.<br>Employee's social security contributions are lower for over 65s. | Swedish Pension Agency took over work of two separate agencies managing national pensions in January 2010.<br>New fund managed by AP7 available from 2010, representing low-cost government alternatives to private-sector investment options. | Review of investment rules and governance of buffer funds in 2012. | |
| Switzerland | | | Minimum rate of return on mandatory private pensions cut from 2.75% to 2% in 2009 and to 1.5% from 2012.<br>In 2012, maximum contribution for insured persons who are not gainfully employed increased to CHF 19 350 (50 times the minimum contribution). | | | Ceilings on real-estate investments and mortgage loans reduced (2009). | |
| Turkey | | | | Pension age to increase from 60 to 65 for men and from 58 to 65 for women by 2048 (2006). | | Use of derivatives by pension funds for investment purposes permitted for the first time in 2010.<br>Government tax deduction on wage to private pensions was abolished, with the aim of encouraging domestic savings (2012). | From January 2013, the government matches 25% of individual contributions up to a gross monthly salary of TRY 978. Participants will have access to government contributions through a gradual vesting system – 15% after the first three years, 35% after six years, 60% after ten years and 100% at retirement at the age of 56. Tax levied on exit is applied to net returns as opposed to accumulated value as previously. |

Table 1.2. **Details of pension reforms enacted or implemented between January 2009 and September 2013** *(cont.)*

By country and prime objective

| | Coverage | Adequacy | Financial and fiscal sustainability | Work incentives | Administrative efficiency | Diversification and security | Other |
|---|---|---|---|---|---|---|---|
| United Kingdom | Large employers (120 000 plus employees) must automatically enroll workers in company scheme or state-run National Employment Savings Trust (NEST) from October 2012; medium-sized employers (50 plus) from June 2013, and small employers (fewer than 50) from May 2015. Contributions will be increased from total of 2% of earnings in 2012 to 5% in 2016 and 8% in 2017. | One-off payment of GBP 60 to pensioners (January 2009).<br>Increase basic State Pension by higher of CPI, earnings growth or 2.5% from April 2011. | Contribution rates increase of 1% to 2% for both employer and employee in 2012-16.<br>A 1% contribution-related tax credit introduced.<br>In October 2017, the employer will pay 3% and the employee will pay 4% (Pensions Act 2011). | Equalise pension ages at 65 by 2018. Bring forward pension age to 66 by 2020 and increase from 66 to 67 by 2026 (October 2010 and amendments in January 2011 and 2012 that accelerated the pace of reform).<br>Removal of the default retirement age (DRA) of 65 to provide workers greater opportunities to remain in the labour market afterwards.<br>From October 2011, employers cannot compel employees to retire using DRA. | New NEST scheme planned in 2010 and implemented in 2012. It aims at reducing investment – management charges significantly, compared to current DC plans. | New NEST scheme planned in 2010 and implemented in 2012. | In January 2013, the Department for Work and Pensions published a draft bill introducing a flat-rate single-tier pension (STP) to replace the existing multi-tier State Pension system. The STP will be implemented in April 2016. The reform is expected to particularly benefit people who were expecting a low amount of Addition Pension due to their work history. It will represent a significant simplification of the state system and be a clear foundation for retirement saving.<br>The government has also legislated to accelerate increase in State Pension age and introduced a regular review process to set SPa based on the principle that a fixed proportion of adult life should be spent in retirement.<br>Increase contribution rates of public sector workers and amend the DB plan for Members of the Parliament (2010). |
| United States | Payroll tax rates for OASDI cut during 2011 and 2012 as a stimulus measure. | One-off payment of USD 250 to all public pension recipients (May 2009).<br>Automatic adjustment of pensions to inflation (COLA) suspended in 2010 to avoid lowering benefits. However, benefit increase was frozen in 2011. | In December 2011, "Bowles-Simpson" plan for improving solvency of the Social Security system: increase in the Social Security payroll tax and reductions in benefits, especially for upper-income workers while raising them for low earners. The plan has been strongly opposed. | | | | |

*Note:* DB = Defined benefit; DC = Defined contribution; NDC = Notional account; GDP = Gross domestic product; CPI = Consumer price index; admin. = Administrative; cohort = Date-of-birth group.

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### *Impact of pension reform on replacement rates*

The gross replacement rate – the ratio between gross pension entitlement upon retirement and gross pre-retirement earnings – is the most widely used indicator of future pension entitlements. Any change in its value reflects the extent to which a reform will impact on retirees' future initial pensions. The impact will not necessarily be the same across all earnings levels, which is one reason why the distributional impact of reform needs to be evaluated. The effect on low earners' pension entitlements requires special attention as it determines poverty rates in years to come.

The findings in this chapter apply to people who have worked a "full career", defined as working each year from the age of 20 to a country's standard retirement age. Previous OECD analysis of reform (see OECD, 2007) used proportions of average earnings to calculate replacement rates. Whilst such an approach is sufficient for analysing reforms, it does not supply enough detail about the lowest earners. Accordingly, this section considers the findings yielded by a calculation method that uses earnings distribution data rather than a simple multiple of the average wage. The earnings distribution data in question are taken from 2008. They have been reweighted using average earnings for 2012 in order to be consistent with the data in the rest of this edition of *Pensions at a Glance*. The assumption is that individuals stay at the same point in the earnings distribution throughout their careers. Calculation is forward looking: it presumes that a full career is spent working to the long-term rules envisaged in the pension system at each stage of the reform process.

Earlier OECD analysis of reforms (OECD, 2007, 2009) concentrated on comparing pension systems in place "currently" (at the time of writing) with those of the early 1990s. This approach, however, clearly misses out everything that has occurred in between. To fill that gap and fully assess the impact of each reform, this chapter considers the modeled results of reforms in the intervening years. For a number of countries no such data are available, so the only results examined are those for the early 1990s and currently. Within this group, a further distinction can be made between countries where reform had a uniform impact across earnings levels and those where it was more redistributive.

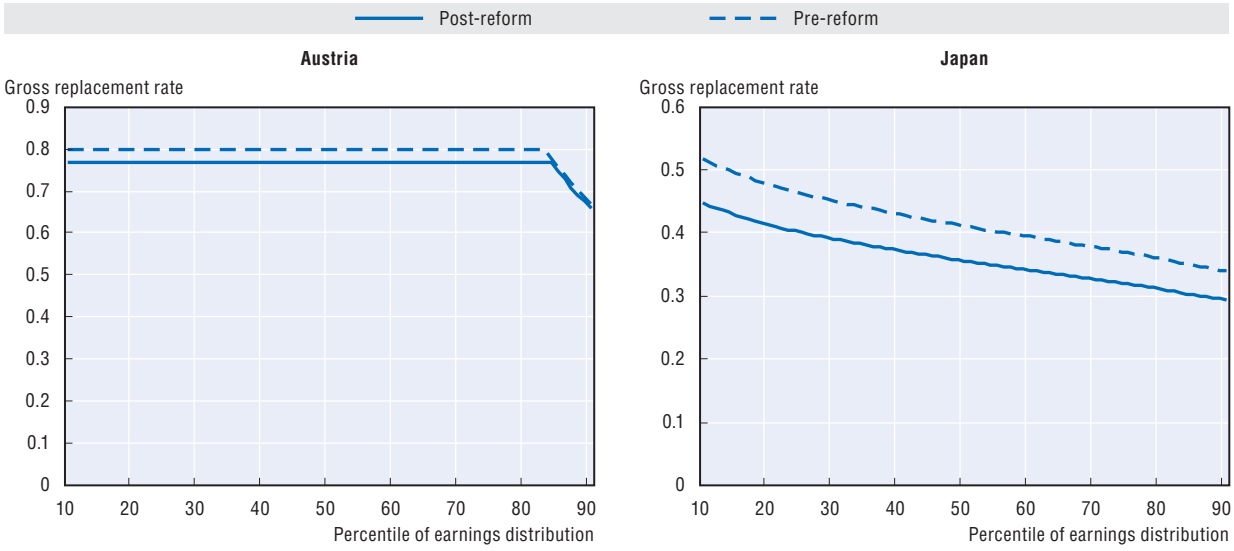
### *Countries with only one major reform in the last 20 years*

The vertical axis in the graphs is the gross replacement rate at the time of retirement, while the horizontal axis indicates the percentile of the income distribution. The "pre-reform" curve applies to the pension system in place in the early 1990s, while "post-reform" denotes the results of the latest – or "current" – scheme introduced up to 20 years later.

Figure 1.1 shows how pension system reform in Austria and Japan has had a uniform impact on replacement rates. Both countries made a reduction to accrual rates, with all individuals being treated the same irrespective of their earnings. Austria's highest earners – who exceed the contribution ceiling – are a slight exception.

The uniform effect across earnings levels is unusual as in most countries recent pension reforms have included special provisions to protect lower earners, with the largest cuts in replacement rates applying to those at the top of the earnings distribution. Figure 1.2 shows how the second group of countries – Finland, Greece, Hungary, Italy, Mexico and Portugal – all display lower reductions for low earners than for high ones, albeit on a widely varying scale.

Figure 1.1. **The uniform impact of pension reform on replacement rates in Austria and Japan, 2009-13**




*Source:* OECD pension models.

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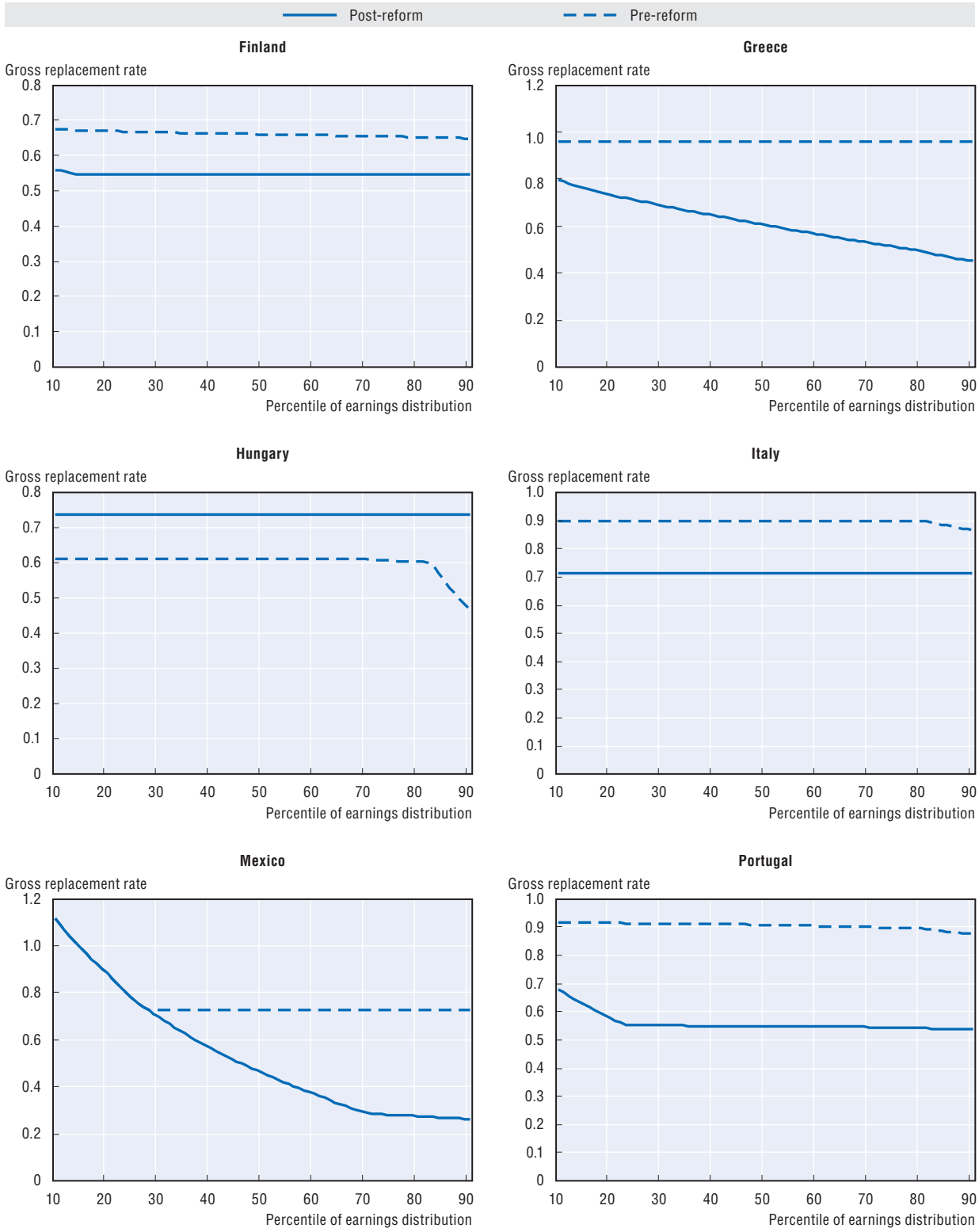
Finland, Italy and, to a lesser extent, Hungary and Portugal show virtually uniform falls in replacement rates, much like Austria and Japan. In Finland and Portugal, however, drops are smaller for the lowest earners – i.e. those earning below the 15th percentile in Finland and around the 25th in Portugal. So, whilst all workers' pension entitlements are affected, the safety-net benefits in both countries protect the most vulnerable. Of all the countries in the second group, Italy shows the lowest reduction for higher earners because of its ceiling on contributions.

In Hungary both the pre-reform and post-reform models refer to a defined benefit earnings-related system. However, accrual rates and retirement ages have changed as a result of the country's 2009 pension reform, which also removed the 13th annual payment. Although changes in the accrual rate have had little impact on full-career workers, the post-reform model produces a higher replacement rate as men's retirement age has been increased by five years.

Both Greece and Mexico reduce future pension entitlement increases as earnings rise, with Mexico showing no reduction for earners below the 30th percentile, as they are entitled to the minimum pension. Greece's pre-reform replacement rate was at a constant level of just under 100% across all earnings levels until reform in 2010 cut accrual rates and the 2012 reform increased the retirement age. The replacement rate now falls as earnings mount – to 80% for the lowest earners and 45% for the highest earners at the 90th percentile.

Greece and Mexico have both cut low earners' replacement rates by less than high earners". Nevertheless, reductions continue to rise across the income distribution in both countries – because of Greece's cap on the size of pensions and Mexico's introduction of a defined-contribution scheme.

Figure 1.2. **Reform offers lower earners relatively better protection**




*Note:* Hungary introduced a defined-contribution system in 1998. It closed it in 2012 as a result of the 2009 pension reform. It is not therefore included in the analysis.
*Source:* OECD pension models.

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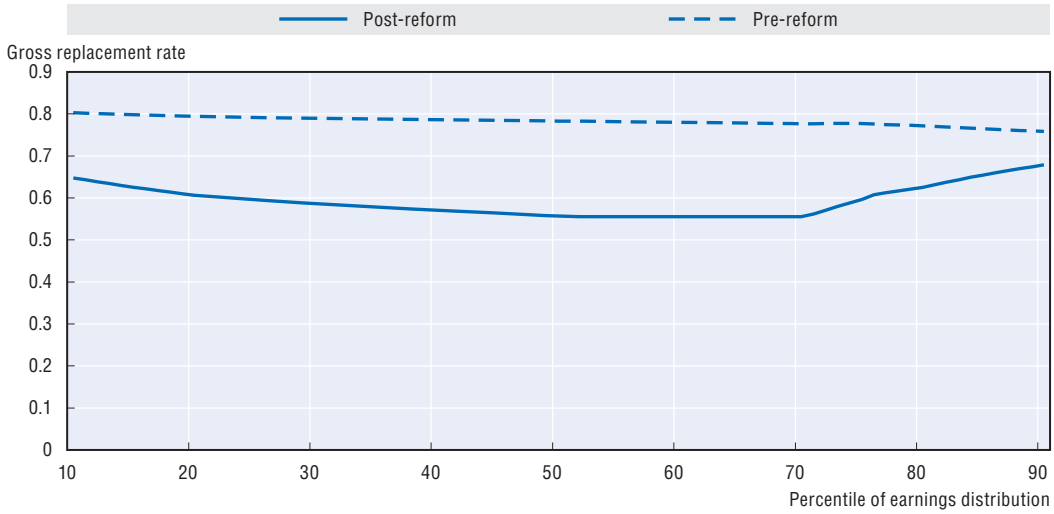
As Figure 1.3 shows, an exception to protection for low earners' replacement rates is Sweden. Reform there affects the highest earners least of all, while low earners fare reasonably better than average earners. Earners who lie between the 40th and 70th percentiles bear the brunt of reform, with their gross replacement rate slashed by over 20 percentage points. By contrast, the replacement rates of earners above the 80th percentile have fallen by just under 10 percentage points.

Figure 1.3. **Pension reform in Sweden spares highest earners' replacement rates**




*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932935420

### *Countries with several reforms in the last 20 years*

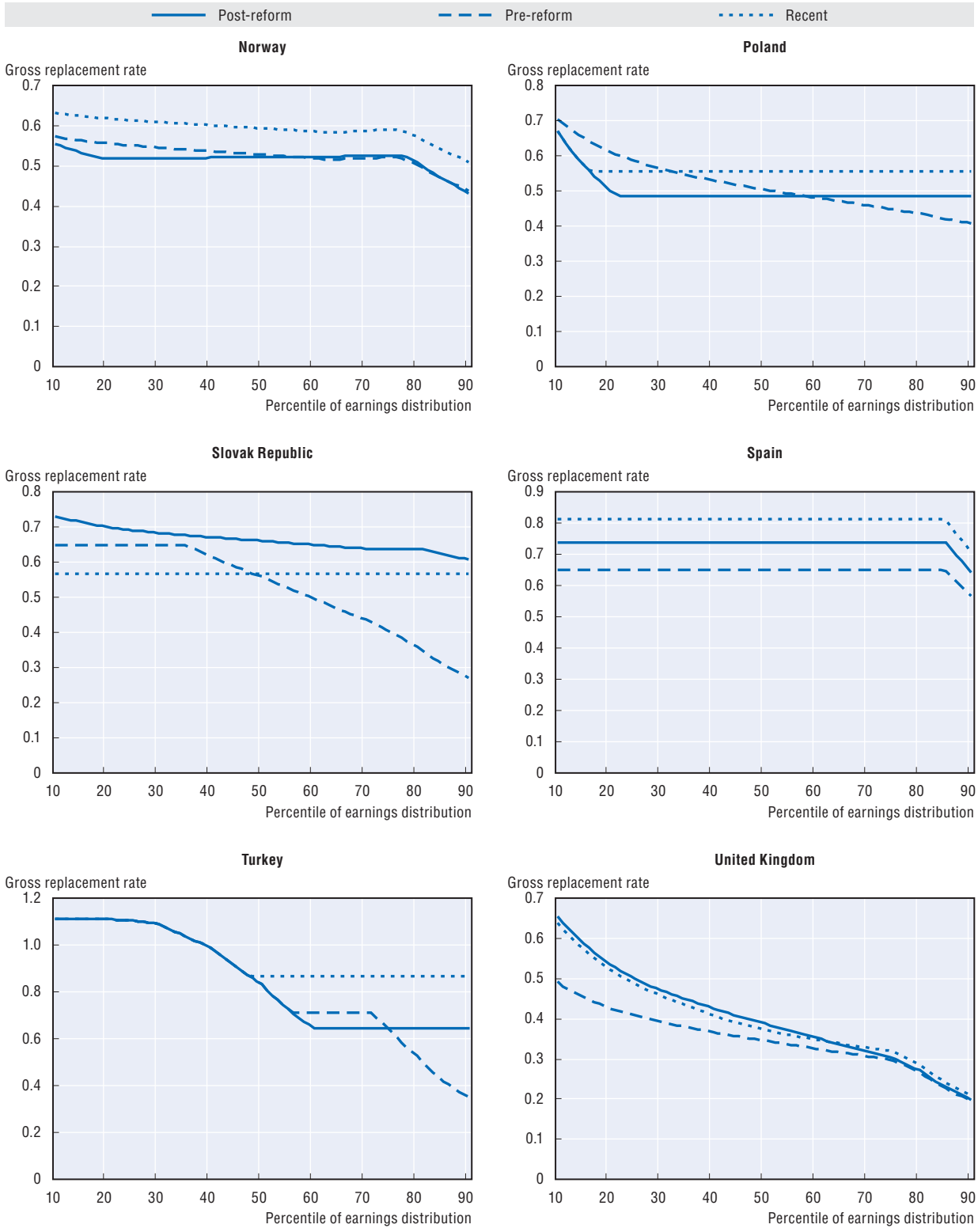
All the countries covered so far have passed a single major reform in the last 20 years. The impact on earnings distributions has been uniform, although low earners have generally enjoyed some degree of protection. However, as the future impact of population ageing has become more apparent and pension systems come under growing pressure, a number of OECD countries have responded with several reforms. Six such countries are Norway, Poland, the Slovak Republic, Spain, Turkey and the United Kingdom. Again, all reforms are assumed to apply to an entire working career so that their impacts can be fully assessed.

The graphs use an additional curve, "recent", to denote reforms undertaken in the interim period between the early 1990s ("pre-reform") and the latest legislation ("post-reform"). "Recent" reforms were generally in place in 2008 and modelled in the last edition of *Pensions at a Glance* (OECD, 2011). Figure 1.4 shows the effect on replacement rates of reform from each of the three periods – "post-reform", "recent", and "pre-reform".

The post-reform final replacement rate is usually lower than the pre-reform scenario of the 1990s. However, it is not uncommon for "recent", or interim, reform to have led to a higher replacement rate, as in Norway and Spain across the entire earnings distribution, in Poland above the 35th percentile, and in Turkey over the 50th.

Findings for the pre-reform Slovak Republic are based on an earnings-related scheme, whilst the "recent" reform scenario includes the additional defined-contribution component introduced in 2005. The 2005 measure strips the system of its redistributional nature, as defined-contribution schemes create individual pension pots that are then

Figure 1.4. **Replacement rates after interim reforms**




*Source:* OECD pension models.

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converted to annuities upon retirement. Conversely, a defined benefit, earnings-related scheme pays out of a collective pot which, because it is based on final or average career salary, does not directly reward each contributor and proportionately benefits lower earners more. The Slovak Republic's pre-reform system led to a flat replacement rate across all earnings levels – in other words, a reduction in the rate for below-median earners and an increase for those above. With the considerable increase in retirement age that has been incorporated in the post-reform model, final replacement rates are higher than either the pre- or "recent" reform scenarios.

The same pattern is true for Poland. It has also introduced a two-stage reform that initially replaced its earnings-related scheme with a defined-contribution component and then secondly increased retirement age. Norway, for its part, also implemented a defined-contribution scheme that slightly tempered redistribution. However, as it has kept the earnings-related component, the impact is minimal. The other three countries in Figure 1.6 – Spain, Turkey and the United Kingdom – all have earnings-related components to their systems and so retain their redistributional approaches.

In the United Kingdom, those who earn under the 60th percentile have benefitted from a (slightly) higher replacement rate at each stage of reform. The pattern holds true of the pension system after the introduction of a minimum, targeted component, in 2003, and the increase in retirement age that is being implemented over the next 30 years. In contrast, earners above the 60th percentile have had virtually identical replacement rates at all reform stages, as there are ceilings on various pension components which lead to reductions in replacement rates for higher earners.

### *Impact on pension wealth*

Gross pension wealth measures the total value of the discounted lifetime flow of retirement incomes. This measure takes into account a wider range of factors than replacement rates, which estimate only the annual pension that will be paid immediately upon retirement. The replacement rate is a single calculation for a particular year. It does not, for example, take indexation into account, which can significantly affect the benefit in payment. Thus, if the pension is index-linked to wages then the pensioner's status relative to the working population will be constant. If, however, it is indexed to prices – or a combination of prices and wages – his or her relative position is likely to decline in a context of positive wage growth, and the value of benefit several years after retirement will not hold the same relative value.

Gross pension wealth also takes account of changes in future life-expectancy estimates which have been calculated using the latest United Nations mortality data. The figures here are expressed as multiples of gross annual individual earnings.

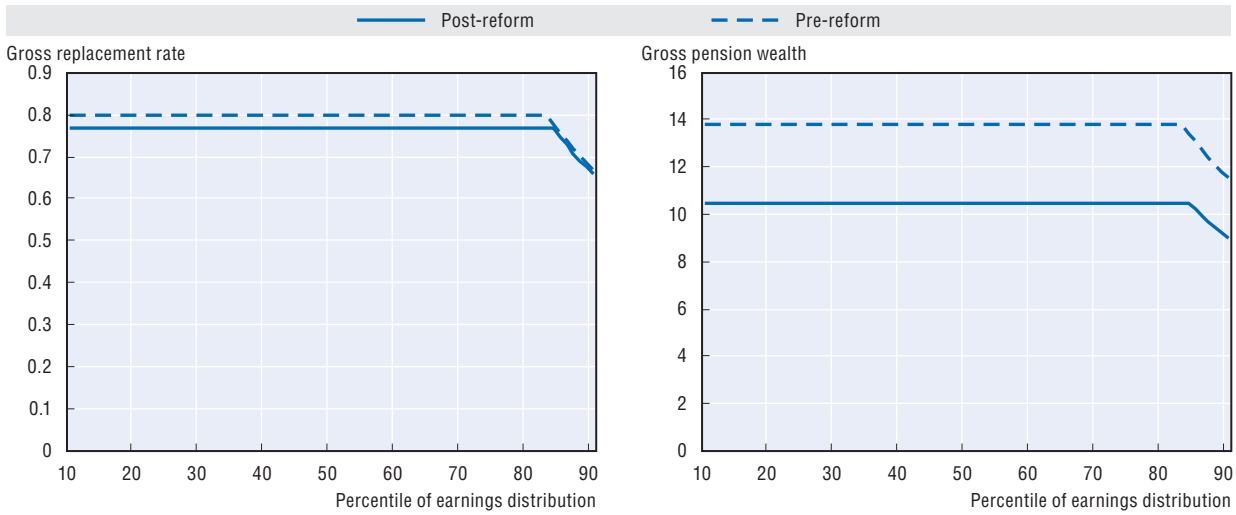
Pension wealth enables more accurate analysis of the impact of reforms, particularly those that increase the retirement age. By their very nature higher retirement ages should, in theory at least, lead to shorter periods of payment, although estimated increases in life expectancy and the pace of increase in retirement age determine, of course, to what extent. What is certain, however, is that the duration of contributions will lengthen, as modelling still assumes that individuals enter the labour market at the age of 20 and work until the formal retirement age.

As with the gross replacement rate, the countries analysed may be divided into different categories. In order to reflect the full impact of reform, graphs displaying results for gross replacement rates are shown adjacent to the new pension wealth figures. Countries can thus be grouped according to the relationship between the two indicators. Graphs for most of the countries considered display pension wealth curves that are similar to those of replacement rates. They are not therefore included below. Those countries are Austria, Finland, Greece, Italy, Japan, Mexico, Norway, Poland, Portugal, Spain, Sweden and the United Kingdom.

The only slight exception is the United Kingdom. Within its pension scheme there is a flat-rate basic component paid to all after a sufficient number of years of contribution, irrespective of previous earnings levels. As legislation has ushered in a pension age that is to rise from 65 to 68 years of age, the average duration of payment of the basic pension will be shortened and the associated pension-wealth component will therefore also be lower.

Although the impact on pension wealth may follow a pattern similar to the effect on both pre- and post-reform replacement rates, there are significant differences in levels. The Austrian case study, for example, offers an interesting comparison between the two graphs (Figure 1.5).

Figure 1.5. **Austria case study**




*Source:* OECD pension models.

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Figure 1.5 shows that the reduction in pension wealth may be much more substantial than in replacement rates. The post-reform gross replacement rate is 3.4 percentage points lower – at 76.6% compared to the pre-reform 80% – for most of the earnings distribution. However, the drop in the replacement rate in conjunction with a change in indexation has led to a more substantial decline in the pension wealth promise. Pre-reform pension wealth was 13.8, meaning that an individuals would, on average, receive a pension that was 13.8 times their last annual earnings. The post-reform pension wealth estimate, however, is only 10.5. It may be inferred that even a small drop in the replacement rate can have more significant long-term effects – confirmation that both replacement rates and pension wealth are needed to properly assess the impact of reforms on future pension entitlements.

The rest of the countries whose replacement rates were considered in Figure 1.4 – Hungary, the Slovak Republic and Turkey – reveal different patterns in which pension wealth results do not follow replacement rates. The reasons differ from country to country and need to be explained in certain detail.

For ease of reference and comparison the estimates of gross replacement rate have been replicated on the left-hand side of Figure 1.6 and the gross pension wealth results on the right. For Hungary, the two lines for pre- and post-reform are identical in shape. Their relative position has changed entirely, however, reflecting the increase in the age at which pensions may be drawn. The explanation is that, although the post-reform replacement rate will be higher, the rate of increase in the retirement age is greater than forecasted rises in life expectancy. Combining the high rate of the increase in the state pension age with the switch in indexation from wages to prices leads to the logical conclusion that there is a fall in pension wealth.

In the Slovak Republic the main change in pension wealth figures occurred when the earnings-related scheme moved from accrual to a point-value system in 2004 and a defined-contribution benefit was introduced in 2005. Moreover the latest reform added a life expectancy component to future retirement ages. The pace of these retirement age increases will lead to a slight fall in the highest earners' pension wealth, as there is a ceiling on contributions. Other components of the reform include adjustments to pension reduction and increasing coefficients in accordance with the pension's point value, which will lead to slightly higher pensions.

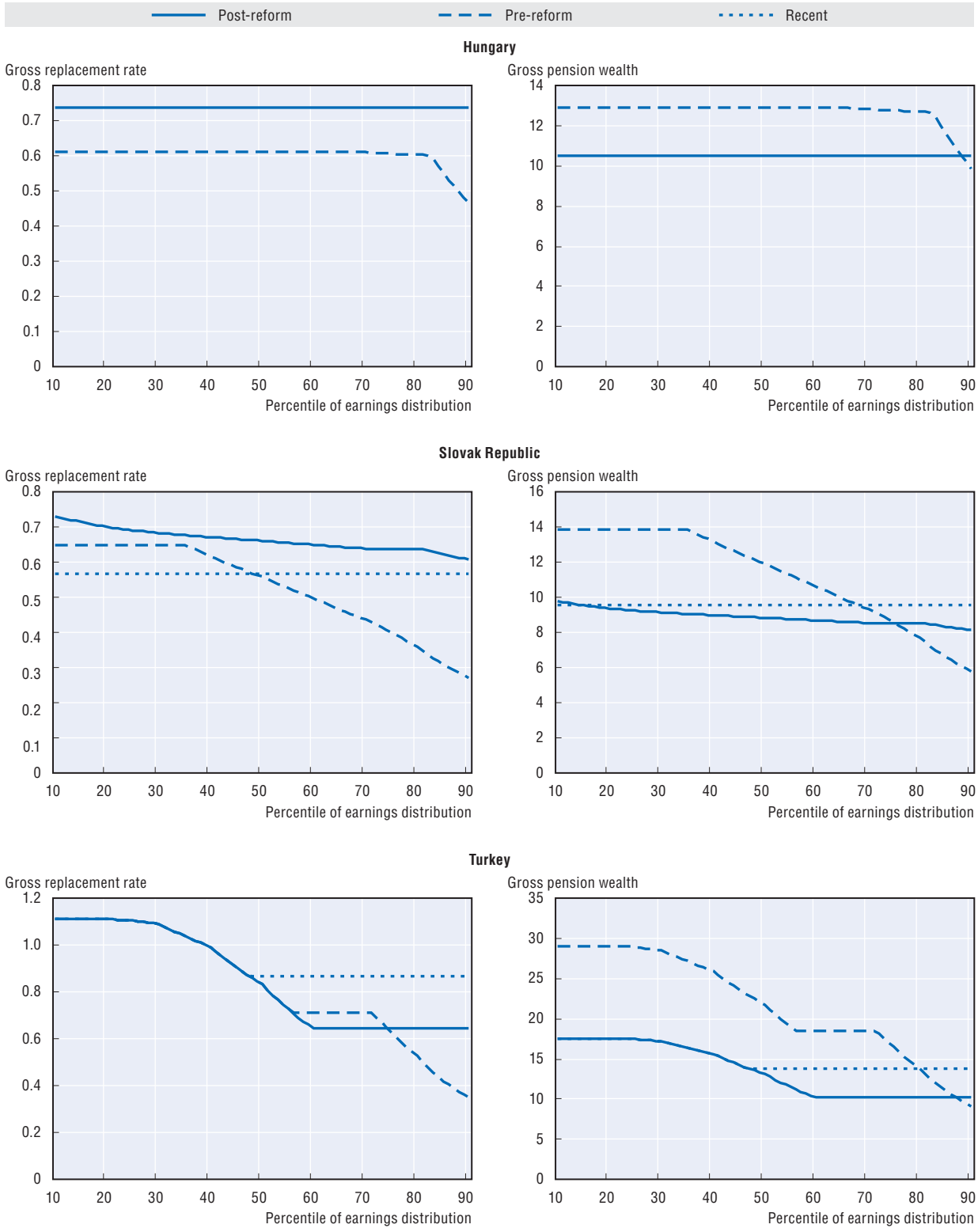
In Turkey the rules governing the retirement age make comparison with other OECD countries difficult, as it was possible for men to retire at 45 and women at 40 under the pre-reform system. Bearing that in mind, it is no surprise that the pension-wealth figures under the pre-reform scenario were the highest of any countries, bar Mexico. The increase in the retirement age obviously led to an increase in the replacement rate over the period between the pre-reform scheme and "recent" reforms for those not receiving minimum pensions. However, a direct consequence was also that pension wealth fell by about 40%. The latest reform to date reduced the accrual rate, thereby explaining the drops in both replacement rates and pension wealth between the "recent" reforms and post-reform pensions.

The results considered so far show what has happened to the pension system in each country. All changes to accrual rates have been included and direct contribution schemes modelled. Most important, all the legislation introducing changes in retirement ages has been implemented. The next section removes changes in retirement age to better gauge the impact of reform on pension systems.

### *What if pension ages had not increased?*

As pointed out at the beginning of this section, any pension reform that includes an increase in the retirement age will clearly lead to an increase in the OECD pension modelling framework if everything else remains constant. However, a reform incorporates numerous components. Considering replacement rates alone can be misleading and make it difficult to assess reforms that do not relate to retirement age. For example, if reform slightly reduces the accrual rate in a defined-benefit scheme and raises the retirement age by five years, the overall replacement rate is likely to be higher. Yet, it should actually be lower if the replacement rate is cut.

Figure 1.6. **Comparison of gross replacement rate and gross pension wealth**




*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932935477

In order to remove the impact of increases in retirement age three different scenarios need to be modelled. The first is the current statutory system with all scheduled ("post-reform") changes incorporated. The second is the same statutory system without any increase to the retirement age ("post-oldret"). The third scenario is the "pre-reform" scheme that was in place in the early 1990s before any of the "post-oldret" or "post-reform" measures were introduced. The impact of pension age increases may then be clearly distinguished from those of the other reform measures implemented.

The results of the three models for the countries of interest – namely Australia, the Czech Republic, France, Germany, the Slovak Republic and Turkey – are shown in Figure 1.7. Reforms in the first four countries did nothing but increase the retirement age (Age Pension age in the case of Australia), while in the Slovak Republic and Turkey the increase in the pension age still plays a major role, even though both countries have instituted other major pension system reforms.

The graphs on the left-hand side of Figure 1.7 show the gross replacement rate and those on the right-hand side pension wealth. The main conclusion to be drawn is that changes in the retirement age have a greater effect on replacement rates than on pension wealth. This is not particularly surprising as it is to be expected that the replacement rate from a long working career should be high, assuming that the age of labour market entry is constant and that individuals may work until the highest retirement age. Similarly, if the length of retirement is shortened, pension wealth will only increase if the statutory increase in retirement age is below forecasted increases in life expectancy.

Turkey shows the largest increase in replacement rates if post-reform changes are compared with the pre-reform status and the retirement age remained unchanged. Again, such results may be expected as the increase in Turkey's retirement age was 20 years, while the norm in the other countries under scrutiny is between five and seven years. It is worth noting, though, that there is no change in the replacement rates of earners under the 60th percentile from post-oldret to post-reform, as they would receive the minimum pension in both cases. Despite this large rise in replacement rates, the value of pension wealth is actually lower than it would have been had the retirement age remained constant – due of course to the reduced period of payment. If working lives are extended by 20 years, the duration of retirement will be shortened by close to this amount, even when the model incorporates life expectancy changes.

Rises in the Slovak Republic's replacement rate would have been similar to Turkey's if the retirement age had not increased. Interestingly, pension wealth is barely affected because the increase in pension age at seven years cancels out changes to the accrual rates. For all the other countries included in the analysis, replacement rates are always higher under current systems than they would have been if retirement ages had remained at their pre-reform levels. Pension wealth, however, falls in the fully reformed scenarios for Australia, the Czech Republic and Germany, while it climbs for France.

Figure 1.7. **Comparison of gross replacement rates and gross pension wealth with unchanged retirement age, 1990-2013**

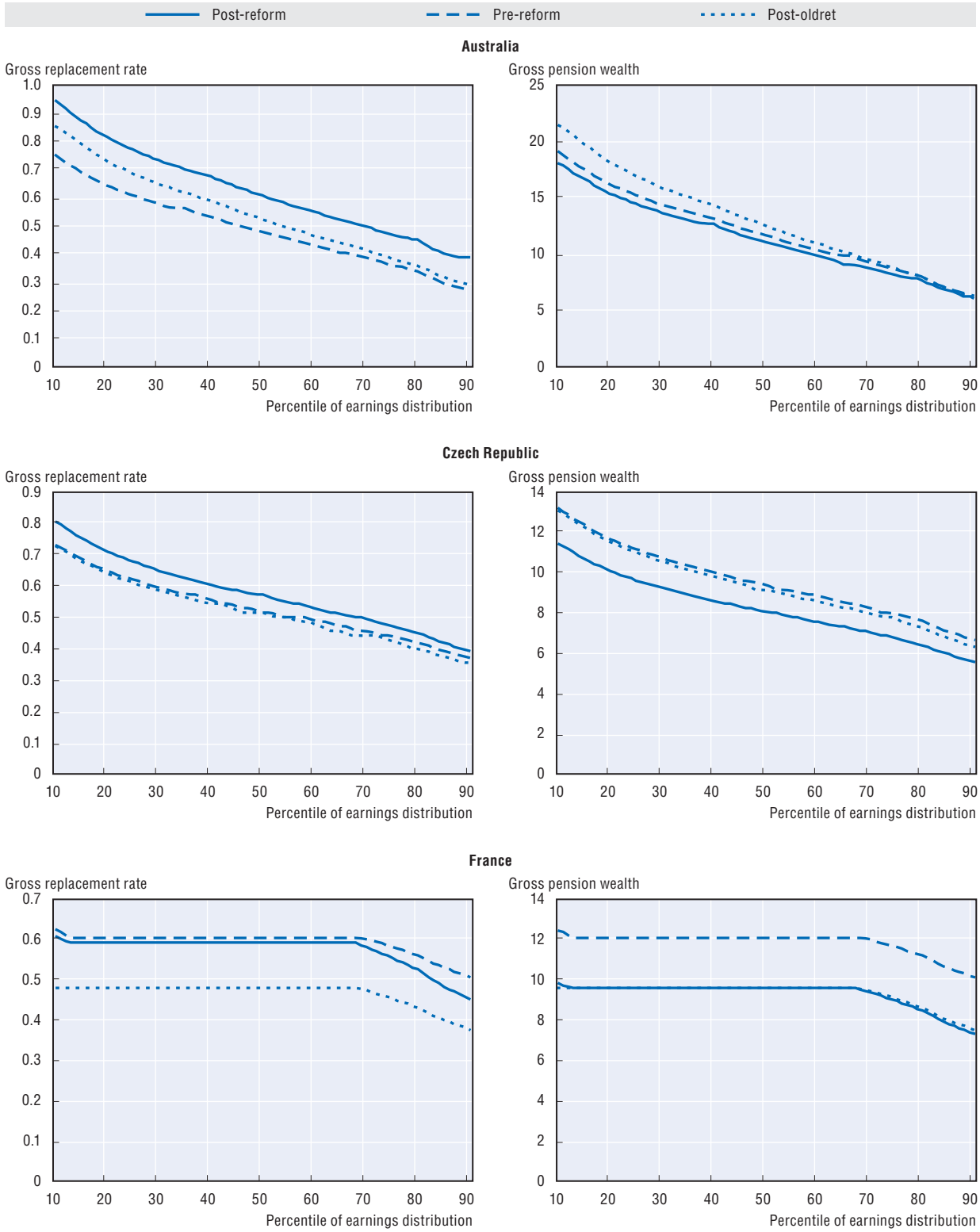
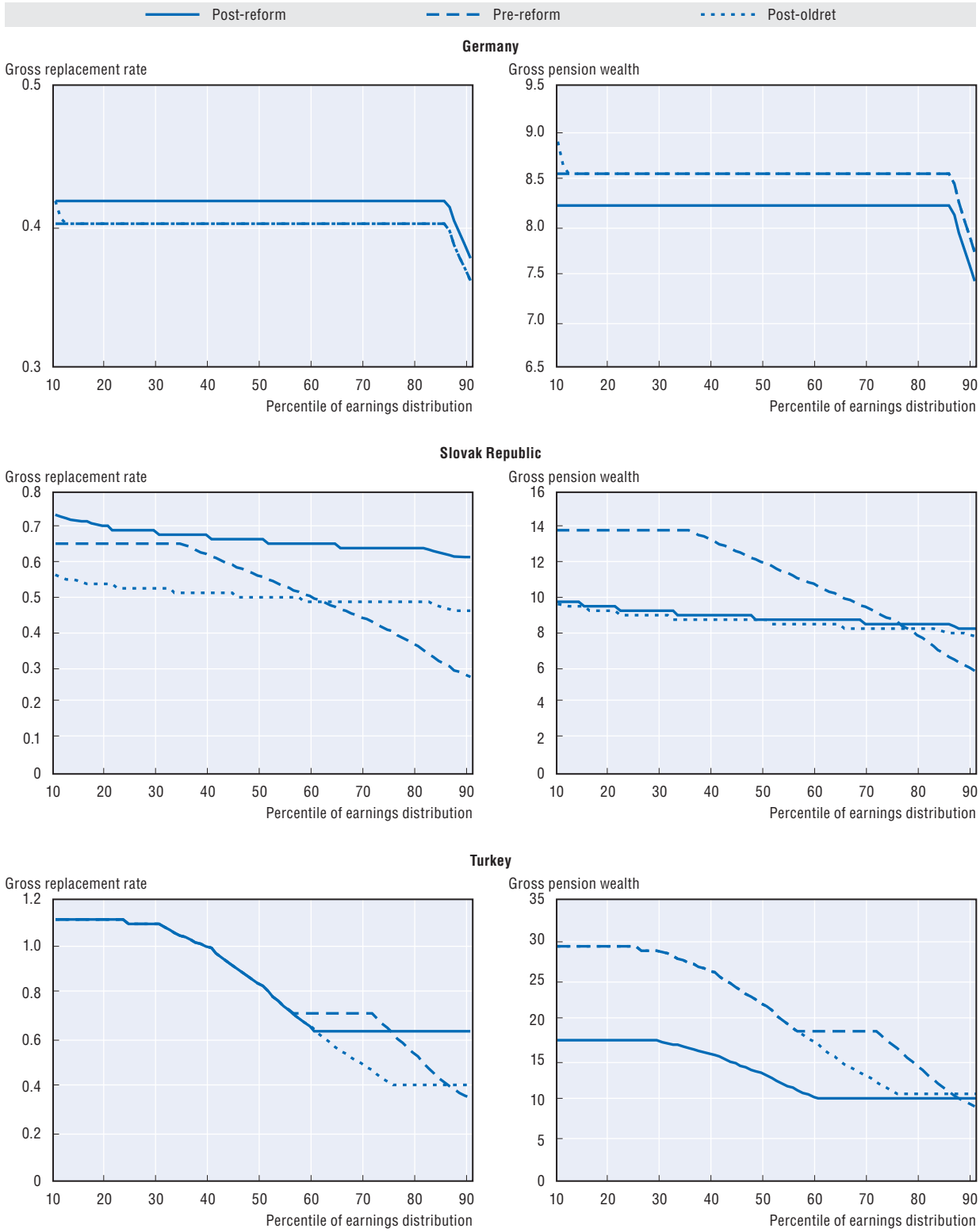


Figure 1.7. **Comparison of gross replacement rates and gross pension wealth with unchanged retirement age, 1990-2013** *(cont.)*




*Source:* OECD pension models.

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## Conclusions and policy implications

This chapter documented and discussed pension reforms in OECD countries undertaken over the last five years. It also examined the impact of pension reforms over the last 20 years on future pension promises to individuals at different earnings levels.

### *Work longer, save more*

Increasing the normal pension age has been the most common reform during the past five years. As a consequence, the majority of OECD countries will have a retirement age of at least 67 years by the middle of this century. A few countries are going beyond this age by linking increases of the pension age directly to the evolution of life expectancy.

Large structural reforms leading to a complete overhaul of the pension system have been rare in recent years. But several countries introduced or have decided on the future introduction of a defined-contribution pension scheme, for example the Czech Republic, Israel and the United Kingdom. At the same time, two countries reduced or closed their privately-managed funded defined-contribution schemes: Poland and Hungary respectively.

### *Poor currently protected but everyone will get less in future*

While pensioners were largely protected in the initial phases of the financial and economic crisis and sometimes even benefited from discretionary increases in pensions as part of economic stimulus programmes, retirees are now also being affected by expenditure cuts in the context of fiscal consolidation. Pension benefits have not been increased since 2009 in Ireland, for example, but retirees were still relatively less affected by declines in income than the working-age population. In Portugal, pension benefit levels were frozen in 2011, and the 13th and 14th monthly payments were abolished for higher-paid pensioners. Future increases of pensions have also been reduced in the Czech Republic through a change in the way that pensions are indexed over time.

Workers who enter the labour market today will be promised lower pension benefits than previous generations due to the series of reforms OECD countries implemented over the last 20 years. Working longer may compensate for some of these reductions but in general every year that workers contribute toward their future pension is credited with lower benefits in defined-benefit schemes than before the reforms. In Korea, for example, the target replacement rate for pensions is falling from 50% to 40% for workers who have contributed during 40 years. In Austria, the pension entitlement accrual rate is being reduced from 2% per year of contributions to 1.78% over time, while in Belgium the number of years to reach the maximum accrual rate has been increased. Accruals at various earnings thresholds have also been reduced in the Czech Republic and the United Kingdom.

### *More workers need to be covered in emerging economies*

For the non-OECD countries recent reforms have concentrated primarily on increasing the level of coverage, which is currently much lower than that of OECD countries. For example, China introduced a new rural pension in 2009 to provide social assistance to rural residents as they are not covered by the urban pension. This was extended nationally to include non-salaried urban residents from 2012, after regional trials in 2011. In May 2009 the Indian government permitted voluntary participation for all private-sector workers in the New Pension System as previously only state employees were covered. This scheme is currently being expanded to include the 300 million workers in the unorganised sector by

partially matching contributions and investing heavily in public awareness campaigns. Although South Africa has not had any specific reforms they have produced a number of consultation papers produced for parliament to try and increase coverage and provide higher levels of benefit.

For the non-OECD countries with more widespread coverage there have not been any major reforms in the last couple of years. But over the last ten years the situation has changed completely. In the Russian Federation, for example, an NDC pension was introduced in 2003 to supplement the flat-rate basic pension. In Argentina in 2008 the individual accounts scheme was closed and all workers and their account balances were transferred to the new single pillar pay-as-you-go system. In Brazil there have not been any changes to the public system but in May 2012 a new defined-contribution scheme was introduced for federal employees, but is not covered in detail here as this publication only covers private sector workers. The other two countries, Indonesia and Saudi Arabia have not made any changes to their pension systems even within this extended time period.

### *Pension promise will decrease*

Future benefits are set to decline across all of the earnings distribution, but the patterns differ markedly between countries. In most cases, countries did aim to protect the lowest earners from benefit cuts. In Mexico, full protection was given to the poorest 30% of all workers who will be eligible for the minimum pension, provided that they have made the necessary contributions during their working lives. In Greece and Portugal, the reduction of pension benefits is considerably lower for those in the bottom quarter of the earnings distribution. Sweden is a particular case in this respect: lower earners were protected compared to average earners, but the reforms actually benefit the richest 20% of workers most while the largest reductions are borne by those between the 40th and 70th percentiles.

In all other countries apart from Sweden the highest earners will be most affected by the reforms. In Greece, for example, future pensions for the richest 10% of workers will be only half of what they would have been if no reforms had taken place. The same is true for Mexico, while Portugal will also see a reduction of about 40% of the pension for this group of highest earners.

In Austria, Finland, Italy and Japan the reduction in future pension entitlements is practically constant for all workers across the entire earnings distribution; only Finland has a slightly lower reduction for the very lowest earners. In Hungary, future replacement rates will increase after the latest reform; this, however, is primarily due to the increase of the retirement age rather than any major systemic changes. Both the pre-reform and the post-reform systems are based on defined benefit.

### *Early retirement access is being tightened*

The analysis of reforms in this chapter focused on the impact on full-career workers. This means that the issue of early retirement has not been covered. But it should be noted that many countries have also tightened or discouraged access to early retirement schemes. In Belgium, employer contributions to early retirement benefits have been increased, while in Denmark access to the voluntary early retirement scheme has been scaled back since January 2012. In Canada, the reduction of the pension benefit for each year of early retirement has been increased from 6% to 7.2% while in Greece the early retirement age has gone from 53 to 60 years. Finally, in Portugal access to early retirement was suspended until at least 2014. But it is unlikely that all workers will be in a position, for health or other

reasons, to actually work fully up until the sometimes substantially higher retirement ages; countries will need to monitor this situation, ensure that working conditions are such that working longer is a possibility and provide targeted support both to keep workers with health problems or physically demanding occupations in the labour force and to provide benefits to those who cannot work. In some countries there is also a policy debate around the career length needed to reach full, unreduced benefits and whether it is fair to expect people who started to work at young ages in work until 67 or beyond.

Table 1.3. **Recent and post-reform pension reforms**

| | Pension eligibility age | Adjusted retirement incentives | Change of years in benefit formula or qualifying conditions | Link to life expectancy and/or financial sustainability | Defined-contribution scheme | Other |
|---|---|---|---|---|---|---|
| Australia (post) | Age Pension for women rose from 60 to 65. Further increase in Age Pension for men and women from 65 to 67 in 2017-23. | New income test concession for public pension. | | | | Higher withdrawal rate for income test in the public pension. |
| Austria (post) | Early retirement age increased by 1.5 years. Pension corridor between 62 and 65. Pension ages for women aligned with those of men. | Benefit reduction for early retirement introduced and set to increase. Access to early retirement restricted. | Best 15 to 40 years. | Introduction of sustainability factor under discussion. | | Reduction in accrual rate. Less generous indexation for higher pensions. |
| Czech Republic (post) | Gradual increase in pension age to 65 by 2030. Pension age to be increased by two months every year after 2025. Models assume a retirement age of 69. | Changes in increments and reductions for early/late retirement. | Increase in contribution years required from 25 to 35. | | | |
| Finland (post) | | Increased accrual rate for people of working age 63-67. | Ten last years to lifetime average. | Life-expectancy multiplier (from 2010). | | Basic part of national pension income-tested. Higher valorisation of past earnings and lower indexation of pensions in payment. |
| France (post) | Increase in retirement age to 62 according to OECD models. | Changes in adjustment to benefits for early/late retirement in public and occupational pensions. | Minimum contribution period increased. Earnings measure in public scheme from best 10 to best 25 years. | Minimum contribution period to increase further with changes in life expectancy. | | Targeted minimum income of 85% of minimum wage. Valorisation now effectively to prices in both plans. |
| Germany (post) | | Reduction in benefits for retirement before 65. | | Valorisation and indexation cut back as system dependency ratio worsens. | Voluntary DC pensions with tax privileges. | Phased abolition of favourable tax treatment of pension income. |
| Greece (post) | Pension age rising from 58 to 65. | | | Pension age linked to life expectancy from 2020. | | |

Table 1.3. **Recent and post-reform pension reforms** *(cont.)*

| | Pension eligibility age | Adjusted retirement incentives | Change of years in benefit formula or qualifying conditions | Link to life expectancy and/or financial sustainability | Defined-contribution scheme | Other |
|---|---|---|---|---|---|---|
| Hungary (post) | Gradual increase in pension age from 55 for women and 60 for men to 62 for both. Pension age increases from 62 to 65 between 2012 and 2017. | Accrual rates linear rather than higher for earlier years. | Pension calculation based on gross rather than net earnings. | Through annuity calculation in DC scheme. | DC scheme closed in 2012. | Minimum pension to be abolished. Less generous Indexation of pensions in payment. Pensions subject to income tax. |
| Italy (post) | Pension age for men increased from 60 to 65 and for women from 55 to 60. Pension age for women to match that of men, and both will then increase to 67 by 2021. | Adjustment to early-retirement benefits through notional annuity calculation. | Qualification years for long service pension increased from 37 to 40 years. | Through notional annuity calculation. | | From DB to notional accounts. Less generous indexation of higher pensions. |
| Japan (post) | Pension age increasing from 60 to 65. | | Earnings used to calculate pension extended to include bonuses. | Benefits adjusted to reflect expected change in dependency ratio. | | Accrual rate reduced. |
| Mexico (post) | | | | | Mandatory private DC scheme replaces public DB plan. | |
| Norway (recent) | | | | Mandatory employer DC contributions. | | |
| Norway (post) | | | | | Notional accounts scheme from January 2011. | |
| Poland (recent) | Withdrawal of early retirement for certain groups of workers. | | From best consecutive 10 in final 20 years to lifetime average. | Through notional annuity calculation in public scheme and annuity calculation in DC. | DC scheme mandatory for new entrants and workers under 30. | Abolition of basic pension. From DB to notional accounts. |
| Poland (post) | | | | | Contribution rate for DC accounts reduced from 7.3% to 2.3% from 2011. Gradual increase to 3.5% from 2017. Residual 5% reduced to 3.8% goes to second NDC scheme. | |
| Portugal (post) | State pension age for women aligned with men's at 65. | Introduction of increments for late retirement and reductions for early retirement. | From best 10 out of last 15 years to lifetime average earnings. | Life-expectancy adjustment to benefits. | | Less generous indexation of higher pensions. |
| Slovak Republic (recent) | Increase in pension ages to 62 for men and women. | | From best five in final ten years to lifetime average earnings. | Through annuity calculation in DC scheme. | DC scheme mandatory for new entrants and voluntary for incumbent workers. | From DB to points system. |
| Slovak Republic (post) | | | | Retirement age linked to life expectancy. | Contribution rate lowered to 4% from 1 September 2012 but to rise to 6% by 2024. | |

Table 1.3. **Recent and post-reform pension reforms** *(cont.)*

| | Pension eligibility age | Adjusted retirement incentives | Change of years in benefit formula or qualifying conditions | Link to life expectancy and/or financial sustainability | Defined-contribution scheme | Other |
|---|---|---|---|---|---|---|
| Spain (recent) | | Introduction of small increment for late retirement. | | | | |
| Spain (post) | Pension age to increase to 67 by 2027. | | Automatic link between pension parameters and life expectancy from 2027. | | | Changes in accrual rate calculation. |
| Sweden (post) | | | Best 15 years to lifetime average (public earnings-related scheme). | Through calculation of notional annuity and annuity in DC schemes. Additional sustainability adjustment in notional accounts. | DC scheme mandatory for nearly all workers. Occupational plans switch from DB to DC. | From DB to notional accounts. Abolition of income-tax concessions for pensioners. |
| Turkey (recent) | Pension age to increase to 65. | | | | | Changes to accrual rate calculation. |
| Turkey (post) | | | | | | Reduced accrual rate. |
| United Kingdom (recent) | Women's pension age and eligibility for guarantee credit rises from 60 to 65. | Increment for deferring State Pension claim increased. Lump-sum option added. | | | Employers required to provide access to DC ("stakeholder") pension. | Increase in basic State Pension. Extension of means-tested supplements. Increased progressivity of earnings-related State Pension. |
| United Kingdom (post) | Pension age to be increased to 68. | | | | | |

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### *Pension adequacy issues remain*

The financial impact of the pension reforms discussed here cannot be fully examined yet as many of the reforms are recent and have not been included in the expenditure projections shown in Chapter 6 of this publication. As population ageing progresses expenditures will rise but the recent reforms will likely at least stabilise, if not reduce, future pension spending. At the same time, policy concerns around adequacy are likely to increase in some countries. Countries with traditionally limited public pension systems, such as New Zealand and the United Kingdom, are addressing adequacy concerns by promoting individual pension provision through auto-enrolment schemes. In Australia, contributions to mandatory funded pensions have been increased for the same reason while Germany has chosen to offer tax credits to people taking up voluntary private pensions. The distributional implications of a stronger reliance on private defined-contribution pension schemes will need to be monitored carefully as lower-income workers will find it harder to contribute sufficient amount over long periods to such schemes.

## Notes

1. Details of all the reforms included in the models under the various scenarios are included in Table 1.3 at the end of the chapter. The pre-reform scheme refers to the scheme immediately in place prior to any of these reforms being enacted.
2. Reform proposals currently under discussion are also mentioned in Table 1.2 under this residual group.

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*Chapter 2*

# The role of housing, financial wealth and public services for adequate living standards in old age

*Chapter 2 examines adequacy of retirement incomes from a wider perspective than pension entitlements of current and future retirees. As living standards in retirement are also influenced by a range of other factors, the analysis looks at the role that housing wealth, financial wealth, and the value of publicly-provided services play on the adequacy of elderly people's incomes.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## Introduction

Change on all fronts – demographic, economic, social, and financial – has compelled OECD countries to reform their pension policies. As the financial and economic crisis has added to the pressures of population ageing, many have undertaken fiscal consolidation policies that include the retrenchment of public pension systems and lower entitlements for current and future retirees alike.

As public pension systems are, and in many countries will continue to be, the backbone of retirement income, workers will need to adapt by working longer and saving more if they are to enjoy adequate standards of living in retirement. Those who cannot or will not risk losing out. Among the "cannots" are people who have already retired or are about to do so because working longer or even returning to the labour market is not an option for many of them.

While there is broad agreement that pension systems should aim to provide adequate retirement incomes, there is much less consensus on exactly what an adequate retirement income is. This chapter examines the various definitions of adequacy used in OECD countries and how it is measured. While the level of pension benefits provided by a public or private pension system is, of course, the prime determinant of retirement-income adequacy, there are other resources, too, providing additional incomes or benefits to retirees.

Most retirees in OECD countries own their homes. Unlike people of working age, older homeowners have generally paid off their mortgages and have substantial savings on which they draw to support consumption during retirement. Publicly provided goods and services – such as healthcare and long-term care – can also be particularly important for retirees.

This chapter seeks to shed greater light on how housing, financial wealth, and publicly provided services contribute to maintaining adequate standards of living in retirement. In doing so, it draws on internationally comparable data. Unfortunately, such data are often available for small groups of countries only and are not collected frequently enough to yield a clear, up-to-date picture of how sources of income other than pension benefits help sustain adequate standards of living in retirement. Nevertheless, this analysis – the first of its kind – can inform the debate on the adequacy of retirement-incomes by examining some patterns of elderly homeownership and wealth holdings and exploring the importance of a public service provision.

## Adequacy

### *What constitutes adequacy?*

Defining the adequacy of pensions is a difficult task. The term "adequacy" is itself politically loaded, especially when applied to social benefits. It is also contentious, as there is no single definition of what an adequate level should be or what constitutes an adequate retirement income in a broader sense.[1]

A narrow definition considers that retirement income is adequate if it meets some absolute minimum level of resources in old age – which will differ across countries and over time, of course. A wider definition takes adequacy to mean meeting the monetary and non-monetary needs of a retired person through a range of policies. The broadest definition – and likely the one closest to an individual's perspective – deems a retirement-income adequate if it replaces a worker's earnings at a level which enables him or her to maintain a standard of living in retirement comparable to that enjoyed in working life – even though retirement incomes often do not just replace earnings.

This diversity of perspectives is reflected in the range of indicators used to assess retirement-income adequacy. Narrow-definition indicators measure old-age income poverty, both in absolute and relative terms.[2] Those that measure the wider definition of adequacy combine monetary and non-monetary metrics, such as material deprivation and risks of social exclusion. Both types of indicators, calculated from data collected in household surveys, are backward-looking and available only after a certain time lag.

The pension replacement rate, expressed as a percentage of earnings, is commonly used to determine to what extent living standards are maintained over retirement. It is a measure of the income that a country's pension system seeks to provide to its retirees and is calculated using national pension system rules.[3] The replacement rate can express adequacy from an individual perspective, i.e. related to a person's previous earnings, or from a societal perspective – related to average economy-wide earnings.

Most countries offer the elderly safety-net benefits – such as targeted, basic or minimum pensions – to prevent, or at least alleviate, poverty and ensure that people who have contributed to a pension system receive a minimum benefit in return. A comparison of such benefits across countries delivers insights into national strategies for retirement-income adequacy.

This chapter seeks to paint a more complete picture of the adequacy of retirement incomes by enriching the perspective on future replacement rates with measures of old-age poverty and other sources of retirement income.

### *Monetary and non-monetary dimensions of adequacy*

Monetary and non-monetary dimensions should both be factored into any attempt to gain a clear picture of retirees' living standards today and whether they can be considered adequate.

Monetary adequacy is assessed by measuring income or expenditure. While a range of factors shapes well-being, income is the most obvious way to gauge whether pensioners risk slipping below the minimum decent living standard. Economic well-being is traditionally determined by measuring the income of individuals, households or families over a given period of time – be it a week, a month, or a year.

The concept of income can be limited to cash. But it may also incorporate the value of publicly provided services such as healthcare and long-term home care. And it can extend to cash-equivalent benefits, as may old people save money over their working lives and/or possess assets such as their own homes.

Another monetary adequacy metric is individual expenditure – an approach that has both advantages and disadvantages over income. Although expenditure is usually more stable over time, it depends on habits, preferences and country-specific circumstances

and, therefore, may be less internationally comparable. Expenditure is also more prone than income to measurement errors, being difficult to record accurately. Similarly, aggregating weekly, monthly or quarterly expenses into an annual variable is no easy task.

However, people's living standards also depend on the number, type and frequency of "special" needs that they may have. For example, poor households having one or more sick or disabled members are more likely to be worse off than households with the same income whose members are all healthy.

Recognising that there are several dimensions of (in)adequacy leads to an interest in material deprivation. People may experience different forms of deprivation, most of which are not captured by the analysis of income alone.

## Measuring adequacy of living standards

### *Cash and non-cash income*

A wide concept of income requires defining the components that should be included. A comprehensive definition derived from Haig-Simons might describe income as equal to the value of a person's annual consumption, plus the net change in the (real) value of his or her wealth.[4] Such a definition would include income in kind (e.g. the value of accommodation in owner-occupied housing) and the net increase in the real value of a person's assets. It would also implicitly refer to non-recurring sources of income.[5]

The standard statistical method of measuring income, however, differs from the Haig-Simons definition in two important ways. First, it ignores accrued capital gains. Household surveys generally measure only capital gains that have been realised by selling assets and have thus generated income.[6] Second, it does not take into account the effect of inflation, even though rising prices may devalue assets.

In practice, measuring how much wealth and other non-cash components contribute to household incomes is complex. Wealth consists of a broad range of assets, both tangible and intangible. Tangible assets are financial (e.g. cash deposits, stocks, life insurances, bonds, mutual investment funds, private pensions) and real (e.g. housing, cars, gold, jewellery). Examples of intangible assets are the benefits from in-kind services and social and human capital.

Measuring housing wealth and comparing it across countries is particularly complex. Homes are both an asset and consumption good, but there is a lack of suitable data both on how to value the good and how to calculate so-called "imputed rent" – the cash value of the benefit that owners derive from living in their own home. Countries use different data and methods to calculate imputed rent, as discussed in detail below in the section on "Homeownership in retirement incomes: The concept of imputed rent". Housing wealth is also less liquid than other assets because owners who wish to liquidate their homes may face transactions costs, frequent problems of indivisibility, and mortgage prepayment penalties. Altogether, housing is more difficult to measure than other types of investments when it comes to turning it into a stream of income.

Finally, valuing public services is no straightforward matter either, since there are no market prices attached to them (Verbist and Matsaganis, 2012). Many studies use actual cost of production to proxy public services' (monetary) value, as it is relatively easy to determine the cost of the inputs. Another advantage of cost of service production is that it is free from the subjective assessments of recipients.[7] Therefore, and because it is the only method for which reliable data are available, it is the most widely used.

If a view of different wealth resources and the income streams they generate is to be comprehensive, it should factor in taxation. Income may be measured in gross or net terms, i.e. before or after income tax, wealth tax, social insurance contributions, and transfers between households. The characteristics of national tax-benefit systems influence the disposable income available to people and thus affect assessments of adequacy. While good cross-country information on tax-benefit systems is available,[8] similar information on the taxation of different types of assets is lacking.[9]

A further important aspect of measuring income is the nature of the income unit – single individuals or larger entities such as households. As most individuals do not live alone, their incomes are pooled wholly or in part to satisfy a household's needs. Household rather than individual income is, therefore, a natural starting point to analyse adequacy. However, even though poor living standards rarely affect some members of a household and not others, it can be useful to home in from the household to the individual level (Atkinson et al., 2002; Förster and Mira d'Ercole, 2009). To reflect the individual's perspective while considering economies of scale within a given household/family, equivalence scales are used.[10] These allow for the fact that a household's needs to do not grow proportionally to the number of family members and differ according to whether members are adults or children.

### *Measuring poverty*

The narrow definition of retirement-income adequacy underlies the assessment of poverty among the elderly. One of the greatest successes of social policy across the OECD in past decades has been the fall in old-age poverty. It is still high on all policy makers' agendas, however, as some groups of old people are highly exposed to the risk of poverty. Examples are the oldest old, in particular women, and those needing long-term personal care.[11]

The pension reforms of recent decades have widely cut benefit entitlements for today's labour market entrants, while working careers are less stable than in previous generations. Monitoring and preventing old-age poverty now and in the future is therefore an ongoing policy concern.

Poverty may be measured in both absolute and relative terms. In simple terms, poverty is benchmarked against different minimum incomes and standards of living, shaped by national traditions, political processes and economic performance. Benchmarking countries' poverty against common arbitrary thresholds makes it possible to identify patterns that are common to all countries (Förster, 1994).

**Absolute poverty.** Absolute poverty metrics rest on the idea that people require a certain level of resources (or goods and services) to enjoy a minimum standard of living. People living with less than that level and therefore below the minimum standard of living are considered poor. Absolute poverty thresholds are commonly based on measurements of household budgets. Although the notion of a poverty threshold is easy to understand, it is not so straightforward to compare them across countries. The basic basket of goods and services that keeps people above the poverty line does not contain the same items from one country to another. The most obvious example is heating expenses, which are higher in cold countries than in warm ones. Moreover, individual perceptions tend to change with income, which suggests that the meaning of poverty changes, too (Fisher, 1995; Madden, 2000). Box 2.1 explains in greater detail some of the main approaches to measuring absolute poverty.

### Box 2.1. **Absolute measures of poverty**

One of the first indicators of absolute poverty was created by the British Rowntree in 1901. The Rowntree line used a basket of goods and services deemed essential to ensure the minimum subsistence level for the unit of analysis – the household or family – under scrutiny. He set his threshold using the monetary value of the basket plus a fixed amount of money to cover other types of expenditure, such as fuel or housing. He classified every household whose income was less than that amount as poor. His method was criticised chiefly for the choice of goods and services (other than food) in the basket.

Another absolute poverty measure is the one still used in the United States, based on the poverty line set by Molly Orshansky (1963-65). Orshansky calculated her poverty threshold by multiplying by three the cost of a minimum food budget – as determined in the Economy Food Plan – for different family sizes. She borrowed the multiplier of "3" from the Department of Agriculture's 1955 Household Food Consumption Survey, which estimated that families of three or more spent about one-third of their income (after tax) on food in that year. This poverty threshold is still indexed every year to the consumer price index and has not changed in any major way since it was initially formulated (Orshansky, 1965, 1969).

Orshanky's method does, however, have some technical flaws. One is the unit of analysis retained, i.e. the family. Consequently, it considers cohabiting couples as distinct units of analysis and does not pool their resources. In addition, recent estimates show that food expenditure accounts for around one-sixth of family income, not one-third as assumed in the metric, which suggests that the multiplier should also be adjusted regularly to account for changing consumption patterns. Finally, the Orshansky indicator does not include some components that matter for determining disposable income, such as the value of some in-kind benefits and some expenses regarded as crucial by most families. Since 1969, several committees and task forces have discussed the question of the adjustment of the poverty threshold.

Another alternative, widely used method, drawn from the World Bank's work on poverty, considers USD 1.25 per person per day as the value of resources needed to stay above the poverty line. Anyone who lives on less than that daily amount is deemed poor. This estimated poverty line, expressed in 2005 USD PPP, results from the average of the national poverty lines of a sample of poor countries.

Other measures use the minimum income standard (MIS) approach (Bradshaw et al., 2008) or reference budgets (see *www.referencebudgets.eu* and Vrooman, 2009). The MIS approach for example, tries to blend the best of the methodologies for developing budget standards in the United Kingdom – the Family Budget Unit (FBU) and the Consensual Budget Standard (CBS). Under the FBU approach a panel of professional experts constructs budget standards, while the CBS is drawn up by ordinary people. The CBS approach considers that negotiation and agreement are necessary to defining a minimum standard. The conclusions of the MIS project suggest that such a methodology should be used as a complement to other poverty measures to improve understanding of poverty conditions. For example, traditional poverty measures in the United Kingdom have generally underestimated the needs of families with children and overestimated the needs of pensioners after housing costs are taken into account.

The reference budgets approach looks at typical expenditure patterns for different household types to measure the cost of a set of lifetime primary items which it considers sufficient to support a decent life style. The basket of basic consumption items is built by surveying the goods and services which appear to be the most fundamental to health or physical autonomy. Its advocates emphasise, in particular, its usefulness as a guideline for the design and delivery of welfare allowances and services (Nordenanckar, 2009) and as a benchmark for comparing household incomes with consumption needs.

Absolute poverty measures may differ with the size and composition of the unit of analysis (household, family, individual). Comparisons across countries need to factor in purchasing power parity (PPP) and use the same basket of products as reference.

**Relative poverty.** To what is relative poverty relative? There are two benchmarks:

1. *Average income*. The poverty line is expressed as a percentage of average income and therefore depends on the distribution of household incomes.
2. *National living standard*. The poverty line is measured against the living standard norm that prevails in a given country at a certain moment in time. A person considered poor in a rich country will therefore have a higher income than many non-poor people in a less prosperous one.

In practice, relative poverty thresholds are proportional to either average (mean) or median income. Median income is more widely used, being less sensitive to outliers. The OECD, for instance, most of the time sets the poverty line at 50% of median equivalised income. Anyone whose income is less than 50% of the median equivalised income is said to be "at risk of poverty". The European Union uses a 60% cut-off point (before housing costs),[12] while lower thresholds give rise to what is sometimes termed "severe poverty" measures (Brewer et al., 2010).

The indicator most commonly used to measure the *extent* of relative poverty is the "headcount ratio", which simply shows the percentage of the population with incomes below the poverty threshold. A headcount ratio in the late 2000s revealed that 12.8% of the over-65s were poor in the OECD area (Figure 2.8). The number does not, however, say anything about *how* poor people who languish below the poverty line are. The *depth* of poverty is captured by the poverty gap indicator which measures how far below the poverty line the median income of the poor lies (Figure 2.9).

**Material deprivation.** Poverty indicators are supplemented by measures of material deprivation that address the non-monetary aspects of poverty. They use checklists of items drawn from responses to surveys on what is necessary or desirable for decent living standards. Again, views differ on the types and number of items that constitute an adequate standard of living. The result is that, for a single country, there may be different assessments of its degree of material deprivation.

The European Union's material deprivation indicator, for example, measures the share of respondents to surveys who cannot afford to do at least three of the following:

1. Face unexpected expenses.
2. Take a week's holiday away from home every year.
3. Pay off arrears (mortgage, rent, utility bills, or hire purchase instalments).
4. Eat a meal with meat, fish, or protein equivalent every second day.
5. Keep home adequately warm.
6. Have a washing machine.
7. Have a colour TV.
8. Have a telephone.
9. Own a car.

Respondents to surveys who cannot afford to do four or more of the nine things listed are considered "severely materially deprived" (Guio, 2005, 2009; Guio et al., 2009).[13]

Among other definitions of material deprivation are, for example, the composite index of Carstairs and Morris (1991) built on a combination of four indicators: male unemployment, low social class, car ownership, and overcrowding in the home. Other indicators also consider subjective dimensions of deprivation, such as the quality of social networks and life satisfaction indices (Boarini and Mira d'Ercole, 2006).

Many non-EU countries also measure deprivation to complement their analyses of monetary poverty. Australia, for example, as stated in Saunders and Wong (2012) draws on the deprivation approach to help identify "those who do not have and cannot afford items regarded as essential by a majority of Australians" where "essential items are things that no-one in Australia should have to go without today". The list in Saunders and Wong (2012) comprises 17 items, ranging from clothing, medical needs, housing, social participation, and savings to car insurance and holidays. The authors stress that the list reflects community views rather than the decisions of experts and researchers.

Two Canadian jurisdictions (Ontario and the Yukon) have surveys to measure material deprivation from a list of items that range from nutrition and clothing to housing and transport. For example, the 2008 Ontario material deprivation survey (OMDS) prompted respondents who did not possess listed items to state whether it was because the household could not afford them.

Household surveys in the United States and New Zealand, include questions on similar items to measure deprivation (Kenworthy, 2007).

One survey, the Pew Global Attitudes Project, provides comparable cross-country information on a few aspects of material deprivation (inability to buy food for the family, inability to pay for medical and health care for the family and inability to buy clothing the family). It covers around 38 000 people in more than 40 countries (see Boarini and Mira d'Ercole, 2006).

### *Pension replacement rates*

The broad view of adequacy – that in retirement people should enjoy a certain standard of living comparable to the one they had during their working lives – naturally leads to the pension replacement rate as a measure. The pension replacement rate measures the level to which a pension (public, private or both) in retirement replaces earnings from working. It may be expressed in either gross or net terms, i.e. with or without taxes and social security contributions.

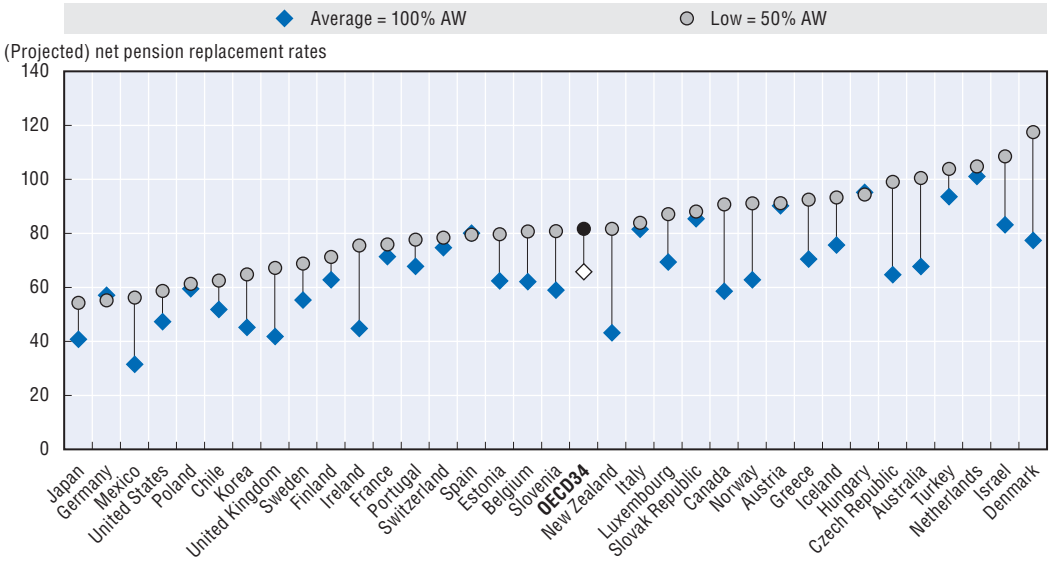
An important issue in constructing the indicator is the choice of the income to be replaced. The replacement rate is widely defined as the ratio of the pension to final earnings (just before retirement). *Pensions at a Glance*, however, shows pension benefits as a share of individual lifetime average earnings (revalued in line with economy-wide earnings growth). In the standard assumption of the OECD pension models, a person's income grows in line with economy-wide average earnings, which means that using the last or average lifetime income will yield the same result.

What level of replacement the pension replacement rate should target, is another important consideration. A simple starting point is to say that standards of living in retirement should be the same as those enjoyed during working life. But working-age people may have to meet a number of needs which retirees no longer have, such as transport costs or work-related expenses. And people who were low earners during their

working lives may need pension replacement rates of 100%, or even higher. Those who enjoyed higher earnings may still have a very comfortable retirement with replacement rates substantially below 100%.

Figure 2.1 shows OECD national net pension replacement rates (i.e. the ratios of pension benefits to earnings after taxes and social security contributions) for full-career workers entering the labour market in 2012 at average and low earnings relative to the economy-wide average. The pension replacement rates are therefore forward-looking and apply to the future entitlements assuming that current pension rules will apply throughout their career until they reach the standard pension age in their country. Countries with the highest net pension replacement rates for low earners are Australia, Denmark, Israel, the Netherlands and Turkey – all above 100%. Countries whose replacement rates are well below the OECD average are Germany, Japan, Mexico, Poland, and the United States, where low earners' pension benefits replace only between 50% and 60% of their pre-retirement earnings.

Figure 2.1. **Theoretical net replacement rates at different earnings levels for full-career workers entering the labour market in 2012, OECD**




*Note:* "Average" and "low" earnings levels refer to 100% AW and 50% of the AW respectively. See Chapter 7 in this publication.

*Source:* OECD pension models, see Table 4.7 on "Net pension replacement rates by earnings" in Chapter 4 in this volume.

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### *Recipiency and take-up of minimum and target benefits*

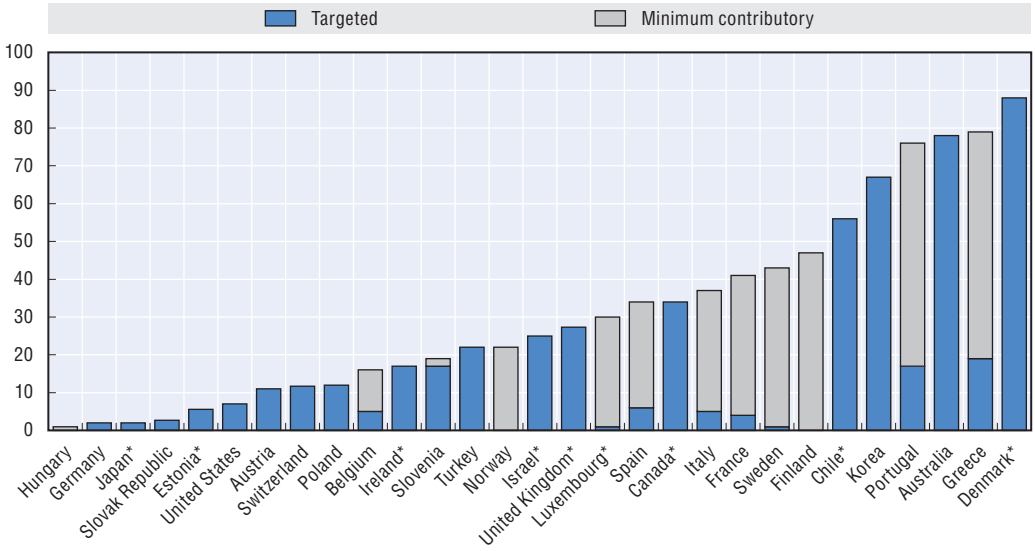
Rather than looking at future theoretical pension replacement rates this section focuses on how poorer pensioners are covered by some specific public pension programmes. As described in Table 3.2 in this publication, the first-tier redistributive schemes, which aim to prevent poverty in old age, are of three main types: resource-tested, basic and minimum. While all OECD countries have general social safety-nets of this type, in some cases their coverage is limited to few people who had many career interruptions.

The analysis of benefit values provided by these schemes is complicated by the existence of multiple programmes in many countries. In some cases, benefits from these schemes are additive. In others, there is a degree of substation between them.

On average, safety-net retirement benefits are worth 22.9% of average worker earnings. Eleven countries provide a minimum pension above this safety-net level. For full-career workers, the average retirement income – including these contributory minimum pensions – is 28.2% of average worker earnings.

About a third of older people receive some support from basic, targeted or minimum pensions on average. Data on coverage are presented in Figure 2.2 just for non-contributory safety-net benefits and contributory minimum pension.

Figure 2.2. **Recipiency of targeted and minimum pensions among people aged 65 and over, 2012**




*Note:* The country-name followed by an asterisk indicates that the first-tier also comprises a basic pension.
*Source:* Indicator on "Basic, targeted and minimum pensions" in Chapter 3 in this publication.

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Where applicable, the chart distinguishes between "targeted" pensions and minimum contributory pensions, which are generally higher. In Denmark, at the top of the scale, nearly 90% of retirees receive safety-net benefits at levels up to 18% of the average wage. Recipiency is also high in Greece which allocates to nearly 20% of retirees targeted benefits at a level equivalent to about 14% of the average wage. At the same time, around 60% receive the contributory minimum pension, which is 36% of the average wage. (Portugal shows very similar shares of recipients and benefit levels.) The Greek percentages are additive, which means that some three-quarters of pensioners receive one or other type of safety-net benefit.

Recipiency is also widespread in Australia (where nearly 80% of the over-65s receive resource-tested benefits) and in Finland and Sweden, where beneficiaries of minimum pensions account for over 40% of the over-65s. At the other end of the scale, no more than 2% of retirees in Germany, Hungary, Japan and the Slovak Republic receive targeted or minimum pensions.

The value of safety-net benefits – in both gross and net terms – has so far been compared with economy-wide average gross earnings. But this is not a good measure of adequacy of these benefits. Taxes and contributions payable on earnings are very likely to make a difference to the comparison of living standards on safety-net retirement benefits compared with those of workers.

Estimates for 22 OECD countries with data available suggest that on average, the level of the targeted pension benefit is worth 26% of average net earnings compared with just 19% of average gross pay. Higher contributory minimum pensions average 33% of net earnings and only 25% of gross.

Finally, the comparison of the net-of-tax value of safety-net benefits with the poverty thresholds suggest large differences across countries. For example, in Slovenia the net targeted and minimum pension benefits were worth around 40% and 93% of the poverty threshold in 2008, respectively. In Belgium, in contrast they were both above 100% of the poverty threshold (see Whitehouse et al., 2011).

An important issue in many countries is the take-up (or rather the non-take-up) of means-tested benefits. Through stigma, ignorance of eligibility, and the cost and complexity of claiming, less than 100% of those entitled to such benefits take them up. In the United Kingdom, for example, figures for 2009-10 show that only between 62% and 68% of people eligible for the means-tested pension credit took it up. However, take-up is estimated to cover 73%-80% of the amounts to which people are entitled, suggesting that those with smaller entitlements are less likely to make a claim. Take-up also appears to be increasing over time: it accounted for 58%-66% of the caseload in 2003-04 and 68-76% of total entitlements, according to the British government's Department of Work and Pensions (2006, 2010).

Matsaganis et al. (2010) supply some recent evidence for Greece and Spain. Their best estimates are a 63% non-take-up of the social solidarity benefit in Greece, both by caseload and aggregate benefit amounts. For the pension payable to the uninsured elderly, non-take-up was estimated to be between around 29% and 46%. Again on the authors' best estimates, the supplementary pension in Spain shows a take-up rate of less than 10%, while the non-take up of the non-contributory minimum pension is around 44% of those entitled and 41% by expenditures.

Low take-up is also a problem in the United States, where only 61%-68% of older people entitled to the means-tested benefit – the supplemental security income (SSI) – were actually receiving it in 2001 (Government Accountability Office, 2005). Further evidence suggests that while the take-up of SSI for disability reasons continued to increase over time (Elder and Power, 2006), it declined among the over-65s by about 20 percentage points over the period 1974-2004. Canada boasts the highest take-up rates for its means-tested benefit among the elderly, the guaranteed income supplement at around 87% according recent estimates.[14] (On take-up rates, see Wiseman and Yèas, 2008; Poon, 2005; Currie, 2006.)

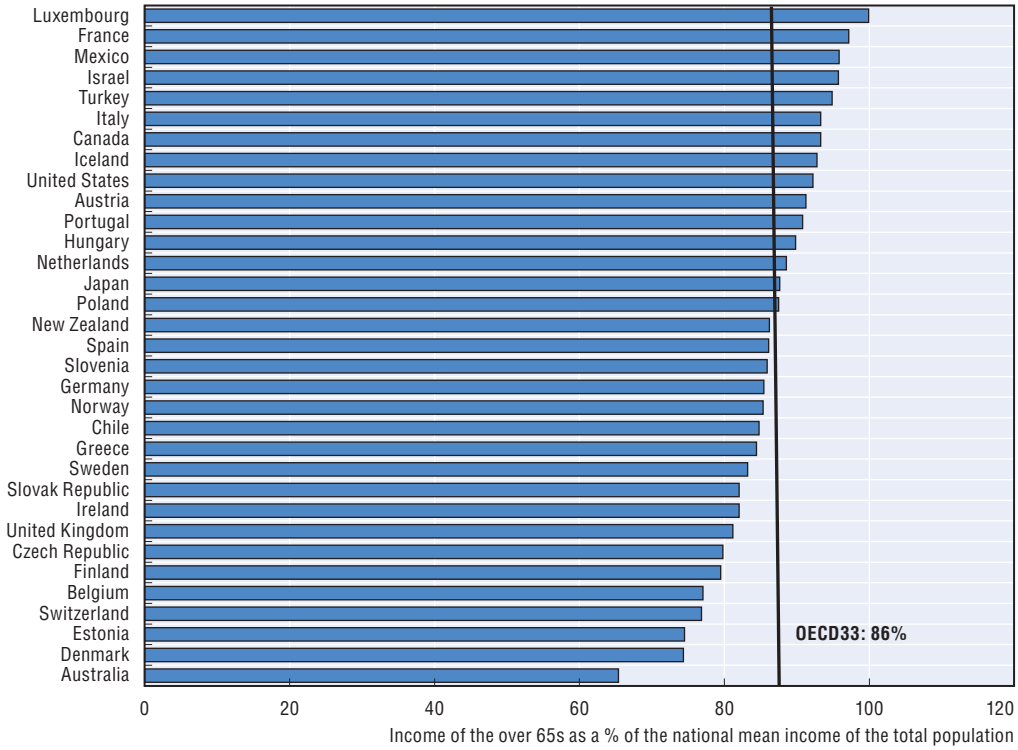
## Living standards in retirement: Incomes and poverty in old age

### *Snapshot of elderly incomes in the OECD*

An at-a-glance idea of pensioner well-being can be gleaned from looking at the average income of the elderly in relation to the overall population's. Figure 2.3 shows the relative average mean equivalent income of the over-65s, remarkably similar across countries

Figure 2.3. **Relative incomes of the over-65s, late 2000s**

Equivalent household disposable income




*Source:* Authors' calculations from data from the *OECD Income Distribution Database*, *www.oecd.org/social/income-distribution-database.htm*.

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despite the diversity of retirement-income systems. In the late 2000s, elderly incomes in two-thirds of OECD countries accounted for an average of 86.2% of the total population's. They stood at above 93% in Austria, Canada, France, Iceland, Israel, Italy, Luxembourg, Mexico, Portugal, Turkey, and the United States. In three OECD countries – Australia, Denmark and Estonia – they were less than 75% of the national average equivalent household disposable income.

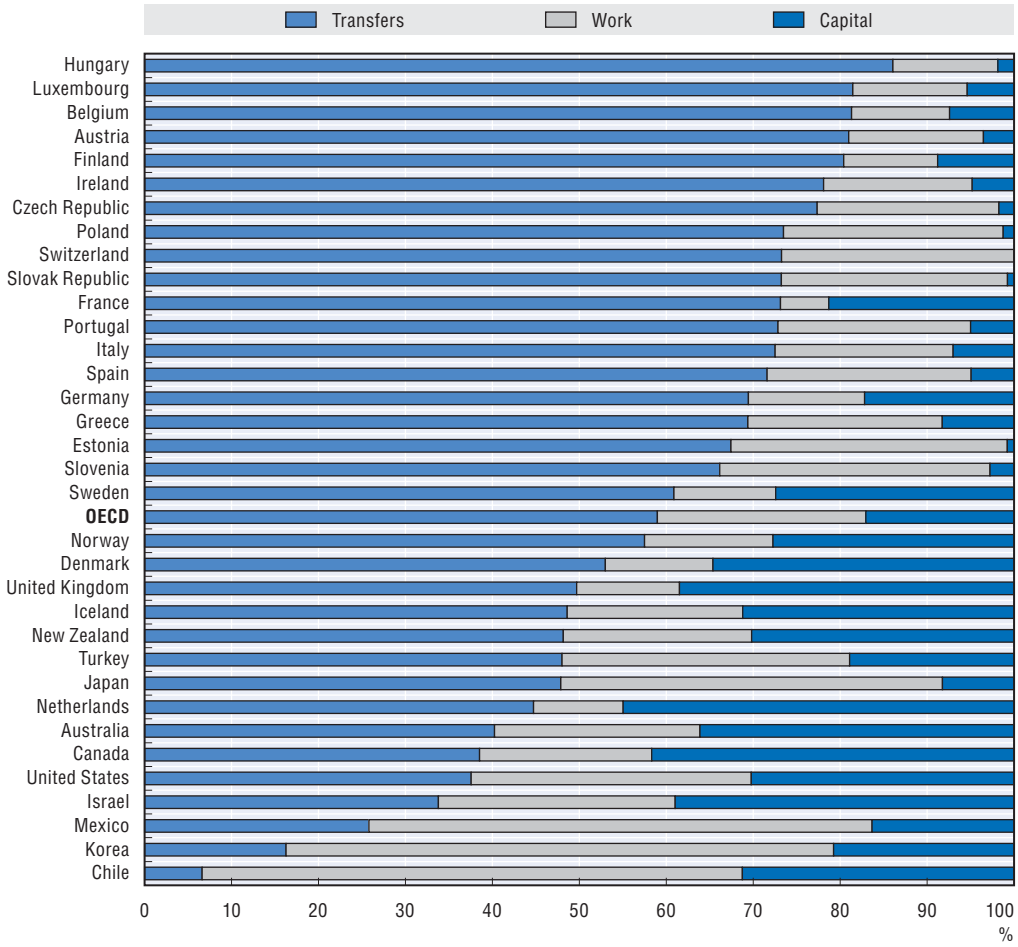
### *Sources of elderly incomes*

Analysis of the sources of old people's income yields further insight into their living standards. Figure 2.4 shows that during retirement they rely heavily on public pensions in the form of earnings-related or resource-tested benefits which account for an average of nearly 59% of their incomes in the 34 OECD countries. At the top end of the scale are Austria, Belgium, Finland, Hungary, and Luxembourg where public pensions make up 80% or more of elderly people's retirement income. By contrast, the figure is 40% in Australia and Canada, and less than 20% in Korea and Chile.

In Chile, Korea and Mexico, the over-65s receive more than half of their income from work, followed by Japan with 44% and Estonia, Slovenia, Turkey, and the United States not far behind. High shares of work-sourced income may reflect the fact that many elderly people do not have full contribution histories in public pension schemes and, being entitled to low or no benefits, they keep working.

Figure 2.4. **Sources of incomes of the over-65s, late 2000s**

Percentage of gross household income




*Note:* Income from work includes both earnings (employment income) and income from self-employment. Capital income includes private pensions as well as income from returns on non-pension savings.

*Source:* Authors' calculations from data in *OECD Income Distribution Database*, *www.oecd.org/social/income-distribution-database.htm*.

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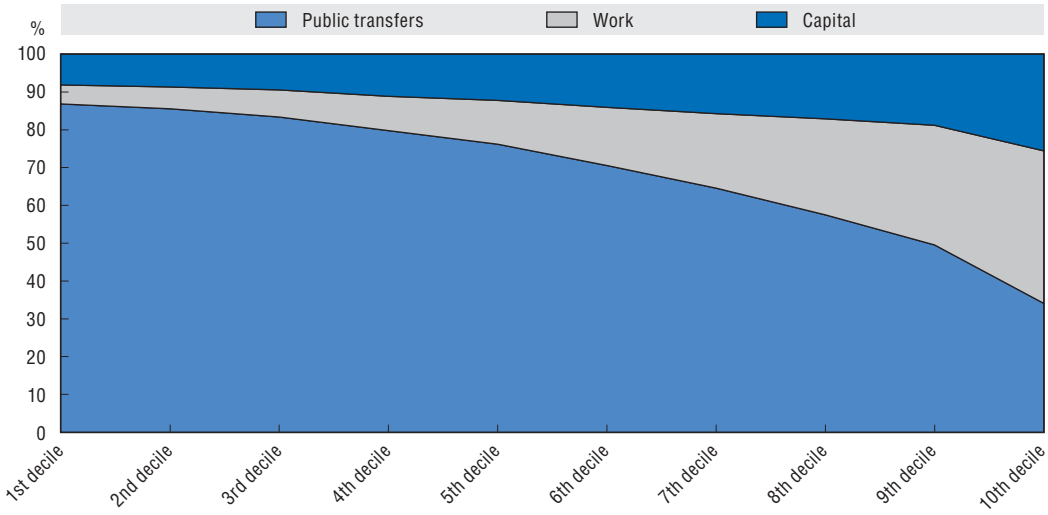
Alternatively, later retirement ages may be the main factor. In 2010, for example, the share of income from work was relatively high in the United States where the normal pension age is over 65. In France, by contrast, where workers who had contributed for 41 years could still retire at the age of 60 in 2010, income from work accounted for less than 10% of old people's incomes.

Capital – mainly in the form of private pensions – provides the over-65s with between 30% and 45% of their incomes in Australia, Canada, Chile, Denmark, Iceland, Israel, the Netherlands, New Zealand, the United Kingdom, and the United States, all countries whose retirement income systems combine public and private pensions.

Generally speaking, poorer old people rely almost exclusively on public transfers, while richer ones derive large shares of their incomes from work or private pensions and other capital income. However, there are OECD countries, like Mexico and Korea, where

Figure 2.5. **Sources of income of the over-65s by income decile, late 2000s**

OECD average incomes before tax




*Note:* Income from work includes both earnings (employment income) and income from self-employment. Capital income includes private pensions as well as income from returns on non-pension savings.

*Source:* Authors' calculations based on data from the *OECD Income Distribution Database*, *www.oecd.org/social/income-distribution-database.htm*; OECD (2011), *Divided We Stand: Why Inequality Keeps Rising*, OECD Publishing, *http://dx.doi.org/10.1787/9789264119536-en*; Suchomel, M., A.C. D'Addio, A. Reilly and E. Whitehouse (2013), "Income Inequality in Old-age Over Time in OECD Countries: Trends and Determinants", *OECD Social, Employment and Migration Working Papers*, OECD Publishing.

StatLink http://dx.doi.org/10.1787/888932935876

work accounts for a considerable share of the income of pensioners who are in the lowest decile of the income distribution (Figure 2.5) (Förster and Mira d'Ercole, 2005; Disney and Whitehouse, 2001).

Figure 2.5 shows the average income shares of the elderly by decile of the income distribution in OECD countries. The share of work-based income grows from less than 5% among the lowest 10% of incomes to just over 40% in the highest decile. The distribution of capital income is also skewed towards the richer income groups, albeit to a lesser extent than income from work. Public transfers, in turn, account for more than 85% of income in the poorest decile and less than 40% in the richest.

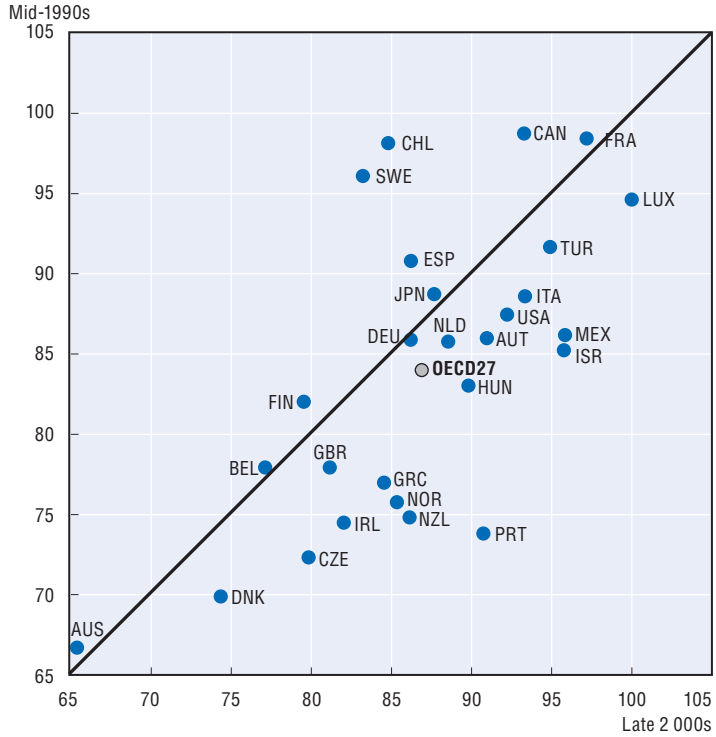
The share of work-sourced income peaks in the 8th or 9th deciles in Australia, Greece, Iceland, Mexico, New Zealand, and Portugal, where the richest 10% of the over-65s enjoy larger incomes from capital, which includes private pensions, than those in the deciles just below (Suchomel et al., 2013).

Conversely, the share of capital income diminishes among the richest group of older people in Chile, Korea, Mexico, and Turkey. In the first two countries, income from work drives the overall picture, while Mexico is unique in having a higher share of public transfers in the top decile of incomes than in those immediately below. This result is probably linked to the high pension benefits of the pre-reform public pension system. The picture is most complex in Turkey where both capital and work show a U-shaped pattern, accounting for the highest proportional share of incomes in the lowest and highest deciles. The implication is that older people in the middle of the income distribution rely the most on public transfers (Suchomel et al., 2013).

Previous OECD analysis has also demonstrated that older people's incomes increased more sharply than those of the total population between the mid-1990s and the mid-2000s (OECD, 2008, 2013a) in 21 OECD countries for which data are available. Figure 2.6 illustrates the trend, comparing the relative incomes of elderly people in the late 2000s (x-axis) and mid-1990s (y-axis). In countries to the right of the 45° line, older people's incomes grew faster than those of the population as a whole. In those to the left, they did not.

Figure 2.6. **Trends in elderly incomes from the mid-1990s to late 2000s**

Percentage of total population income




*Source:* Authors' calculations on data from *OECD Income Distribution Database*, *www.oecd.org/social/income-distribution-database.htm*. See also Figure 5.2 in Chapter 5 in this publication.

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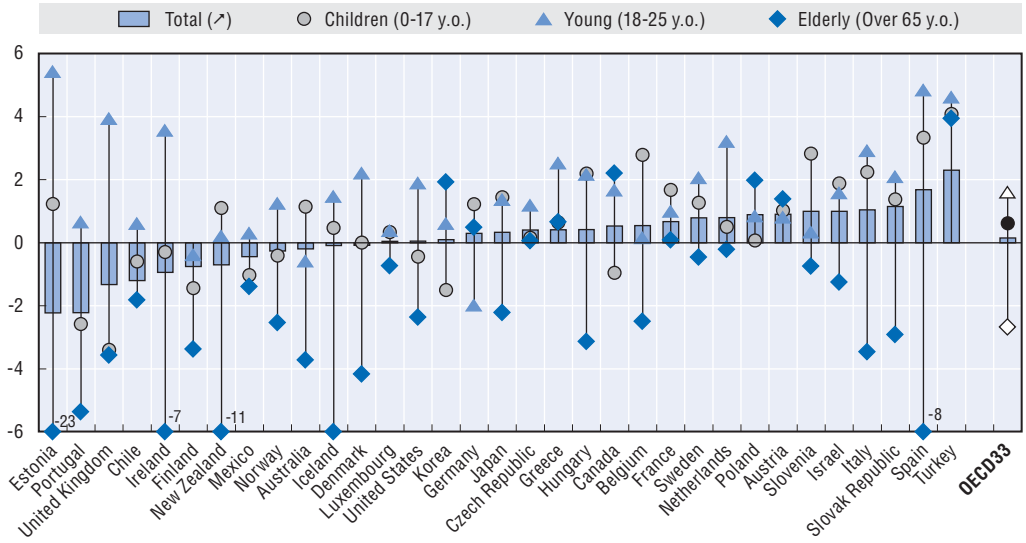
The elderly saw the largest increases in their incomes relative to the total population's in Israel, New Zealand and Portugal – over 10 percentage points. There were also significant rises in the Czech Republic, Greece, Ireland, Mexico and Norway of between 7 and 9 percentage points. However, the rate of growth in their incomes fell behind the rises in population incomes in eight countries, with the largest fall-back observed in Chile.

While the coverage and maturity of pension systems are the main determinants of the increase in benefit incomes among the oldest old, the growth of real earnings over time, has benefitted each successive cohort of retirees who have received higher starting benefits.

### *Old-age poverty rates*

Old people's economic well-being has widely improved in recent decades, as their relative incomes have risen and poverty rates dropped. The fall documented in earlier OECD work between the mid-1980s and the mid-2000s (OECD, 2008) continued between 2007 and 2010 (Figure 2.7). Over those three years, average income poverty in the

Figure 2.7. **Changes in poverty rates by age, 2007-10**




*Note:* Income poverty measured using relative poverty rate based on 50% of current median equivalised household disposable income.

*Source:* OECD (2013), "Crisis Squeezes Income and Puts Pressure on Inequality and Poverty. New Results from the *OECD Income Distribution Database*", *Policy Brief*, OECD, available at *www.oecd.org/els/soc/OECD2013-Inequality-and-Poverty-8p.pdf*.

StatLink *http://dx.doi.org/10.1787/888932935914*

OECD rose from 12.8% to 13.4% among children and from 12.2% to 13.8% among young people. Among the elderly, however, relative income poverty shrunk from 15.1% to 12.8%, with falls in 20 countries and rises of around 2 percentage points in Turkey, Canada, and Poland only.

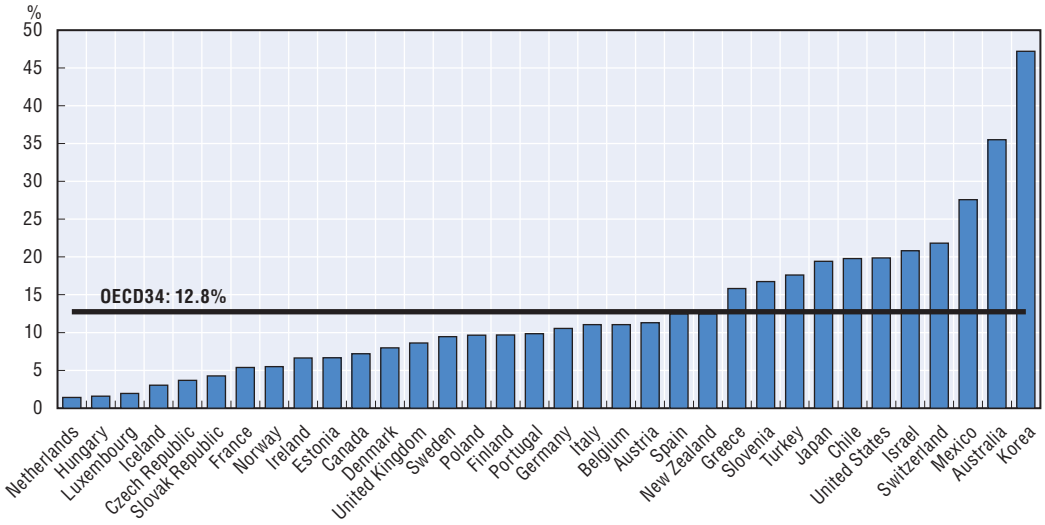
The risk of elderly poverty, measured against the threshold of 50% of the median equivalised household income, was less than 13% on average in the late 2000s in OECD countries. The poverty rate shown in Figure 2.8, however, captures only partially the risk of poverty in old-age because non-cash benefits such as the value of publicly provided services, are not included in the measure of income used. The percentage displayed in Figure 2.8 masks wide variations across countries: in the late 2000s, 25% or more of the over-65s were income poor in Australia, Mexico, Korea and Switzerland. The risk of poverty in old age was also above the OECD average in Chile, Greece, Israel, Japan, Slovenia, Turkey, and the United States.[15] By contrast, it was 5% or less in the Czech Republic, France, Hungary, Iceland, Luxembourg, the Netherlands, and the Slovak Republic.

Poverty measures can be very sensitive to changes in the minimum old-age and safety net benefits (Whitehouse et al., 2011) if they are close to the poverty line. Even slight changes in amounts may have a strong impact on the number of people considered poor or non-poor.

In Ireland in the mid-2000s, for example, the basic pension was EUR 8 870 while the poverty line stood at EUR 10 775. The increase in the state pension over time contributed to cutting by more than one-half the number of people in poverty between the early and late 2000s.

Figure 2.8. **Poverty rates among the over-65s**

Percentage of the over-65s with incomes below 50% of the median equivalised income




*Source:* Authors' calculations based on *OECD Income Distribution Database*, *www.oecd.org/social/income-distribution-database.htm*.

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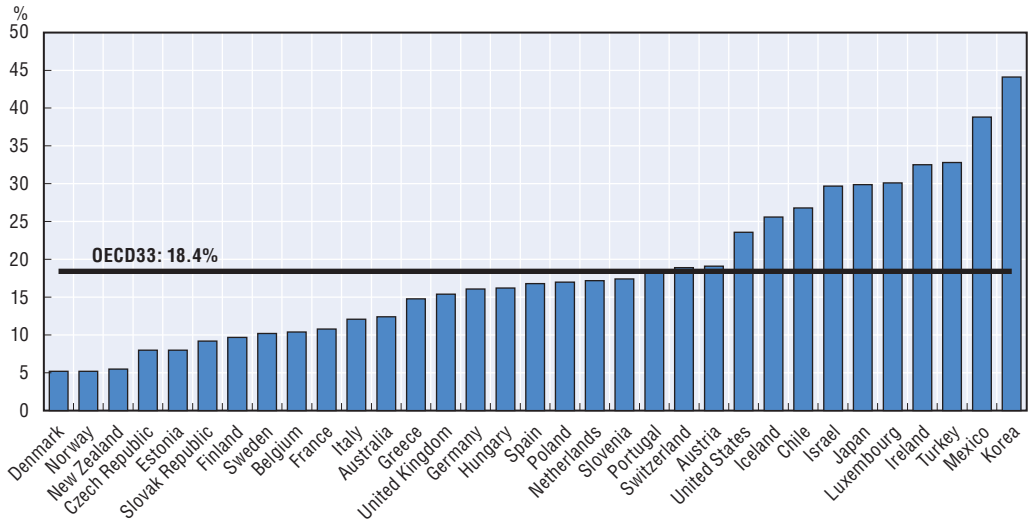
In New Zealand, the rate of poverty among the over-65s increased from less than 2% in the mid-2000s to more than 12% in the late 2000s, with peaks in excess of 23% in the years between. This development was, however, linked less to the level of the universal old age pension than to earnings in the working-age population. As earnings grew rapidly during the period and the pension benefit was increased in line with prices, poverty among pensioners, measured relative to median earnings, increased.

### *The median at-risk-of-poverty gap*

The median poverty gap illustrated in Figure 2.9 complements the headcount ratio with information on the depth of poverty. On average, the median income of the over-65s in the OECD area said to be "at risk of poverty" – i.e. with incomes below the 50% poverty line – was 18.4% below that line in the late 2000s. Differences across countries were substantial. Of the countries shown in Figure 2.9, the at-risk-of-poverty gap was widest in Korea, Ireland, Israel, Japan, Luxembourg, Mexico, and Turkey, where the elderly's median equivalised incomes were 30% and more below those countries' poverty lines. It was at its narrowest (at 5% or less) in Denmark and Norway (followed very closely by New Zealand). Wider-than-average gaps were also recorded in Austria, Chile, Iceland, Switzerland, and the United States.

The poverty gap can be partly explained by how low the safety net is strung. However, other factors underlie it, too. For example, although the data available are not broken down by gender, other studies have shown that poverty gaps are much wider among single females and women in general than among men. Because their retirement incomes are much more likely than men's to be low, women account for a majority of the poor population (Wolff, 2004).

Figure 2.9. **Median poverty gap among the over-65s, late 2000s**




*Note:* Data for Hungary, Ireland, Japan, New Zealand. Switzerland and Turkey refer to the year 2009; for the Czech Republic data refer to the year 2011.
*Source:* Authors' calculations based on data extracted from OECD.Stat in the *OECD Income Distribution Database*, *www.oecd.org/social/income-distribution-database.htm*.

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## Wealth and the adequacy of retirement incomes

To address the issue of adequate incomes, this section includes wealth in assessments of old-age income adequacy. For poorer retirees, public pensions and other income transfers are generally the only source of income. Other sources of income are private pension schemes and the workplace, since older people in many countries continue working to earn part of their retirement income. But that is not the whole picture. Housing wealth, financial wealth, and access to publicly provided services can also make substantial contributions to standards of living in retirement.

Concentrating solely on cash incomes may detract from the full retirement picture and, in some cases, overstate elderly people's exposure to the risk of poverty. Owning a house and living in it, for example, means less need for cash to pay the rent.

To capture the contribution of these other resources, this section extends the income concept used so far to include income flows which retirees might be able to generate by liquidating or otherwise using their assets.

### *Housing wealth*

Housing is both a consumption and an investment good. Unlike other goods, which are consumed after being bought, a home needs upkeep. People who occupy their own homes need to spend money to sustain the value of their investment over time. A home is also a tangible asset which homeowners can partially or totally release to receive a stream of income or a lump sum to finance other needs, particularly during retirement. People who live in their own home enjoy the benefit of not having to pay rent, although the term "imputed rent" is used to quantify the Homeowner's Advantage over rent-paying tenants.

Elderly homeowners are widely supposed to belong to higher income brackets. Yet, although they may occupy their own homes and thus be asset rich, they might also be income poor if their cash income is not enough to meet their daily needs. As Figure 2.A1.1 in Annex 2.A2 shows, there is indeed a negative correlation between homeownership and poverty rates among the elderly. It is not statistically significant, however, which suggests that there is no straightforward link between standards of living and homeownership.

Homeownership has increased in most major OECD regions since the mid-1980s even though variations across countries are large (Andrews et al., 2011; Andrews and Caldera Sanchez, 2011).

The trend towards increasing homeownership may be explained partly by population ageing: older people are generally more likely to be homeowners. A study of 12 OECD countries (see Box 1 in Andrews et al., 2011) attributes up to 1 percentage point of the average growth in owner-occupation rates to ageing The effect of this demographic change on homeownership was most pronounced in Canada, Denmark, Germany, and Switzerland.

In order to assess the contribution of housing to the adequacy of retirement incomes, it is useful to look at homeownership by age group. Figure 2.10 shows that, on average, 77% of heads of household aged 55 and over are homeowners, compared to 60% in the under-45 age group. In Chile, France, Greece, Iceland, Slovenia, and the United States rates of homeownership in the older age group are between one-fourth and one-third higher. The gaps are much narrower in the Czech Republic, the Netherlands, Poland and Portugal.

Figure 2.10. **Homeownership rates among the under-45s and over-55s, 2011**

*Source:* EU-SILC Revision 1, March 2013; and Eurostat, *Income and living conditions* data, *http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/data/database*. For Canada, Chile and the United States, data are derived from national sources.

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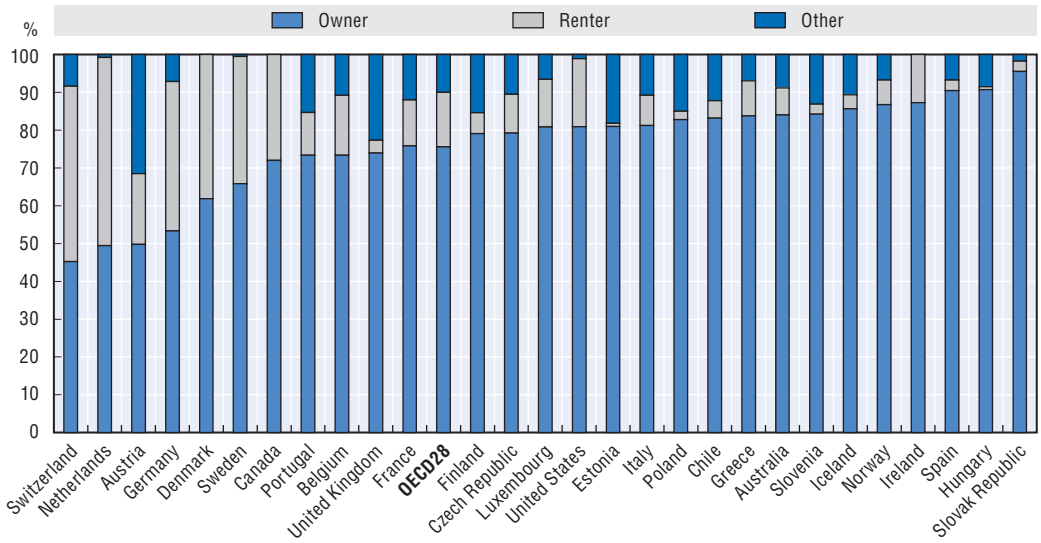
Data for Japan suggest that in 2006 the rate of homeownership was 23% among heads of household aged up to 34 years old, against 85% among those aged 65 or more (Hirayama, 2010). Data based on the 2010 census suggests that, in Mexico, 76.44% of houses are owner-occupied and 14.3% rented (INEGI – Mexican Census and Geography Agency, 2011), but data is not available by age group. According to ENIGH (Mexican National Household Survey of Incomes and Expenditures), however, the percentage of owner-occupation reported is lower at 71.2% (Guerrero and Soto, 2012).[16]

Figure 2.11 illustrates tenure patterns among the over-65s in the 28 OECD countries with publicly available data. On average, around 76% of heads of household in this age group own their homes. Of the remaining 24%, those who rent their accommodation at market prices account for 15% and tenants who enjoy reduced rents or free accommodation (i.e. the "other status") represent 9%.

Figure 2.11. **Housing tenure among the over-65s aged in selected OECD countries, 2011**




*Note:* The category "owner" includes both outright owners and owners who are still repaying a mortgage.
*Source:* Authors' calculations based on EU-SILC Revision 1 of March 2013. For Australia, Canada, Chile and the United States data are from national sources.

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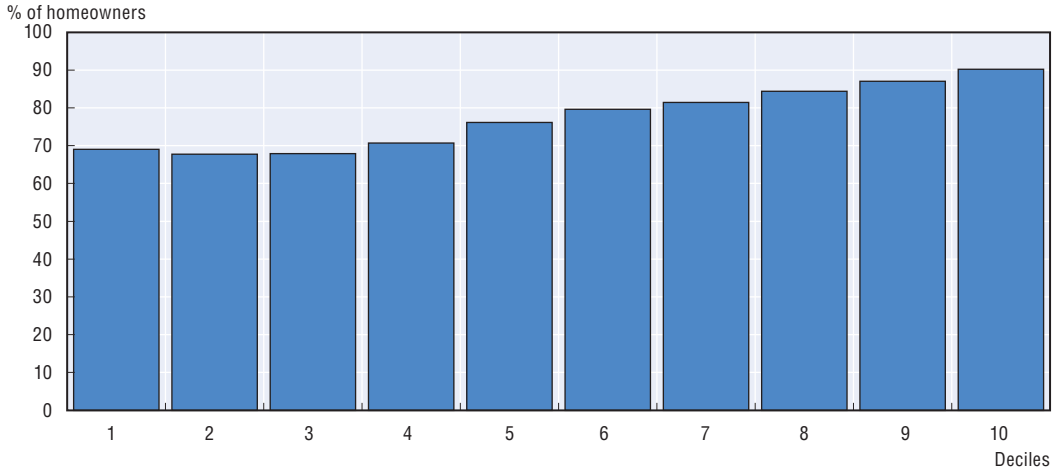
The extent to which older people own their homes varies widely across countries. In Switzerland, just over 40% of older people are outright owners – having paid off their mortgages – compared to more than 90% in Hungary and the Slovak Republic. In Australia, Chile and the United States, around 80% of older people are homeowners, while the figure is 70% in Canada. Some of these homeowners are still repaying a mortgage. For example, 17% of elderly Canadians reported that their households were making regular mortgage payments in 2010 (Uppal, 2010). In 2011, among the over-65s who owned their homes, 6.5% were still repaying a mortgage.

Less than 5% are tenants paying rent at market price in many Eastern European countries, Iceland, Spain and the United Kingdom. In Denmark, Germany, the Netherlands, Sweden and Switzerland, the percentage is at least 30%.

Accommodation at reduced rates is frequent among older people in Austria, Estonia, Finland and the United Kingdom, as public housing accounts for a substantial share of accommodation for the elderly. However, reduced rate rents may mean totally different things in different countries. For example, in Finland the "other" category includes dwellings rented from municipalities, non-profit organisations and some residual categories. While in some towns (such as Helsinki), rent levels of municipal and non-profit housing are below the market price, in other parts of Finland they are higher.

Housing tenure among the elderly also varies with socio-economic factors, owners' income being a particularly important determinant. Figure 2.12, which depicts homeownership among the over-65s (measured with data from the European Survey on Income and Living Conditions) by income quintiles in 23 EU-OECD countries, confirms that those with low incomes are less likely to be homeowners. Similar figures are observed in many other non-EU OECD countries. In Canada, the percentage of homeowners among the over-70s rises from 52% in the bottom decile of the income distribution, to 80% in the middle decile, and to more than 90% in the top decile. In the United States, the percentage of homeowners (in the total population) increases from 42% in the bottom quintile, to 66% on average in the second and third quintiles, and 87% in the top quintile.

Figure 2.12. **Homeownership among the over-65s by income decile**




*Source:* Authors' calculations based on EU-SILC Revision 1 of March 2013 for 23 OECD countries for the year 2011.

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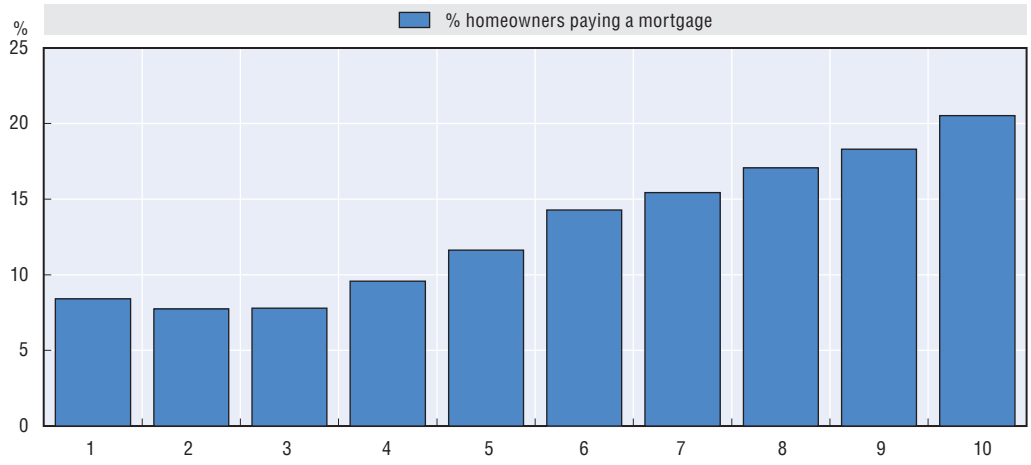
The share of elderly households with mortgages also increases with income. The number of households paying a mortgage is much lower in the lowest quartile of the income distribution than in the top income quartiles (Figure 2.13).

The housing cost burden is also unevenly spread across the income distribution. In the United States, for example, housing costs were, in 2011, 20% of household incomes among households with above-median incomes and 32% among moderate-income households – those with incomes of less than or equal to 50% of the area median income (Haas et al., 2012). The Australian Bureau of Statistics suggests that housing costs represent 26% of the incomes of households in the bottom deciles, 20% of those in the second and third deciles, and only between 10% and 15% of those in the higher-income deciles (ABS, 2013).

Figure 2.13. **Heads of households aged over 65 who are homeowners and paying a mortgage in 23 OECD-EU countries, 2011**

By income decile




*Source:* Authors' calculations based on EU-SILC Revision 1 of March 2013.

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Research from the Australian Housing and Urban Research Institute (AHURI) also reveals that, in 2007-08, 61% of the low-income households in Australia who bought a house spent more than 30% of their income on mortgage costs in the first four years after purchase and that they would be shouldering the same financial burden 14 years later (Hulse et al., 2010). By contrast, mortgage payments represented 30% of the income of "only" 20% of higher-income households, a percentage that would drop to 8% after 14 years. Estimates by the Australian National Housing Supply Council on the basis of data for the years 2009-10 are very similar (NHSC, 2012).

Similar outcomes emerge from the analysis of the European Union's Survey on Income and Living Conditions (EU-SILC) for the year 2011. In some countries (Denmark, Sweden, and Switzerland) the elderly suffer proportionately more than younger people from the housing cost overburden – i.e. when housing costs exceed 40% of the homeowner's equivalised disposable income.[17] In Spain, by contrast, the opposite is true (Eurostat, 2013; see also Pittini, 2012).

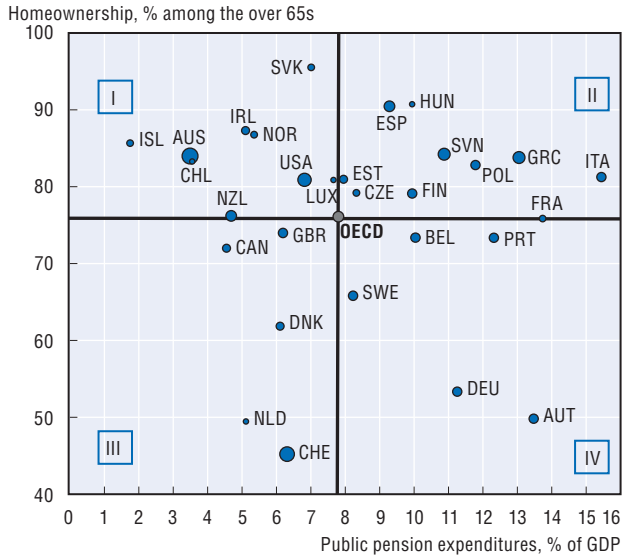
The situation of low-income elderly homeowners is particularly relevant to the discussion on retirement-income adequacy. The location of the house also matters. Low-income elderly people are more likely to own property in neighbourhoods and on land of lower value with less chance of appreciation over time. They consequently have dimmer prospects of selling their homes or releasing housing equity. In this regard, the 2012 report of the European Mortgage Federation (EMF) suggests that the year-on-year price-increase registered in France in the first quarter of 2012 was related to the rise in housing prices in Ile-de-France, the Greater Paris area, while in the rest of the country they decreased (see EMF, 2012). Large regional variations in house prices ranging from 4% rises to 8% drops in property prices were also observed in Poland and the United Kingdom. The bursting of the bubble in real estate markets in many countries has obviously made the situation worse, in particular for lower-income households.

### *Bringing pensions, housing and old-age poverty together*

A factor to consider in analysing the housing wealth of the elderly is how the generosity of the welfare state, in particular the pension system, may interact with homeownership (Fahey, 2004; Kemeny, 1992). Castles (1998) suggests that high levels of owner-occupation reduce the need for generous pensions. Accordingly, in less bountiful welfare states, people might invest in housing as a form of social protection, viewing homeownership as a means of securing their economic future (Kemeny, 1981, 2005). The "precautionary motive" also suggests that they may be aware of the relatively low old-age benefits provided by the state and so consider buying a house to secure future retirement income.

Using data from the OECD and the European Union, Figure 2.14 seeks to identify clusters of countries with respect to public pension expenditure, poverty, and homeownership among the elderly in the late 2000s. Public pension expenditure is taken as a proxy for pension generosity. It should be interpreted with caution, however, as high expenditure does not necessarily entail high pension benefits: people may actually receive relatively low benefits but have retired at an early age.

Figure 2.14. **Homeownership and pension expenditure**




*Note:* All the data refer to the late 2000s.
*Source:* Authors' calculations based on OECD Income Distribution Questionnaire for the old-age poverty rates, on EU-SILC and national information for homeownership, and on Indicator 6.2 in Chapter 6 of this publication for public expenditure on pension.

StatLink http://dx.doi.org/10.1787/888932936047

The size of the bubbles in the graph represents the scale of old-age poverty rates. Countries in the top-left quadrant – Australia, Chile, the United States, Iceland, Ireland, Luxembourg, and the Slovak Republic – show below-average levels of public pension expenditure and above-average rates of homeownership among the elderly. The rates of poverty among the elderly, however, differ substantially across those countries, as the different bubble sizes denote.

Countries in the top-right quadrant (II) boast above-average levels of both homeownership and public pension expenditure. With the exception of Hungary, where poverty among the elderly is low, their poverty rates are much more similar than in

quadrant (I). In the bottom-left quadrant (III), countries have below-average levels of public pension expenditure and homeownership and relatively low levels of poverty, the only exception being Switzerland. Finally, countries in the bottom-right quadrant (IV) show below-average levels of homeownership among the elderly combined with above-average public pension expenditure. In this group, Austria and Germany stand out.

Although Figure 2.14 does not depict them as such, some particularities characterise the countries represented. First, private pensions play a very important role in many of those in the first and third quadrants, while public pensions account for much of retirement incomes in most countries in quadrants II and IV. However, the size of the bubble seems smaller in countries with basic and minimum pension schemes (such as the Netherlands, Iceland, and Ireland) than in those with targeted pension schemes (e.g. Switzerland). Second, some of the countries in quadrant II (such as Portugal, Spain, Italy and Greece) are characterised by relatively low levels of social provision, while others represented in quadrants I and III have more liberal welfare regimes. Finally, there is a group of countries that stand out for their relatively low rates of elderly homeownership – Austria, Germany, the Netherlands, and Switzerland.

Significantly, what the graph also does *not* show is a clear nexus between housing and pensions. The inference that may be drawn is that other factors are more decisive in homeownership than retirement considerations and what people can expect to receive from pension systems. It also points to the difficulty of making housing wealth an important factor in retirement income policy. Homeownership is not distributed uniformly across populations, and national housing policies, individual preferences, and even local culture are probably powerful influences. Nor it is distributed evenly within populations, which makes the link between housing and pensions, if any, all the more difficult to establish.

The potential returns on and risks associated with housing investment also highlight the potential difficulty of including housing in assessments of the adequacy of retirement incomes. Large fluctuations in house-prices, such as those experienced during the financial and economic crisis, can dramatically and suddenly change the value of housing bought as a security against retirement, leaving retirees with little option but to change their financial retirement plans. Simulating the effect on household wealth of a 13.5% drop in housing prices (the size of the drop if 2005 housing prices were to return to their 2002-03 levels in the United States), Lusardi and Mitchell (2007) report that baby-boomers' properties would lose 10% of their total net worth on average.[18]

### *Homeownership in retirement incomes: The concept of imputed rent*

The income stream which owners could draw from their homes and "save" by living in them is commonly termed "imputed rent". The economic advantage of owner-occupied housing may also be viewed as the return on the capital invested in real estate (see Box 2.2).

The literature generally distinguishes three main methods to compute imputed rent: rental equivalence, user cost, and self-estimation which take different perspectives on the advantages of homeownership. The first method sees the advantage as a rent, which does not have to be paid. The second method, considers the advantage as a return on investment made in real-estate rather than investing in the financial market. The third method is based on personal estimates of the rent people would have to pay for their home.

Under the rental equivalence, or market-value, method, imputed rents are thus rents that would be paid for "similar" dwellings. However, the actual rent for an equivalent

### Box 2.2. **Remarks on the definition of imputed rents**

More than 45 years ago, the United Nations recommended including the economic advantage gained from owner-occupied housing in national accounts. Quoting the UN definition, Yates (1994) argues:

> "The total of owner-occupied dwellings which is to be included in gross output should, in principle, be valued at the rent on the market of the same facilities. It may be necessary to approximate the market rent by an estimate which should cover items such as operating, maintenance and repair outlays, water charges, insurance service charges, taxes, depreciation and mortgage interest in addition to interest on owner's investment in the dwelling and other elements of net return."

Yates' line of thinking suggests that imputed rent – the economic advantage to be gained from owner-occupied housing – coincides with the estimate of gross rents minus maintenance, operating, and insurance costs and taxes. As such, imputed rent is a component of the unearned income of private households and is classified in the same category as income from interest, dividends, and letting or leasing property (United Nations, 1977). The Canberra Group (2001) has also recommended including imputed net rent in calculations of disposable income in international surveys. Including imputed rents in disposable household income is a step towards a fuller and more accurate definition of material well-being (see also OECD, 2013a; and Canberra Group, 2011).

accommodation cannot always be found on the market because, for example, the rental sector might be very small or the characteristics of other rented properties very different from the one for which rent is imputed. In that event, the value of the actual rent has to be estimated by means of external price statistics or rental prices and other data. The method used in Australia to compute imputed rents belongs to this category.[19] Eurostat also recommends the indirect rental equivalence approach which involves estimating the rents of dwellings similar to those which are either owner-occupied or rented at reduced rates or free of charge, minus all relevant costs.[20]

User-cost methods determine imputed rents by estimating the costs that owners would consider when they set rents. In the capital-market approach, user costs are also the "opportunity costs" of making alternative use of capital on the capital markets – which would produce real income flows in the shape of interests and dividends. This opportunity cost represents the net return on home equity. The American Panel Study of Income Dynamics (PSID) and the British Household Panel Study (BHPS) both use the capital-market approach. In the PSID, the homeowner estimates the value of the owner-occupied dwelling from which he or she deducts the value of outstanding debt (such as mortgages). If the difference is positive, the imputed rent is calculated with an interest rate of 6% (Butrica and Jurkat, 1996). Only four other European countries (Estonia, Iceland, the Slovak Republic, and Sweden) have opted for the capital market approach (Junto and Rejo, 2010; Törmälehto and Sauli, 2013).

With the self-estimate approach, owners are asked directly to estimate the rent that they would have to pay if they lived in their homes as tenants. Such information has been collected, for example, in the German Socio-Economic Panel Household Survey.

Canada has adopted a more pragmatic, nuanced approach that accounts for the potential "housing advantage" which low-income homeowners may have over non-owners by adjusting its Market Basket Measure (MBM) of low income (see Box 2.3).

### Box 2.3. **How Canada includes the mortgage-free Homeowner's Advantage in its low-income measure**

The market basket measure (MBM) is a low-income measure based on the cost of a specific basket of goods and services comprising a modest, but decent, standard of living. It is made up of five components that represent typical living expenses for a reference family of two adults and two children: food, clothing and footwear, shelter, transportation, and other necessary goods and services. The total cost of the basket is calculated for 49 geographical areas in the 10 Canadian provinces. If a family's MBM disposable income is less than the cost of the basket, all members in the family are considered to be in the low-income bracket.

Originally, the shelter component of the MBM basket was based on the median rental shelter costs for two- and three-bedroom units (considered adequate to meet the housing needs of the reference family) in each geographical area of interest.

During the first MBM review process, it was decided that the specific shelter costs of homeowners without a mortgages should also be considered. The decision was prompted by the recognition that, in a given year, mortgage-free homeowners generally have to pay less than what they would for the same type of housing on the rental market.

To reflect the additional resources that mortgage-free homeowners enjoy thanks to their lower mandatory shelter costs, the following adjustment to their disposable income is applied:

- Calculate the shelter costs for mortgage-free homeowners. As for renters, they are based on the median shelter costs for two- and three-bedroom mortgage-free dwellings in each MBM region.
- Establish the Homeowners' Advantage by calculating the difference between homeowners' shelter costs and those of tenants.
- Adjust the disposable income of mortgage-free homeowners by adding the Homeowners' Advantage prevailing in their respective MBM region to their MBM disposable income.

Such an adjustment does not involve mortgage-free homeowners liquidating any assets. Adding the Homeowners' Advantage to mortgage-free homeowners' disposable incomes is an attempt to capture the global additional monetary resources available to them in a given year for purchasing the other goods and services included in the MBM basket.

The sheer diversity of approaches that different countries use makes it difficult to compare imputed rents internationally and should be borne in mind when interpreting results on a cross-country basis. For example, this section uses imputed rents net of owner-specific costs. The treatment of owner specific costs (such as taxes on properties, maintenance costs and interest on mortgages) may differ substantially across countries which may affect estimates of imputed rents. In this respect, Smeeding and Weinberg (2001) note that, "if net imputed rent is included in income, one must be careful that it is measured in a way that leads to greater international standardisation instead of nation-specific measures of its value".

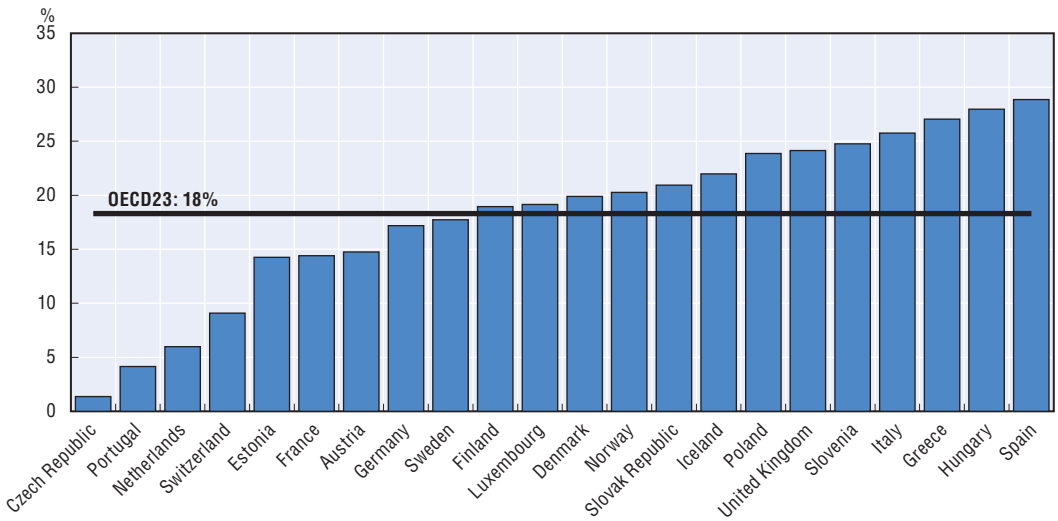
The effect of including imputed rents in income is shaped by several factors:

- Tenure status.
- The level and distribution of mortgage indebtedness.
- Types of housing support and fiscal incentives for home buyers and rent-payers.[21]
- The size and structure of the rental market.
- The methodology and approach used to compute imputed rents.

The Australian example illustrates the impact of outstanding mortgage payments: the value of the net (of owner-specific costs) imputed rent estimated for outright owners in 2009-10 was AUD 251, compared to only AUD 31 for owners with mortgages (ABS, 2012, Table 19).

Factoring imputed rents into income generally increases the disposable income of householders who own the dwelling they live in or rent at less than the going market rate. Among the 22 OECD countries with relatively comparable data collected by EU-SILC (Törmälehto and Sauli, 2013), the incomes of the over-65s rise by 18% on average when net imputed rent is added (Figure 2.15). The effects on incomes are substantial – between 20% and 29% – in Greece, Hungary, Iceland, Italy, Norway, Poland, Slovenia, the Slovak Republic, Spain, and the United Kingdom. The weakest effects, at around 5%, are observed in the Czech Republic, the Netherlands, and Portugal, while imputed rents account for some 10% to 15% of household equivalised disposable incomes in Austria, Estonia, France, and Germany. However, it is in Spain, which measures imputed rents with the rental equivalence method, that the resulting rise in disposable income is greatest.

Figure 2.15. **Net imputed rents as percentages of disposable income of the over-65s**




*Note:* Disposable income is defined as the equivalised (with the square root equivalence scale) income derived from the sum for all household members of gross personal income components from employment, self-employment, old-age pensions, survivor's benefit, disability benefit, sickness benefit, and education-related allowances. Incomes obtained from rented properties are also included. Similarly, allowances related to the family and children, housing allowances, regular inter-household cash transfers received, interests, dividends, profit from capital investments in unincorporated business, and income received by people aged under 16 – all are incorporated into income. The income is net of interest paid on mortgage, regular taxes on wealth owned, regular inter-household cash transfers paid, and tax on income and social insurance contributions. Income includes imputed rents.
*Source:* Authors' calculations based on data from EU-SILC Revision 1 of March 2013.

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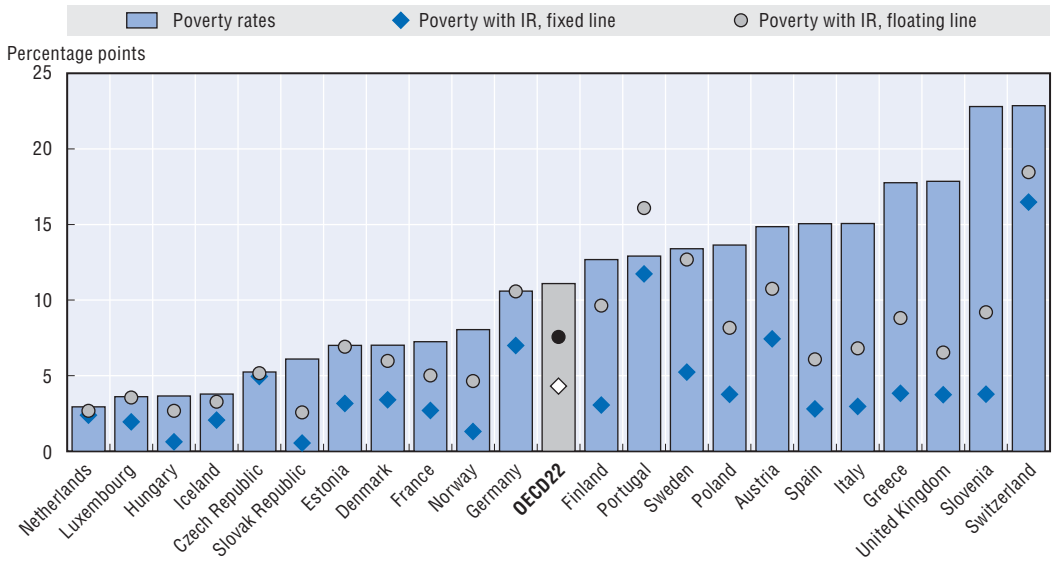
Recent studies also suggest that the impact on incomes is greatest among older homeowners who have paid off their mortgages, in particular if they are women living alone. As correctly noted in Eurostat (2013), "imputed rental equivalences can be over-estimated because the rental prices are abnormally high or under-estimated because the absence of rental price data leads to crude approximations from geographically large and

heterogeneous rental markets".[22] The imputation approach used in countries with very small private rental markets may also yield biased estimates of rents, thereby affecting the estimates of imputed rents.

Figure 2.16 shows poverty rates with fixed and floating poverty lines in selected European OECD countries before and after incorporating imputed rents. When the line is fixed, poverty is computed by comparing the incomes, augmented by net imputed rents, with the original poverty threshold calculated without imputed rent. With a floating line, poverty is computed with reference to a new income threshold that also includes the (net) imputed rent.

Figure 2.16. **Poverty rates among the over-65s before and after the inclusion of imputed rents (IR) in household income**




*Source:* Authors' calculations based on data from EU-SILC Revision 1 of March 2013.

StatLink http://dx.doi.org/10.1787/888932936085

In nearly all countries shown, poverty rates decline once imputed rents have been included. The reductions amount to around 7 percentage points when the poverty line is fixed and 3.5 when it is floating. On both metrics, the largest poverty reductions, above 60%, are observed in Slovenia and Spain. By contrast, imputed rents have almost no effect on reducing exposure to poverty in the Czech Republic, Estonia, Germany, or Luxembourg. Portugal's adoption of a floating poverty line actually leads to a greater risk of relative poverty among the elderly.

Decisive determinants of poverty reduction (linked to the consideration of imputed rents) among the elderly are their tenure status and levels of mortgage indebtedness. For Spain, Calvo and Sanchez (2010) show that the inclusion of imputed rents in household income does not substantially change the number of people considered poor and non-poor on the basis of where they live. The main changes in the composition of the poor population that result from including imputed rents in income are the type of households, the age of household members, and tenure status. The authors suggest that the inclusion of imputed rents reduces by more than half the poverty rates of the over-65s who live alone. In particular, the poverty rate affecting women aged over 65 falls by 10 percentage points.

The inclusion of imputed rents changes countries' old-age poverty-rate rankings. While the Netherlands, Luxembourg, Hungary and Iceland remain at the bottom of the poverty scale and Switzerland at the top both before and after imputed rents, all other countries experience significant shifts. Greece, Italy, Norway, Spain, and the United Kingdom, for example, all rank much better. Including imputed rent in incomes worsens the rankings of Finland, Germany, Portugal and Sweden because the reductions of poverty are smaller than those observed in other countries (D'Addio, 2013). Where housing equity is held mainly by households at the top of the income distribution, income from owner-occupied housing may deepen inequality among the elderly and explain why imputed rents may exert almost no effect on reducing poverty in some countries, like Luxembourg and the Netherlands.

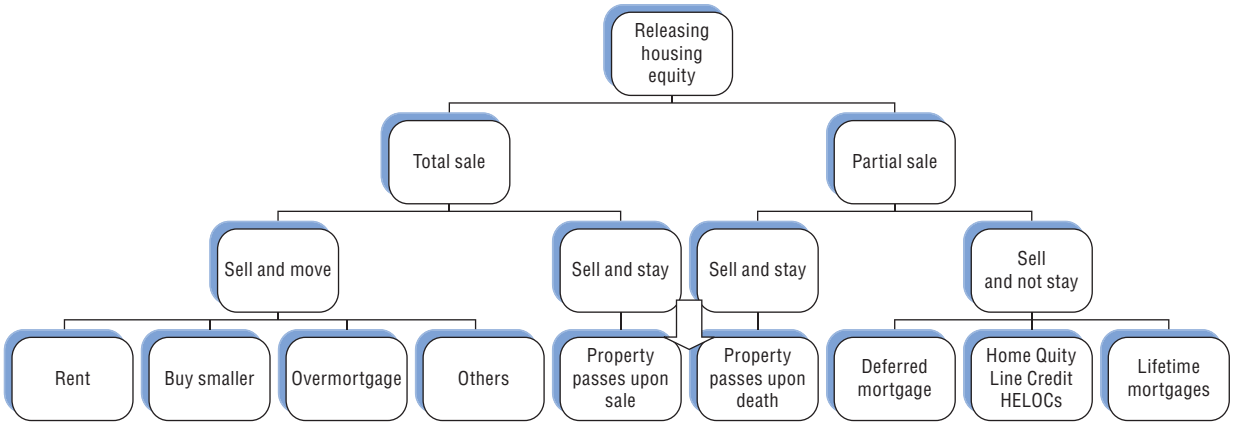
Impact also varies according to the size of the imputed rents themselves, which in turn is closely linked to housing equity values. The low level of imputed rents may, for example, explain why they have little or no effect in the Czech Republic.[23]

While the data suggest that the inclusion of imputed rents reduces poverty among the elderly in most countries, there remain a number of unresolved issues. They are linked to the different approaches used to compute imputed rents, to the lack of comparable data and to the quality of those available.

### *Releasing home equity*

There are different ways in which homeowners may cash out their housing wealth (Davey, 1995). They may transfer home equity by inheritance or sell it to secure some specific financing needs. Older people generally prefer to stay in their home as long as possible. In that event, as Figure 2.17 shows, they may cash in on all or part of their home equity by means of equity release schemes (ERS).

Figure 2.17. **Equity release schemes**




*Source:* Adapted from Ong, R., M. Haffner, G. Wood, T. Jefferson and S. Austen (2013), "Assets, Debt and the Drawdown of Housing Equity by an Ageing Population", *Positioning Overmortgage Paper*, No. 153, Australian Housing and Urban Research Institute, Melbourne.

ERSs allow homeowners to extract income from their housing wealth in order to support financing needs at different times of life. Schemes generally fit into two main categories: lifetime mortgage arrangements and home reversion plans in which all or part of the property is sold.

With a lifetime mortgage, homeowners take out loans on their property which do not need to be repaid until they eventually leave their home. Lifetime mortgages (also called annuity reverse mortgages or home income plans) may come as roll-up, fixed-repayment lifetime, or interest-paying mortgages. They differ both in the way interest payments are made and when they are paid.

The other main ERS is home reversion in which owners sell all or part of their home while continuing to live there. The price at which the owner sells his or her property is lower than the actual market value and takes into account the discount rate and homeowner's life expectancy. The seller may receive an annuity, a lump-sum, or a mix of the two.

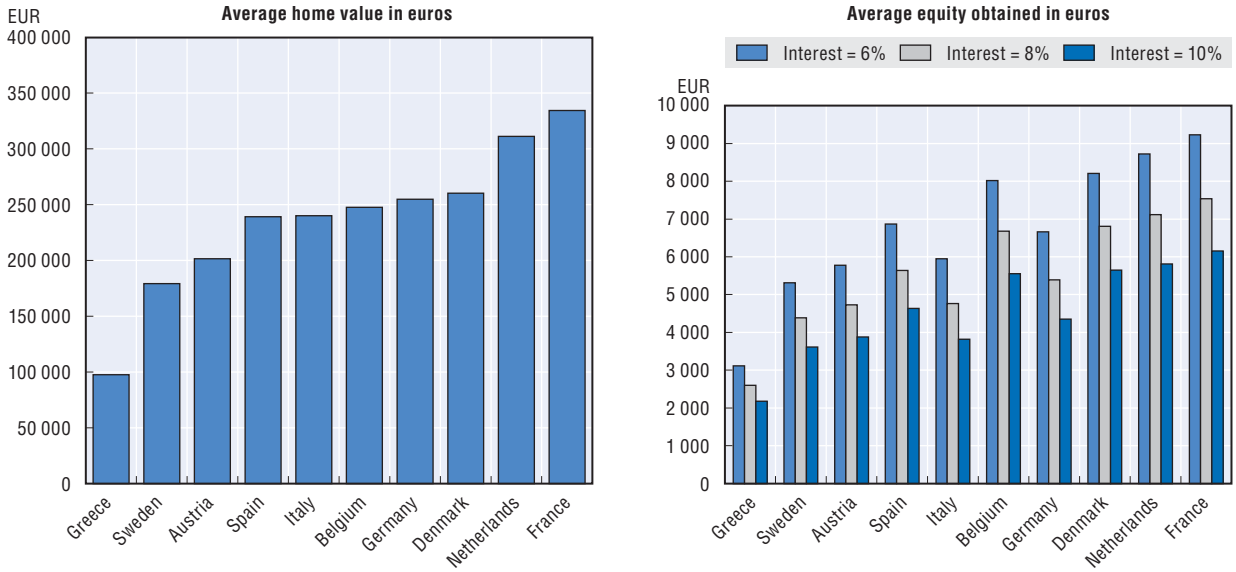
The amount of housing wealth that may be released varies across schemes, as do the costs and risks of the schemes themselves (Ong et al., 2013a and 2013). An outright home sale releases up to 100% of equity. In home reversion, that amount generally depends on the age of the borrower as well as on the value of the house. However, very few comparative studies exist on the state of the ERS market, which makes it difficult to assess its potential impact on retirement-income adequacy.[24] Nevertheless, the use of ERSs has spread steadily in Europe, North America, Australia, and New Zealand (Springer, 1985; Leather, 1990; Jacobs, 1985; Wilson, 1988; Carter, 1985),[25] fuelled by the development of housing and by deregulation and innovation in financial markets. Several recent studies find that younger cohorts, in particular, are increasingly willing to use equity release schemes in, for example, the United Kingdom (Smith, 2004), Australia (Ong et al., 2013a, 2013b), and New Zealand (Davey, 2007).

The available evidence suggests that the use and number of schemes vary widely across countries. Reifner et al. (2009a and 2009b) find that in Europe the total worth of equity release mortgages was about EUR 3.31 billion with an estimated 45 238 contracts in 2007.[26] Yet they still accounted for only around 0.1% of Europe's overall mortgage market. In Australia, the number of loans under equity release schemes more than doubled between 2005 and 2011, while substantial growth was also recorded in the United Kingdom between 1992 and 2011, both in value and number. New Zealand saw more than 4 500 ERS-related loans issued in 2006 for an overall value of NZD 227 million, twice as high as in the previous year. In the United States the number of loans issued under the Home Equity Conversion Mortgage (HECM) programme for people aged 62 and over peaked in (fiscal year) 2009 at 115 000 and fell to about 72 000 loans by 2011.In total, 740 000 loans were initiated under the HECM programme; about 582 000 are still outstanding. The size of the market is, however, relatively small. For example in 2010, when 24 million households headed by someone age 62 and older were homeowners only about 2 to 3% actually had a reverse mortgage (Bowen Bishop and Shan, 2008; see also CFPB, 2012).

Coda Moscarola et al. (2012) examined the worth of a reverse mortgage scheme for an average sample household in Italy and found that such plans could contribute sizably to retirement incomes. For low-income households with housing equity in the bottom 20% of the distribution, the annuity from a reverse mortgage would represent 11% of their income, while for those in the top 20% it would be 35%. Low-income households with average housing equity of around EUR 300 000 could draw an annuity from a reverse mortgage that would account for 24% of disposable income. Equity with the same average value would yield a 16% addition to middle-income households and 10% to low-income ones. Like Ong (2008), Coda Moscarola et al. (2012) suggest that among households with low incomes but above-average housing equity, ERSs benefit the over-80s and single females most.[27]

In a second study, Coda Moscarola et al. (2013) simulated the lump sum which could be extracted from a reverse mortgage in a number of selected European countries assuming interest rates of 6%, 7%, and 8% and a remaining life expectancy of 18.8 years.[28] The left-hand panel in Figure 2.18 shows the value in euros of the average home as supplied by the Survey of Health, Ageing and Retirement in Europe (SHARE) dataset for the countries under scrutiny. In the right-hand panel is the average annuity which the over-65s would receive if they converted 100% of their housing equity at the alternative interest rates of 6%, 7%, and 8%.[29]

Figure 2.18. **Reverse mortgage against 100% of housing equity taken out as an annuity**




*Note:* The value of a home is derived from answers to the question asked in the SHARE questionnaire: "In your opinion, how much would you receive if you sold your property today?" For the computation of average equity, the authors assumed that all over-65s decide to convert their housing equity fully into an annuity at interest rates of 6%, 8%, or 10%.
*Source:* Coda Moscarola, F., A.C. D'Addio, M.C. Rossi and D. Sansone (2013), "Making Assets a Tool Against Poverty?", SHARE conference, November, forthcoming.

StatLink http://dx.doi.org/10.1787/888932936104

Obviously, differences in the value of housing equity reported in the survey are not strictly comparable and likely to depend on individual preferences and tastes and country-specific circumstances. Bearing that caveat in mind, Coda Moscarola et al. (2013) examine the impact of annuities from reverse mortgages on poverty against a poverty line that is set at 60% of equivalised income, unlike the OECD which uses a 50% threshold and three alternative interest rates.[30]

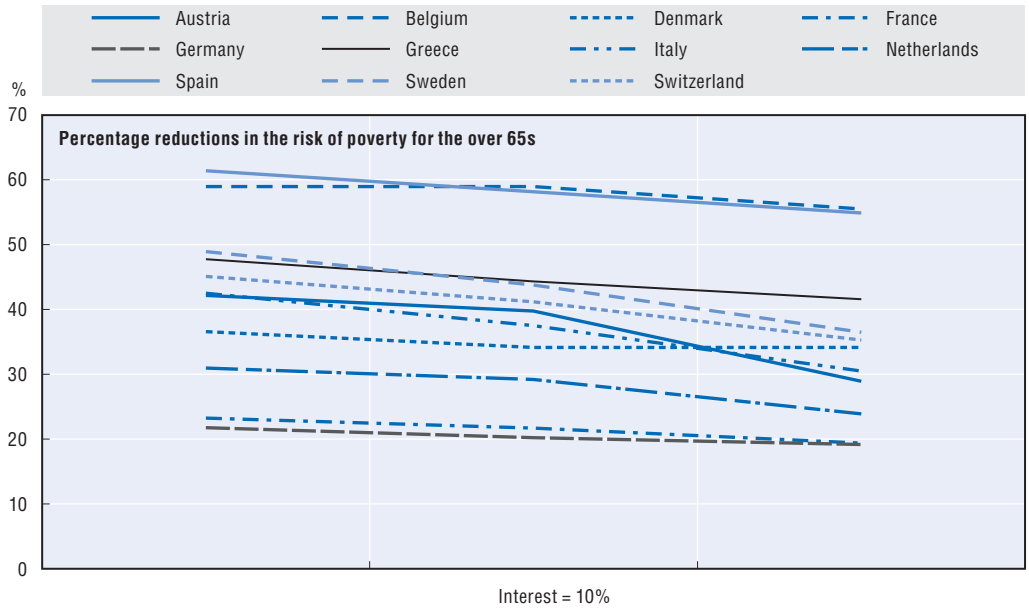
Using real data on homeownership Coda Moscarola et al. (2013) find that reverse mortgage annuities obtained releasing 100% of housing equity bring about very large reductions in poverty in Belgium and Spain cutting it by more than half. Even in Austria, France, Greece and Italy they have a substantial impact. One reason might be that, as poor people are very close to the poverty threshold, annuities from reverse mortgages could just lift them out of poverty.

In reality, the elderly are highly unlikely to convert all their housing equity into cash income – either because they may wish to bequeath their estate or out of sheer precaution. If they were to release their housing wealth fully, they might also run the risk of squandering their savings and, with life expectancy being uncertain, find themselves with

very inadequate resources. However, Coda Moscarola et al. (2013) show that if they released only 50% of their housing equity, they would substantially enhance their incomes. In Belgium, Denmark, Spain, and Switzerland, poverty would fall by one-third or more, though not by as much in Germany and Sweden.

Finally, the gains from reverse mortgages can be realised only if homeowners are well informed about their options for releasing home equity. In the first place, they need to actually know that financial institutions offer such policies at reasonable rates, particularly for low-income clients, since the annuity value declines as the interest rates increases and rises with declining life expectancy.[31] Homeowners should also feel able to deal with the red tape that converting their home equity would pose.

Figure 2.19. **Poverty reduction as a result of including home-equity annuities in income**




*Note:* The x-axis shows the alternative interest rates used to compute the annuity. The y-axis shows percentage reductions in the risk of poverty for the over-65s and measured with reference to the 60% of the household equivalised income drawn from the SHARE survey.
*Source:* Authors' calculations based on data in Coda Moscarola, F., A.C. D'Addio, M.C. Rossi and D. Sansone (2013), "Making Assets a Tool Against Poverty?", SHARE conference, November, forthcoming, and using the 1st and 2nd waves of the SHARE survey.

StatLink http://dx.doi.org/10.1787/888932936123

### *Financial wealth*

Households save for retirement and other purposes. Financial assets encompass deposit accounts, bonds, stocks, mutual investment funds, life insurance, and investment and financial assets that include pensions.[32] Drawing on two main sources, this section analyses such financial wealth and the part it plays in adequate retirement incomes.

The first source is the Luxembourg Wealth Study (LWS) which examines financial and non-financial assets and liabilities in 11 OECD countries, albeit with a lengthy time lag.[33] The variable drawn from the LWS defines financial wealth as the sum of the value of deposit accounts, stocks, bonds and other mutual funds, but not pensions, whether mandatory or voluntary.

The second source is the 1st wave of the Eurosystem Household Finance and Consumption Survey (HCFS). It was publicly released in May 2013 and supplies comparable data on assets in euro area countries (Eurosystem Household Finance and Consumption Network, 2013a and 2013b).[34] The variable drawn from the Eurosystem HFCS defines financial assets as the sum of the values of investments in private businesses (but not the self-employed), sight accounts, saving accounts, mutual funds, bonds, shares, managed accounts, "other" assets, private loans, voluntary pension plans, and whole life insurance schemes. However, it excludes public and occupational pension plans (see Box 2.4 on funded private pensions).

The main obstacle to analysing the distribution of financial wealth in OECD countries is that comparable data are still scarce. While the reader should bear this limitation in mind, examining the data that *are* available can inform the debate on the adequacy of retirement incomes.

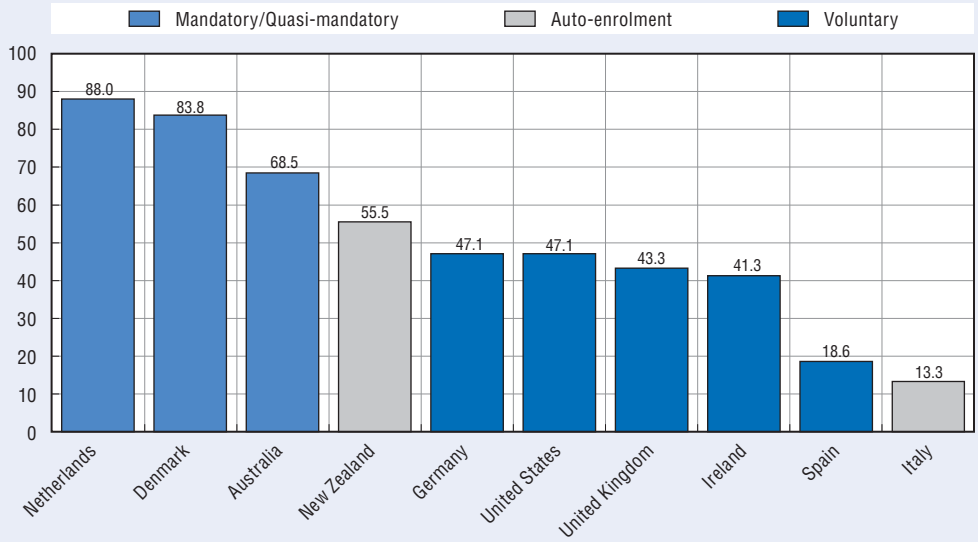
### Box 2.4. **Coverage of funded private pensions**

Private pensions are expected to play an increasingly important role in the income of future retirees. They are mandatory or quasi-mandatory in 13 OECD countries. In most of them, payments are paid as monthly benefits which are captured by income measures.

For voluntary pensions, lump-sum withdrawals are more common. In 20 OECD countries, funded pension systems are voluntary – employers decide on a voluntary basis whether to draw up pension plans for their employees. Among such countries, New Zealand has experienced a substantial increase in coverage thanks to the introduction of automatic enrolment and government subsidies. Until the introduction of the "KiwiSaver" scheme in 2007, coverage had declined to less than 10% of the working-age population. By 2010, "KiwiSaver" had built up coverage to 55%.

**Coverage of private pension plans in selected OECD countries, 2009-10**

As a percentage of the working-age population




*Source:* OECD (2012), *OECD Pensions Outlook 2012*, Chapter 4, OECD Publishing, *http://dx.doi.org/10.1787/9789264169401-en.*

StatLink *http://dx.doi.org/10.1787/888932936142*

Box 2.4. **Coverage of funded private pensions** *(cont.)*

Italy, however, has been less successful in widening coverage following the introduction of automatic enrolment in 2007, with private pension plans covering only 13.3% of the working-age population by the end of 2010. The United Kingdom introduced an automatic enrolment scheme in October 2012, so it is still too early to evaluate coverage.

In order to understand coverage gaps and their implications for retirement-income adequacy – especially in countries where private pensions are voluntary – coverage needs to be broken down into its different socio-economic facets. OECD (2012a) contains household data indicators on coverage from private pensions in eight OECD countries (Australia, Germany, Ireland, Italy, the Netherlands, Spain, the United Kingdom, and the United States). They apply to age, income, gender, type of employment (full-time or part-time), and type of contract (permanent or temporary). The OECD analysis shows that coverage is uneven, particularly in voluntary private pension systems, and some population groups have very low enrolment rates in private pension plans.

Younger people tend to be less often enrolled in privately managed funded pensions, especially in voluntary ones. However, their coverage increases with age. In contrast, coverage is relatively constant across age groups in mandatory or quasi-mandatory private pension plans, as Australia and the Netherlands illustrate.

Coverage, particularly of voluntary plans, also increases with income before generally reaching a plateau after the 7th or 8th income deciles. Among the poorest income groups, however, voluntary scheme coverage is quite low – around 15% – except in the United States where it reaches 29%. By contrast, the mandatory/quasi-mandatory systems of Australia and the Netherlands plateau out much earlier – after the 2nd or 3rd deciles – and coverage of the poorest income groups exceeds 65%.

There is also a gap in coverage by gender. The wide gap is observed in the Netherlands, where voluntary personal pension plan coverage of men exceeds that of women by 16.4 percentage points. Next comes Ireland (10.3 percentage points), Italy (5.4), and Spain (3.0). In Germany, the United Kingdom, and the United States, the coverage gender gap is negligible.

*Source:* OECD (2014), *OECD Reviews of Pension Systems: Ireland*, forthcoming; OECD (2012), *OECD Pensions Outlook 2012*, Chapter 4, OECD Publishing, *http://dx.doi.org/10.1787/9789264169401-en*; Antolin, P., S. Payet and J. Yermo (2012), "Coverage of Private Pension Systems: Evidence and Policy Options", *OECD Working Paper on Finance, Insurance and Private Pensions*, No. 20, OECD Publishing, *http://dx.doi.org/10.1787/5k94d6gh2w6c-en*.

### *Mean and median financial wealth reveals wide disparities*

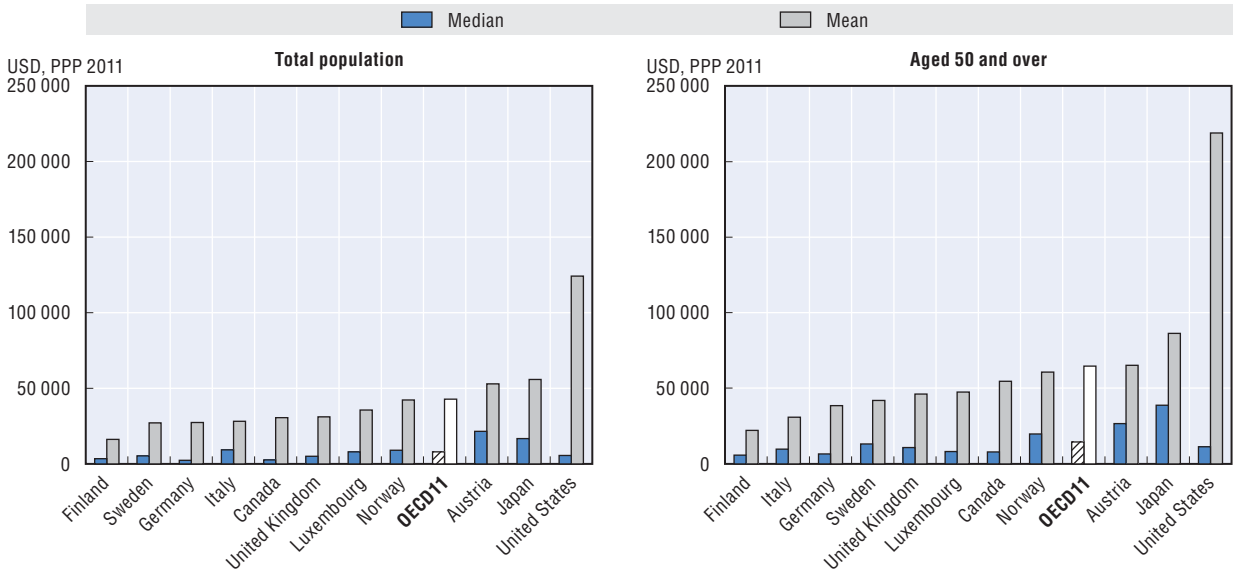
Figure 2.20 illustrates households' mean and median financial wealth expressed in 2011 USD purchasing power parity (PPP) in countries studied in the LWS. While the mean reflects the simple average, the median shows the value which divides the population into two equal parts: one-half below the median line, the other half above. When the distribution is very unequal, as it is with financial wealth, the median is much lower than the mean.

Using comparable data from the LWS, average median wealth across the whole population is about USD 8 200. It ranges from USD 2 600 (at 2011 PPP rates) in Germany to almost USD 22 000 in Austria. Average mean wealth is much higher – at about USD 43 100 – ranging from about USD 16 300 in Finland to USD 124 000 in the United States.

Examination of older age groups shows that median financial wealth in the over-50s age group is USD 14 300, while mean wealth amounts to about USD 63 000. Differences across countries are again very wide, with median wealth ranging from USD 5 600 in Finland to almost USD 39 000 in Japan and mean wealth from USD 22 000 in Finland to USD 219 000 in the United States.

Figure 2.20. **Median and mean financial wealth, 2011**

2011 USD, in purchasing power parities




*Source:* Authors' calculations based on data from the Luxembourg Wealth Study (LWS).

StatLink http://dx.doi.org/10.1787/888932936161

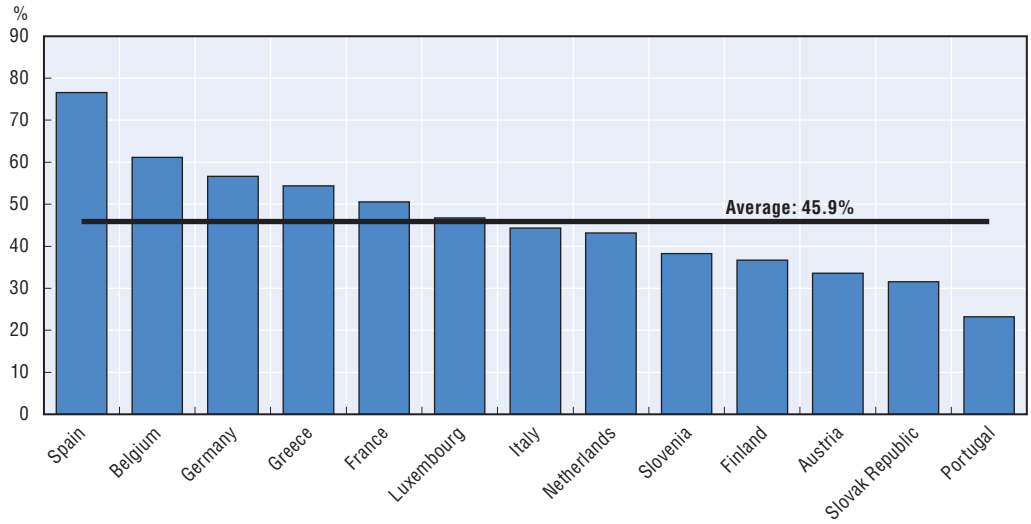
Data from the Eurosystem HFCS paints a very similar picture for euro area countries,[35] where 94% of the elderly held some form of financial wealth in 2010-11. The highest shares of older people without wealth are found in Slovenia and Greece (around 25%), while in Finland and Luxembourg close to 100% of the elderly had some form of financial wealth. Mean financial wealth was about EUR 120 000 in the euro area's total population in 2010, ranging from EUR 7 700 in the Slovak Republic to more than EUR 260 000 in Spain. Median wealth, however, was much lower at EUR 20 000 on average, with EUR 3 000 in the Slovak Republic at one end of the spectrum and EUR 69 000 in the Netherlands at the other.

There is a large gender gap in wealth holdings: women possess much less. Among the countries depicted in Figure 2.21, the gender wealth gap in old age is about 46% on average.[36] Countries where the gap is widest are Belgium, France, Germany, Greece and Spain (see also D'Addio et al., 2013).

The uneven distribution of financial wealth is also clearly visible in Figure 2.22, which shows the approximation of the Lorenz Curve based on ECB data. The x-axis sorts households by wealth deciles, while the cumulative proportion of financial wealth held by households lies along the y-axis. A perfectly equal distribution would describe a straight 45-degree line showing that each 10% of population held exactly 10% of the overall wealth. The larger the distance of the actual curve from the 45-degree line, the higher the inequality in the distribution of financial wealth. LWS data yield the same result. In the 13 OECD countries in Figure 2.22, the top 30% of the wealth distribution hold more than two-thirds of the financial wealth.

Wolff (2012) points out that in 2010 the richest 1% of the United States' population owned 42.1% of private held financial wealth, the next 19% owned 53.5%%, and the bottom 80% only 4.7%. While the top 1%'s share of total wealth remained broadly stable

Figure 2.21. **(Mean) gender wealth gap among the over-65s**




*Source:* Authors' calculations based on data from the first wave of the Eurosystem Household Finance and Consumption Survey (HCFs).

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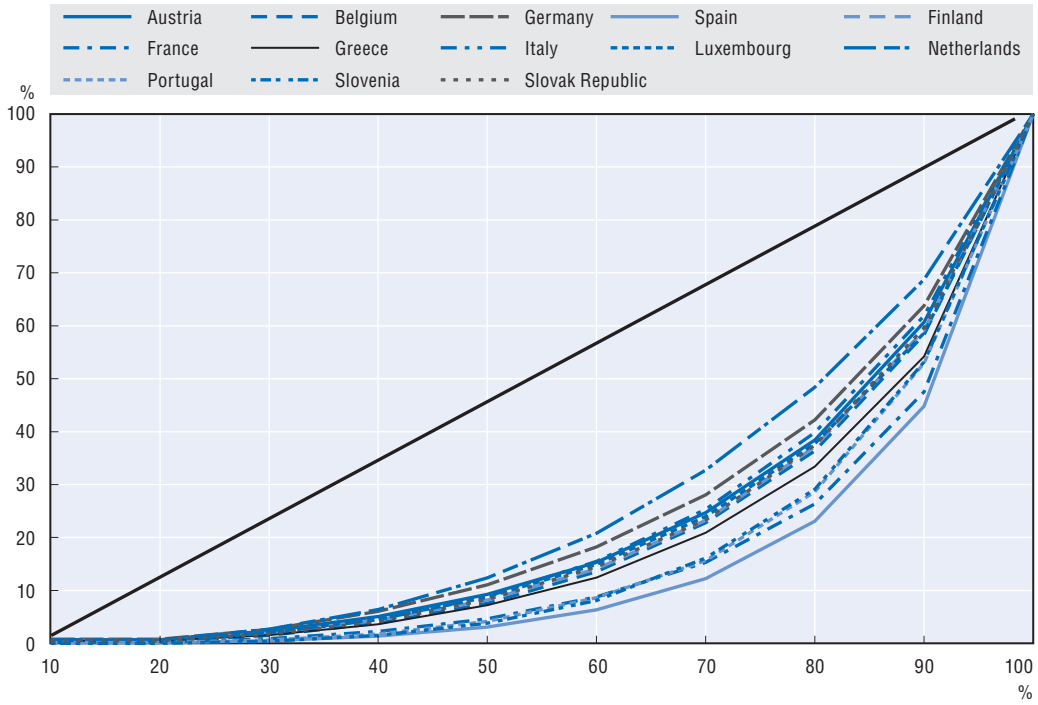
Figure 2.22. **Distribution of financial wealth**




*Source:* Authors' calculations based on data from the first wave of the Eurosystem Household Finance and Consumption Survey (HCFs) in 2013.

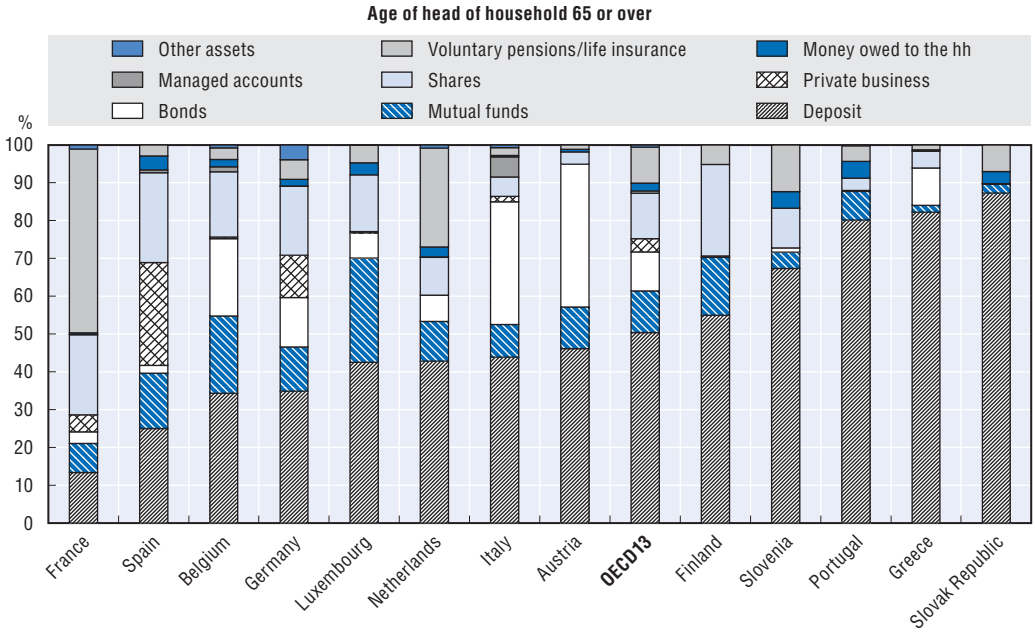
StatLink http://dx.doi.org/10.1787/888932936199

between 2007 and 2010, the wealth of the bottom 80% declined by 2.3 percentage points. During the same period, those in the top 19% saw their wealth increase by more than 3 percentage points (ibid., Domhoff, 2013).

Figure 2.23 shows an average "wealth portfolio" held by the over 65s in the thirteen OECD countries covered by the HCFS. The portfolio is 50% deposit accounts, 12% equities, 11% mutual funds, 10% bonds, 9% voluntary pensions or life insurance, 3.5% private business (not the self-employed), and the remaining 3% residual categories of assets like managed accounts and money owed to the household. Only Belgium, France, Germany and Spain have wealth holdings in cash deposits of less than 40% of total financial assets, which suggest that in most countries in Figure 2.23 the elderly's wealth holdings are mainly liquid. Savings in the form of shares, mutual funds, and investments in private businesses account for more than 40% of the total wealth portfolios of the elderly in Germany, Luxembourg and Spain.

Figure 2.23. **Breakdown of wealth in selected OECD countries, 2010-11**

Age of head of household 65 or over




*Source:* Authors' calculations based on data from the first wave of the Eurosystem Household Finance and Consumption Survey (HCFs) in 2013.

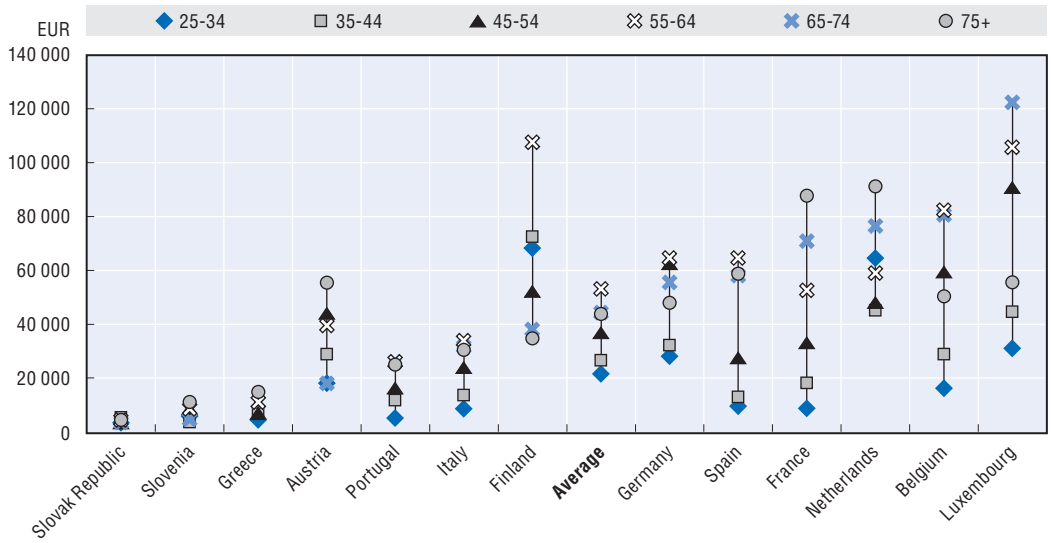
StatLink http://dx.doi.org/10.1787/888932936218

Beyond individual tastes, the propensity to invest in specific forms of wealth holdings is also shaped by institutional factors, such as the structure of the pension system, the financial products available, and the tax treatment of different investments. For example, the voluntary pensions/life insurance component in the wealth holdings of the elderly is very large in France, where it represents 48% of their assets – due to specific tax breaks for putting savings in life insurance products.

### *Dissaving and income streams*

The HCFS data also show that average gross wealth generally increases between the ages of 25 and 64 years old. It declines thereafter, when people generally start to dissave (Figure 2.24). Average median gross wealth peaks between 55 and 64 years old at around EUR 53 000. But that average figure masks wide differences across countries. In Finland, for example, the median wealth of people aged between 55 and 64 is above EUR 107 000, while in the Slovak Republic it is only about EUR 4 400. It is interesting to note that in the Netherlands and France wealth increases in an almost linear manner with age.

Figure 2.24. **Median financial wealth by age group**




*Source:* Authors' calculations based on data from the first wave of the Eurosystem Household Finance and Consumption Survey (HCFs) released in 2013.

StatLink http://dx.doi.org/10.1787/888932936237

Income from financial wealth comes in the form of interest payments, dividends, and capital gains. Converting financial wealth can generate an income stream that supplements other sources of retirement income, since people gradually draw down their savings as they advance into old age. They follow very different patterns when they do so, however.

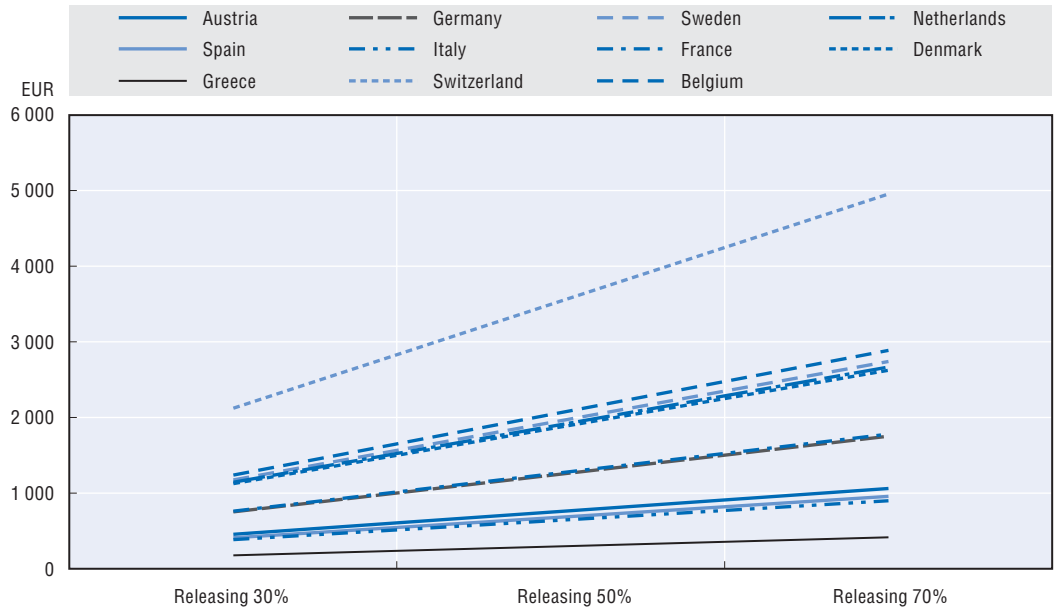
Bloom et al. (2006) report that, in the United States, people's savings increase from their early 30s up to retirement and decline thereafter. However, the authors do not find any clear dissaving trend between the ages of 65 and 75 (see also Bloom and Canning, 2006). Börsch Supan et al. (2003) describe similar patterns for Germany and find Germans actually never stop saving. Hayashi et al. (1988) show that in the United States retirees dissave on average about one-third of their peak wealth over retirement. The remainder, which consists mostly of housing wealth, is left as bequests. They compare American practices with patterns observed among the elderly in Japan and report big differences between couple-households (living with or without children) and single households – while the former keep on saving, the latter dissave (see also Hayashi, 1989). Studies based on the SHARE dataset for European countries show that savings and dissavings rates hinge on socio-economic factors. Health, income and the distribution of wealth also affect dissaving in old age, as does the availability of and access to financial products, such as annuities, which can help retirees secure a regular income until the ends of their lives (see e.g. Romiti and Rossi, 2012).

Drawing on data from the LWS, Annex 2.A1 shows an example of how annuities are calculated through a combination of standard techniques from actuarial and income-distribution analysis that transforms stocks of wealth into a lifelong stream of income. The results of the analysis suggest that the income streams obtained from the conversion of financial wealth tend to be smaller than those from housing wealth. In the 11 OECD countries considered by the LWS, converting financial wealth can produce incomes that range from USD 68 in Finland to USD 453 in the United States. But these national average figures do not yield any very informative conclusions, given the highly unequal distribution of financial wealth in most countries.

Median values tell a different story, however. In all the countries analysed, with the exception of Austria and Japan, one-half of the population could convert their stock of financial wealth into annuities of less than USD 30. The distribution of annuities is very close to that of stocks of wealth: they increase at higher quintiles.

Coda Moscarola et al. (2012) adopt a similar procedure for calculating annuities. Taking an interest rate of 2.5%, they report annuities varying from EUR 415 in Greece to around EUR 4 955 in Switzerland for those over-65s who decide to convert 70% of their financial wealth. Lower annuities are obviously obtained by releasing lower shares of wealth and values are higher if interest rates rise (see Figure 2.25). Unfortunately, consistent estimates of the extent to which annuities contribute to reduce poverty are not available.

Figure 2.25. **Annuities obtained by releasing different percentage of total financial wealth**




*Source:* Authors' calculations based on the results provided in Coda Moscarola, F., E. Fornero, A. Romiti, M.C. Rossi and D. Sansone (2012b), "Is Housing an Impediment to Consumption Smoothing?", CERP, Italy on the second wave of the SHARE data.

StatLink http://dx.doi.org/10.1787/888932936256

Because of the very unequal distribution of financial wealth, the scale of poverty reduction is likely to be related to the characteristics of the households who hold such wealth and to the properties of pension systems (in other words, whether the private component is voluntary or mandatory). Moreover, where financial wealth is concentrated primarily at the top of the income distribution, the income that it yields has only a limited effect on reducing poverty.

Finally, the cost of annuities is an important factor in individual decisions to convert financial wealth. For example, the duration over which payment is made significantly affects its cost. With a term annuity there is a defined period over which payments are made to the retiree. By contrast, with a life annuity the socio-economic position of the insured person (gender, marital status, health, etc.) needs to be taken into account. Life annuities are typically illiquid and inflexible, and nor do they allow for bequests. They are

also expensive, given that only individuals who expect to live a long retirement will be interested in purchasing them. Moreover, sales commissions and the paperwork costs of annuities are often considerable, which makes them unattractive and even unaffordable for lower income groups.

### *Publicly provided services*

OECD governments provide a wide range of social services, from healthcare and education to social housing (see Verbist et al., 2012; Verbist and Matsaganis, 2012; D'Addio and Cavalleri, 2013). Some services – such as homecare, institutional care, and recreational and rehabilitation support – are of particular importance to the elderly and can represent a substantial cost for elderly households if they are purchased privately.

#### *In-kind public eldercare growing but still limited*

Some countries also offer other services to the elderly, such as free public transport, television and radio licences, or electricity and gas allowances. Ireland, for example, has a scheme, the Household Benefits Package, which is means-tested for people aged 65 to 69 and available to all from the age of 70. In Australia, services for the elderly are provided through a large number of government programmes at federal, state and territory, and local levels. There is a particularly strong provision for the oldest-old – people aged between 75 and 80 years.

In the OECD area, expenditure on publicly provided services for the whole population averaged 14.6% of GDP in 2009, slightly above the value of corresponding cash transfers (12.6%). Mexico, Chile, Korea, Iceland, and Australia spend much more on services than on cash transfers. By contrast, many EU countries – particularly Austria, Italy, Poland, and Greece – focus far more heavily on cash transfers (Figure 2.26).

In-kind benefits have grown faster than cash transfers in recent years. Between 2000 and 2009, spending on in-kind benefits[37] in the OECD rose by 2.5 percentage points of GDP, while cash transfers[38] grew by 1.5. The same patterns are not observed from country to country, however. For example, the relative share of public services grew significantly in Chile, Australia, Slovenia, New Zealand, and the Netherlands, whereas cash benefits rose more steeply in Mexico, Iceland, Ireland, and Portugal.

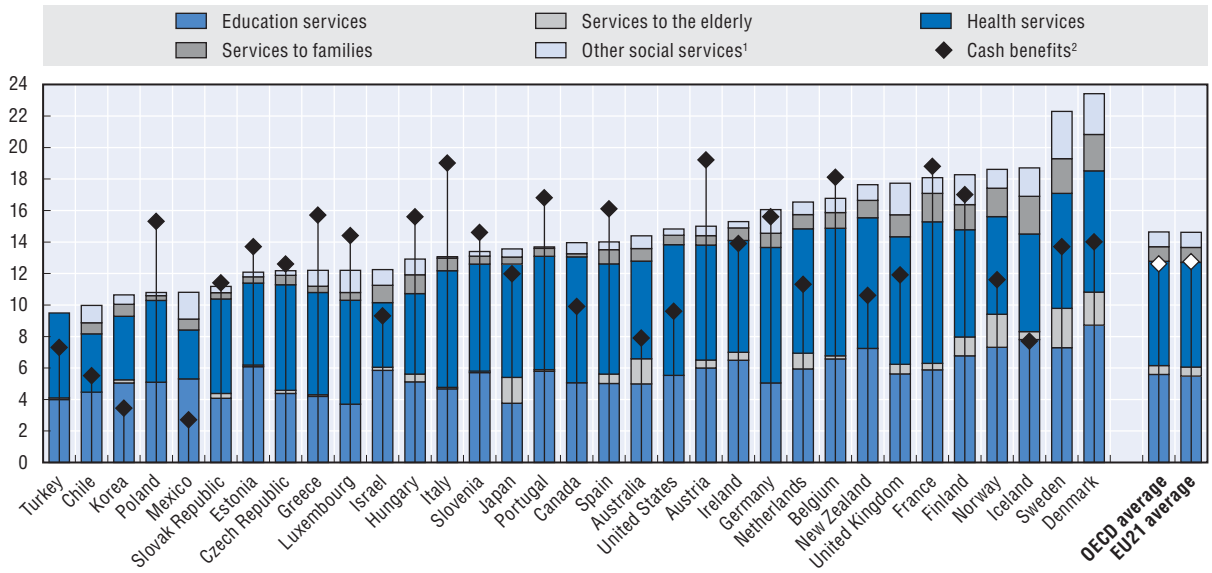
The largest component of public expenditure on in-kind social benefits are education and healthcare services, with education accounting for 5.8% of GDP and healthcare 6.6% in 2009. Care services for the elderly are still a minor component, accounting for an average of 0.6% of GDP, although they have developed more widely in Japan, Australia, the Nordic countries, and the Netherlands. Recent projections from the European Commission (2012), however, point to eldercare costs doubling – and possibly tripling – by 2060 in the EU area as populations age. The increase will exceed 3 percentage points of GDP in Denmark, Norway, and the Netherlands.

#### *The costs of care and caring*

Paying for long-term care can have dramatic consequences for the adequacy of retirement incomes (OECD, 2011; OECD, 2014b). The OECD 2011 report *Help Wanted? Providing and Paying for Long-Term Care* shows that the costs associated with low care needs (i.e. ten hours per week) may rise to very high levels at old ages (65 and over) and account for more than 60% of a senior's available income up to the fourth decile (Figure 2.27). Care

Figure 2.26. **Gross public spending by type of benefit for the total population, cash and in-kind, 2009**

As a percentage of GDP




*Note:* Countries are ranked in ascending order of total expenditure on all social services. Data on education services in Greece, Luxembourg and Turkey refer to 2005.

1. "Other social services" include services to survivors, disabled persons, the unemployed, social assistance and housing services, though estimates of social housing are not included.
2. "Cash benefits" encompass cash transfers to the elderly, survivors, disabled persons, families, the unemployed, as well as transfers for social assistance.

*Source:* *OECD Social Expenditure Database*, *OECD Education Database*.

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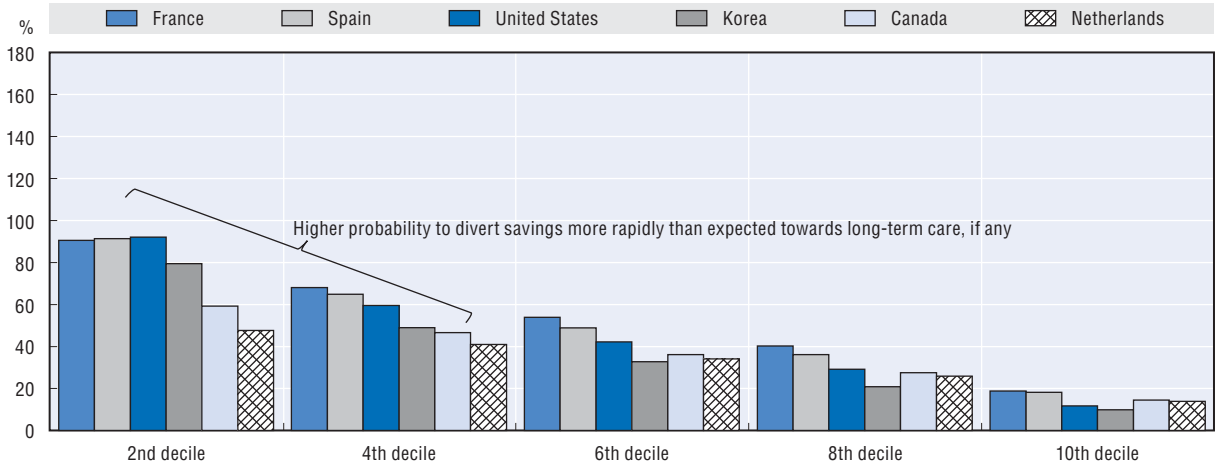
Figure 2.27. **Cost associated with (low-) care needs at old age (65 and over)**

Share of adjusted disposable income for individuals 65 years and over in different income deciles, mid-2000s




*Note:* Low-care need is defined as 43.33 hours of care per month, at the prevailing rate per hour, excluding public subsidies, in each respective country.

*Source:* OECD (2011), *Help Wanted? Providing and Paying for Long-Term Care*, OECD Publishing, *www.oecd.org/health/longtermcare/helpwanted*; OECD (2014), *Women and Pensions*, OECD Publishing, forthcoming.

StatLink http://dx.doi.org/10.1787/888932936294

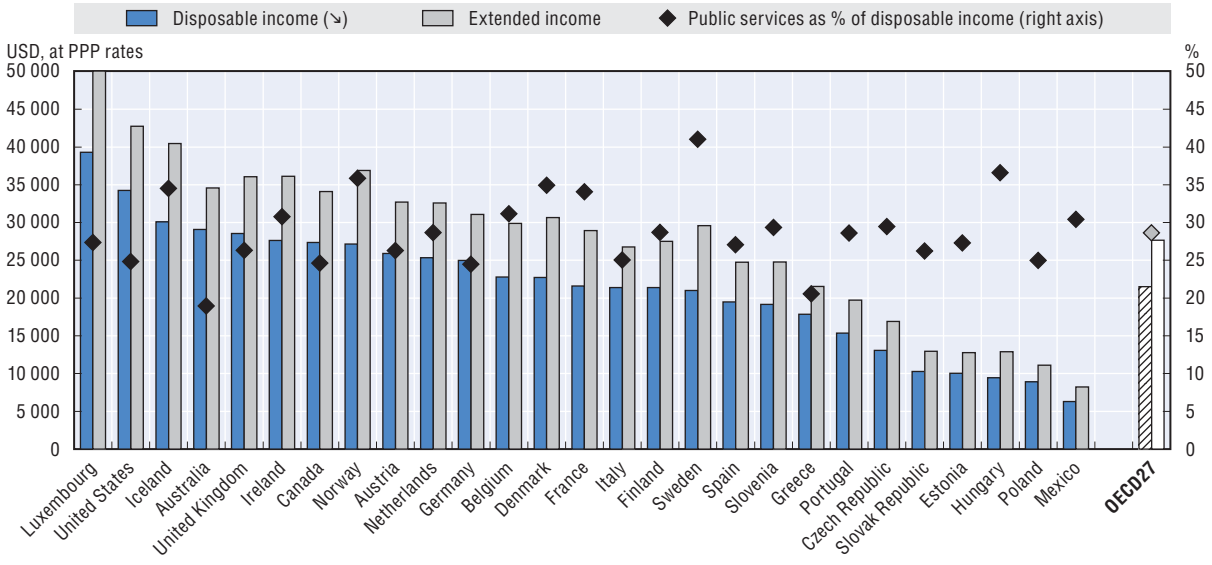
costs that meet a wide range of needs (25 hours a week) may exceed 60% of disposable incomes up to the eighth decile (OECD, 2011c). Women, whose life expectancy is longer and who have lower pensions and less wealth are particularly exposed to old-age poverty when they begin to need long-term care (OECD, 2014b).

OECD estimates suggest that the share of full-time equivalent nurses and personal carers – who currently represent between 1% and 2% of the total workforce – could more than double by 2050. Close to two-thirds of family carers are women who forego periods of paid work to look after their near and dear. In some countries, they even carry out much intensive care (more than 20 hours a week). In Southern Europe, the Czech Republic, and Poland, more than 30% of family carers provide intensive care, with the share even higher in Spain (over 50%) and Korea (over 60%). While care can alleviate the poverty risk to which old people are exposed, it jeopardises the adequacy of carers' future retirement entitlements, as the vast majority are not sufficiently covered by pension systems.

### *Public services boost retirement-income adequacy*

Taken together and with respect to the whole population, education, healthcare, childcare, eldercare and social housing services enhance households' incomes by 28.8% on average in 27 OECD countries, with the largest aggregate effects in Sweden (41%) and the lowest in Australia (19%) (Figure 2.28). Healthcare services, in particular, lift incomes by an average of 14%, particularly in France (17.9%) and Sweden (17.2%), but much less in the Netherlands (10.9%). Everywhere eldercare services still account for a small share of public expenditure, however. Accordingly, their average income-enhancing potential remains low at 1.8%, although in Sweden, the Netherlands, and Norway they contribute around 5% to household incomes.

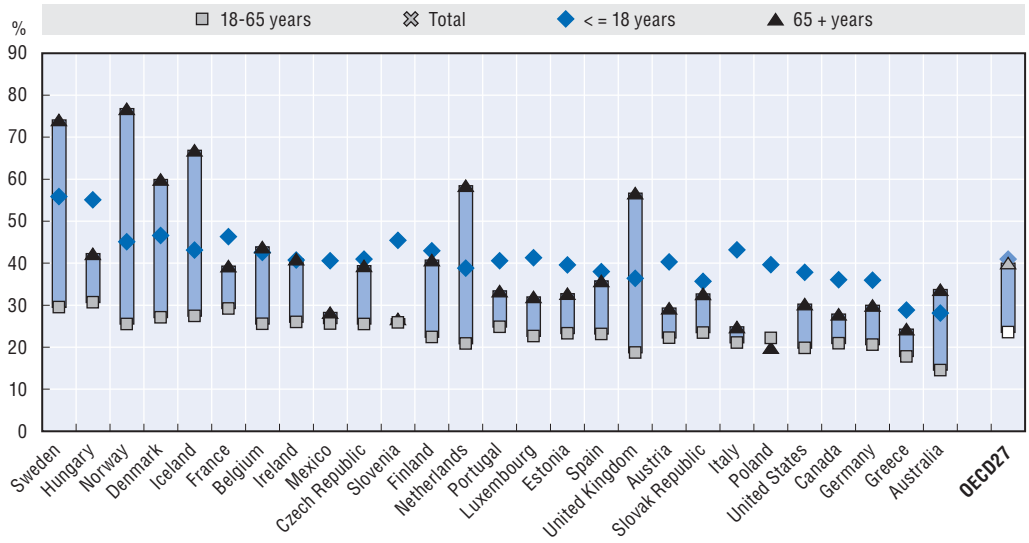
Figure 2.28. **Income-enhancing effect of public services in the total population, 2007**




*Note:* Income data for each country are adjusted for inflation (when they refer to a year different from 2007) before being converted into USD based on PPP rates for actual consumption in 2007. This exchange rate expresses the costs of a standard basket of consumer goods and services purchased on the market or provided free of charge (or at subsidised rates) by the public sector in different countries.
*Source:* Verbist, G., M. Förster and M. Vaalavuo (2012), "The Impact of Publicly Provided Services on the Distribution of Resources: Review of New Results and Methods", *OECD Social, Employment and Migration Working Papers*, No. 130, OECD Publishing, *http://dx.doi.org/10.1787/5k9h363c5szq-en*.
StatLink *http://dx.doi.org/10.1787/888932936313*

Figure 2.29 also suggests also that public services are likely to benefit the elderly more than the working-age population: about 40% of older people's extended income is made up of in-kind public services, compared to 24% for the working-age population at large. However, in some countries the share of public services in the disposable income of the elderly is much larger: it exceeds 70% in Sweden and Norway and 60% in Iceland and Denmark.

Figure 2.29. **Income-enhancing effect of public services by age, 2007**




*Note:* Income data for each country are the per capita net equivalised disposable income of people aged 65 and above. The equivalence scale is the square root of household size. Income data is taken from the *OECD Income Distribution Database* and refers to the mid-2000s. Income is adjusted for inflation and then converted into USD at the relevant PPP rates.

*Source:* Verbist, G., M. Förster and M. Vaalavuo (2012), "The Impact of Publicly Provided Services on the Distribution of Resources: Review of New Results and Methods", *OECD Social, Employment and Migration Working Papers*, No. 30, OECD Publishing, *http://dx.doi.org/10.1787/5k9h363c5szq-en*; and *OECD Income Distribution Database*, *www.oecd.org/social/income-distribution-database.htm*.

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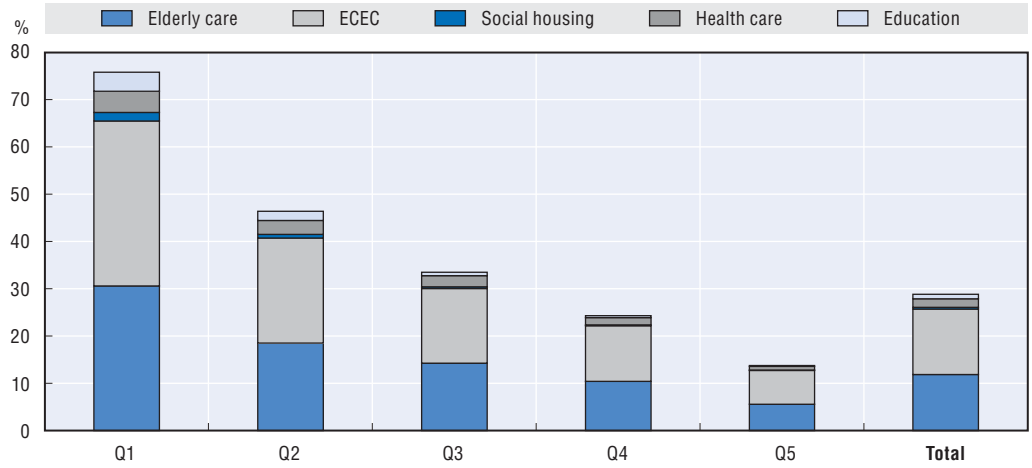
Public services, particularly health- and eldercare, play an important part in enhancing household incomes at the bottom of the income distribution. Verbist et al. (2012) find that the aggregate value of services represents an average of 76% of the disposable incomes of the poorest 20%, but only 14% of those of the richest 20% (Figure 2.30).

Looking in particular at long-term care, Verbist et al. (2012) stress their redistributive impact in that people towards the bottom of the income distribution benefit most (Figure 2.31). In Northern European countries for example, the bottom quintile are the recipients of between 40% and 50% of long-term care: on average in the 14 OECD countries in Figure 2.31, long-term in-kind care benefits boost incomes among the bottom quintile by more than one-third and incomes among the top quintile by less than one-fifth (Verbist et al., 2012).

Publicly provided services reduce poverty in the total population by an average of 46% with a floating poverty line. As Figure 2.31 shows, the result is a fall from 10% to 6% in the average poverty rate of the 14 OECD countries under scrutiny. The sharpest reductions are observed in Ireland, Belgium, and the United Kingdom (down by about 60%) and the smallest in Estonia and Sweden (27%). Poverty rates are between 6% and 18% when

Figure 2.30. **Impact of in-kind services on households' disposable income across the quintiles of the income distribution, total population, 2007**




*Source:* Verbist, G., M. Förster and M. Vaalavuo (2012), "The Impact of Publicly Provided Services on the Distribution of Resources: Review of New Results and Methods", *OECD Social, Employment and Migration Working Papers*, No. 130, OECD Publishing, *http://dx.doi.org/10.1787/5k9h363c5szq-en*.

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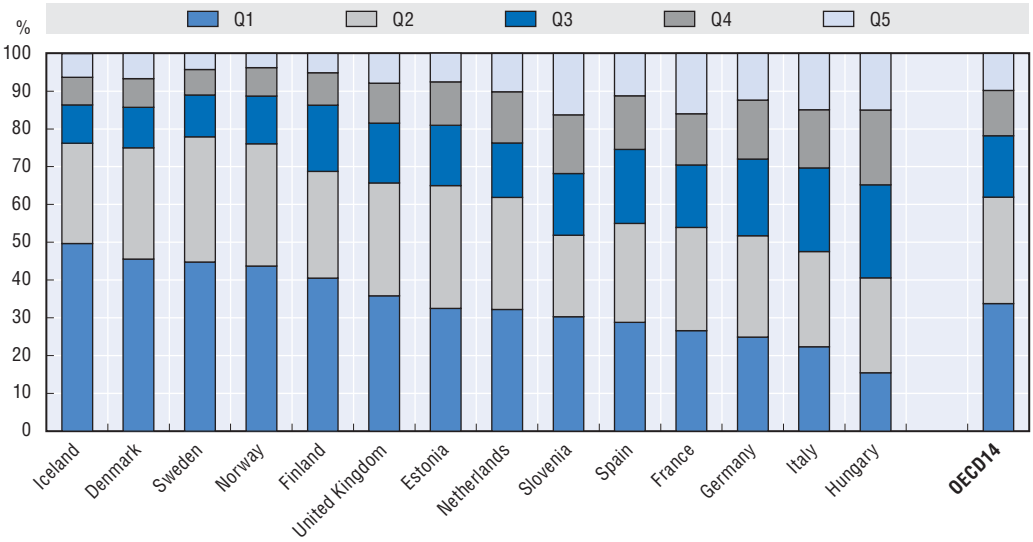
Figure 2.31. **Distribution of long-term care in-kind benefits over quintiles**

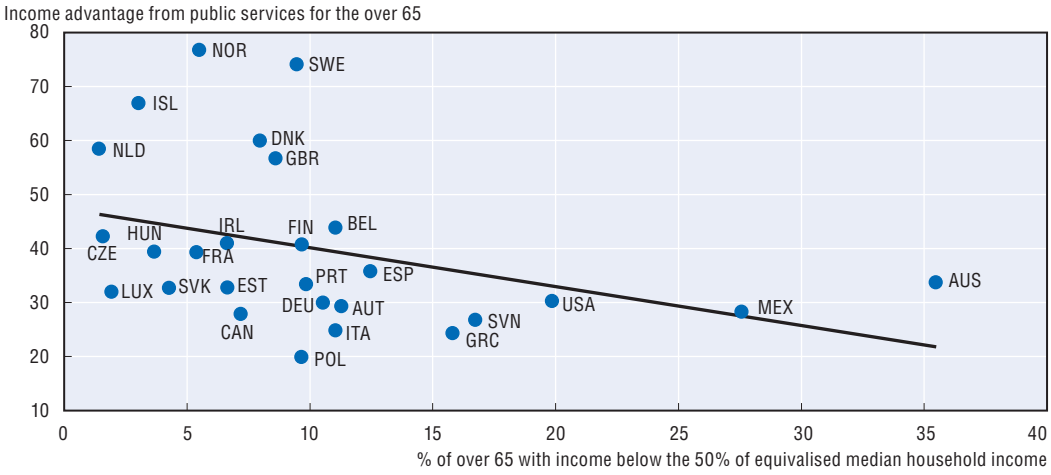



*Source:* Verbist, G., M. Förster and M. Vaalavuo (2012), "The Impact of Publicly Provided Services on the Distribution of Resources: Review of New Results and Methods", *OECD Social, Employment and Migration Working Papers*, No. 130, OECD Publishing, *http://dx.doi.org/10.1787/5k9h363c5szq-en*.

StatLink http://dx.doi.org/10.1787/888932936370

calculated for disposable income without public services, but decline to between 3% and 10% when services are factored in.[39] Results also reveal the key part that public services can play in helping the elderly maintain adequate incomes over retirement. Figure 2.32 shows, in addition, that where services have the greatest income-enhancing effect, old age poverty rates are lower.

Figure 2.32. **In-kind benefits enhance elderly incomes and reduce old age poverty rates, 2007**




*Source:* Authors' calculation based on data from Verbist, G., M. Förster and M. Vaalavuo (2012), "The Impact of Publicly Provided Services on the Distribution of Resources: Review of New Results and Methods", *OECD Social, Employment and Migration Working Papers*, No. 130, OECD Publishing, *http://dx.doi.org/10.1787/5k9h363c5szq-en*, and data OECD Income Distribution Questionnaire.

StatLink *http://dx.doi.org/10.1787/888932936389*

Broadening the income concept to include the value of publicly provided services is important for an accurate, comprehensive evaluation of the adequacy of retirement incomes. Across the OECD the mix of cash transfers and in-kind services varies from country to country. Some make wider use of public services and recipients' incomes increase substantially when they are taken into account. As the analysis has shown, services play a crucial role in elderly well-being and should therefore be an integral part of any adequate retirement income package.

## Summary and conclusions

This chapter examined the adequacy of retirement incomes from a wider perspective than merely the pension entitlements of current and future retirees. As living standards in retirement are also influenced by a range of other factors, the analysis looked at the impact of housing wealth, financial wealth, and the value of publicly-provided services on the adequacy of elderly people's incomes.

### *Multiple sources of retirement income*

In OECD countries the average monetary living standards of older people, aged 65 and over, are generally high today. They stand at about 86% of the total population's level of disposable income, ranging from close to 100% in Luxembourg and France to just under 75% in Australia, Denmark, and Estonia.

Retirees in OECD countries receive their incomes from different sources, which vary widely across countries. In some, such as France, Hungary, and Austria, public transfers make up the bulk of retirement incomes. In other countries, capital incomes – especially from private pension schemes – play an important role. Examples are Canada, Israel, and the Netherlands. In other countries still, like Chile, Japan, Korea and Mexico, many older people work and earn a substantial share of their retirement income in the labour market. Everywhere, however, low-income retirees rely almost exclusively on public pensions and other income transfers.

### *Reduction of old-age poverty: a policy success*

The reduction of old-age poverty over the decades has been one of the greatest successes of social policy in OECD countries. In 2010, the average OECD poverty rate among the elderly was 12.8% – down, in spite of the Great Recession, from 15.1% in 2007. Only Canada, Poland and Turkey saw a rise in old-age poverty over that period. In many countries, younger age groups are now at higher risk of poverty than the elderly. Low old-age poverty is also reflected in the relatively low numbers of older people who receive safety-net benefits in OECD countries.

That being said, through stigma, lack of information on entitlement, and other factors, not all elderly people who need last-resort benefits claim them. There is thus a certain degree of hidden old-age poverty.

### *Homeownership is an asset in retirement*

To paint a more complete picture of pensioners' retirement needs, this chapter examined other factors which affect their living standards: housing wealth, financial wealth, and access to publicly-provided services, such as health and long-term care services. A major obstacle to a comprehensive assessment, however, is the lack of internationally comparable data. Bearing this constraint in mind, the analysis showed that homeownership can make a substantial contribution to pensioners' living standards – they enjoy the financial advantage of living in their own homes and can, when necessary, convert their property into cash through sale, rent, or reverse mortgage schemes.

Homeownership rises with age: on average, 77% of over-55s are homeowners, compared to 60% of under-45s. However, the extent to which the elderly have or have not paid off their mortgages varies considerably from country to country. More than one in five elderly homeowners in Europe are still paying off their mortgages. In Switzerland, only 40% of older people are outright homeowners, compared to more than 90% in Hungary and the Slovak Republic, and around 80% in Australia, Chile and the United States.

In European countries, homeownership is more common among higher-income groups. Yet, even among the poorest 10% of the elderly, almost 70% are homeowners. In Canada, more than 90% of over-70s in the highest income decile own their homes. Indeed, outstanding mortgage obligations are bigger and more widespread among higher-income retirees than among poorer ones.

### *Imputed rent boosts income, drops poverty*

The monetary benefit that people derive from living in their own homes is known as "imputed rent". Different countries use different methods to calculate it, so comparing the results internationally is difficult. Nevertheless, adding imputed rent to the disposable income of the elderly increases it by an average of 18% in countries where data are available. The country where housing makes its biggest contribution to disposable income, increasing it by 29%, is Spain.

Adding imputed rent also reduces old-age poverty rates. Poverty among the elderly declines in selected European countries by an average of 7 percentage points against a fixed poverty threshold of 50% of the median equivalised disposable income. It also falls – by 3.5% – against a floating poverty line drawn from a higher median income that includes imputed rent. Again, data are available only for a limited set of countries, which makes OECD-wide cross-country comparisons impossible.

Housing wealth can also provide a stream of income in retirement through the use of reverse mortgages. Such schemes are not yet very common, however, and only Australia, the United Kingdom, and the United States have made any real use of them and even then, only sparingly. Reverse mortgages remain a comparative rarity in Europe for the time being, though they are set to become more widespread in the future, particularly to finance long-term care needs.

While housing wealth can substantially raise retirees' living standards, owning a house does not necessarily mean that they need less resources in old age. First, housing is not only an asset, but a consumption good, too. Owners need to spend money on the upkeep of their homes, costs that should be factored into their incomes. Second, housing values change over time and place, while population ageing is poised to set in motion strong social and economic shifts that will introduce considerable uncertainty into retirement planning. Third, housing owned by lower-income groups is likely to be of considerably lower value than the properties of the richest retirees. Whether turning housing wealth into an income flow is a feasible option will likely depend on the homeowner's position in the income distribution.

### *Data scarcity hampers analysis of retirement potential of wealth*

The paucity of consistent data is most acute with regard to the financial wealth of the elderly. There are little recent internationally comparable data on which to base analysis. Using what evidence is available, this chapter finds that wealth of the elderly is very unequally distributed and that there are wide wealth gender gaps among the over-65s that are to the disadvantage of older women. As a consequence, the potential contribution of drawing down financial wealth to bolster retirement income is limited. Those most likely to reap the benefits are rich retirees. But is not the adequacy of their retirement income and standards of living which concerns policy makers.

Housing and financial wealth supplement public pension benefits. They do not, in their own right, appear to be sources of income that can be expected to replace a proper pension income. Better internationally comparable data are urgently needed to explore in greater detail how housing and financial wealth can contribute to the adequacy of retirement incomes.

### *Public services: Retirement enhancers*

Publicly provided services, on the other hand, increase retirees' incomes considerably. This is especially true of healthcare and long-term care services, though countries also provide other services such as free transport, TV licences, or free participation in cultural and social activities. Publicly provided in-kind services add value to retirement: they enhance the income of the elderly by an average of 40%, compared to 24% among the working-age population. In some Nordic countries, the share of services in the disposable income of the elderly is as high as 70%. The analysis presented here also shows that services benefit the poorest retirees much more than they do richer elderly households.

Public in-kind services reduce poverty in the total population by an average of 46%, while old-age poverty is lower in countries where the provision of services is strong. The contribution of long-term care, however, which by definition is focused on the elderly, is still small. Few countries are spending much on it as yet, although they will be in the future. Public support is set to play a more and more crucial role in preventing old-age poverty among people requiring health and long-term care services.

### *The outlook for pensions*

There are number of adequacy-related factors which this chapter has not addressed in detail but are the focus of ongoing work in the OECD. As public pension entitlements will remain the backbone of retirement income provision in most countries, it is essential that people should continue paying in contributions to build future pension entitlements and ensure coverage.

The OECD analysis of pension reforms in the previous chapter shows that future entitlements will generally be lower and that not all countries have built in special protection for low earners. People who do not have full contribution careers will struggle to achieve adequate retirement incomes under public schemes. The same is true for private pension plans, perhaps even more so, given that they are not commonly redistributive. For some countries, pension system coverage in a broader sense is also still a challenge. Examples are Mexico, Chile, and Turkey, as well as many emerging economies, where coverage is low due to large informal sectors.

Although these policy challenges have not been covered here, the OECD publication *OECD Pensions Outlook* addresses them in detail.

### *Notes*

1. See for example European Union (2012a) and Whitehouse et al. (2011).
2. These indicators are published both by Eurostat and the OECD. See for example OECD (2008) and OECD (2009, 2011a, 2011b).
3. Administrative data are best used to compute current replacement rates which show what current pensioners actually get from the pension system. Pension replacement rates can also be used to assess future pension benefits by applying current rules to workers who will be retiring in the future; this method is the focus of the OECD's pension models.
4. Haig (1921) and Simons (1938). Goode (1977) argues persuasively that von Schanz anticipated the Haig-Simons definition in 1896 and so prefers "Schanz-Haig-Simons".
5. Non-recurring incomes derive from infrequent or unusual events such as the sale of assets, the settlement of insurance contracts, etc.
6. A capital gain is accrued when the value of the asset increases. The gains are realised when the owner sells the asset and cashes in the gains.
7. Smeeding and Moon (1980) have compared alternative methods for the evaluation of a set of services, finding negligible differences between the cost of production and more subjective metrics such as the utility value.
8. See OECD website, "Going social: the great tax-benefit balancing act" on wages and benefits indicators, *www.oecd.org/els/benefitsandwagesoecdindicators.htm*.
9. Eurosystem (2009) provides information on housing taxation across European countries (see also EMF, 2012). Information on the taxation of the different forms of assets is more scarce. The International Organization of Pension Supervisors (IOPS) does, however, provide some (IOPS, 2008).
10. The scales take into consideration that households' needs do not grow proportionally with the number of family members (whether adults or children) (OECD, 2011b). Different methods may be used to determine the number of consumption units, many of which are reviewed in Atkinson et al. (1995). The factors commonly taken into account for assigning values to units are the size of the household and the age of its members (whether adults or children). The scales most commonly used are:
    - The OECD-equivalence scale, which assigns a value of 1 to the first household member, of 0.7 to each additional adult, and 0.5 to each child.
    - The OECD-modified scale which assigns a value of 1 to the household head, 0.5 to each additional adult member, and 0.3 to each child.
    - The square-root scale which divides household income by the square root of household size.

11. For example, in Canada, being "unattached" is the single biggest risk factor for low income among the elderly: about 80% of low-income seniors are unattached.

12. Because both the equivalence scales and the thresholds used differ, the Eurostat and OECD poverty measures do not overlap.

13. Currently, the structure of the EU-SILC database allows the analysis of material deprivation across five main domains or groups of items: *i)* economic strain; *ii)* economic strains linked to accommodation; *iii)* (enforced lack of) durables or consumption deprivation; *iv)* housing deprivation; and *v)* the environment of the dwelling. Other authors distinguish between "basic" and "secondary" forms of deprivation. Recent studies by Eurostat, for example, use the housing and environment dimensions of deprivation in the primary indicator (see Guio and Maquet, 2007).

14. This number is likely to be lower among the entire population, the 87% referring to tax-filers only.

15. Recent estimates of old-age poverty in the United States measured with the new supplemental poverty measure (SPT) suggests that it is quite close to the "traditional" estimate, around 15% or 16%. But the age composition differs: according to SPT, old-age poverty is higher (15%) than the traditional measure (9%) – see Figure 5 in *www.census.gov/prod/2012pubs/p60-244.pdf*. The main difference between the official estimate and the SPT is that the latter factors in taxes and some in-kind transfers (Short, 2012).

16. See also, Flores Rodriguez (2009), and Salles and de la Paz López (2008).

17. In the United States and Australia, the threshold to determine the housing cost overburden is generally set at 30% of household disposable income.

18. See also Moriizumi, and Naoi (2012).

19. For example, the Australian Bureau of Statistics (ABS) uses hedonic regression to estimate the market value of the rental equivalent of an owner-occupied dwelling (ABS, 2008). Data on the rents paid by private tenants are regressed on some dwelling characteristics (e.g. location and dwelling structure) and the estimates are subsequently used to produce imputed values for the rental equivalence of owner-occupied and other dwellings rented at below-market values.

20. See also Brown et al. (2010), Milligan (2008), Lafrance and LaRochelle-Côté (2011), Pendakur (1998 and 2001).

21. This category should, for example, include subsidies for homeowners for refurbishment and maintenance work (e.g. for energy efficiency), and tax deductions granted on interest paid on mortgages, benefits for tenants who rent accommodation at below-market prices. Subsidies designed to encourage the building of homes for particular groups of individuals should also be considered.

22. The size of rental markets varies across countries from less than 10% in the Eastern European countries, Iceland, and Spain to nearly 40% in Germany.

23. Another reason may be that the rental market is relatively small and the share of households living in reduced-rent or rent-free dwellings is significant, as in Poland and the Czech Republic.

24. Examples are Reifner et al. (2009a and 2009b) and Reifner et al. (2010) who analyse the market in Europe; Ong et al. (2013a and 2013b) who compare the schemes in Australia, Finland, Germany, the Netherlands, the United Kingdom and the United States; Coda Moscarola et al. (2012) who compare the market in Australia, Italy, New Zealand, the United Kingdom and the United States; and Davey (2007) who compares the schemes in Britain and New Zealand. See also Rossi and Sansone (2013) and Mitchell and Piggot (2003).

25. Ong et al. (2013a and 2013b) refer to housing equity withdrawal schemes (HEW).

26. See also Reifner et al. (2010).

27. The results also suggest that housing could have a sizeable income-enhancing effect in Italy because many low-income households are homeowners. For example, Italy's national Inland Revenue agency (the Agenzia delle Entrate) reported that 71% of homeowners declare total revenues of below EUR 26 000 and that they account for 79% of total taxpayers. One-quarter of those with revenues below EUR 10 000 are also homeowners (see Agenzia delle entrate, 2012).

28. As the authors note, the present discounted value of a home depends on the interest rate and life expectancy. Obviously, for reasons of simple algebra, the value is high when life expectancy is short and the interest rate low. An interest rate of 8% would bring the present value of the same home for the same 65-year old individual down to EUR 34 843 and an interest rate of 10% would bring it down to EUR 24 835 on average.

29. For reasons of scale Switzerland is not reported in Figure 2.18: the value of a home is the highest at more than EUR 870 000. The annuities, too, are high – more than EUR 23 000 with an interest rate of 6% and EUR 15 000 with an interest rate of 10%.

30. The poverty rate is defined with respect to the Eurostat poverty threshold in 2005.

31. Assume, for example, average housing equity for a 65-year-old in 2004 and 2006 of around EUR 146 000. With a life expectancy of 18.8 years (as calculated by Eurostat) at the age of 65 and an annual interest rate of 6%, the present value of the home would be around EUR 49 250. With an interest rate of 8% the present value of the house for the same 65-year-old drops to EUR 34 843, while with an interest rate of 10% it falls to EUR 24 835. To take into account the preferences of the financial providers, the authors also assume that 5 years are added to the life expectancy of the borrowers. As a consequence, a borrower whose house is worth EUR 100 000 and who has a life expectancy of 12 years would obtain an annuity of EUR 3 544 instead of EUR 5 928 with a 6% interest rate. The annuities are computed using the following formula:

$$Annuity = House\ value\ \frac{r}{(1+r)^{life\ expectancy\ +\ 5\ -1}}.$$

Where $r$ is the interest rate applied and life expectancy is the life expectancy of th. e youngest member of the couple.

32. The fiscal treatment of wealth goes beyond the scope of this report, though it may heavily affect investment choices. Broadly speaking, there are three main types of wealth taxes: 1) a tax on the net worth of wealth; 2) a tax on capital transfers (such as inheritance tax gift tax); 3) a tax on capital gains. Many such taxes exist in European and OECD countries, although the revenues they raise are relatively small. According to OECD (2011d), 1% of total revenues were derived from wealth taxes in the OECD in 2010. The most common form of wealth taxation is still the capital gains tax, while the other two kinds of taxes are not used as widely as may be expected. Indeed, most OECD countries are moving away from them. As pointed out by the Center on Household Assets and Savings Management (CHASM, 2013), while half of OECD countries had wealth taxes in 1990, ten years later only one-third did,, and by 2010 only three countries (France, Norway, and Switzerland) still maintained them. However, with the onset of the crisis many countries have reintroduced wealth taxes even if just temporarily (e.g. Iceland and Spain). See also the Institute for Fiscal Studies (IFS, 2011).

33. The data in the LWS come from surveys conducted in the following years: Austria, 2004; Canada, 1999; Finland, 1998; Germany, 2006; Italy, 2004; Japan, 2003; Luxembourg, 2007; Norway, 2002; Sweden, 2002; the United Kingdom, 2000; the United States, 2000.

34. Finally, some analyses are based on the 1st and 2nd waves of the SHARE survey (Coda Moscarola et al., 2012 and 2013).

35. The HFCS data contain comparable information on the wealth of households and individuals in fifteen European countries belonging to the Euro zone. Among these are Austria, Belgium, Finland, France, Germany, Greece, Italy, Luxembourg, the Netherlands, Portugal, the Slovak Republic, Slovenia and Spain which are considered in the analysis. The demographic and socio-economic characteristics of the respondents are also recorded in the survey and can be useful in analysis of wealth. See Eurosystem HFCN (2009, 2011, 2013a, 2013b).

36. The gap is expressed as [1 – (mean of women's wealth/mean of men's wealth].

37. The definition of in-kind benefits encompasses services for the elderly, families and the disabled, healthcare, education, housing, and long-term care services.

38. Cash transfers comprise old-age pensions, pensions for survivors and the disabled, family allowances, unemployment checks, and other cash transfers.

39. Recent estimates by GAO (2011) on the Annual Social and Economic Supplements of the Current Population Survey suggests that when out-of-pocket medical costs are factored in the poverty rates for people aged 65 and over almost double in the United States, passing from 9% on the official poverty measure to 17% on the alternative measure which accounts for these costs.

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# ANNEX 2.A1

## *Calculating the annuity*

The method outlined here is borrowed from Disney and Whitehouse (2001). The best approach is to begin by considering it for a single person then extending it to a multiple-person household. The calculation for a single person is a simple actuarial one. The survival function, *s* – the probability that an individual is alive at some time *t* in the future – is expressed by:

$$S_t = \prod_{t=0}^{T} (1 - \lambda_t)$$

where λ is the hazard function (the probability of dying at a particular age conditional on surviving to that age).

The net present value of an income flow of one unit per period conditional on an individual still being alive is:

$$a_0 = \sum_{t=0}^{T} S_t \, (1 - z)^t$$

where *z* is the interest rate and the result, *a*, is known as the annuity factor. Dividing wealth holdings in period zero by the annuity factor yields the proportion of wealth that the individual can safely spend now while maintaining a constant (discounted) level of consumption and leaving net wealth of zero at death.

The analysis becomes more complicated for a household of two adults. The starting point is a joint life annuity that pays one unit when either (or both) are alive. The formula for the annuity factor then becomes:

$$a_0 = \sum_{t=0}^{T} (S_{1t} S_{2t} + (1 - S_{1t}) S_{2t} + S_{1t} \; (1 - S_{2t} \;)) \; (1 - z)^t$$

where the survival functions are indexed 1.2 for the two people in the household.

However, a household with only one person needs fewer resources to achieve the same living standard than a household of two people. Put another way, a household with one person with the same total income as a household of two people can enjoy a better standard of living. This is captured by an equivalence scale. It is also recognised in pension systems, which pay a lower rate of benefit to survivors.

A simple scale, in widespread use in international studies (including those of the OECD, 2008) is to divide household income by the square root of the number of household members. Thus,

$$Y_E = \frac{Y}{n^{\varepsilon}}$$

where $Y_E$ is the household's equivalent income, $Y$ is household income, $n$ the number of members and $\varepsilon$ is the equivalence elasticity, which we take to be 0.5 (as in OECD, 2008).

Applying the scale to the annuity calculation, we assume that the household spends less when only one of its members is alive than when both are. Thus,

$$a_0 = \sum_{t=0}^{T} (S_{1t} S_{2t} \sqrt{2} + (1 - S_{1t}) S_{2t} + S_{1t} (1 - S_{2t}))(1 - z)^t$$

where the square root of 2 implements the equivalence scale in the case where both household members are alive.

Extending the method to larger households quickly becomes problematic. While the formula contains three terms for the different permutations of survival with two members, it contains seven terms with three members, 13 with four people in the household, 21 with five, etc. This necessitates some simplification to keep the results tractable.

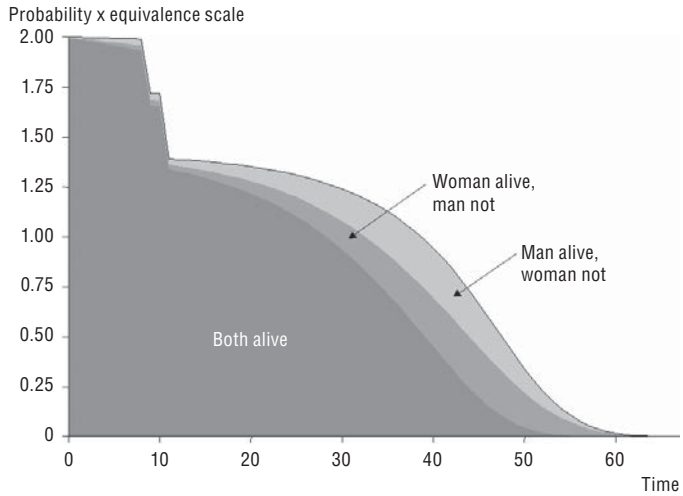
First, the calculations can be carried out on an income unit rather than a household basis. Each income unit consists of a maximum of two adults and their dependent children. This then raises the second issue: the treatment of children. It would be inappropriate to apply a full life cycle annuity calculation to the children in a household as well as the adults, since they are expected to leave the household and set up on their own. It is therefore assumed that children share in the household's wealth until they reach majority (which is taken for the moment to be 18 years of age). A second simplification is that children survive until the age of 18 rather than applying the relevant mortality table. This substantially reduces the computational burden and the price in terms of accuracy is insignificant. The actual annuity factor from birth to age 18 is 99.43% of the term certain annuity at the same age.*

To illustrate the technique, the example of a household comprising a couple aged 43 and 37 with two children aged 10 and 8 is employed. The results are shown in Figure 2.A1.1. Not far into the future, mortality rates are very low and so the assessment of household needs (the survival probabilities multiplied by the relevant equivalence scales) are close to the equivalence scale values. Thus, when both children are under 18, the value is close to 2 (the square root of 4) and with just one child, 1.73 (the square root of 3). When both children are 18, the curve drops to 1.34, a little below the equivalence scale of 1.41, because the probability of one partner dying before this point is no longer negligible. The curves then diminish slowly to zero. The annuity factor can be visualised as the size of the area under the summation curve (Figure 2.A1.1).

The second part of the actuarial calculation is discounting future income flows using a 2% discount rate. Applying this to the survival probabilities and equivalence scales in Figure 2.A1.1 gives the results in Figure 2.A1.2. The result is the sum of the discounted equivalent flows. In this example, the result is 45.6. Thus, if the household had financial wealth of EUR 20 000, this would add EUR 20 000/45.6 = EUR 440 to the household's

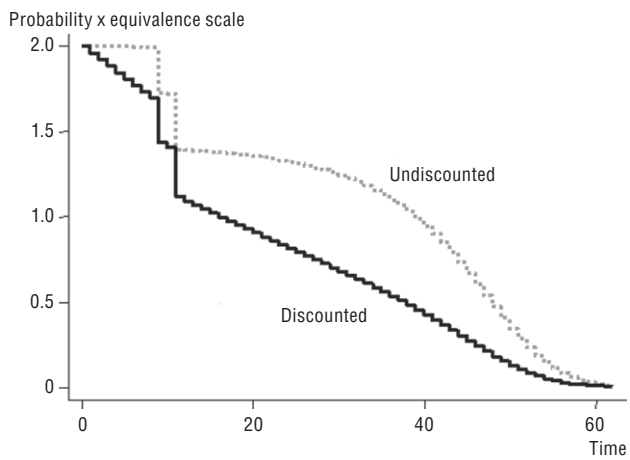
* A large part of this reflects mortality at birth, which is 0.4% in the mortality database used here. Most children observed in household surveys are not new-borns, so the actual error is even smaller than suggested by this calculation.

Figure 2.A1.1. **Actuarial calculation for the example of a household: Survival and equivalising**




*Source:* Authors calculations based on the OECD pension models.

Figure 2.A1.2. **Actuarial calculations for the example of a household: Discounting**



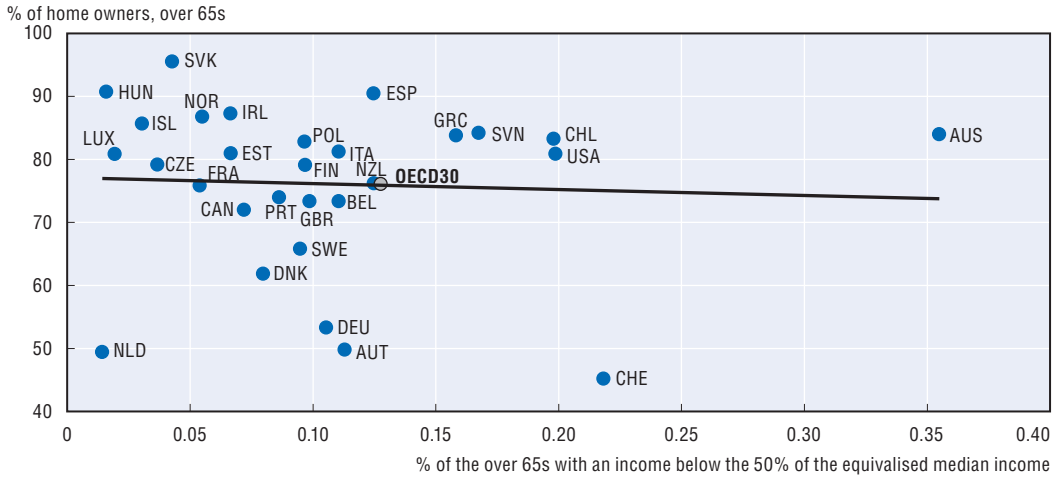

*Source:* Authors calculations based on the OECD pension models.

equivalent income from non-capital sources (transfers, labour income, etc.). For the purpose of comparison, take the case of a single man of the same age (43). The annuity factor result in this case is 27.1. He therefore enjoys greater command over resources: the same financial wealth would add EUR 740 to his income from other sources.

# ANNEX 2.A2

## *Additional figure*

Figure 2.A2.1. **Over-65s at risk of poverty and rates of homeownership, late 2000s**




*Note:* The poverty rate shown in the figure captures only partially the risk of poverty in old-age because non-cash benefits and the value of publicly provided services are not included.

*Source:* Authors' calculation based on data from EU-SILC (Revision 1 of March 2013) and *OECD Income Distribution Database*. For Australia, Chile, Canada and the United States data on homeownership are derived from national sources.

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*Chapter 3*

# Design of pension systems

*The five indicators in this section look in detail at the design of national retirement-income systems in OECD countries and other major economies. The first indicator sets out a taxonomy of the different kinds of retirement-income programmes found around the world. It uses this framework to describe the architecture of 42 countries' pension systems.*

*The next three indicators set out the parameters and rules of pension systems. The description begins with the second indicator covering basic, targeted and minimum pensions, showing the value of these benefits and the proportion of older people covered by these programmes. The third indicator looks at earnings-related pensions: earnings-related and defined-contribution schemes. It shows how benefits are determined in these schemes and the range of earnings that is covered by the pension system. The fourth indicator shows pension eligibility ages for both "normal" and "early" retirement. It also sets out the treatment of early and late retirees by the pension system.*

*The last indicator is new to the publication and shows the effective age of labour market exit both currently and over time.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

**Key results**

Retirement-income systems are diverse and often involve a number of different programmes. Classifying pension systems and different retirement-income schemes is consequently difficult. The taxonomy of pensions used here consists of two mandatory "tiers": a redistributive part and a savings part. Voluntary provision, be it individual or employer-provided, makes up a third tier.

The framework, shown in the figure, is based on the role and objective of each part of the system. The redistributive, first tier comprises programmes designed to ensure pensioners achieve some absolute, minimum standard of living. The second-tier savings components are designed to achieve some target standard of living in retirement compared with that when working. Within these tiers, schemes are classified further by provider (public or private) and the way benefits are determined. *Pensions at a Glance* focuses mainly on mandatory and quasi-mandatory parts of the pension system, although much information is also provided on voluntary, private schemes.

Using this framework, the architecture of national schemes is shown in the table. Programmes aimed to prevent poverty in old age – first-tier, redistributive schemes – are provided by the public sector and are of three main types.

***Resource-tested*** or ***targeted*** plans pay a higher benefit to poorer pensioners and reduced benefits to better-off retirees. In these plans, the value of benefits depends either on income from other sources or on both income and assets. All countries have general social safety-nets of this type, but in some cases they only cover a few older people who had many career interruptions. Rather than mark every country in the table, only 12 OECD countries are marked in this column. Full-career workers with low earnings (30% of the average) would be entitled to resource-tested benefits in these countries.

***Basic*** schemes pay either flat rate benefits (the same amount to every retiree) or their value depends only on years of work, not on past earnings. Additional retirement income does not change the entitlement. Some 13 OECD countries have a basic pension scheme or other provisions with a similar effect.

***Minimum*** pensions, which share many features with resource-tested plans, are found in 18 OECD countries. The value of entitlements takes account only of pension income: unlike resource-tested schemes, it is not affected by income from savings, etc. Minimum credits in earnings-related schemes, such as those in Belgium and the United Kingdom, have a similar effect: benefits for workers with very low earnings are calculated as if the worker had earned at a higher level.

Only Ireland and New Zealand of the OECD countries do not have mandatory, second-tier provision. In the other 32 countries, there are four kinds of scheme.

***Defined-benefit*** (DB) plans are provided by the public sector in 18 OECD countries. Private (occupational) schemes are mandatory or quasi-mandatory in three OECD countries (Iceland, the Netherlands and Switzerland). Retirement income depends on the number of years of contributions and on individual earnings.

There are ***points*** schemes in four OECD countries: French occupational plans (operated by the public sector) and the Estonian, German and Slovak public schemes. Workers earn pension points based on their earnings each year. At retirement, the sum of pension points is multiplied by a pension-point value to convert them into a regular pension payment.

***Defined-contribution*** (DC) plans are compulsory in 10 OECD countries. In these schemes, contributions flow into an individual account. The accumulation of contributions and investment returns is usually converted into a pension-income stream at retirement. In Denmark and Sweden, there are quasi-mandatory, occupational DC schemes in addition to compulsory plans.

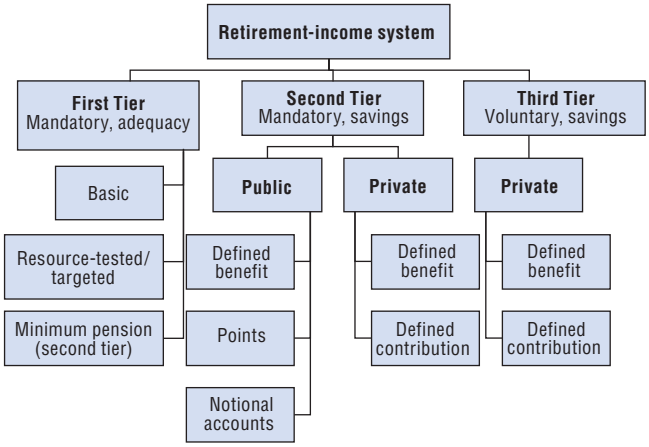
There are ***notional-accounts*** schemes in four OECD countries (Italy, Norway, Poland and Sweden). These record contributions in an individual account and apply a rate of return to the balances. The accounts are "notional" in that the balances exist only on the books of the managing institution. At retirement, the accumulated notional capital is converted into a stream of pension payments using a formula based on life expectancy. Since this is designed to mimic DC schemes, they are often called notional defined-contribution plans (NDC).

## *Further reading*

OECD (2005a), *OECD Pensions at a Glance 2005: Public Policies across OECD Countries*, OECD Publishing, *http://dx.doi.org/10.1787/pension_glance-2005-en*.

OECD (2005b), *Private Pensions: OECD Classification and Glossary*, OECD Publishing, *http://dx.doi.org/10.1787/9789264017009-en-fr*.

## 3.1. Taxonomy: Different types of retirement-income provision




*Note:* See Chapter 1 of OECD (2005a) and OECD (2005b) for a more detailed discussion of classification issues.

StatLink http://dx.doi.org/10.1787/888932907034

## 3.2. Structure of retirement-income provision

| | Public | | | Public | Private | | Public | | | Public | Private |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Targeted | Basic | Minimum | Type | Type | | Targeted | Basic | Minimum | Type | Type |
| **OECD members** | | | | | | **OECD members** *(cont.)* | | | | | |
| Australia | ✓ | | | | DC | New Zealand | | ✓ | | | |
| Austria | | | | DB | | Norway | | | ✓ | NDC | DC |
| Belgium | ✓ | | ✓ | DB | | Poland | | | ✓ | NDC | DC |
| Canada | ✓ | ✓ | | DB | | Portugal | | | ✓ | DB | |
| Chile | ✓ | | ✓ | | DC | Slovak Republic | | | ✓ | Points | DC |
| Czech Republic | | ✓ | ✓ | DB | | Slovenia | | | ✓ | DB | |
| Denmark | ✓ | ✓ | | | DC | Spain | | | ✓ | DB | |
| Estonia | | ✓ | | Points | DC | Sweden | | | ✓ | NDC | DC |
| Finland | | | ✓ | DB | | Switzerland | ✓ | | ✓ | DB | DB |
| France | | | ✓ | DB + points | | Turkey | | | ✓ | DB | |
| Germany | ✓ | | | Points | | United Kingdom | ✓ | ✓ | ✓ | DB | |
| Greece | | | ✓ | DB | | United States | | | | DB | |
| Hungary | | | | DB | | | | | | | |
| Iceland | ✓ | ✓ | | | DB | **Other major economies** | | | | | |
| Ireland | | ✓ | | | | Argentina | | ✓ | | DB | |
| Israel | | ✓ | | | DC | Brazil | | | | DB | |
| Italy | ✓ | | | NDC | | China | | ✓ | | NDC/DC | |
| Japan | | ✓ | | DB | | India | | | | DB + DC | |
| Korea | ✓ | ✓ | | DB | | Indonesia | | | | DC | |
| Luxembourg | ✓ | ✓ | ✓ | DB | | Russian Federation | | ✓ | | NDC | DC |
| Mexico | | | ✓ | | DC | Saudi Arabia | | | ✓ | DB | |
| Netherlands | | ✓ | | | DB | South Africa | ✓ | | | | |

*Note:* In Iceland and Switzerland, the government sets contribution rates, minimum rates of return and the annuity rate at which the accumulation is converted into a pension for mandatory occupational plans. These schemes are therefore implicitly defined benefit.
DB = Defined benefit; DC = Defined contribution; NDC = Notional accounts.
*Source:* See "Country profiles" in Chapter 9 of this report.

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**Key results**

Programmes designed to ensure adequacy of old-age incomes make up the first tier of the OECD's taxonomy of pension systems.

Safety-net retirement benefits are worth 22.9% of average worker earnings. Eleven countries provide a minimum pension above this safety-net level. For full-career workers, the average retirement income – including these contributory minimum pensions – is 28.2% of average worker earnings.

About a third of older people receive some support from basic, targeted or minimum pensions on average.

There are three main ways in which OECD countries provide retirement incomes which aim to meet a minimum standard of living in old age. The left-hand part of the table shows the value of benefits provided under these different types of scheme. Values are presented in *absolute* terms – national currency units – to allow a direct link with the detailed information in the "Country profiles" in Chapter 9 of this report. They are also given in *relative* terms – as a percentage of average worker earnings – to facilitate comparisons between countries. (See the indicator of "Earnings: Averages and distribution" in Chapter 7.)

Benefit values shown are for a single person. In some cases – usually with minimum contributory pensions – each partner in a couple receives an individual entitlement. In other cases – especially under targeted schemes – the couple is treated as the unit of assessment and couple receives less than twice the entitlement of a single person.

The analysis of benefit values is complicated by the existence of multiple programmes in many countries. In some cases, benefits under these schemes are additive. In others, there is a degree of substation between them. Benefit values are therefore summarised in the left-hand figure for two cases. The dark bars show the overall value of non-contributory benefits. This can be seen as the absolute minimum, safety-net income. The lighter bars show minimum contributory benefits. The entitlements shown are the maximum for a worker contributing for each year from age 20 until the standard national pension age. These can be seen as the minimum income of a low-earning, full-career worker.

In 21 countries, only non-contributory benefits are relevant. This group includes cases where basic pensions are residency-tested, such as the Netherlands and New Zealand. In Canada, Denmark and Iceland, entitlements are a mix of basic and resource-tested benefits. Finally, in countries including Austria, Germany, Italy and the United States, this refers only to resource-tested schemes, including social assistance.

In 13 countries, the picture is more complex: there is a safety-net income at a lower level and a contributory minimum at a higher level. In Ireland, for example, the contributory basic pension is worth only slightly more than the resource-tested scheme. In Greece, Portugal, Spain, Sweden and Turkey, contributory minimum pensions are set at a significantly higher level than the safety-net income.

Overall, the average non-contributory benefit is worth 22.9% of economy-wide average earnings, while contributory benefits average 28.2%.

### *Coverage*

The percentage of over 65s receiving first-tier benefits is shown in the final two columns of the table and the right-hand figure. Data are presented just for non-contributory safety-net benefits and contributory minimum pensions. The importance of these benefits varies enormously. In Greece, for example, some 60% of older people are on the contributory minimum pension and a further 19% on safety-net benefits, with slightly lower proportions for both kinds of scheme in Portugal. Nearly 80% of Australians receive at least some payment from the resource-tested scheme and nearly 90% in Denmark. In Finland, France and Sweden, minimum contributory benefits are the most significant, covering 37-47% of retirees.

At the other end of the spectrum, 2% or fewer of pensioners receive safety-net benefits in Germany and Japan.

### *Further reading*

European Union, Social Policy Committee (2006), "Minimum Income Provision for Older People and their Contribution to Adequacy in Retirement", *Special Pensions Study*, Brussels.

Pearson, M. and E. Whitehouse (2009), "Social Pensions in High-Income Countries", in R. Holzmann and N. Takayama (eds.), *Closing the Coverage Gap: The Role of Social Pensions*, World Bank, Washington, DC.

## 3.3. Value and coverage of basic, targeted and minimum pensions

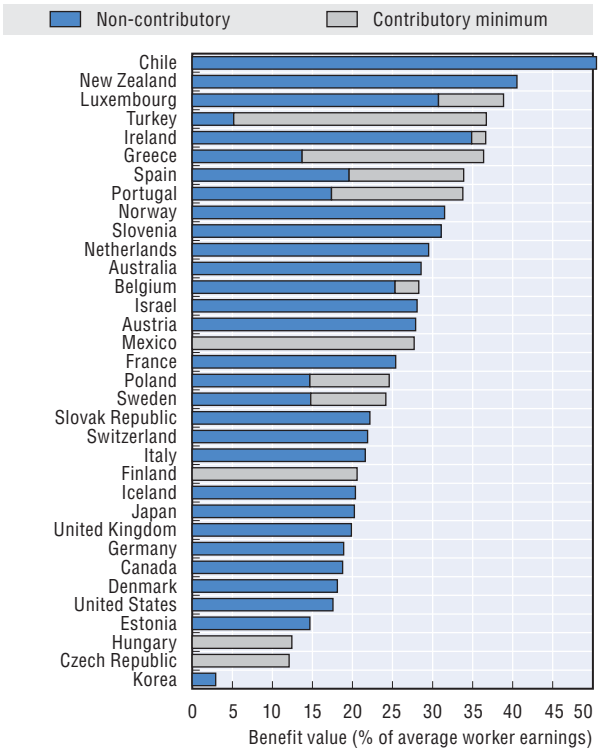
| | Relative benefit value (% of AW earnings) | | | Absolute value (units of national currency per year) | | | Coverage (% of over 65s receiving) | |
|---|---|---|---|---|---|---|---|---|
| | Basic | Targeted | Minimum | Basic | Targeted | Minimum | Targeted | Minimum |
| Australia | x | 28.6 | x | x | 21 018 | x | 78 | x |
| Austria | x | 27.9 | x | x | 11 407 | x | 11 | x |
| Belgium | x | 25.3 | 28.3 | x | 11 669 | 13 052 | 5 | 11 |
| Canada | 13.9 | 18.8 | x | 6 511 | 8 828 | x | 34 | x |
| Chile. | 15.5 | 50.5 | x | 966 336 | 3 141 096 | x | 60 | x |
| Czech Republic | 9.1 | x | 12.1 | 27 240 | x | 36 480 | x | .. |
| Denmark | 17.5 | 18.1 | x | 68 556 | 71 196 | x | 88 | x |
| Estonia | 13.2 | 14.7 | x | 1 442 | 1 609 | x | 6 | x |
| Finland | x | x | 20.6 | x | x | 8 565 | x | 47 |
| France | x | 25.4 | 22.5 | x | 9 326 | 8 248 | 4 | 37 |
| Germany | x | 18.9 | x | x | 8 484 | x | 2 | x |
| Greece | x | 13.7 | 36.4 | x | 2 760 | 7 303 | 19 | 60 |
| Hungary | x | x | 12.4 | x | x | 342 000 | x | < 1 |
| Iceland | 6.5 | 20.4 | x | 393 300 | 1 240 000 | x | .. | x |
| Ireland | 36.7 | 34.9 | x | 11 976 | 11 388 | x | 17 | x |
| Israel | 14.8 | 28.1 | x | 17 772 | 33 712 | x | 25 | x |
| Italy | x | 21.6 | 19.3 | x | 6 253 | 5 582 | 5 | 32 |
| Japan | 16.4 | 20.3 | x | 786 500 | 969 840 | x | 2 | x |
| Korea | x | 2.9 | x | x | 1 135 200 | x | 67 | x |
| Luxembourg | 10.2 | 30.8 | 38.9 | 5 232 | 15 780 | 19 944 | 1 | 29 |
| Mexico | x | x | 27.7 | x | x | 26 112 | x | .. |
| Netherlands | 29.5 | x | x | 13 714 | x | x | x | x |
| New Zealand | 40.6 | x | x | 20 804 | x | x | x | x |
| Norway | x | x | 31.5 | x | x | 160 956 | x | 22 |
| Poland | x | 14.7 | 24.6 | x | 5 724 | 9 590 | 12 | .. |
| Portugal | x | 17.4 | 33.8 | x | 2 736 | 5 307 | 17 | 59 |
| Slovak Republic | x | 22.2 | x | x | 2 177 | x | 3 | x |
| Slovenia | x | 31.1 | 13.2 | x | 5 397 | 2 315 | 17 | 2 |
| Spain | x | 19.6 | 33.9 | x | 5 008 | 8 665 | 6 | 28 |
| Sweden | x | 14.8 | 24.2 | x | 61 644 | 93 720 | 1 | 42 |
| Switzerland | x | 21.9 | 16.0 | x | 19 050 | 13 920 | 12 | .. |
| Turkey | x | 5.2 | 36.8 | x | 1 433 | 10 124 | – 22 – | |
| United Kingdom | 15.6 | 19.9 | 10.2 | 5 587 | 7 142 | 3 654 | 27 | .. |
| United States | x | 17.6 | x | x | 8 376 | x | 7 | x |

*Note:* Data are for the most recent year available.
.. = Data are not available.
x = Not applicable.

StatLink http://dx.doi.org/10.1787/888932907072

## 3.4. Value of basic, targeted and minimum pensions

Percentage of average worker earnings

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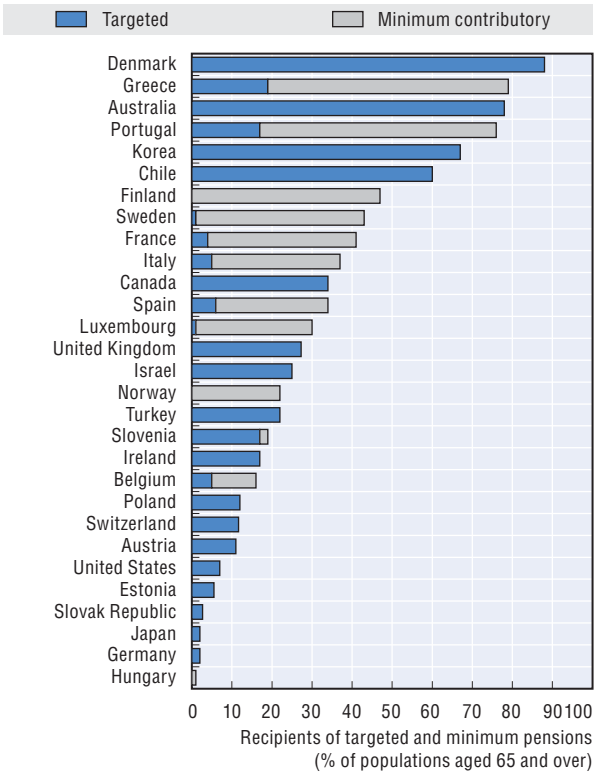
## 3.5. Coverage of targeted and minimum pensions

Percentage of over 65s

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## Key results

The second tier of the OECD's taxonomy of retirement-income provision comprises earnings-related pensions. Key parameters and rules of these schemes determine the value of entitlements, including the long-term effect of pension reforms that have already been legislated.

Earnings-related schemes can be of three different types: defined benefit (DB), points or notional accounts (NDC). The ***accrual rate*** shows the rate at which benefit entitlements build up for each year of coverage. The accrual rate is expressed as a percentage of the earnings that are "covered" by the pension scheme.

For points systems, the effective accrual rate is calculated as the ratio of the cost of a pension point to the pension-point value. In notional-accounts schemes, the effective accrual rate is calculated in a similar way; it depends on the contribution rate, notional interest rate and annuity factors.

In a little under half of the countries with earnings-related plans (of all three types), accrual rates are "linear". Elsewhere, the benefit earned for each year of coverage varies, either with individual earnings, age or years of contributions.

Among the eight cases where accrual rates vary with earnings, the public schemes of the Czech Republic, Portugal, Switzerland and the United States are "progressive". They pay higher replacement rates to lower earners. In the United Kingdom, accrual rates are U-shaped: highest for low earners, then smaller, then higher again. The occupational plans of France and Sweden are designed to offset the public scheme's redistribution, paying a higher replacement rate to high earners on their pay above the ceiling of the public plan. In Swiss occupational plans and Finland, accrual increases with age.

Accrual rates vary with service in two countries; in Luxembourg, increasing with a longer contribution history. Spain does the reverse: the highest accruals for the first few years of coverage and lower later on.

***Earnings measures*** used to calculate benefits also differ. Some 21 OECD countries use lifetime earnings to calculate benefits and in Canada and the United States, the great majority of careers (34-35 years) are used. Final salaries are not used to calculate benefits in any OECD country, though Spain does use the final 25 years. Public benefits in France and all benefits in Slovenia are based on the best 25 years' earnings and best 24 years, respectively.

Closely linked with the earnings measure is ***valorisation***, whereby past earnings are adjusted to take account of changes in living standards between the time pension rights accrued and the time they are claimed (sometimes called pre-retirement indexation). If benefits are based on the final year's salary, there is no need for valorisation. But it is necessary to protect the value of pension entitlements when benefits are based on earnings over a longer period. The uprating of the pension-point value and the notional interest rate in points and notional-accounts systems, respectively are the exact corollaries of valorisation in DB plans.

The most common practice is to revalue earlier years' pay with the growth of average earnings. Belgium, France, Greece and Spain, revalue earnings only with price inflation and 25 years enters the benefit formula in the French public scheme compared with lifetime average in Belgium and the French occupational plans. Estonia, Finland and Portugal revalue earlier years' earnings to a mix of price and wage inflation and for Turkey it is a mix of prices and GDP.

The key parameter for defined-contribution (DC) plans is the proportion of earnings that must be paid into the individual account. The average ***contribution rate*** for the ten countries shown, including quasi-mandatory DC occupational schemes in Denmark and Sweden, is 7.9%.

Most countries set a limit on the earnings used to calculate both contribution liabilities and pension benefits. The average ***ceiling*** on public pensions for 20 countries is 191% of average worker earnings, excluding four countries with no ceiling on public pensions. Ceilings are typically higher for mandatory private pensions.

***Indexation*** refers to the uprating of pensions in payment. Price indexation is most common, but five countries uprate benefits with a mix of inflation and wage growth. A further two have a combination of prices and GDP, with another two increasing by wages with a set deduction. Some countries have progressive indexation, giving larger increases to low pensions.

## 3.6. Parameters and rules of income-replacement pensions

| | Earnings-related schemes | | | | | DC schemes | Ceilings on pensionable earnings (% of AW earnings) | |
|---|---|---|---|---|---|---|---|---|
| | Type | Accrual rate (%) | Earnings measure | Valorisation | Indexation | Contribution rate (%) | Public | Private |
| Australia | None | | | | | 12.0 | | 249 |
| Austria | DB | 1.78 | 40 | w[1] | d | | 145 | |
| Belgium | DB | 1.33 | L | p | p | | 111 | |
| Canada | DB | 0.63 | b34 | w | p [c] | | 107 | |
| Chile | None | | | | | 10.0 | | 298 |
| Czech Republic | DB | 0.53-2.04 | L | w | 33w/67p | | None | |
| Denmark | None | | | | | 10.8[2] | | |
| Estonia | Points | 1.00 | L | 50w/50p | 80w/20p | 6.0 | None | None |
| Finland | DB | 1.5-4.5 | L | 80w/20p | 20w/80p | | None | |
| France | DB/points | 1.06 | b25/L | p/p | p/p | | 99/297[3] | |
| Germany | Points | 1.00 | L | w [c] | w [c] | | 150 | |
| Greece | DB | 0.8-1.5 | L | p | 50p/50GDP | | 327[4] | |
| Hungary | DB | 1.22 | L | w | p | | | |
| Iceland | DB | 1.40 | L | fr | p | | | None |
| Ireland | None | | | | | | | |
| Israel | None | | | | | 15.0 | | 100 |
| Italy | NDC | 1.75 | L | GDP | p[5] | | 332 | |
| Japan | DB | 0.55 | L | w | p | | 155[6] | |
| Korea | DB | 0.89 | L | w | p | | 121 | |
| Luxembourg | DB | 1.84 [y] | L | w | p/w | | 180 | |
| Mexico | None | | | | | 6.5 | | 604 |
| Netherlands | DB | 1.75 | L | w [c] | w [c] | | | None |
| New Zealand | None | | | | | | | |
| Norway | NDC | 0.98 | L | w | w-0.75 | 2.0 | 191 | |
| Poland | NDC | 0.52 | L | w | p | 3.8 | 250 | |
| Portugal | DB | 2.25 [w] | L | 25w/75p | p/GDP[7] | | None | |
| Slovak Republic | Points | 1.25 | L | w | 50w/50p | 6.0 | 500 | |
| Slovenia | DB | 1.25 | b24 | w (d) | w | | 154 | |
| Spain | DB | 2.7 [y] | f25 | p | p | | 153 | |
| Sweden | NDC | 0.75 [w] | L | w [c] | w-1.6 [c] | 2.5 + 4.5[8] | 114 | 110/none[8] |
| Switzerland | DB | [w/a] | L | fr | 50w/50p | | 96 | 96 |
| Turkey | DB | 1.5-3.5 | L | p + 30% GDP | p | | 259 | |
| United Kingdom | DB | 0.21-0.83 | L | w | p | | 113 | |
| United States | DB | 0.91-2.57 | b35 | w[9] | p | | 264 | |

*Note:* Parameters are for 2012 but include all legislated changes that take effect in the future: for example, some countries are extending the period of earnings covered for calculating benefits. Empty cells indicate that the parameter is not relevant.
[a] = Varies with age; b = Number of best years; [c] = Valorisation/indexation conditional on financial sustainability; d = Discretionary indexation; DB = Defined benefit; DC = Defined contribution; f = Number of final years; fr = Fixed rate valorisation; GDP = Growth of gross domestic product; L = Lifetime average; NDC = Notional accounts; p = Valorisation/indexation with prices; w = Valorisation/indexation with average earnings; [w] = Varies with earnings; [y] = Varies with years of service.

1. Austria: valorisation assumed to move to earnings as the averaging period for the earnings measure is extended.
2. Denmark: typical contribution rate for quasi-mandatory occupational plans.
3. France: the first ceiling relates to the national pension scheme, the second to the mandatory occupational plan modelled here (ARRCO).
4. Greece: effective ceiling calculated from maximum pension.
5. Italy: indexation is fully to prices for low pensions, 90% of prices or 75% of prices for higher pensions.
6. Japan: the ceiling is calculated as 200% of the average monthly remuneration of all insured workers in Employees' Pension Insurance, disregarding bonuses.
7. Portugal: indexation will be higher relative to prices for low pensions and vice versa. Indexation will be more generous the higher is GDP growth.
8. Sweden: the contribution rate is 2.5% for personal plans up to the ceiling for the public scheme. For quasi-mandatory occupational plans the contribution rates are 4.5% on a lower slice of earnings and 30% on an upper slice with no ceiling (in the largest scheme for private-sector workers).
9. United States: earnings valorisation to age 60; no adjustment from 60 to 62; prices valorisation from 62 to 67.

StatLink http://dx.doi.org/10.1787/888932907129

**Key results**

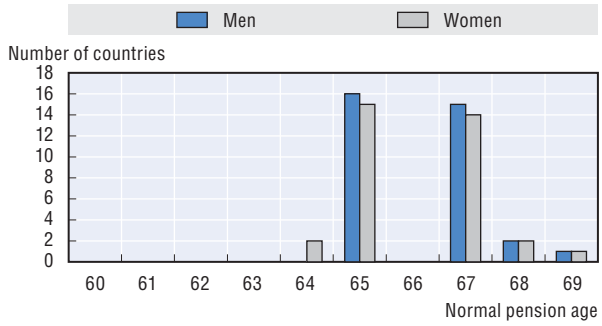
The rules for eligibility to retire and draw a pension are very complex, often reflecting conflicting government objectives. On the one hand, encouraging people to work longer as the population ages has been a major feature of many pension reforms. On the other hand, government have often been concerned to protect workers perceived as vulnerable and unable to continue their jobs to an older age.

The table shows the rules for normal, early and late retirement under the long-term parameters of the pension system, including changes that have been legislated but are not yet in effect. These parameters underpin the modelling of pension entitlements in Chapter 4 of this report. In 14 of the 34 countries, different rules apply to different components of the overall retirement-income package and so these are shown separately.

### *Normal pension age*

Virtually all OECD countries already have a normal pension age of at least 65 or plan to reach that level in the future. In two of these, normal pension age for women will be lower, at 64 in both Israel and Switzerland.

**Normal pension ages by sex: Long-term rules**




*Source:* See "Country profiles" in Chapter 9.

StatLink http://dx.doi.org/10.1787/888932907148

Seventeen countries will have normal pension ages for men and women above age 65. Only Iceland and Norway are currently at 67, but Australia, Denmark, Germany and the United States plan to reach that level in the future, with the United Kingdom going further to 68.

### *Early retirement*

Nine countries will not allow early retirement in any mandatory part of the pension system: Denmark, Hungary, Ireland, Israel, the Netherlands, New Zealand, Poland, Turkey and the United Kingdom. In other cases, early retirement is restricted to certain schemes: in Australia, Chile and Iceland to mandatory private pensions; and in Canada and Sweden, there is no early retirement under basic or targeted programmes.

Benefits for early retirees are usually cut to reflect the longer period over which the pension is paid.

In most defined-benefit and points schemes, the adjustment is simply a parameter of the pension system: the benefit is permanently reduced by *x*% for each year of early retirement. The adjustment for early and late retirement in the notional-accounts schemes of Italy and Sweden is not directly observed. (Poland does not allow early retirement.) However, it can be calculated from the different annuity rates or factors used to convert accumulated notional capital, which in turn are based on projections of mortality rates at different ages and the discount rates employed in the annuity calculation.

The size of the adjustments varies significantly. The largest standard decrements are in Canada – which is increasing the rate from 6.0% to 7.2%. However, larger adjustments are possible in the Czech Republic (for people who retire at the earliest possible ages) and in Spain (for people with a smaller number of contribution years). In some cases – Belgium, France, Germany, Greece and Luxembourg – there is no benefit reduction provided a certain number of years of contributions were paid.

### *Late retirement*

It is possible to defer claiming a pension until after the normal age in nearly all countries. Typically, an increase in accrued benefits is provided. However, the ability to combine work and pension receipt after normal pension age is common and so the size of the increment will have little influence on people's financial incentives to remain in work.

### *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*.

Whitehouse, E.R. (2010), "Decomposing Notional Defined-Contribution Pensions: Experience of OECD Countries' Reforms", *OECD Social, Employment and Migration Working Papers*, No. 109, OECD Publishing, *http://dx.doi.org/10.1787/5km68fw0t60w-en*.

## 3.7. Pension ages and treatment of early and late retirees, long-term rules, all mandatory and quasi-mandatory schemes, by type of scheme

| | Scheme | Early age | Reduction (%) | Normal age | Increase (%) |
|---|---|---|---|---|---|
| Australia | T | .. | | 67 | |
| | DC | 60 | - | 67 | - |
| Austria | DB | 62 | 5.1 | 65 | 4.2 |
| Belgium | DB | 62 | 0 | 65 | 0 |
| Canada | Basic/T | .. | | 67 | 7.2 |
| | DB | 60 | 7.2 | 65 | 8.4 |
| Chile | Basic/T | .. | | 65 | |
| | DC | Any age | - | 65/60 | - |
| Czech Republic | DB | 64 | 3.6-5.6 | 69 | 6.0 |
| Denmark | Basic/T | .. | | 67 | 5.8 |
| | DC | .. | | 67 | - |
| Estonia | Points | 62 | 4.8 | 65 | 10.8 |
| | DC | 62 | - | 65 | - |
| Finland | Min | 63 | 4.8 | 65 | 7.2 |
| | DB | 63 | | 68 | 4.8 |
| France | DB | 62 | 5.0 | 67 | 5.0 |
| | DB (Occ) | 60 | 4.0-7.0 | 67 | 0 |
| Germany | Points | 63 | 3.6 | 67 | 6.0 |
| Greece | DB | 62 | 0/6.0 | 67 | 0 |
| Hungary | DB | .. | | 65 | 6.0 |
| Iceland | Basic/T | .. | | 67 | |
| | DB (Occ) | 65 | 7.0 | 67 | 6.0 |
| Ireland | Basic/T | .. | | 68 | .. |
| Israel | Basic/T | .. | | 67M/64F | 5.0 |
| | DC | | | 67 | - |
| Italy | NDC | 62 | - | 67 | - |
| Japan | Basic/DB | 60 | 6.0 | 65 | 8.4 |
| Korea | DB | 60 | 6.0 | 65 | 7.2 |
| Luxembourg | DB | 57/60 | 0 | 65 | .. |
| Mexico | Min | 60 | 0 | 65 | 0 |
| | DC | Any age/60 | - | 65 | - |
| Netherlands | Basic | .. | | 67 | .. |
| New Zealand | Basic | .. | | 65 | .. |
| Norway | Min | .. | | 67 | |
| | NDC/DC | 62 | - | 67 | - |
| Poland | NDC/DC | .. | | 67 | - |
| Portugal | DB | 55 | 6.0 | 65 | 4.0-12.0 |
| Slovak Republic | Points | 65 | 6.5 | 67 | 6.0 |
| | DC | 65 | - | 67 | - |
| Slovenia | DB | 60 | 3.6 | 65 | 4.0 |
| Spain | DB | 65 | 6.0-8.0 | 67 | 2.0-4.0 |
| Sweden | Min | .. | | 65 | |
| | NDC | 61 | 4.1-4.7 | 65 | 4.9-6.1 |
| | DC | 55/61 | - | 65 | - |
| Switzerland | DB | 63M/62F | 6.8 | 65M/64F | 5.2-6.3 |
| | DB (Occ) | 58 | 6.35-7.1 | 65M/64F | 4.5-5 |
| Turkey | DB | .. | | 65 | 0 |
| United Kingdom | Basic/DB | .. | | 68 | 10.4 |
| United States | DB | 62 | 5.0/6.7 | 67 | 8.0 |

*Note:* Data rounded to one decimal place. Calculations for late retirement assume a maximum retirement age of 70.
DB = Defined benefit; DC = Defined contribution; Min = Minimum benefit; .. = Early retirement or deferral of pension is not available; NDC = Notional defined contribution; Occ = Occupational; T = Targeted. Where pension ages for men and women differ they are shown as M/F. - = Benefits automatically adjusted for early and late retirement in DC schemes.
The implicit adjustments are calculated from the annuity calculations using projected mortality, the discount rate specified in legislation and indexation of pensions in payment.
*Source:* See "Country profiles" in Chapter 9 of this report.

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## Key results

The average effective age of labour market exit was 64.2 for men and 63.1 for women across OECD countries in 2012. The effective age of labour market exit is lower than the official retirement age in 22 OECD countries for both men and women. For 2012 the lowest effective exit age is found for men in Luxembourg and for women in Belgium and the Slovak Republic at 57.6 and 58.7 years respectively. The highest figures for men are found in Mexico, at 72.3 years, with the highest for women in Chile, at 70.4 years.

The effective age of labour market exit is lower than official retirement age in the majority of OECD countries. It is lower for both men and women in 19 of the 34 OECD countries. There are an additional three countries with lower figures for men and three different countries have lower ages for women.

On average the official retirement age is 0.8 years higher for men and 0.4 years higher for women than the effective age of labour market exit. However there is considerable variation between the OECD countries. The effective age of exit is 7.4 years lower for men in Luxembourg and is over five years in both Belgium and France. All three of these countries have pension systems that permit lower retirement ages for long careers, though this system is being tightened. The figures for women are also highest in these three countries, ranging from 5.0 years in France to 6.3 years in Belgium.

In contrast the effective labour market exit age is considerably higher than the official retirement age in a number of countries. The highest difference is found in Korea for men at 11.1 years and in Chile for women at 10.4 years. For women, Korea also has a higher effective exit age of around ten years, whilst the second highest for men is 7.3 years in Mexico.

In the United Kingdom the effective exit age is 63.7 years for men and 63.2 years for women. However for men this is 1.3 years below official retirement age whereas it is 2.0 years above for women because of the current disparity in retirement age. As the retirement age for women continues to align with that for men then this position should change. The same is true for Poland, which currently has a five year difference in retirement age between men and women. In contrast the effective exit age is above the official retirement age for men and below for women in Switzerland, despite the official retirement age for men being one year higher.

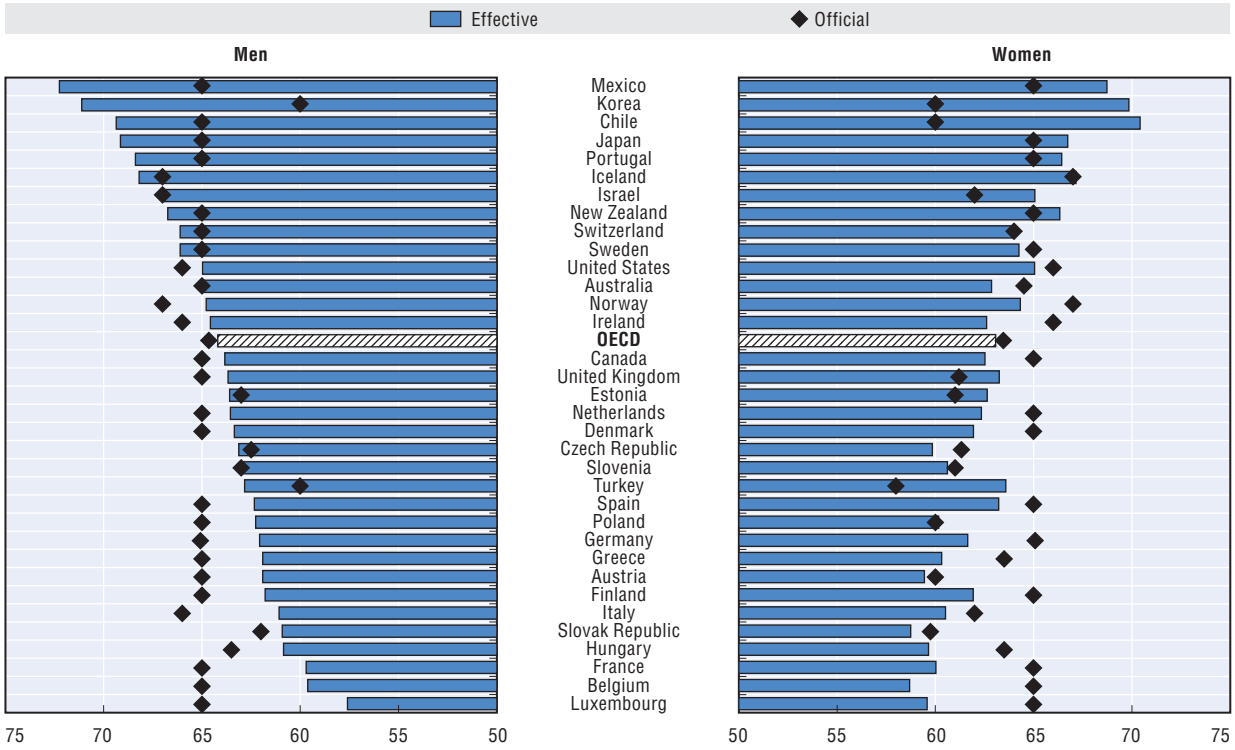
Only six of the 34 countries have a higher effective exit age for women than men but in two of these countries – Finland and France – the difference is 0.3 years at most. Chile and Spain have a difference of about one year, with Luxembourg at two years and Turkey highest at 9.4 years.

Over time there was a downward trend to effective exit age until the early 2000s. In 1970 the effective exit age was 68.4 years for men and 66.4 years for women. In contrast by 2000 the averages were 63.2 years for men and 61.1 years for women. However there is considerable variation between country with a low for men in 2000 of 58.3 years in Hungary and a high of 75.0 years in Mexico. For women the range was 55.8 years to 69.8 years with the same countries being at the extremes.

### *Definition and measurement*

The average effective age of retirement is defined as the average age of exit from the labour force during a five-year period for workers initially aged 40 and over. In order to abstract from compositional effects in the age structure of the population, labour force withdrawals are estimated based on changes in labour force participation rates rather than labour force levels. These changes are calculated for each (synthetic) cohort divided into five-year age groups.

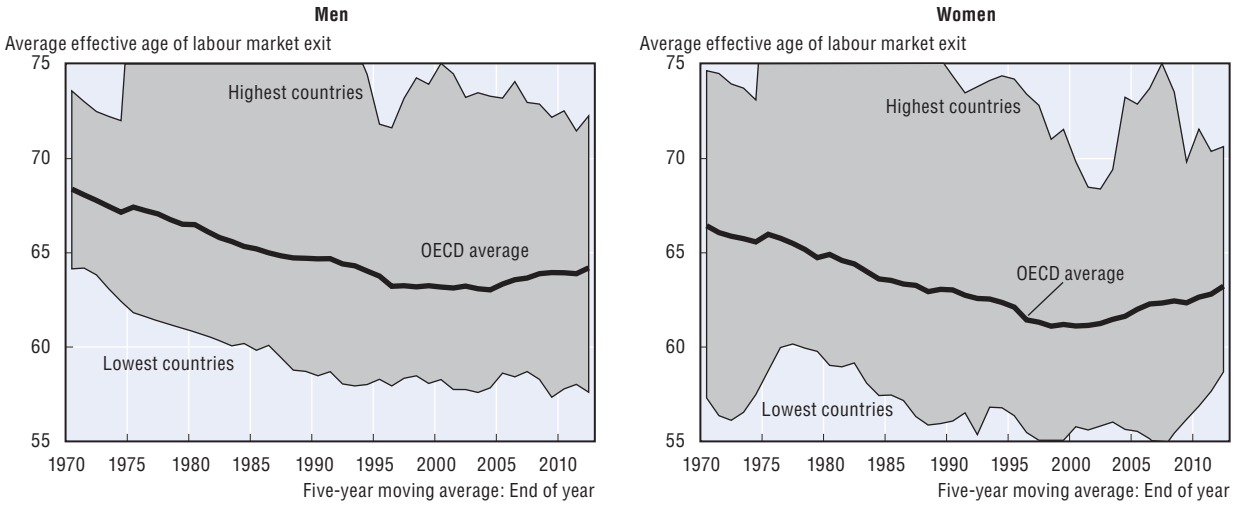
## 3.8. Average effective age of labour market exit and normal pensionable age




*Note:* Effective retirement age shown is for five year period 2007-12. Pensionable age is shown for 2012.
*Source:* OECD estimates based on the results of national labour force surveys and the European Union Labour Force Survey.

StatLink http://dx.doi.org/10.1787/888932907186

## 3.9. Average labour market exit age in OECD countries, 1970-2012




*Source:* OECD estimates based on the results of national labour force surveys, the European Union Labour Force Survey and, for earlier years in some countries, national censuses.

StatLink http://dx.doi.org/10.1787/888932907205

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*Chapter 4*

# Pension entitlements

*Pension entitlements are calculated using the OECD pension models. The theoretical calculations are based on national parameters and rules applying in 2012. They relate to workers entering the labour market in that year at age 20, and so include the full impact of pension reforms that have already been legislated but are currently being phased in. A note on methodology and assumptions precedes the indicators.*

*The indicators begin with the familiar replacement rate: the ratio of pension to individual earnings. The first looks at gross (before tax) replacement rates from all mandatory and quasi-mandatory sources, for a single person. The second shows replacement rates from public and private schemes separately, including data on voluntary private pensions where these have broad coverage. There follows an analysis of the tax treatment of pensions and pensioners. The fourth and fifth indicators are replacement rates in net terms, taking account of taxes and contributions paid on earnings and pensions. The final element in this group is an exploration of investment risk, showing how different rates of return on private pension investments affect overall retirement incomes.*

*There follows three indicators of "pension wealth": the lifetime value of the flow of retirement benefits. This is a more comprehensive measure than replacement rates because it takes account of pension ages, indexation and life expectancy. The first two indicators cover gross and then net pension wealth, whilst the third is a new indicator covering the change in gross pension wealth.*

*The balance between two policy goals – providing adequate old-age incomes and replacing a target share of earnings – is explored in the next pair of indicators. They summarise the progressivity of pension benefit formulae and the link between pensions and earnings.*

*The final two indicators of entitlements average across individuals with different earnings levels, showing pension levels, pension wealth and the role of each part of the retirement-income system.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## Introduction

The indicators of pension entitlements that follow here in Chapter 4 and the analysis of pension "savings gaps" in Chapter 8 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 under today's parameter and rules.

The pension entitlements presented here are computed with rules currently legislated in OECD countries. 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 legislated since 2012 are included where sufficient information is available.

The values of all pension-system parameters reflect the situation in the year 2012.

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. Age 20 is approximately the average age of labour-market entry in OECD countries, although obviously some countries lie above and below this average. (Sensitivity analysis for situations where workers entered the labour market at age 25 rather than age 20, and so had a five-year shorter career, were presented in the 2007 edition of *Pensions at a Glance*.)

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. Rules for periods of unemployment and caring for children, which are often very complex, are set out in the "Country profiles" in Chapter 9 of this report. The OECD pension models include these rules. For reasons of space, the results are not presented here.

### *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 particularly significant in Denmark, the Netherlands and in Sweden.

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 replacement rates is shown with entitlements from these voluntary pension plans. There is also an analysis of pension "savings gaps": how much people in countries with relatively small public pensions would need to save for old-age.

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 presented for workers with a range of different earnings levels: between 0.5 times and twice the average worker earnings. This range permits an analysis of future retirement benefits across the earnings distribution.

### *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, real earnings 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 worker earnings in every year of the working life. ***Earnings distribution*** data from the OECD database are used in some composite indicators (see the indicator of "Earnings: Averages and distribution" in Chapter 7).

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 2060.

Changes in these baseline assumptions will obviously affect the resulting pension entitlements. The impact of variations in economy-wide earnings growth, and for individual earnings growing faster or slower than the average, was shown in the first edition of *Pensions at a Glance* (OECD, 2005). The impact of different rates of return is assessed in the indicator on "Investment risk and private pensions").

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 is calculated from 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 the benefits are spread which changes. 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.

### *Taxes and social security contributions*

Information on personal income tax and social security contributions paid by pensioners, used to calculate pension entitlements, are available in the on-line "Country profiles" from the website: *www.oecd.org/pensions/pensionsataglance.htm*.

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 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 2012 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*

D'Addio, A.C., J. Seisdedos and E.R. Whitehouse (2009), "Investment Risk and Pensions: Measuring Uncertainty in Returns", *OECD Social, Employment and Migration Working Papers*, No. 70, OECD Publishing, *http://dx.doi.org/10.1787/224016838064*.

OECD (2013), *Taxing Wages 2013*, OECD Publishing, *http://dx.doi.org/10.1787/tax_wages-2013-en*.

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*.

Whitehouse, E.R., A.C. D'Addio and A.P. Reilly (2009), "Investment Risk and Pensions: Impact on Individual Retirement Incomes and Government Budgets", *OECD Social, Employment and Migration Working Papers*, No. 87, OECD Publishing, *http://dx.doi.org/10.1787/224005547774*.

## Key results

The gross replacement rate shows the level of pensions in retirement relative to earnings when working. For workers with average earnings, the gross replacement rate averages 54% in the 34 OECD countries. But there is significant cross-country variation. At the bottom of the range, Mexico and the United Kingdom offer future replacement rates of less than a third to people starting work today. The Netherlands at the top of the range, offer replacement rates of more than 90%. Other countries with high projected replacement rates are Denmark at 79% and Austria at 77%.

Most OECD countries protect low-income workers from old-age poverty by providing higher replacement rates for them than for average earners. For example, workers earning only half the average receive replacement rates averaging around 71%, compared with 54% for average earners. However, replacement rates in five countries are the same at average and half-average pay: Austria, Germany, Hungary, Italy, and Spain.

At the top of the range, there are two countries that provide low earners with pensions equal to or higher than their earnings when working: Denmark (replacement rate of 121%) and Israel (104%). At the other end of the scale, Germany and Poland offer replacement rates at 42% and 49%, respectively. Some countries, such as Ireland and New Zealand, pay relatively small benefits to average earners, but are above the average for low-income workers.

On average in the 34 OECD countries, the gross replacement rate at 1.5 times average earnings (here called "high earnings") is 48%, somewhat below the 54% figure for average earners. For high earners, country variations are again wide. Replacement rates equal 89% in the Netherlands. At the other end of the spectrum, Ireland and the United Kingdom offer replacement rates of less than 25%.

At median earnings – the level which half of workers lie above and half below – the average gross replacement for the 34 OECD countries is 58%. In general, it is little different from the gross replacement at average (mean) pay. (Median earnings are between 55% and 96% of the mean; see in Chapter 7 the indicator on "Earnings: Averages and distribution").

Gross pension replacement rates for women differ (due to a lower pension eligibility age for women than for men and to the use of sex specific mortality) in five countries: Australia, Chile, Israel, Mexico and Switzerland. Differences between the sexes are substantial in Australia, Chile and Israel, with replacement rates for women between 79% and 92% of the value for men. In Switzerland, replacement rates for women are 98% of that for men. The value for women is also lower in Mexico around 97%, but this is due to a higher annuity rate rather than a difference in retirement age.

For the non-OECD countries there is a wide range in the replacement rate calculations, with Indonesia around 14% and Saudi Arabia at 100% for average earners. The average for the EU27 is higher than that of the OECD34 for average and high earners.

### *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). Here, however, pension benefits are shown as a share of individual lifetime average earnings (revalued in line with economy-wide earnings growth). Under the baseline assumptions, workers earn the same percentage of average worker earnings throughout their career. In this case, lifetime average revalued earnings and individual final earnings are identical. If people move up the earnings distribution as they get older, then their earnings just before retirement will be higher than they were on average over their lifetime and replacement rates calculated on individual final earnings would be lower.

## 4.1. Gross pension replacement rates by earnings

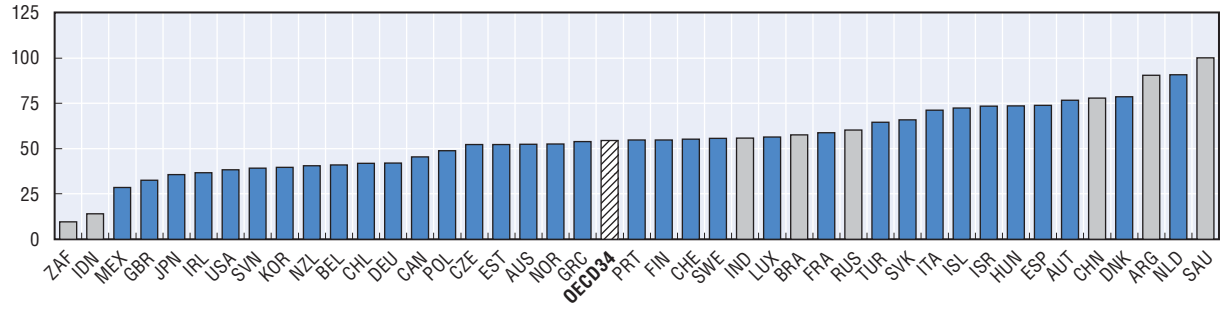
Individual earnings, multiple of mean for men (women where different)

| | Median earner | 0.5 | 1.0 | 1.5 | | Median earner | 0.5 | 1.0 | 1.5 |
|---|---|---|---|---|---|---|---|---|---|
| **OECD members** | | | | | **OECD members** *(cont.)* | | | | |
| Australia | 60.2 *(55.8)* | 91.1 *(86.6)* | 52.3 *(47.8)* | 39.4 *(34.9)* | Norway | 52.3 | 63.4 | 52.5 | 41.6 |
| Austria | 76.6 | 76.6 | 76.6 | 74.0 | Poland | 48.8 | 49.3 | 48.8 | 48.8 |
| Belgium | 41.4 | 58.2 | 41.0 | 30.2 | Portugal | 55.0 | 67.5 | 54.7 | 54.1 |
| Canada | 51.0 | 80.1 | 45.4 | 30.2 | Slovak Republic | 67.9 | 74.2 | 65.9 | 63.4 |
| Chile | 45.5 *(36.6)* | 57.3 *(48.3)* | 41.9 *(33)* | 37.3 *(27.9)* | Slovenia | 40.6 | 62.0 | 39.2 | 36.7 |
| Czech Republic | 59.9 | 85.2 | 52.2 | 41.2 | Spain | 73.9 | 73.9 | 73.9 | 73.9 |
| Denmark | 83.7 | 120.7 | 78.5 | 64.4 | Sweden | 55.6 | 70.2 | 55.6 | 67.9 |
| Estonia | 55.3 | 65.2 | 52.2 | 47.9 | Switzerland | 58.4 *(57.6)* | 64.3 *(63.7)* | 55.2 *(54.3)* | 36.8 *(36.2)* |
| Finland | 54.8 | 64.1 | 54.8 | 54.8 | Turkey | 66.8 | 73.5 | 64.5 | 64.5 |
| France | 59.1 | 64.8 | 58.8 | 47.5 | United Kingdom | 37.9 | 55.8 | 32.6 | 22.5 |
| Germany | 42.0 | 42.0 | 42.0 | 42.0 | United States | 41.0 | 49.5 | 38.3 | 33.4 |
| Greece | 64.0 | 75.4 | 53.9 | 46.7 | **OECD34** | **57.9 *(57.2)*** | **71.0 *(70.3)*** | **54.4 *(53.7)*** | **48.4 *(47.7)*** |
| Hungary | 73.6 | 73.6 | 73.6 | 73.6 | | | | | |
| Iceland | 73.8 | 91.7 | 72.3 | 70.1 | **Other major economies** | | | | |
| Ireland | 44.2 | 73.4 | 36.7 | 24.5 | Argentina | 96.2 *(88.9)* | 115.2 *(107.9)* | 90.4 *(83.1)* | 82.1 *(74.8)* |
| Israel | 86.7 *(76.8)* | 103.7 *(93.9)* | 73.4 *(64.8)* | 48.9 *(43.2)* | Brazil | 57.5 *(52.3)* | 55.4 *(50.3)* | 57.5 *(52.3)* | 61.7 *(56.1)* |
| Italy | 71.2 | 71.2 | 71.2 | 71.2 | China | 82.5 *(65.1)* | 97.9 *(78.5)* | 77.9 *(61)* | 71.2 *(55.2)* |
| Japan | 37.5 | 49.8 | 35.6 | 30.8 | India | 60.4 *(56.3)* | 75.6 *(71.2)* | 55.8 *(51.8)* | 49.2 *(45.3)* |
| Korea | 43.9 | 59.2 | 39.6 | 29.2 | Indonesia | 14.1 *(13)* | 14.1 *(13)* | 14.1 *(13)* | 14.1 *(13)* |
| Luxembourg | 59.3 | 77.7 | 56.4 | 53.0 | Russian Federation | 63.0 *(56.4)* | 72.4 *(65.8)* | 60.2 *(53.6)* | 56.1 *(49.5)* |
| Mexico | 44.7 | 55.5 | 28.5 *(27.7)* | 27.2 *(25.1)* | Saudi Arabia | 100.0 *(87.5)* | 100.0 *(87.5)* | 100.0 *(87.5)* | 100.0 *(87.5)* |
| Netherlands | 91.4 | 94.4 | 90.7 | 89.4 | South Africa | 11.8 | 19.1 | 9.6 | 6.4 |
| New Zealand | 50.1 | 81.1 | 40.6 | 27.0 | EU27 | 60.0 *(59.7)* | 69.6 *(69.3)* | 58.0 *(57.7)* | 53.3 *(53.1)* |

*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907224

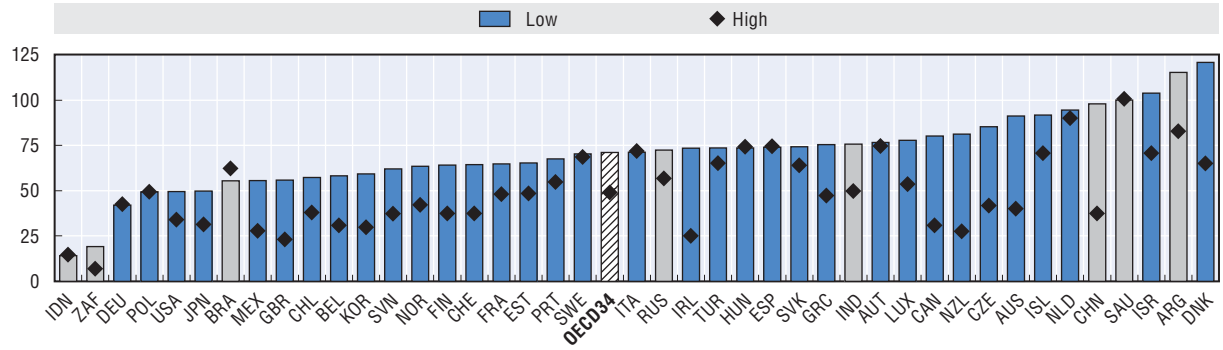
## 4.2. Gross pension replacement rates: Average earners




*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907243

## 4.3. Gross pension replacement rates: Low and high earners




*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907262

**Key results**

Private pensions play a large and growing role in providing incomes for old age. This is illustrated with calculations of gross pension replacement rates which distinguish the contributions of public and private sectors. The OECD average for replacement rates of an average earner from public schemes alone is 41%, compared with 54% with mandatory private pensions included. When voluntary private pensions, under typical rules, are added, the average replacement rate is 68% for an average earner.

For the 13 OECD countries where the calculations of mandatory entitlements cover only public pensions, the replacement rate for an average earner is 58% on average. For the 13 OECD countries with public and mandatory private provision, the average replacement rate is 59%. For all 34 OECD countries, including public, mandatory private and voluntary private pensions, the average replacement rate is 61%.

This shows the interplay between different scheme types. Australia, Denmark, Iceland and Israel have highly targeted public programmes, so very low public replacement rates for middle and high earners are topped up with mandatory private pensions. In Chile, Mexico, Poland, the Slovak Republic and Sweden, part of public provision was replaced by reforms with mandatory private pensions. Canada, Ireland, the United Kingdom and the United States have long had relatively low public pensions and widespread voluntary provision.

Of the other major economies public pensions are mandatory in Argentina, Brazil, China, India, the Russian Federation and Saudi Arabia. South Africa has voluntary private schemes, with the public pension being withdrawn for average earners and above, because of its means-tested component. Indonesia's system is entirely mandatory private with no public component.

### *Mandatory private pensions*

The first group of 13 countries has mandatory private pensions or private pensions that have near-universal coverage and so are described as "quasi-mandatory" (Denmark, the Netherlands and Sweden).

In Iceland, the Netherlands and Switzerland, private pensions are defined benefit while in other countries, they are defined contribution. Replacement rates from mandatory private schemes for average earners range from 22% to 39% in eight of the 13 countries. But they are significantly above this range in Denmark, Iceland, Israel and the Netherlands and much lower in Norway.

In six countries, replacement rates are the same for workers earning between 50% and 150% of the average worker earnings. However, some countries have private pensions designed to cover earnings above the ceiling of the public scheme. This is the reason that replacement rates from private plans increase with earnings across the range in Chile, the Netherlands and Norway. It also explains why replacement rates for workers on 150% of average earnings are much higher in Sweden.

The pattern in Switzerland is complex. Again, low earners have a lower replacement rate to take account of public benefits. But the ceiling on earnings that must be covered by the occupational plans is relatively low.

### *Voluntary private pensions*

Replacement rates are shown for nine countries where voluntary private pensions are widespread: covering between 40% and 65% of the workforce (see the indicator of "Coverage of private pensions"). It is assumed that workers with voluntary private pensions spend a full career in the scheme. Voluntary private pensions include both voluntary occupational and voluntary personal.

The rules modelled are in the "Country profiles" in Chapter 9. In all nine countries, a defined-contribution plan is modelled.

In general, the defined-contribution schemes pay a constant replacement rate with earnings. (Data on actual contribution rates by earnings are not available for most countries, and so an average or typical rate is assumed across the earnings range.) Belgium is the exception due to ceilings on pensionable earnings that qualify for tax incentives. Germany also falls into this category with a ceiling equal to 150% of average worker earnings. In Norway, as with the mandatory defined-contribution plan, replacement rates increase with earnings because the private schemes are designed to offset some of the redistribution in public retirement benefits.

## 4.4. Gross pension replacement rates from public, mandatory private and voluntary private pension schemes

Percentage of individual earnings

| | Public | | | Mandatory private | | | Voluntary DC | | | Total mandatory | | | Total with voluntary | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 |
| **OECD members** | | | | | | | | | | | | | | | |
| Australia | 52.4 | 13.6 | 0.6 | 38.7 | 38.7 | 38.7 | | | | 91.1 | 52.3 | 39.4 | | | |
| Austria | 76.6 | 76.6 | 74.0 | | | | | | | 76.6 | 76.6 | 74.0 | | | |
| Belgium | 58.2 | 41.0 | 30.2 | | | | 15.1 | 15.1 | 11.2 | 58.2 | 41.0 | 30.2 | 73.3 | 56.2 | 41.4 |
| Canada | 63.1 | 39.2 | 26.1 | | | | 33.9 | 33.9 | 33.9 | 63.1 | 39.2 | 26.1 | 97.0 | 73.1 | 60.1 |
| Chile | 20.4 | 4.8 | 0.0 | 36.9 | 37.2 | 37.3 | | | | 57.3 | 41.9 | 37.3 | | | |
| Czech Republic | 71.8 | 43.5 | 34.1 | | | | 39.2 | 39.2 | 39.2 | 71.8 | 43.5 | 34.1 | 111.0 | 82.8 | 73.4 |
| Denmark | 68.0 | 30.6 | 18.1 | 52.6 | 47.9 | 46.4 | | | | 120.7 | 78.5 | 64.4 | | | |
| Estonia | 40.4 | 27.4 | 23.0 | 24.8 | 24.8 | 24.8 | | | | 65.2 | 52.2 | 47.9 | | | |
| Finland | 64.1 | 54.8 | 54.8 | | | | | | | 64.1 | 54.8 | 54.8 | | | |
| France | 64.8 | 58.8 | 47.5 | | | | | | | 64.8 | 58.8 | 47.5 | | | |
| Germany | 42.0 | 42.0 | 42.0 | | | | 16.0 | 16.0 | 16.0 | 42.0 | 42.0 | 42.0 | 58.0 | 58.0 | 58.0 |
| Greece | 75.4 | 53.9 | 46.7 | | | | | | | 75.4 | 53.9 | 46.7 | | | |
| Hungary | 73.6 | 73.6 | 73.6 | | | | | | | 73.6 | 73.6 | 73.6 | | | |
| Iceland | 25.9 | 6.5 | 4.3 | 65.8 | 65.8 | 65.8 | | | | 91.7 | 72.3 | 70.1 | | | |
| Ireland | 73.4 | 36.7 | 24.5 | | | | 43.0 | 43.0 | 43.0 | 73.4 | 36.7 | 24.5 | 116.4 | 79.7 | 67.5 |
| Israel | 44.5 | 22.2 | 14.8 | 59.3 | 51.1 | 34.1 | | | | 103.7 | 73.4 | 48.9 | | | |
| Italy | 71.2 | 71.2 | 71.2 | | | | | | | 71.2 | 71.2 | 71.2 | | | |
| Japan | 49.8 | 35.6 | 30.8 | | | | | | | 49.8 | 35.6 | 30.8 | | | |
| Korea | 59.2 | 39.6 | 29.2 | | | | | | | 59.2 | 39.6 | 29.2 | | | |
| Luxembourg | 77.7 | 56.4 | 53.0 | | | | | | | 77.7 | 56.4 | 53.0 | | | |
| Mexico | 30.7 | 3.8 | 2.5 | 24.7 | 24.7 | 24.7 | | | | 55.5 | 28.5 | 27.2 | | | |
| Netherlands | 59.1 | 29.5 | 19.7 | 35.3 | 61.1 | 69.7 | | | | 94.4 | 90.7 | 89.4 | | | |
| New Zealand | 81.1 | 40.6 | 27.0 | | | | 14.1 | 14.1 | 14.1 | 81.1 | 40.6 | 27.0 | 95.3 | 54.7 | 41.2 |
| Norway | 57.9 | 45.7 | 34.3 | 5.5 | 6.8 | 7.2 | 8.3 | 11.3 | 16.5 | 63.4 | 52.5 | 41.6 | 71.6 | 63.8 | 58.1 |
| Poland | 24.5 | 24.5 | 24.5 | 24.3 | 24.3 | 24.3 | | | | 48.8 | 48.8 | 48.8 | | | |
| Portugal | 67.5 | 54.7 | 54.1 | | | | | | | 67.5 | 54.7 | 54.1 | | | |
| Slovak Republic | 45.9 | 37.6 | 35.1 | 28.3 | 28.3 | 28.3 | | | | 74.2 | 65.9 | 63.4 | | | |
| Slovenia | 62.0 | 39.2 | 36.7 | | | | | | | 62.0 | 39.2 | 36.7 | | | |
| Spain | 73.9 | 73.9 | 73.9 | | | | | | | 73.9 | 73.9 | 73.9 | | | |
| Sweden | 48.6 | 33.9 | 25.7 | 21.7 | 21.7 | 42.2 | | | | 70.2 | 55.6 | 67.9 | | | |
| Switzerland | 49.3 | 32.0 | 21.4 | 14.9 | 23.1 | 15.4 | | | | 64.3 | 55.2 | 36.8 | | | |
| Turkey | 73.5 | 64.5 | 64.5 | | | | | | | 73.5 | 64.5 | 64.5 | | | |
| United Kingdom | 55.2 | 32.6 | 22.5 | | | | 34.5 | 34.5 | 34.5 | 55.2 | 32.6 | 22.5 | 89.7 | 67.1 | 57.0 |
| United States | 49.5 | 38.3 | 33.4 | | | | 37.8 | 37.8 | 37.8 | 49.5 | 38.3 | 33.4 | 87.4 | 76.2 | 71.2 |
| **OECD34** | **57.4** | **40.6** | **34.5** | | | | | | | **70.1** | **54.0** | **48.0** | **88.9** | **67.9** | **58.6** |
| **Other major economies** | | | | | | | | | | | | | | | |
| Argentina | 115.2 | 90.4 | 82.1 | | | | | | | 115.2 | 90.4 | 82.1 | | | |
| Brazil | 55.4 | 57.5 | 61.7 | | | | | | | 55.4 | 57.5 | 61.7 | | | |
| China | 97.9 | 77.9 | 71.2 | | | | | | | 97.9 | 77.9 | 71.2 | | | |
| India | 75.6 | 55.8 | 49.2 | | | | | | | 75.6 | 55.8 | 49.2 | | | |
| Indonesia | | | | 14.1 | 14.1 | 14.1 | | | | 14.1 | 14.1 | 14.1 | | | |
| Russian Federation | 30.6 | 30.6 | 30.6 | 17.3 | 17.3 | 17.3 | | | | 47.9 | 47.9 | 47.9 | | | |
| Saudi Arabia | 100.0 | 100.0 | 100.0 | | | | | | | 100.0 | 100.0 | 100.0 | | | |
| South Africa | 0.0 | 0.0 | 0.0 | | | | 54.5 | 54.5 | 54.5 | 0.0 | 0.0 | 0.0 | 54.5 | 54.5 | 54.5 |
| EU27 | 59.2 | 47.0 | 41.3 | | | | | | | 69.0 | 57.6 | 53.0 | | | |

DC = Defined contribution.

*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907281

**Key results**

The personal tax system plays an important role in old-age support. Pensioners often do not pay social security contributions. Personal income taxes are progressive and pension entitlements are usually lower than earnings before retirement, so the average tax rate on pension income is typically less than the tax rate on earned income. In addition, most income tax systems give preferential treatment either to pension incomes or to pensioners, by giving additional allowances or credits to older people.

Slightly more than half (18 out of 34) OECD countries provide older people with additional basic relief under the personal income tax. Generally, this takes the form of an extra tax allowance or tax credit. In many cases – Canada and the United Kingdom, for example – this additional relief is phased out for older people with higher incomes.

A significant number of countries offer tax relief for particular source of retirement income. Relief from income tax for public pensions, either full or partial, is available in 11 OECD countries. For example, between 15% and 50% of income from public pensions (social security) in the United States is not taxed, depending on the total income of the pensioner. Another four countries offer reliefs for private-pension income. In Australia, for example, benefits derived from pension contributions and investment returns that have been taxed are not taxable in payment for over 60s. (This therefore applies to the mandatory defined-contribution scheme and voluntary contributions to such plans.)

In contrast Sweden taxes earned income from work less than pensions. The Earned Income Tax Credit is targeted to low and mid-income earners and work as a tax deduction on work income. The tax deduction is larger for the over 65s in order to strengthen incentives work and to prolong working lives.

Overall, 23 OECD countries have some concession for older people or pension income under their personal income taxes. In only eleven is the tax treatment of pensions and pensioners the same as it is for people of working age.

Virtually all OECD countries levy employee social security contributions on workers: Australia and New Zealand are the only exceptions. In addition to these two countries, a further 17 do not levy social security contributions on pensioners. The rate of contributions in the 15 countries that *do* levy social security contributions on retirees is always lower than the rate charged on workers. Typically, older people do not pay contributions for pensions or unemployment (for obvious reasons). However, pensioners can be subject to levies to pay for health or long-term care and, in some cases, are liable for "solidarity" contributions to finance a broad range of benefits.

### *Empirical results*

The figures show the percentage of income paid in taxes and contribution by workers and pensioners.

Starting with workers, countries have been ranked by the proportion of income paid in tax at an average earner level. This is then compared to the replacement rate that an average earner would see in retirement (as set out in the indicator of "Gross pension replacement rates" above). In eight OECD countries and all the other major economies, such a pensioner would not pay an income tax in retirement. In others, such as the Slovak Republic and Turkey, this is because pensions are not taxable. In Ireland it is because the pension income would be less than the basic income-tax reliefs offered to older people. Pensioners with the gross replacement rate for an average earner would pay 10.9% of their income in taxes and contributions.

The figure aims to show directly the impact of different tax and contribution treatment of earnings and pensions. The amount of taxes and contributions paid by a worker with average earnings averages 26.7% in OECD countries and 10.2% in other major economies.

The last comparison shows how much a pensioner would pay with the same income: that is, a pension worth the same as average earnings. This averages 16.9% in OECD countries, some 10 percentage points less than workers pay with the same level of income.

The difference between this 17% rate for pensioners with an income equal to average earnings and the 11% paid in taxes and contributions paid on incomes equal to the gross replacement rate for an average earner illustrates the impact of progressivity in income-tax systems.

### *Further reading*

Keenay, G. and E.R. Whitehouse (2003), "The Role of the Personal Tax System in Old-age Support: A Survey of 15 Countries", *Fiscal Studies*, Vol. 24, No. 1, pp. 1-21.

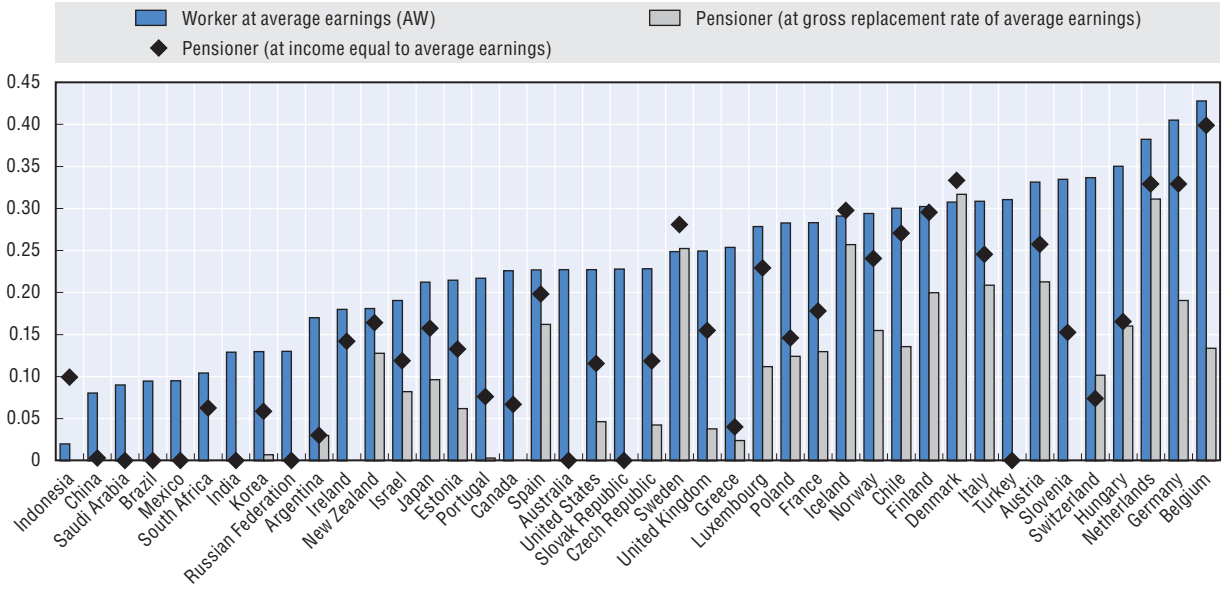
## 4.5. Treatment of pensions and pensioners under personal income tax and social security contributions

| | Extra tax | Full or partial relief for pension income | | Social security contributions | | Extra tax | Full or partial relief for pension income | | Social security contributions |
|---|---|---|---|---|---|---|---|---|---|
| | Allowance/ credit | Public scheme | Private scheme | Pensions | | Allowance/ credit | Public scheme | Private scheme | Pensions |
| **OECD members** | | | | | **OECD members** *(cont.)* | | | | |
| Australia | ✓ | ✓ | ✓ | *None* | New Zealand | | | | *None* |
| Austria | | | | *Low* | Norway | ✓ | ✓ | | *Low* |
| Belgium | | ✓ | | *Low* | Poland | | | | *Low* |
| Canada | ✓ | ✓ | ✓ | *None* | Portugal | | | | *None* |
| Chile | ✓ | | | *None* | Slovak Republic | | ✓ | | *None* |
| Czech Republic | ✓ | ✓ | | *None* | Slovenia | ✓ | | | *Low* |
| Denmark | | | | *None* | Spain | | | | *None* |
| Estonia | ✓ | | | *None* | Sweden | ✓ | | | *None* |
| Finland | | ✓ | | *Low* | Switzerland | | | | *Low* |
| France | | | | *Low* | Turkey | | ✓ | | *None* |
| Germany | | ✓ | ✓ | *Low* | United Kingdom | ✓ | | | *None* |
| Greece | | | | *Low* | United States | ✓ | ✓ | | *None* |
| Hungary | | | | *None* | | | | | |
| Iceland | | | | *None* | **Other major economies** | | | | |
| Ireland | ✓ | | | *Low* | Argentina | | ✓ | | *None* |
| Israel | ✓ | | | *Low* | Brazil | | ✓ | | *None* |
| Italy | ✓ | | ✓ | *None* | China | | | | |
| Japan | ✓ | | | *Low* | India | ✓ | | | *None* |
| Korea | ✓ | ✓ | | *None* | Indonesia | | | | *None* |
| Luxembourg | ✓ | | | *Low* | Russian Federation | | | | *Low* |
| Mexico | ✓ | | | *None* | Saudi Arabia | | | | *Low* |
| Netherlands | ✓ | | | *Low* | South Africa | ✓ | | | *None* |

*Source:* On-line country profiles available at *www.oecd.org/pensions/pensionsataglance.htm*.

StatLink http://dx.doi.org/10.1787/888932907300

## 4.6. Personal income taxes and social security contributions paid by pensioners and workers




*Source:* OECD pension models; OECD tax and benefit models.

StatLink http://dx.doi.org/10.1787/888932907319

## Key results

For average earners, the net replacement rate across the OECD averages 66%, which is 11 percentage points higher than the gross replacement rate. This reflects the higher taxes and contributions that people paid on their earnings when working than they pay on their pensions in retirement. Net replacement rates again vary across a large range, from under a third in Mexico to over 100% in the Netherlands for average earners.

For low earners (with half of mean earnings), the average net replacement rate across OECD countries is 82%. For high earners (150% of mean earnings) the average net replacement rate is 60%, lower than for low earners. As with gross replacement rates, the differences with earnings reflect progressive features of pension systems, such as minimum benefits and ceilings on pensionable earnings.

The previous indicator of the "Tax treatment of pensions and pensioners" showed the important role that the personal tax and social security contribution systems play in old-age income support. Pensioners often do not pay social security contributions and receive preferential treatment under the income tax. Progressivity of income taxes coupled with gross replacement rates of less than 100% also mean that pensioners pay less in income tax than workers. As a result, net replacement rates are usually higher than gross replacement rates.

For average earners, the pattern of replacement rates across countries is different on a net rather than a gross basis. For example, the Belgian and German pension systems have considerably higher net replacement rates than gross. This is due, first, to favourable treatment of pension income under social security contributions. Second, because replacement rates are relatively low compared with OECD countries and personal income taxes are strongly progressive in these countries, people pay much less in income tax when retired than they did when working. This is despite the fact that the very generous tax treatment of pension income in Germany is gradually being withdrawn. In the case of Slovenia the difference between gross and net is a consequence of the pension formula; pension benefits are calculated in net terms directly. In contrast Sweden move lower down the figure on a net basis. This is because Sweden taxes pension income and earnings at different rates due to the Earned Income Tax Credit. Tax concessions for pensioners have also been re-introduced since 2009.

For low earners, the effect of taxes and contributions on net replacement rates is more muted than for workers higher up the earnings scale. This is because low income workers typically pay less in taxes and contributions relative to average earners. In many cases, their retirement incomes are below the level of the standard reliefs in the personal income tax (allowances, credits, etc.). Thus, they are often unable to benefit fully from additional concessions granted to pensions or pensioners under the personal income tax.

The difference between gross and net replacement rates for low earners is 11 percentage points on average. Belgium, Germany, Norway, Slovenia and Turkey have much higher replacement rates for low earners measure on a net basis than in gross terms.

The net replacement rate for workers earning 150% of the average is highest in Turkey, the Netherlands and Hungary. The lowest replacement rates are in the United Kingdom, New Zealand and Mexico. In all countries, workers earning 150% of the average will receive pensions that amount to less than a third of their net earnings when working.

For non-OECD countries, there is very little variation in net replacement rates within countries across the earnings range. However, there is considerable difference between countries, ranging from 11% for average earners in South Africa to 110% in Saudi Arabia. As with the gross rates, the EU27 average net replacement rate for average earners is 71%, markedly higher than the OECD34 figure.

### *Definition and measurement*

The net replacement rate is defined as the individual net pension entitlement divided by net pre-retirement earnings, taking account of personal income taxes and social security contributions paid by workers and pensioners. Otherwise, the definition and measurement of the net replacement rates are the same as for the gross replacement rate (see the previous indicator).

Details of the rules that national tax systems apply to pensioners can be found in the on-line country profiles at *www.oecd.org/pensions/pensionsataglance.htm*.

## 4.7. Net pension replacement rates by earnings

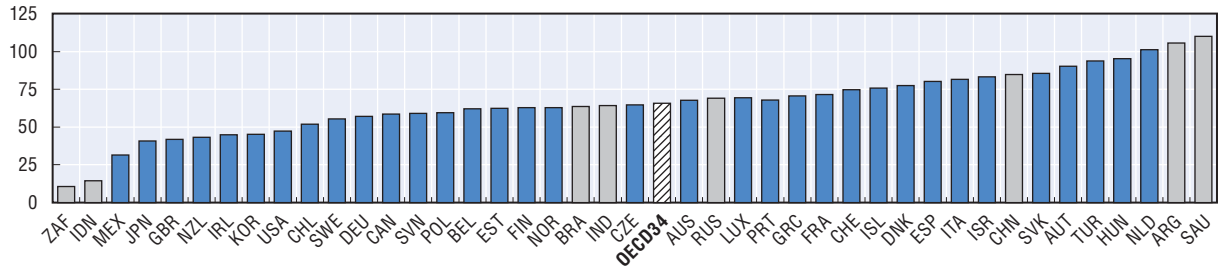
Individual earnings, multiple of mean for men (women where different)

| | Median earner | 0.5 | 1.0 | 1.5 |
|---|---|---|---|---|
| **OECD members** | | | | |
| Australia | 75.6 *(70.0)* | 100.5 *(95.6)* | 67.7 *(61.9)* | 54.3 *(48.2)* |
| Austria | 89.9 | 91.2 | 90.2 | 86.2 |
| Belgium | 63.9 | 80.7 | 62.1 | 44.6 |
| Canada | 64.4 | 90.7 | 58.6 | 40.8 |
| Chile | 54.1 *(44.1)* | 62.5 *(53.2)* | 51.8 *(41.6)* | 47.7 *(37.2)* |
| Czech Republic | 73.4 | 99.1 | 64.7 | 51.6 |
| Denmark | 82.4 | 117.5 | 77.4 | 67.4 |
| Estonia | 67.1 | 79.7 | 62.4 | 55.5 |
| Finland | 62.4 | 71.3 | 62.8 | 63.2 |
| France | 72.3 | 75.9 | 71.4 | 60.9 |
| Germany | 57.8 | 55.2 | 57.1 | 56.1 |
| Greece | 79.6 | 92.5 | 70.5 | 65.0 |
| Hungary | 94.4 | 94.4 | 95.2 | 96.1 |
| Iceland | 77.8 | 93.3 | 75.7 | 73.3 |
| Ireland | 52.2 | 75.5 | 44.8 | 34.6 |
| Israel | 95.5 *(85.9)* | 108.5 *(98.8)* | 83.2 *(74.7)* | 59.1 *(53.0)* |
| Italy | 82.0 | 83.9 | 81.5 | 83.3 |
| Japan | 42.5 | 54.3 | 40.8 | 35.7 |
| Korea | 49.1 | 64.8 | 45.2 | 34.2 |
| Luxembourg | 70.5 | 87.1 | 69.4 | 66.8 |
| Mexico | 45.3 | 56.2 | 31.5 *(30.7)* | 31.3 *(28.9)* |
| Netherlands | 103.8 | 104.8 | 101.1 | 97.2 |
| New Zealand | 51.7 | 81.7 | 43.2 | 30.6 |
| **OECD members** *(cont.)* | | | | |
| Norway | 63.8 | 91.1 | 62.8 | 51.3 |
| Poland | 59.8 | 61.3 | 59.5 | 59.1 |
| Portugal | 65.6 | 77.7 | 67.8 | 68.4 |
| Slovak Republic | 86.1 | 88.1 | 85.4 | 84.7 |
| Slovenia | 59.0 | 80.8 | 59.0 | 57.0 |
| Spain | 79.8 | 79.5 | 80.1 | 79.8 |
| Sweden | 55.3 | 68.8 | 55.3 | 72.9 |
| Switzerland | 77.8 *(76.6)* | 78.4 *(77.7)* | 74.7 *(73.5)* | 49.1 *(48.3)* |
| Turkey | 94.9 | 103.9 | 93.6 | 97.2 |
| United Kingdom | 48.0 | 67.2 | 41.8 | 30.5 |
| United States | 49.9 | 58.7 | 47.3 | 42.9 |
| **OECD34** | **69.1 *(68.3)*** | **81.7 *(80.9)*** | **65.8 *(65.0)*** | **59.7 *(53.8)*** |
| **Other major economies** | | | | |
| Argentina | 112.4 *(103.9)* | 134.6 *(126.1)* | 105.6 *(97.1)* | 98.4 *(90.1)* |
| Brazil | 63.1 *(57.4)* | 60.2 *(54.7)* | 63.5 *(57.7)* | 70.3 *(64.0)* |
| China | 89.7 *(70.8)* | 106.4 *(85.3)* | 84.7 *(66.3)* | 78.2 *(60.9)* |
| India | 68.7 *(64)* | 85.9 *(80.9)* | 64.1 *(59.2)* | 58.2 *(53.5)* |
| Indonesia | 14.4 *(13.2)* | 14.4 *(13.2)* | 14.4 *(13.2)* | 14.5 *(13.4)* |
| Russian Federation | 72.4 *(64.9)* | 83.2 *(75.6)* | 69.1 *(61.6)* | 64.5 *(56.9)* |
| Saudi Arabia | 109.9 *(96.2)* | 109.9 *(96.2)* | 109.9 *(96.2)* | 109.9 *(96.2)* |
| South Africa | 12.9 | 19.7 | 10.7 | 7.5 |
| EU27 | 72.7 *(72.3)* | 81.6 *(81.2)* | 70.6 *(70.3)* | 65.6 *(65.3)* |

*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907338

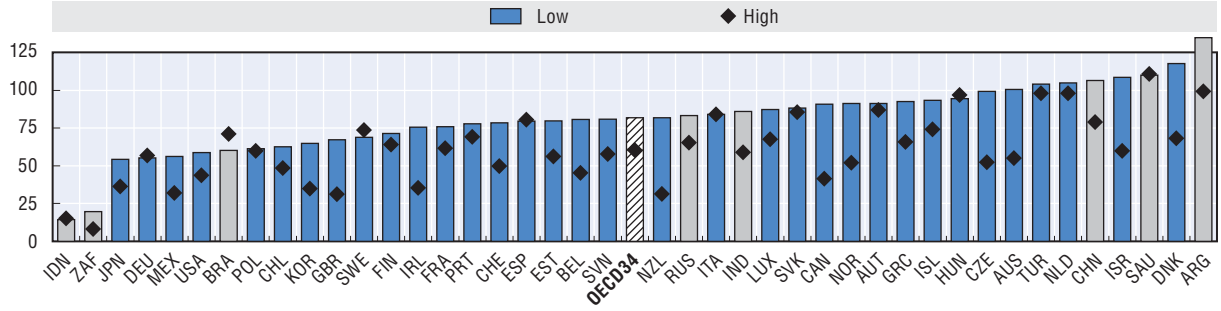
## 4.8. Net pension replacement rates: Average earners




*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907357

## 4.9. Net pension replacement rates: Low and high earners




*Source:* OECD pension models.

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**Key results**

The OECD average for net replacement rates of an average earner from public schemes alone is 49%, compared with 64% with mandatory private pensions included. When voluntary private pensions, under typical rules, are added, the average net replacement rate is 79% for an average earner.

The personal tax system plays an important role in old-age support. Pensioners often do not pay social security contributions and, as personal income taxes are progressive and pension entitlements are usually lower than earnings before retirement, the average tax rate on pension income is typically less than the tax rate on earned income. In addition, most income tax systems give preferential treatment either to pension incomes or to pensioners, by giving additional allowances or credits to older people. Therefore, net replacement rates are usually higher than gross replacement rates.

For the 13 OECD countries where the calculations cover only public pensions, the replacement rate for an average earner is 71% on average. For the 13 OECD countries with data for public and mandatory private provision, the average replacement rate is 68%. For all 34 OECD countries, including public, mandatory private and voluntary private pensions, the average replacement rate is 79%. Overall net replacement rates are on average 11 percentage-points higher than the corresponding gross replacement rate figures.

For the other major economies there is a wide variation between country and across earnings level. The exception to the latter is the Russian Federation which has identical net replacement rates across all the earnings ranges.

### *Mandatory private pensions*

The first group of 13 countries has mandatory private pensions or private pensions that have near-universal coverage and so are described as "quasi-mandatory" (Denmark, the Netherlands and Sweden).

In Iceland, the Netherlands and Switzerland, private pensions are defined benefit while in other countries, they are defined contribution. Net replacement rates from mandatory private schemes for average earners range from 22% to 37% in six of the 13 countries. But they are significantly above this range in Australia, Chile, Denmark, Iceland, Israel and the Netherlands and much lower in Norway.

Between the combination of some countries having private pensions designed to cover earnings above the ceiling of the public scheme and the tax system in place no country has the same replacement rate across the earnings levels. This is the reason that replacement rates from private plans increase with earnings across the range in Australia, Chile, Mexico, the Netherlands, Norway and the Slovak Republic. It also explains why replacement rates from mandatory private schemes for workers on 150% of average earnings are more than double that of average workers in Sweden.

The pattern in Switzerland is complex. Again, low earners have a lower replacement rate to take account of public benefits. But the ceiling on earnings that must be covered by the occupational plans is relatively low.

### *Voluntary private pensions*

Replacement rates are shown for nine countries where voluntary private pensions are widespread: covering between 40% and 65% of the workforce (see the indicator of "Coverage of private pensions" in Chapter 8). The only country with a comparable proportion of the workforce in voluntary private pensions is Japan, but information is not available on typical rules. It is assumed that workers with voluntary private pensions spend a full career in the scheme.

The rules that have been modelled are in the "Country profiles" in Chapter 9. In all nine countries, a defined-contribution plan is modelled.

In general, the defined-contribution schemes pay a constant replacement rate with earnings. (Data on actual contribution rates by earnings are not available for most countries, and so an average or typical rate is assumed across the earnings range.) However the difference in taxation rules means that the net replacement rate differs across the earnings range, but generally increases as earnings increase. Belgium is the exception due to ceilings on pensionable earnings that qualify for tax incentives. Germany also falls into this category but the ceiling is equal to the 150% earnings range.

## 4.10. Net pension replacement rates from public, mandatory private and voluntary private pension schemes

Percentage of individual earnings

| | Public | | | Mandatory private | | | Voluntary DC | | | Total mandatory | | | Total with voluntary | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 |
| **OECD members** | | | | | | | | | | | | | | | |
| Australia | 57.7 | 17.5 | 0.9 | 42.7 | 50.1 | 53.5 | | | | 100.5 | 67.7 | 54.3 | | | |
| Austria | 91.2 | 90.2 | 86.2 | | | | | | | 91.2 | 90.2 | 86.2 | | | |
| Belgium | 72.9 | 50.1 | 39.9 | | | | 19.0 | 18.5 | 14.8 | 72.9 | 50.1 | 39.9 | 91.8 | 68.6 | 54.7 |
| Canada | 71.5 | 50.6 | 35.2 | | | | 38.5 | 43.8 | 45.8 | 71.5 | 50.6 | 35.2 | 110.0 | 94.4 | 81.0 |
| Chile | 22.3 | 5.9 | 0.0 | 40.3 | 45.9 | 47.7 | | | | 62.5 | 51.8 | 47.7 | | | |
| Czech Republic | 79.7 | 50.7 | 40.1 | | | | 43.5 | 45.7 | 46.1 | 79.7 | 50.7 | 40.1 | 123.2 | 96.4 | 86.2 |
| Denmark | 66.2 | 30.1 | 18.9 | 51.2 | 47.3 | 48.5 | | | | 117.5 | 77.4 | 67.4 | | | |
| Estonia | 49.4 | 32.7 | 26.7 | 30.3 | 29.7 | 28.8 | | | | 79.7 | 62.4 | 55.5 | | | |
| Finland | 71.3 | 62.8 | 63.2 | | | | | | | 71.3 | 62.8 | 63.2 | | | |
| France | 75.9 | 71.4 | 60.9 | | | | | | | 75.9 | 71.4 | 60.9 | | | |
| Germany | 55.9 | 55.3 | 54.4 | | | | 21.3 | 21.1 | 20.8 | 55.9 | 55.3 | 54.4 | 77.2 | 76.4 | 75.2 |
| Greece | 92.5 | 70.5 | 65.0 | | | | | | | 92.5 | 70.5 | 65.0 | | | |
| Hungary | 94.4 | 95.2 | 96.1 | | | | | | | 94.4 | 95.2 | 96.1 | | | |
| Iceland | 26.4 | 6.8 | 4.5 | 66.9 | 68.9 | 68.8 | | | | 93.3 | 75.7 | 73.3 | | | |
| Ireland | 71.4 | 37.3 | 27.9 | | | | 41.8 | 43.7 | 49.0 | 71.4 | 37.3 | 27.9 | 113.2 | 81.0 | 76.9 |
| Israel | 46.5 | 25.2 | 17.9 | 62.0 | 58.0 | 41.2 | | | | 108.5 | 83.2 | 59.1 | | | |
| Italy | 78.0 | 78.2 | 77.9 | | | | | | | 78.0 | 78.2 | 77.9 | | | |
| Japan | 54.3 | 40.8 | 35.7 | | | | | | | 54.3 | 40.8 | 35.7 | | | |
| Korea | 64.8 | 45.2 | 34.2 | | | | | | | 64.8 | 45.2 | 34.2 | | | |
| Luxembourg | 87.1 | 69.4 | 66.8 | | | | | | | 87.1 | 69.4 | 66.8 | | | |
| Mexico | 31.1 | 4.2 | 2.9 | 25.0 | 27.3 | 28.4 | | | | 56.2 | 31.5 | 31.3 | | | |
| Netherlands | 65.6 | 33.0 | 21.4 | 39.2 | 68.2 | 75.8 | | | | 104.8 | 101.1 | 97.2 | | | |
| New Zealand | 83.0 | 43.5 | 30.6 | | | | 14.5 | 15.2 | 16.0 | 83.0 | 43.5 | 30.6 | 97.5 | 58.7 | 46.6 |
| Norway | 71.5 | 52.0 | 39.5 | 6.8 | 7.7 | 8.3 | 10.2 | 12.9 | 19.0 | 78.3 | 59.7 | 47.8 | 88.5 | 72.6 | 66.8 |
| Poland | 30.4 | 29.9 | 29.7 | 30.2 | 29.6 | 29.5 | | | | 60.6 | 59.5 | 59.1 | | | |
| Portugal | 77.7 | 67.8 | 68.4 | | | | | | | 77.7 | 67.8 | 68.4 | | | |
| Slovak Republic | 54.4 | 48.7 | 46.8 | 33.6 | 36.7 | 37.8 | | | | 88.1 | 85.4 | 84.7 | | | |
| Slovenia | 80.8 | 59.0 | 57.0 | | | | | | | 80.8 | 59.0 | 57.0 | | | |
| Spain | 79.5 | 80.1 | 79.8 | | | | | | | 79.5 | 80.1 | 79.8 | | | |
| Sweden | 47.6 | 33.7 | 27.6 | 21.2 | 21.5 | 45.3 | | | | 68.8 | 55.3 | 72.9 | | | |
| Switzerland | 60.2 | 43.4 | 28.5 | 18.2 | 31.3 | 20.6 | | | | 78.4 | 74.7 | 49.1 | | | |
| Turkey | 103.9 | 93.6 | 97.2 | | | | | | | 103.9 | 93.6 | 97.2 | | | |
| United Kingdom | 61.7 | 38.0 | 27.2 | | | | 38.6 | 40.2 | 41.7 | 61.7 | 38.0 | 27.2 | 100.3 | 78.1 | 68.9 |
| United States | 56.2 | 44.8 | 40.4 | | | | 42.9 | 44.2 | 45.8 | 56.2 | 44.8 | 40.4 | 99.1 | 88.9 | 86.2 |
| **OECD34** | **65.7** | **48.7** | **42.6** | | | | | | | **79.4** | **64.1** | **58.3** | **100.1** | **79.5** | **71.4** |
| **Other major economies** | | | | | | | | | | | | | | | |
| Argentina | 134.6 | 105.6 | 98.4 | | | | | | | 134.6 | 105.6 | 98.4 | | | |
| Brazil | 60.2 | 63.5 | 70.3 | | | | | | | 60.2 | 63.5 | 70.3 | | | |
| China | 106.4 | 84.7 | 78.2 | | | | | | | 106.4 | 84.7 | 78.2 | | | |
| India | 85.9 | 64.1 | 58.2 | | | | | | | 85.9 | 64.1 | 58.2 | | | |
| Indonesia | | | | 14.4 | 14.4 | 14.5 | | | | 14.4 | 14.4 | 14.5 | | | |
| Russian Federation | 35.2 | 35.2 | 35.2 | 19.9 | 19.9 | 19.9 | | | | 55.1 | 55.1 | 55.1 | | | |
| Saudi Arabia | 109.9 | 109.9 | 109.9 | | | | | | | 109.9 | 109.9 | 109.9 | | | |
| South Africa | 0.0 | 0.0 | 0.0 | | | | 56.1 | 60.8 | 61.8 | 0.0 | 0.0 | 0.0 | 56.1 | 60.8 | 61.8 |
| EU27 | 68.6 | 56.6 | 50.7 | | | | | | | 80.0 | 69.1 | 64.3 | | | |

DC = Defined contribution.
*Source:* OECD pension models.

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## Key results

Although private pension funds in OECD countries have, on average, now recovered all of the pre-crisis losses the markets are still volatile and negative growth is still not uncommon. However, it is important to bear in mind that private pensions are only a part of the overall retirement-income package: a major part of retirement income is generally not affected by investment risk. In some countries, means-tested pensions protect low-income workers from much investment risk and the tax system can also acts as an "automatic stabiliser" of retirement incomes.

### *Measuring investment risk*

The scale of investment risk has been analysed using historical data for eight OECD countries: Canada, France, Germany, Italy, Japan, Sweden, the United Kingdom and the United States. Detailed econometric results were then used to simulate a distribution of outcomes and probabilities for a 40-year investment horizon. The two main assets in pension-fund portfolios were analysed: equities and government bonds. The results for a portfolio split equally between these two assets are shown in the table below.

**The degree of investment risk: Implications for pensions**

| Distribution of returns, percentile point | 10% | 25% | 50% | 75% | 90% |
|---|---|---|---|---|---|
| Annual real return | 2.5% | 3.3% | 4.3% | 5.3% | 6.0% |
| Replacement rate | 26.9% | 31.9% | 39.9% | 50.5% | 60.0% |

The table above shows that 50% of the time, investment returns will be higher or lower than 4.3% a year in real terms. This is higher than the baseline assumption of 3.5% of this report. Some 10% of the time, the real return is expected to be less than 2.5% or more than 6.0%. The table shows that these returns generate a large range of replacement rates, ranging from 27% in the worst cases to 60% in the best.

### *Investment risk in practice*

The table shows gross and net replacement rates with low, middle and high returns: the 10th, 50th and 90th percentile of the distribution of returns respectively. On the left-hand side of the table there are ten countries where defined-contribution plans are mandatory. The nine countries on the right-hand side have broad coverage of voluntary private plans (see the indicator of "Coverage of private pensions" in Chapter 8).

The way investment risk affects retirement incomes depends crucially on the structure of the retirement-income package. First, many benefits – from public earnings-related schemes or basic pensions – are unaffected by investment returns. In the Slovak Republic, for example, the defined-contribution pension in the best scenario is worth 2.6 times its value in the worst (also see figure). However, the overall benefit varies only by a factor of 1.6 times.

Secondly, means-tested benefits can offset some of the investment risk: a smaller defined-contribution pension results in higher benefits from targeted programmes. In Australia, for example, the defined-contribution pension is 2.4 times higher in the best rather than worst scenario for returns. Overall income, including means-tested benefit, varies by a factor of just 1.5. Means-tested benefits also play an important role on investment risk in Denmark.

The final stabiliser of retirement incomes in the face of investment risk is the tax system. Because marginal tax rates are generally higher than average rates (i.e. personal income taxes are progressive), a fall in income from defined-contribution pensions results in a more than proportionate reduction in tax liability. The effect is strongest in Denmark. Before taxes, the ratio of total pension in the best and worst cases is 1.7 compared with 1.6 after taxes are taken into account. The impact of taxes is also noticeable in Poland, but pensions in the Slovak Republic are not taxed and so there is no automatic stabiliser of retirement incomes.

### *Further reading*

D'Addio, A.C., J. Seisdedos and E.R. Whitehouse (2009), "Investment Risk and Pensions: Measuring Uncertainty in Returns", *OECD Social, Employment and Migration Working Papers*, No. 70, OECD Publishing, *http://dx.doi.org/10.1787/224016838064*.

Whitehouse, E.R., A.C. D'Addio and A.P. Reilly (2009), "Investment Risk and Pensions: Impact on Individual Retirement Incomes and Government Budgets", *OECD Social, Employment and Migration Working Papers*, No. 87, OECD Publishing, *http://dx.doi.org/10.1787/224005547774*.

## 4.11. Gross and net pension replacement rates with different rates of investment return

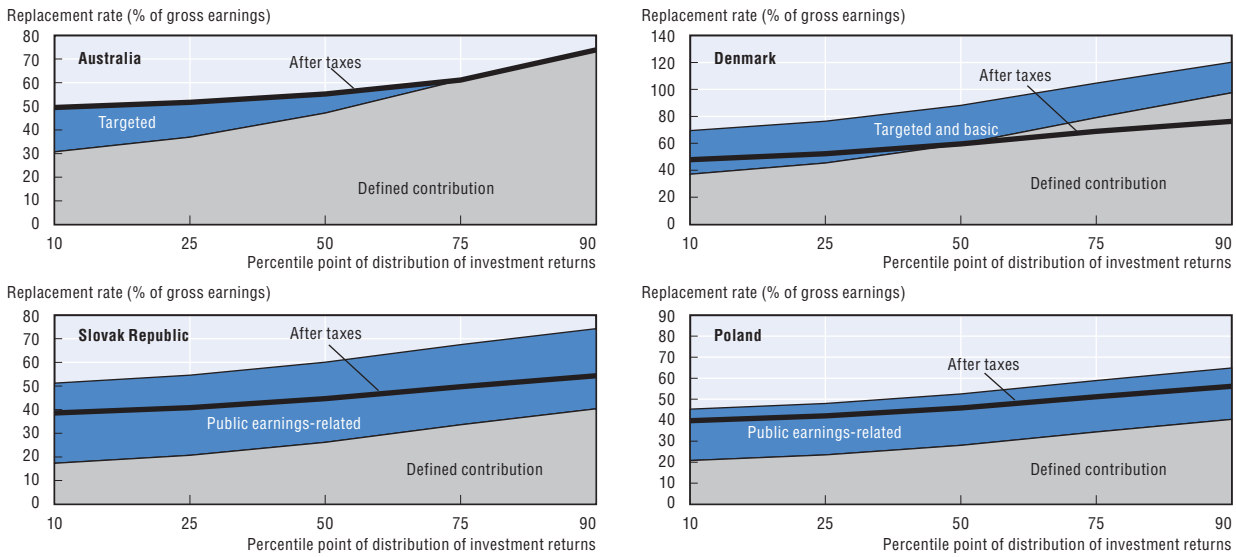
| Mandatory or quasi-mandatory defined contribution plans | | Gross replacement rate (%) | | | Net replacement rate (%) | | |
|---|---|---|---|---|---|---|---|
| Percentile of rate of return | | 10 | 50 | 90 | 10 | 50 | 90 |
| Annual real return (%) | | 2.5 | 4.3 | 6.0 | 2.5 | 4.3 | 6.0 |
| Australia | DC | 30.7 | 47.1 | 73.9 | 39.8 | 61.0 | 95.6 |
| | Other | 18.8 | 8.1 | 0.0 | 24.3 | 10.4 | 0.0 |
| | Total | 49.5 | 55.2 | 73.9 | 64.1 | 71.5 | 95.6 |
| Chile | DC | 29.1 | 45.7 | 73.4 | 36.4 | 55.6 | 82.1 |
| | Other | 7.1 | 2.3 | 0.0 | 8.9 | 2.8 | 0.0 |
| | Total | 36.2 | 48.0 | 73.4 | 45.3 | 58.3 | 82.1 |
| Denmark | DC | 37.2 | 59.5 | 97.5 | 37.1 | 58.1 | 89.4 |
| | Other | 32.3 | 28.7 | 22.6 | 32.2 | 28.1 | 20.8 |
| | Total | 69.5 | 88.2 | 120.1 | 69.3 | 86.2 | 110.2 |
| Estonia | DC | 19.5 | 30.5 | 48.7 | 23.7 | 35.8 | 55.4 |
| | Other | 27.4 | 27.4 | 27.4 | 33.3 | 32.2 | 31.1 |
| | Total | 46.9 | 57.9 | 76.1 | 57.0 | 68.1 | 86.4 |
| Israel | DC | 39.7 | 63.4 | 104.0 | 46.0 | 70.7 | 109.4 |
| | Other | 22.2 | 22.2 | 22.2 | 25.8 | 24.8 | 23.4 |
| | Total | 61.9 | 85.7 | 126.2 | 71.7 | 95.5 | 132.9 |
| Mexico | DC | 19.4 | 30.4 | 48.6 | 21.5 | 33.6 | 53.7 |
| | Other | 8.3 | 4.5 | 6.8 | 9.2 | 5.0 | 7.5 |
| | Total | 27.7 | 34.9 | 55.4 | 30.7 | 38.5 | 61.2 |
| Poland | DC | 20.8 | 28.0 | 40.4 | 25.5 | 34.1 | 48.7 |
| | Other | 24.5 | 24.5 | 24.5 | 30.0 | 29.8 | 29.5 |
| | Total | 45.3 | 52.5 | 64.9 | 55.5 | 63.9 | 78.3 |
| Slovak Republic | DC | 22.0 | 35.2 | 57.7 | 28.5 | 45.6 | 74.7 |
| | Other | 37.6 | 37.6 | 37.6 | 48.7 | 48.7 | 48.7 |
| | Total | 59.6 | 72.8 | 95.3 | 77.2 | 94.3 | 123.4 |
| Sweden | DC | 17.3 | 26.2 | 40.4 | 17.3 | 25.9 | 39.3 |
| | Other | 33.9 | 33.9 | 33.9 | 34.0 | 33.5 | 33.0 |
| | Total | 51.2 | 60.1 | 74.3 | 51.3 | 59.4 | 72.3 |

| Voluntary or mainly voluntary defined contribution | | Gross replacement rate (%) | | | Net replacement rate (%) | | |
|---|---|---|---|---|---|---|---|
| Percentile of rate of return | | 10 | 50 | 90 | 10 | 50 | 90 |
| Annual real return (%) | | 2.5 | 4.3 | 6.0 | 2.5 | 4.3 | 6.0 |
| Belgium | DC | 11.9 | 18.6 | 29.7 | 15.1 | 22.4 | 34.3 |
| | Other | 41.0 | 41.0 | 41.0 | 52.0 | 49.5 | 47.3 |
| | Total | 52.9 | 59.6 | 70.8 | 67.1 | 71.9 | 81.6 |
| Canada | DC | 26.3 | 42.1 | 69.0 | 34.0 | 54.4 | 89.2 |
| | Other | 39.2 | 39.2 | 39.2 | 50.6 | 50.6 | 50.6 |
| | Total | 65.5 | 81.3 | 108.2 | 84.6 | 105.0 | 139.8 |
| Czech Republic | DC | 30.1 | 49.2 | 82.7 | 35.5 | 56.6 | 92.6 |
| | Other | 43.5 | 43.5 | 43.5 | 51.4 | 50.1 | 48.8 |
| | Total | 73.6 | 92.7 | 126.2 | 87.0 | 106.7 | 141.4 |
| Germany | DC | 12.4 | 19.9 | 32.6 | 16.5 | 26.0 | 41.7 |
| | Other | 42.0 | 42.0 | 42.0 | 55.6 | 54.9 | 53.7 |
| | Total | 54.4 | 61.9 | 74.6 | 72.1 | 80.9 | 95.4 |
| Ireland | DC | 33.2 | 53.6 | 89.0 | 35.4 | 53.5 | 81.5 |
| | Other | 36.7 | 36.7 | 36.7 | 39.2 | 36.6 | 33.6 |
| | Total | 69.9 | 90.3 | 125.7 | 74.6 | 90.0 | 115.1 |
| New Zealand | DC | 11.1 | 17.4 | 27.8 | 11.9 | 18.5 | 29.4 |
| | Other | 40.6 | 40.6 | 40.6 | 43.7 | 43.4 | 43.0 |
| | Total | 51.7 | 57.9 | 68.3 | 55.6 | 61.9 | 72.4 |
| Norway | DC | 8.8 | 14.0 | 23.0 | 10.2 | 15.7 | 24.8 |
| | Other | 50.9 | 54.1 | 59.5 | 58.9 | 60.6 | 64.1 |
| | Total | 59.7 | 68.1 | 82.5 | 69.1 | 76.4 | 88.8 |
| United Kingdom | DC | 26.6 | 43.0 | 71.4 | 31.5 | 49.3 | 80.2 |
| | Other | 32.6 | 32.6 | 32.6 | 38.6 | 37.3 | 36.6 |
| | Total | 59.2 | 75.6 | 104.0 | 70.2 | 86.6 | 116.9 |
| United States | DC | 29.4 | 46.9 | 76.9 | 34.5 | 54.5 | 86.3 |
| | Other | 38.3 | 38.3 | 38.3 | 45.1 | 44.5 | 43.0 |
| | Total | 67.7 | 85.3 | 115.3 | 79.6 | 98.9 | 129.3 |

*Source:* OECD pension models; see also Whitehouse et al. (2009).

StatLink http://dx.doi.org/10.1787/888932907414

## 4.12. Gross pension replacement rate and taxes and contributions paid on pensions with different rates of investment return




*Source:* OECD pension models; see also Whitehouse et al. (2009).

StatLink http://dx.doi.org/10.1787/888932907433

**Key results**

Pension wealth measures the total value of the lifetime flow of retirement incomes. For average earners, pension wealth for men is 9.3 times annual earnings on average in OECD countries. The figure is higher for women – 10.6 times individual earnings – because of their longer life expectancy.

Replacement rates give an indication of the pension promise, but they are not comprehensive measures; they look only at benefit level at the point of retirement. For a full picture, life expectancy, retirement age and indexation of pensions must also be taken into account. Together, these determine for how long the pension benefit is paid, and how its value evolves over time. Pension wealth – a measure of the stock of future flows of pension benefits – takes account of these factors. It can be thought of as the lump sum needed to buy an annuity giving the same flow of pension payments as promised by mandatory retirement-income schemes.

Gross pension wealth for both men and women is highest in the Netherlands at 17.6 and 20.3 times average earnings, respectively nearly twice the OECD34 figure of 9.3 and 10.6 times earnings. Pension wealth for average earners is lowest in Mexico at around 4.8 times earnings for men and 5.1 for women, due to relatively low replacement rates.

Higher replacement rates mean that pension wealth tends to be higher for low earners than for average earners. For men with half- average earnings, pension wealth is 12.3 times individual earnings on average, compared with 9.3 times for average earners. Similarly, for women with low earnings, pension wealth of 14.1 compares with 10.6 times individual earnings for average earners. In the two countries where pension wealth for low earners is highest (Denmark and Luxembourg), its value is between almost 20 to 21 times individual earnings for men and around 23 times individual earnings for women.

### *Impact of life expectancy*

In countries with shorter life expectancies, such as Hungary, Mexico, Poland, the Slovak Republic and Turkey, the expected duration of retirement is shorter, and so, other things equal, the pension promise becomes more affordable. The effect is the reverse in Switzerland and the Nordic countries, where life expectancies are high. Unlike measures of replacement rates, the link between affordability and life expectancy is captured by the pension-wealth indicator.

Similarly, since women's life expectancy is longer relative to men, their pension wealth is relatively higher in all countries. This is simply because pension benefits can be expected to be paid over a longer retirement period. Also, some countries still have lower retirement ages for women; this extends the payment period even further.

Pension wealth is also affected by pension ages. A low retirement age such as in Luxembourg increases the pension wealth. Many countries have therefore increased or plan to increase the legislative pension ages to reduce pension wealth and increases the financial stability of pension schemes.

### *Impact of indexation*

Pension wealth is also affected by indexation rules. Although most OECD countries now index pensions in payment to prices, there are exceptions: Luxembourg, for example links pensions to average earnings, while six countries, comprising Australia, the Czech Republic, Estonia, Finland, the Slovak Republic and Switzerland, index to a mix of price inflation and earnings growth. In normal times, at least, earnings tend to grow faster than prices, so that pension wealth is higher with these more generous indexation procedures than with price indexation.

Different indexation policies also affect the pension wealth of women relative to men. Women's longer life expectancy means that they tend to benefit more from more generous indexation procedures (above price inflation, for example).

Variations are again seen among non-OECD countries with South Africa at only 1.3 times individual earnings for average earners for men and 1.6 for women and Saudi Arabia at 18.4 times individual earnings for men and 19.3 for women. The low value for South Africa results from a combination of the low replacement rate and low life expectancy.

### *Definition and measurement*

The calculation of pension wealth uses a uniform discount rate of 2%. Since the comparisons refer to prospective pension entitlements, the calculations use country-specific mortality rates by age and sex projected for the year 2060, using the latest UN population data. Pension wealth is expressed as a multiple of gross annual individual earnings.

## 4.13. Gross pension wealth by earnings

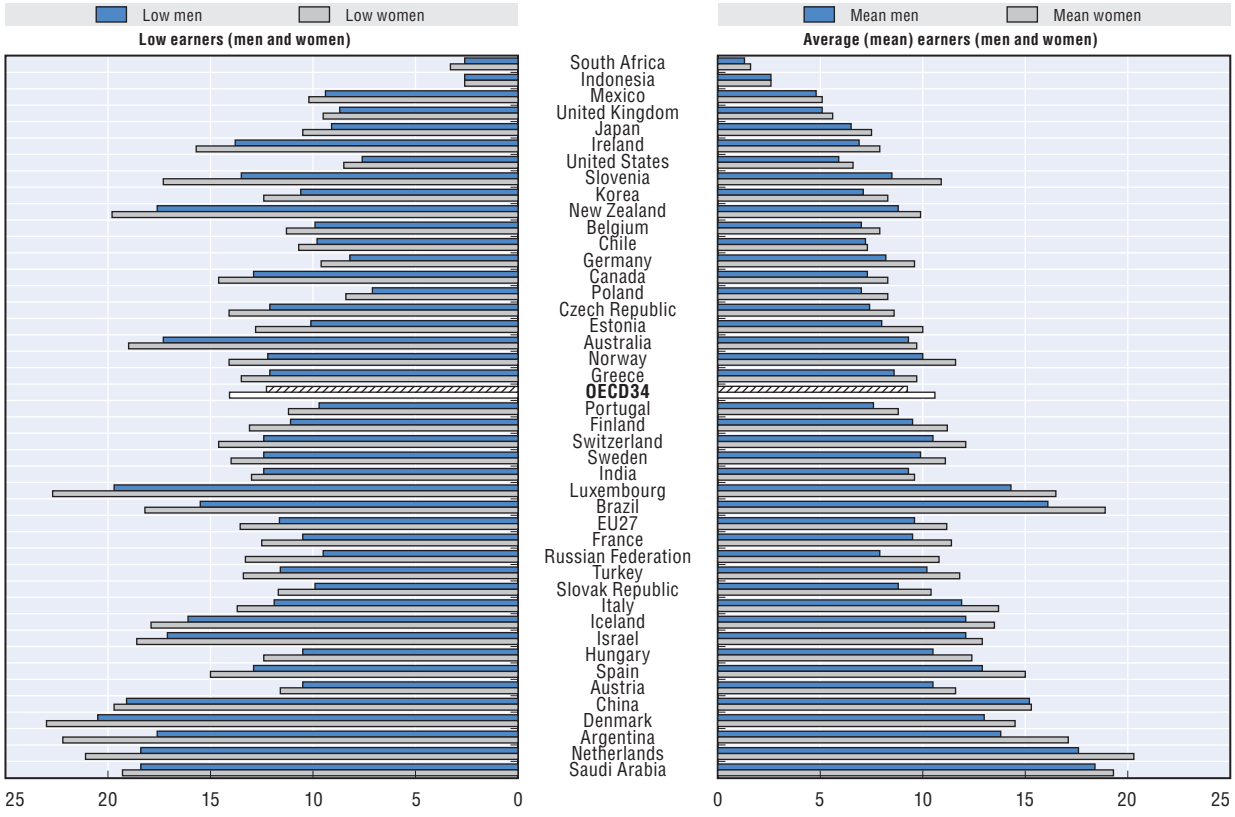
| | Individual earnings, multiple of mean | | | | | |
|---|---|---|---|---|---|---|
| | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 |
| | Men | | | Women | | |
| **OECD members** | | | | | | |
| Australia | 17.3 | 9.3 | 6.6 | 19.0 | 9.7 | 6.6 |
| Austria | 10.5 | 10.5 | 10.1 | 11.6 | 11.6 | 11.2 |
| Belgium | 9.9 | 7.0 | 5.1 | 11.3 | 7.9 | 5.8 |
| Canada | 12.9 | 7.3 | 4.9 | 14.6 | 8.3 | 5.5 |
| Chile | 9.8 | 7.2 | 6.4 | 10.7 | 7.3 | 6.2 |
| Czech Republic | 12.1 | 7.4 | 5.8 | 14.1 | 8.6 | 6.8 |
| Denmark | 20.5 | 13.0 | 10.4 | 23.0 | 14.5 | 11.6 |
| Estonia | 10.1 | 8.0 | 7.2 | 12.8 | 10.0 | 9.1 |
| Finland | 11.1 | 9.5 | 9.5 | 13.1 | 11.2 | 11.2 |
| France | 10.5 | 9.5 | 7.7 | 12.5 | 11.4 | 9.2 |
| Germany | 8.2 | 8.2 | 8.2 | 9.6 | 9.6 | 9.6 |
| Greece | 12.1 | 8.6 | 7.5 | 13.5 | 9.7 | 8.4 |
| Hungary | 10.5 | 10.5 | 10.5 | 12.4 | 12.4 | 12.4 |
| Iceland | 16.1 | 12.1 | 11.7 | 17.9 | 13.5 | 13.0 |
| Ireland | 13.8 | 6.9 | 4.6 | 15.7 | 7.9 | 5.2 |
| Israel | 17.1 | 12.1 | 8.1 | 18.6 | 12.9 | 8.6 |
| Italy | 11.9 | 11.9 | 11.9 | 13.7 | 13.7 | 13.7 |
| Japan | 9.1 | 6.5 | 5.6 | 10.5 | 7.5 | 6.5 |
| Korea | 10.6 | 7.1 | 5.2 | 12.4 | 8.3 | 6.1 |
| Luxembourg | 19.7 | 14.3 | 13.5 | 22.7 | 16.5 | 15.5 |
| Mexico | 9.4 | 4.8 | 4.6 | 10.2 | 5.1 | 4.6 |
| Netherlands | 18.4 | 17.6 | 17.4 | 21.1 | 20.3 | 20.0 |
| New Zealand | 17.6 | 8.8 | 5.9 | 19.8 | 9.9 | 6.6 |

| | Individual earnings, multiple of mean | | | | | |
|---|---|---|---|---|---|---|
| | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 |
| | Men | | | Women | | |
| **OECD members** *(cont.)* | | | | | | |
| Norway | 12.2 | 10.0 | 7.9 | 14.1 | 11.6 | 9.1 |
| Poland | 7.1 | 7.0 | 7.0 | 8.4 | 8.3 | 8.3 |
| Portugal | 9.7 | 7.6 | 8.1 | 11.2 | 8.8 | 9.1 |
| Slovak Republic | 9.9 | 8.8 | 8.5 | 11.7 | 10.4 | 10.0 |
| Slovenia | 13.5 | 8.5 | 8.0 | 17.3 | 10.9 | 10.2 |
| Spain | 12.9 | 12.9 | 12.9 | 15.0 | 15.0 | 15.0 |
| Sweden | 12.4 | 9.9 | 12.0 | 14.0 | 11.1 | 13.4 |
| Switzerland | 12.4 | 10.5 | 7.0 | 14.6 | 12.1 | 8.1 |
| Turkey | 11.6 | 10.2 | 10.2 | 13.4 | 11.8 | 11.8 |
| United Kingdom | 8.7 | 5.1 | 3.5 | 9.5 | 5.6 | 3.8 |
| United States | 7.6 | 5.9 | 5.1 | 8.5 | 6.6 | 5.7 |
| **OECD34** | **12.3** | **9.3** | **8.2** | **14.1** | **10.6** | **9.4** |
| | | | | | | |
| **Other major economies** | | | | | | |
| Argentina | 17.6 | 13.8 | 12.5 | 22.2 | 17.1 | 15.4 |
| Brazil | 15.5 | 16.1 | 17.3 | 18.2 | 18.9 | 20.3 |
| China | 19.1 | 15.2 | 13.9 | 19.7 | 15.3 | 13.8 |
| India | 12.4 | 9.3 | 8.2 | 13.0 | 9.6 | 8.4 |
| Indonesia | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| Russian Federation | 9.5 | 7.9 | 7.3 | 13.3 | 10.8 | 10.0 |
| Saudi Arabia | 18.4 | 18.4 | 18.4 | 19.3 | 19.3 | 19.3 |
| South Africa | 2.6 | 1.3 | 0.9 | 3.3 | 1.6 | 1.1 |
| EU27 | 11.6 | 9.6 | 8.8 | 13.6 | 11.2 | 10.2 |

*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907452

## 4.14. Gross pension wealth by earnings and sex




*Note:* Countries are ranked in order of gross pension replacement rates (GRR) of average earners, i.e. mean GRR in Figure 4.2.
*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907471

**Key results**

Net pension wealth, like the equivalent indicator in gross terms, shows the present value of the lifetime flow of pension benefits. But it also takes account of taxes and contribution paid on retirement incomes. Both figures for pension wealth are expressed as a multiple of individual *gross* earnings.

For average earners, net pension wealth for OECD countries averages 8.1 times gross individual earnings for men and 9.3 for women. Values are higher for women than men, due mainly to differences in life expectancy between the sexes.

Because net pension wealth is expressed as a multiple of individual gross earnings, it is either less (if there is some tax liability during retirement) or the same (if pensions are not taxed or pension income is below tax thresholds) as gross pension wealth. This is shown in the two figures. For example, pension wealth is the same, in both net and gross terms, in the Slovak Republic and Turkey because pensions are not taxable.

The levels of pension wealth change significantly when measured on a net rather than a gross basis as do the country rankings. For example, Denmark has the third highest gross pension wealth for countries within the OECD for an average earner compared with the ninth highest measured on a net basis. The net to gross pension wealth ratio in Denmark is 68%. The situation is similar in the other four Nordic countries, as well as in Austria, Italy, Luxembourg and the Netherlands, where retirees face a substantial tax burden. In part, this reflects the high level of the gross replacement rate from the mandatory system. But it also results from the levels of taxation in the economy as whole. As a result the differences in net pension wealth levels are much smaller than the differences in gross pension wealth between countries.

### *Impact of individual earnings*

Low earners would not be liable for taxes or pay less than 1% in tax and contributions in nine OECD countries. In nine countries there is no or very low tax liability on pensions for average earners.

For high earners there is less variation in the results, with the majority of countries showing net pension wealth in the range of four to nine times annual earnings. The main exceptions to this are Luxembourg and the Netherlands at 11 times earnings for men and around 12.5 times for women. The lowest figure is for the United Kingdom: 3.4 times earnings for men and 3.7 for women.

For the non-OECD economies, net and gross pension wealth are the same in Brazil, China, India, Indonesia, the Russian Federation, Saudi Arabia and South Africa. As with the gross pension wealth calculation, there is a wide range among these countries, with South Africa at 1.3 times average earnings for men and 1.6 for women and Saudi Arabia with the highest of any country at 18.4 times average earnings for men and 19.3 for women.

It is important to note that these calculations look at the benefit side of the pension system only. The impact of taxes and contributions paid by people of working age on living standards during retirement relative to when working work are discussed above in the indicator of "Net pension replacement rates".

### *Definition and measurement*

Net pension wealth is the present value of the flow of pension benefits, taking account of the taxes and social security contributions that retirees have to pay on their pensions. It is measured and expressed as a multiple of gross annual individual earnings in the respective country. The reason for using gross earnings as the comparator is to isolate the effects of taxes and contribution paid in retirement from those paid when working. This definition means that gross and net pension wealth are the same where people are not liable for contributions and income taxes on their pensions.

Taxes and contributions paid by pensioners are calculated conditional on the mandatory pension benefit to which individuals are entitled at different levels of earnings. The calculations take account of all standard tax allowances and tax reliefs as well as concessions granted either to pension income or to people of pension age.

Details of the rules that national tax systems apply to pensioners can be found in the on-line country profiles at *www.oecd.org/pensions/pensionsataglance.htm*.

## 4.15. Net pension wealth by earnings

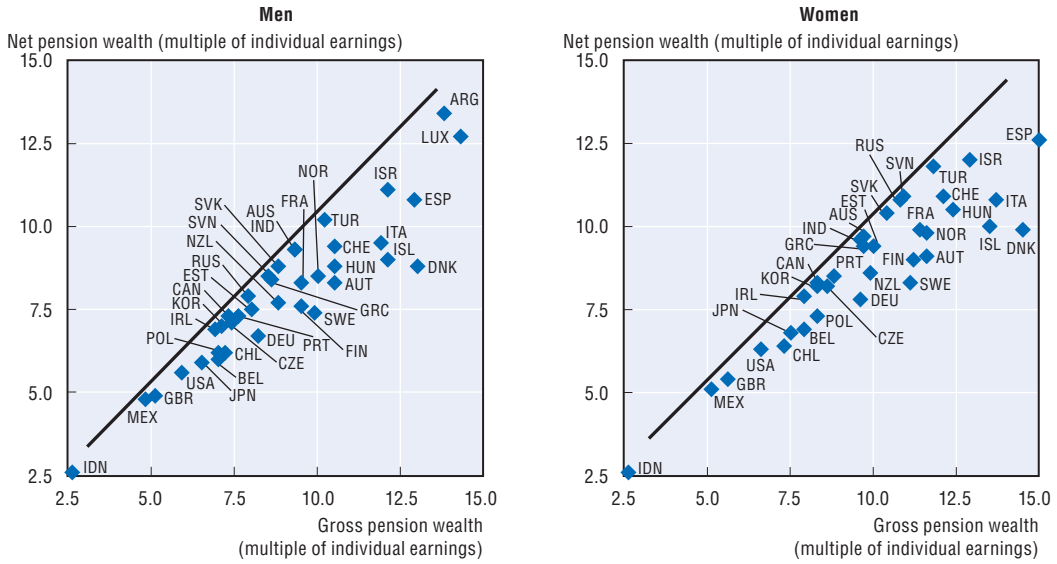
| | Multiple of individual annual gross earnings | | | | | |
|---|---|---|---|---|---|---|
| | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 |
| | Men | | | Women | | |
| **OECD members** | | | | | | |
| Australia | 17.3 | 9.3 | 6.6 | 19.0 | 9.7 | 6.6 |
| Austria | 9.8 | 8.3 | 7.4 | 10.8 | 9.1 | 8.2 |
| Belgium | 9.9 | 6.0 | 3.9 | 11.3 | 6.9 | 4.5 |
| Canada | 12.9 | 7.3 | 4.9 | 14.6 | 8.3 | 5.5 |
| Chile | 8.7 | 6.2 | 5.3 | 9.6 | 6.4 | 5.3 |
| Czech Republic | 12.0 | 7.1 | 5.5 | 14.0 | 8.2 | 6.3 |
| Denmark | 14.4 | 8.8 | 7.0 | 16.1 | 9.9 | 7.8 |
| Estonia | 10.1 | 7.5 | 6.5 | 12.8 | 9.4 | 8.2 |
| Finland | 10.0 | 7.6 | 7.0 | 11.8 | 9.0 | 8.3 |
| France | 9.7 | 8.3 | 6.6 | 11.6 | 9.9 | 7.9 |
| Germany | 7.4 | 6.7 | 6.1 | 8.6 | 7.8 | 7.1 |
| Greece | 11.9 | 8.4 | 7.3 | 13.3 | 9.4 | 8.1 |
| Hungary | 8.8 | 8.8 | 8.7 | 10.5 | 10.5 | 10.3 |
| Iceland | 13.3 | 9.0 | 8.2 | 14.8 | 10.0 | 9.0 |
| Ireland | 13.8 | 6.9 | 4.6 | 15.7 | 7.9 | 5.2 |
| Israel | 16.5 | 11.1 | 7.4 | 18.0 | 12.0 | 8.0 |
| Italy | 10.9 | 9.5 | 8.9 | 12.5 | 10.8 | 10.1 |
| Japan | 8.0 | 5.9 | 4.9 | 9.3 | 6.8 | 5.7 |
| Korea | 10.6 | 7.0 | 5.2 | 12.3 | 8.2 | 6.0 |
| Luxembourg | 18.6 | 12.7 | 11.1 | 21.4 | 14.6 | 12.7 |
| Mexico | 9.4 | 4.8 | 4.6 | 10.2 | 5.1 | 4.6 |
| Netherlands | 14.6 | 12.1 | 10.8 | 16.7 | 14.0 | 12.4 |
| New Zealand | 15.4 | 7.7 | 5.1 | 17.3 | 8.6 | 5.8 |

| | Multiple of individual annual gross earnings | | | | | |
|---|---|---|---|---|---|---|
| | 0.5 | 1.0 | 1.5 | 0.5 | 1.0 | 1.5 |
| | Men | | | Women | | |
| **OECD members** *(cont.)* | | | | | | |
| Norway | 13.6 | 8.5 | 6.4 | 15.8 | 9.8 | 7.3 |
| Poland | 6.5 | 6.2 | 6.1 | 7.7 | 7.3 | 7.2 |
| Portugal | 9.7 | 7.3 | 7.5 | 11.2 | 8.5 | 8.4 |
| Slovak Republic | 9.9 | 8.8 | 8.5 | 11.7 | 10.4 | 10.0 |
| Slovenia | 13.5 | 8.5 | 7.7 | 17.3 | 10.9 | 9.9 |
| Spain | 12.0 | 10.8 | 10.2 | 14.0 | 12.6 | 11.9 |
| Sweden | 9.8 | 7.4 | 8.6 | 10.9 | 8.3 | 9.6 |
| Switzerland | 10.7 | 9.4 | 6.3 | 12.5 | 10.9 | 7.3 |
| Turkey | 11.6 | 10.2 | 10.2 | 13.4 | 11.8 | 11.8 |
| United Kingdom | 8.6 | 4.9 | 3.4 | 9.4 | 5.4 | 3.7 |
| United States | 7.5 | 5.6 | 4.8 | 8.4 | 6.3 | 5.3 |
| **OECD34** | **11.4** | **8.1** | **6.9** | **13.1** | **9.3** | **7.8** |
| | | | | | | |
| **Other major economies** | | | | | | |
| Argentina | 17.1 | 13.4 | 12.1 | 21.5 | 16.6 | 14.9 |
| Brazil | 15.5 | 16.1 | 17.3 | 18.2 | 18.9 | 20.3 |
| China | 19.1 | 15.2 | 13.9 | 19.7 | 15.3 | 13.8 |
| India | 12.4 | 9.3 | 8.2 | 13.0 | 9.6 | 8.4 |
| Indonesia | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| Russian Federation | 9.5 | 7.9 | 7.3 | 13.3 | 10.8 | 10.0 |
| Saudi Arabia | 18.4 | 18.4 | 18.4 | 19.3 | 19.3 | 19.3 |
| South Africa | 2.6 | 1.3 | 0.9 | 3.3 | 1.6 | 1.1 |
| EU27 | 10.8 | 8.4 | 7.3 | 12.6 | 9.8 | 8.5 |

*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907490

## 4.16. Gross versus net pension wealth by sex, average earner




*Note:* The scales of both figures have been capped at pension wealth of 15 times individual earnings, which excludes Brazil, China, the Netherlands and Saudi Arabia from both figures and Argentina and Luxembourg from the figure for women.
*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907509

**Key results**

The change in gross pension shows the level of the pension promise from remaining in employment for an additional year. In half of the OECD countries lower or average earners have a lower incentive to remain in work than higher earners. In contrast there are only eight OECD countries where it is more advantageous for low or middle earners to stay in employment.

At the left-hand side of the table are 25 OECD countries where there is significant variation in retirement incentives with individual earnings. In the nine countries on the right-hand side, retirement incentives are constant for different workers in three of them, and broadly constant in the other six.

In the strictly-constant group, Hungary has a pension system with a strong link between individual earnings and pension benefits. In New Zealand, the universal basic pension scheme means that the change in pension wealth is zero for everyone.

The six countries in the broadly-constant group mainly have progressive pension systems, in contrast to retirement-income provision in most of the strictly-constant group. The incentive to remain in work is a little better, the lower are individual earnings, in Canada, Denmark, Italy, Japan and the United Kingdom. The reverse – work incentives are slightly stronger for higher earners – in the United States.

The countries where the link between individual earnings and retirement incentives are strongest (left-hand side of the table) also divide into two groups. Progressivity of pension benefits is the main reason why the eight countries in the upper part of the table have stronger work incentives for lower or middle earners. The progressivity results from quite different features of the national scheme: the basic pension in Ireland, minimum credits for low earners in the Slovak Republic and progressive benefit formulae for earnings-related pensions in the Czech Republic and Korea.

Incentives to retire are stronger for low earners than middle or high earners in the 17 countries in the lower-left part of the table. In nearly all cases, this is driven by safety-net provisions in the retirement-income system. In Belgium, Luxembourg and Portugal, for example, progressivity accentuates the negative rather than the positive. In Finland, Germany, Norway and Sweden, low-income workers who will be entitled to minimum pensions or resource-tested benefits have incentives to retire early that are not shared by average and high earners. In Mexico, the minimum pension means that incentives to retire early are especially strong for low earners.

### *The role of taxes*

Pensions in payment are taxable in virtually all OECD countries' personal income tax systems. In 15 OECD countries, pensions are subject to social security contributions (usually for health or long-term care), albeit at a lower rate than levied on earnings. Taking account of these taxes and contributions – set out in the indicator of the "Tax treatment of pensions and pensioners" – gives the net change in pension wealth from working longer.

As shown in Figure 4.18 changes in gross and net pension wealth are equal in a number of countries. Firstly there are two countries – the Slovak Republic and Turkey – where pensions are not taxed and there are a number of countries where an average earner's pension entitlement would be below the level at which income tax starts to be paid. This latter group comprises Australia, Canada, the Czech Republic, Ireland, Mexico and Slovenia.

### *Definition and measurement*

The change in pension wealth is a measure of the incentive to remain in the workforce for an additional period. The calculations are prospective and aim to evaluate the current pension policy stance as it affects workers retiring in the future. The calculation is the annual average increase in pension wealth when working from age 60 to 65.

### *Further reading*

OECD (2011), *Pensions at a Glance 2011: Retirement-income Systems in OECD Countries and G20 Countries*, OECD Publishing, *http://dx.doi.org/10.1787/pension_glance-2011-en*.

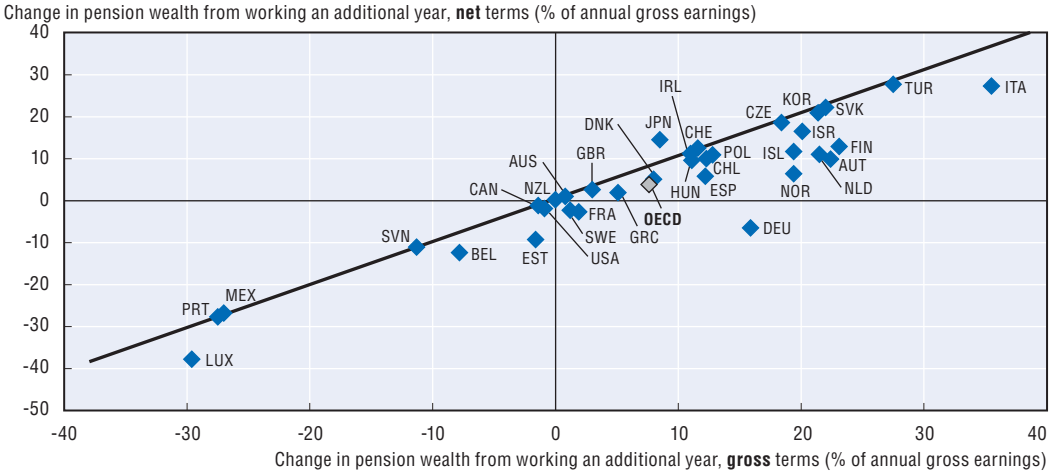
## 4.17. Annual five year average change in gross pension wealth for working between age 60 and 65, men at different earnings levels

| | Individual earnings (% of average) | | | | Individual earnings (% of average) | | |
|---|---|---|---|---|---|---|---|
| | Low (50%) | Average (100%) | High (200%) | | Low (50%) | Average (100%) | High (200%) |
| **Better incentives for lower or middle earners to stay in work** | | | | **Retirement incentives strictly constant with earnings** | | | |
| Austria | 22.4 | 22.4 | 16.2 | Australia | 0.8 | 0.8 | 0.8 |
| Czech Republic | 27.7 | 18.4 | 13.7 | Hungary | 11.1 | 11.1 | 11.1 |
| France | 18.2 | 1.9 | -7.2 | New Zealand | 0.0 | 0.0 | 0.0 |
| Ireland | 21.9 | 11.0 | 5.5 | | | | |
| Israel | 23.3 | 20.1 | 10.0 | | | | |
| Korea | 31.9 | 21.4 | 11.8 | | | | |
| Slovak Republic | 46.8 | 22.0 | 13.9 | | | | |
| Switzerland | 13.3 | 11.6 | 5.8 | | | | |
| **Worse incentives for lower or middle earners to stay in work** | | | | **Retirement incentives broadly constant with earnings** | | | |
| Belgium | -8.8 | -7.8 | -4.4 | Canada | -1.4 | -1.4 | -2.1 |
| Chile | 12.3 | 12.3 | 17.3 | Denmark | 8.8 | 8.0 | 7.6 |
| Estonia | -4.1 | -1.6 | -0.3 | Italy | 35.5 | 35.5 | 34.5 |
| Finland | 8.1 | 23.1 | 23.1 | Japan | 8.8 | 8.5 | 8.2 |
| Germany | -15.1 | 15.9 | 12.0 | United Kingdom | 3.6 | 3.0 | 1.5 |
| Greece | 1.5 | 5.1 | 7.0 | United States | -0.1 | -0.9 | 0.3 |
| Iceland | 10.0 | 19.4 | 19.4 | | | | |
| Luxembourg | -99.7 | -29.6 | -23.8 | | | | |
| Mexico | -59.0 | -27.0 | 0.6 | | | | |
| Netherlands | 12.4 | 21.5 | 26.1 | | | | |
| Norway | -28.4 | 19.4 | 11.5 | | | | |
| Poland | -0.2 | 12.8 | 12.8 | | | | |
| Portugal | -67.4 | -27.5 | -27.7 | | | | |
| Slovenia | -57.3 | -11.3 | -8.1 | | | | |
| Spain | 5.2 | 12.2 | 9.4 | | | | |
| Sweden | -12.3 | 1.2 | 3.6 | | | | |
| Turkey | 0.0 | 27.5 | 27.5 | | | | |

*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907528

## 4.18. Changes in gross pension wealth for working age 60-65, men with average earnings




*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907547

## Key results

The progressivity index is designed to summarise the relationship between pension in retirement and earnings when working in a single number. The results show variation from 100 in pure basic schemes (such as Ireland and New Zealand), through zero in Hungary to a negative result in Sweden (-13), indicating that the overall retirement-income system in Sweden is regressive. The average index across OECD countries is 39. Regional differences are striking, with the index averaging 82 in the Anglophone countries: public pensions are strongly progressive. In Southern European countries, by contrast, it averages 23, indicating a very strong link between earnings and pension benefits.

"Pure-basic" pension systems pay the same benefit regardless both of their earnings history and their other sources of income. The relative pension level is independent of earnings and the replacement rate falls with earnings. "Pure-insurance" schemes, in contrast, aim to pay the same replacement rate to all workers when they retire. Defined-contribution plans generally conform to this pure-insurance model as do earnings-related schemes that offer the same accrual rate regardless of earnings, years of service or age.

These two benchmarks underpin the "index of progressivity" used for cross-country comparison of pension benefit formulae of mandatory schemes. The index is designed so that pure-basic systems score 100 and a pure-insurance schemes, zero. The former is maximally progressive; the latter is not progressive because the replacement rate is constant. A high score is not necessarily "better" than a low score or vice versa. Countries with a high score simply have different objectives than countries with a low score.

The table shows the Gini coefficient for gross pension benefits and the index of progressivity of the benefit formula assuming a synthetic distribution of earnings based on the OECD average. In addition to the two countries with an index of 100, Canada, Israel and the United Kingdom all have highly progressive pension systems where the index is close to 80 or higher. These countries all have significant targeted or basic pensions.

At the other end of the scale, Finland, Hungary, Italy, the Netherlands, Poland, and Turkey have almost entirely proportional systems and so limited progressivity. The index is less than 5. This group includes two countries with notional accounts, which have a close link between contributions and benefits by design. Other countries lie between these two groups. The result for Portugal and Sweden stands out with a negative progressivity index. In the case of Sweden this regressivity can be seen in the gross replacement figure in the "Country profiles" in Chapter 9, which shows both low and high earners have higher replacement rates than average earners.

The final two columns explore whether inequality in pension entitlements is explained by inequality in the national earnings distribution or by differences in benefit formulae. In fact, the index of progressivity averages around 38-39 on both measures for the 29 countries with complete data.

It is important to note that the index of progressivity of pension benefit formulae measures only the mandatory parts of the pension systems. Some countries have extensive private occupational and personal pension provision (see the indicator of "Coverage of private pensions"). Taking these into account would make the distribution of pensioners' incomes wider.

### *Definition and measurement*

OECD countries' retirement-income systems place differing emphasis on the roles of insurance and redistribution. The progressivity index is designed so that a pure basic scheme would give 100 and a pure insurance scheme, zero. The calculation is based on Gini coefficients, a standard measure of inequality. Formally, the index of progressivity is 100 minus the ratio of the Gini coefficient of pension entitlements divided by the Gini coefficient of earnings, on both cases weighted by the earnings distribution. Calculations were carried out with both national data (where available) and the OECD average earnings distribution. The indicator is based on the analysis of Musgrave and Thin (1948).

### *Further reading*

D'Addio, A.C. and H. Immervoll (2010), "Earnings of Men and Women Working in the Private Sector: Enriched Data for Pensions and Tax-Benefit Modelling", *OECD Social, Employment and Migration Working Papers*, No. 108, OECD Publishing, *http://dx.doi.org/10.1787/5km7smt2r7d2-en*.

Musgrave, R.A. and T. Thin (1948), "Income Tax Progression 1924-48", *Journal of Political Economy*, Vol. 56, pp. 498-514.

## 4.19. Gini coefficients on pension entitlements and earnings

OECD average and national earnings-distribution data

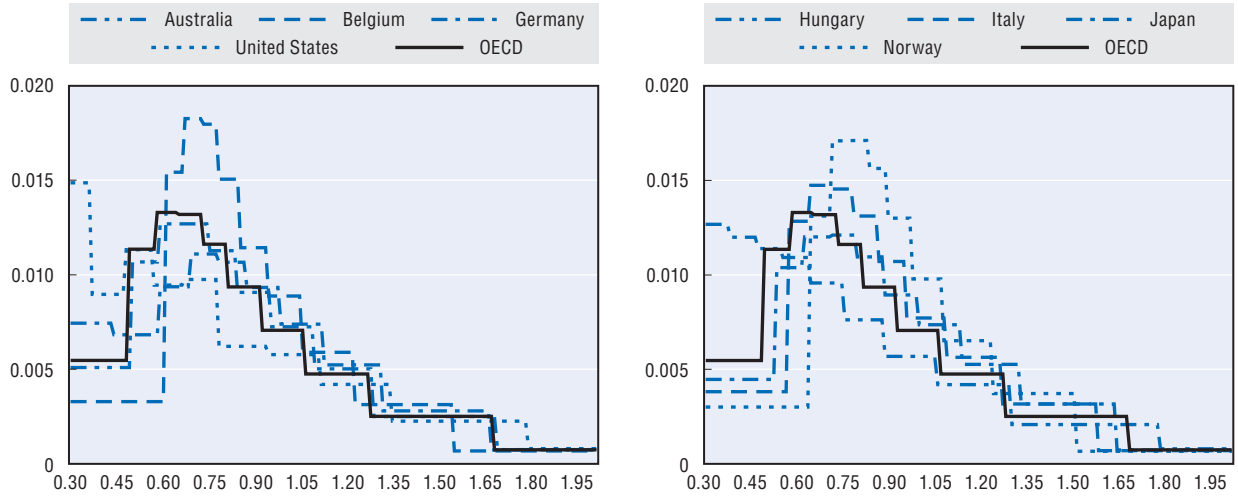
| | OECD average distribution | | National earnings distribution | | |
|---|---|---|---|---|---|
| | Pension Gini | Progressivity index | Pension Gini | Progressivity index | Gini wage |
| **OECD members** | | | | | |
| Australia | 7.3 | 71.9 | 7.3 | 71.7 | 25.6 |
| Austria | 18.9 | 27.5 | 18.2 | 27.9 | 25.3 |
| Belgium | 10.3 | 60.6 | 9.8 | 57.0 | 22.9 |
| Canada | 2.1 | 92.1 | 1.7 | 93.1 | 25.0 |
| Chile | 18.8 | 27.9 | | | |
| Czech Republic | 9.8 | 62.2 | 9.8 | 62.2 | 26.0 |
| Denmark | 11.2 | 57.0 | 9.5 | 56.8 | 21.9 |
| Estonia | 19.4 | 25.6 | | | |
| Finland | 25.0 | 4.0 | 21.3 | 1.5 | 21.6 |
| France | 18.0 | 30.6 | 17.1 | 30.4 | 24.5 |
| Germany | 19.4 | 25.4 | 18.0 | 26.8 | 24.6 |
| Greece | 15.9 | 39.0 | 16.2 | 40.2 | 27.1 |
| Hungary | 26.0 | 0.0 | 27.7 | 0.0 | 27.7 |
| Iceland | 21.7 | 16.6 | | | |
| Ireland | 0.0 | 100.0 | 0.0 | 100.0 | 26.1 |
| Israel | 5.3 | 79.5 | | | |
| Italy | 25.7 | 1.4 | 23.4 | 1.4 | 23.8 |
| Japan | 13.8 | 46.9 | 13.2 | 46.3 | 24.5 |
| Korea | 7.4 | 71.5 | 7.4 | 72.7 | 27.2 |
| Luxembourg | 20.5 | 21.1 | 20.9 | 21.8 | 26.8 |
| Mexico | 13.7 | 47.4 | 19.3 | 37.2 | 30.7 |
| Netherlands | 25.0 | 3.9 | 23.4 | 3.9 | 24.4 |
| New Zealand | 0.0 | 100.0 | 0.0 | 100.0 | 26.0 |
| Norway | 14.2 | 45.3 | 12.1 | 43.9 | 21.5 |

| | OECD average distribution | | National earnings distribution | | |
|---|---|---|---|---|---|
| | Pension Gini | Progressivity index | Pension Gini | Progressivity index | Gini wage |
| **OECD members** *(cont.)* | | | | | |
| Poland | 25.8 | 0.9 | 26.1 | 1.0 | 26.3 |
| Portugal | 26.2 | -0.8 | 29.1 | 1.0 | 29.4 |
| Slovak Republic | 22.4 | 13.9 | 22.4 | 13.9 | 26.0 |
| Slovenia | 12.8 | 50.7 | | | |
| Spain | 19.7 | 24.1 | 19.8 | 24.5 | 26.2 |
| Sweden | 29.4 | -13.1 | 26.0 | -18.7 | 21.9 |
| Switzerland | 8.6 | 66.9 | 7.5 | 68.0 | 23.3 |
| Turkey | 25.1 | 3.5 | 29.3 | 4.4 | 30.7 |
| United Kingdom | 3.8 | 85.4 | 3.8 | 85.4 | 26.0 |
| United States | 14.9 | 42.6 | 14.9 | 42.6 | 26.0 |
| **OECD34 average** | **15.8** | **39.2** | | | |
| **OECD29** | **15.9** | **39.0** | **15.7** | **38.5** | **25.5** |
| | | | | | |
| **Other major economies** | | | | | |
| Argentina | 19.1 | 26.4 | | | |
| Brazil | 26.5 | -2.0 | | | |
| China | 19.6 | 24.7 | | | |
| India | 17.5 | 32.6 | | | |
| Indonesia | 26.0 | 0.0 | | | |
| Russian Federation | 19.8 | 23.8 | | | |
| Saudi Arabia | 26.0 | 0.0 | | | |
| South Africa | 0.0 | 100.0 | | | |
| EU27 | 18.5 | 29.1 | | | |

*Note:* OECD29 refers to the countries for which national earnings-distribution data are available.
*Source:* OECD pension models; *OECD Income Distribution Database*.

StatLink http://dx.doi.org/10.1787/888932907566

## 4.20. Distribution of earnings: OECD average and selected countries




*Source:* *OECD Income Distribution Database*.

StatLink http://dx.doi.org/10.1787/888932907585

**Key results**

In some countries, such as Hungary, Italy, the Netherlands and the Slovak Republic, there is a very strong link between pension entitlements and pre-retirement earnings. In contrast, flat-rate benefits in Ireland and New Zealand mean that there is no link between pension and earnings levels, but in Ireland it is linked to duration of contributions.

The figures show relative pension levels on the vertical axis and individual pre-retirement earnings on the horizontal. A flat curve in the figures shows no relationship between pension and earnings, while a linear increasing function means the link is strong.

Countries have been grouped by the degree to which pension benefits are related (or not) to individual pre-retirement earnings. The grouping is based on the distribution of pension benefits relative to the distribution of earnings, set out in the previous indicator of "Progressivity of pension benefit formulae".

Panel A shows seven countries where there is little or no link between pension entitlements and pre-retirement earnings. In addition to the flat-rate systems in Ireland, New Zealand and South Africa, the relative pension level varies little in Canada: from 38% for low earners to 44% for those on average earnings and above. Although Canada has an earnings-related pension scheme, its target replacement rate is very low, its ceiling is approximately equal to average worker earnings and a resource-tested benefit is withdrawn against income from this scheme. In the United Kingdom, the earnings-related scheme has a strongly progressive formula and there is also a basic pension programme. In Australia, the relatively flat curve results mainly from the means-tested public programme. There is also a limit to the earnings for which employers must contribute to the DC scheme.

At the other end of the spectrum lie eight countries with a very strong link between pension entitlements and pre-retirement earnings (Panel F). In the Netherlands, there is no ceiling to pensionable earnings in quasi-mandatory occupational plans. In Hungary, Italy and the Slovak Republic, ceilings on pensionable earnings are three or more times average worker earnings. In these countries, relative pension levels increase with earnings in a linear way over most of the range shown.

The eight economies in Panel E have a slightly weaker link between individual pre-retirement earnings and pensions than those in Panel F. This group includes the average for the EU27 countries. In Estonia and Poland, there is a strong pension-earnings link from the defined-contribution and public, earnings-related pensions. But minimum benefits are expected to play a greater role than in the countries in Panel F.

It is noteworthy that most of the non-OECD countries analysed lie in these last two groups, with a relatively strong pension-earnings link: Argentina, Brazil, China, India, the Russian Federation, and Saudi Arabia. Moreover, many of these countries have large informal sectors with workers not covered by the formal pension system.

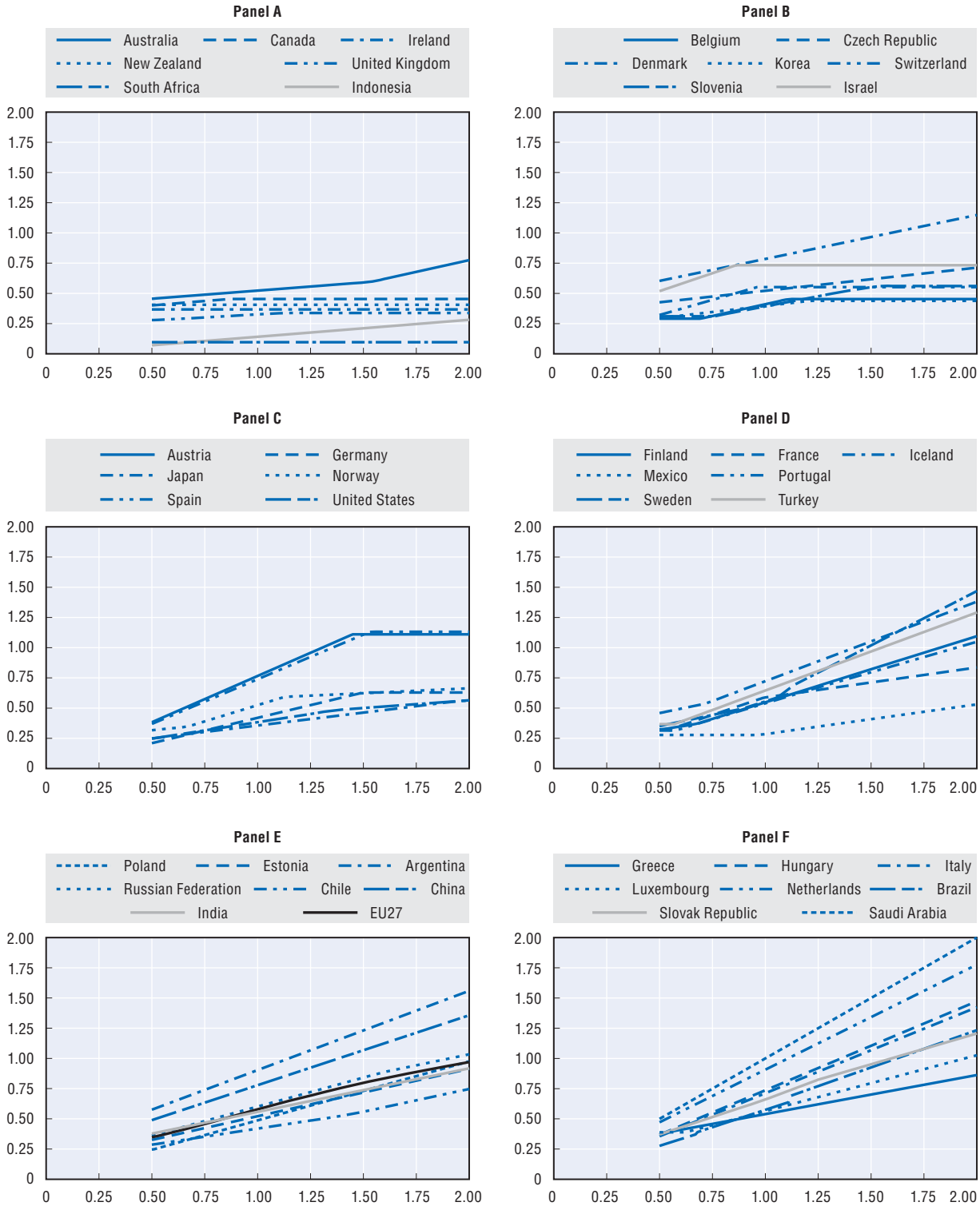
One explanation is that Luxembourg and Sweden have redistributive programmes targeting a relatively high minimum retirement income worth 35% of average earnings. Secondly, Sweden has a relatively low ceiling for pensionable earnings in its public scheme of 114% of average worker earnings) which weakens the link between pay and pensions compared with the countries shown in Panel F.

The remaining countries are intermediate cases. The thirteen countries in Panels B and C exhibit stronger links between pensions and pre-retirement earnings than the first group of countries (Panel A), but their pension systems have much more progressive formulae than those of the five countries shown in Panel F. In the Czech Republic, Korea, Norway and the United States this redistribution to low earners is primarily the result of a progressive benefit formula. These public schemes replace a larger share of pre-retirement income for poorer workers than for average and higher-income earners. In Denmark and Iceland, this progressivity is achieved by substantial basic and targeted retirement-income programmes.

Panel D shows six countries that lie towards the middle of the OECD countries in terms of the link between pension entitlements and pre-retirement earnings. France and Portugal have redistributive pension programmes – minimum and targeted schemes – at lower-income ranges. However, there is a strong earnings-benefit link at higher income levels.

## 4.21. The link between pre-retirement earnings and pension entitlements

Gross pension entitlements as a proportion of economy-wide average earnings




*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907604

## Key results

The indicators so far have shown replacement rates, relative pension levels and pension wealth for people at different levels of earnings. By taking a weighted average of these indicators over the earnings range, the measures presented here show the average for the pension level at the time of retirement and pension wealth, the lifetime value of pension payments.

The first of these is designed to show the level of the average retirement income, taking account of the different treatment of workers with different incomes. The average pension level is 55.9% of average worker earnings for men and 55.2% for women across the OECD34 countries. The second aims to summarise the total cost of providing old-age incomes. Weighted average pension wealth is an average of 9.5 times annual average worker earnings for men and 10.9 for women.

The weighted average relative pension level combines data on the distribution of earnings with calculations of pension entitlements. This aggregate measure is then expressed as a percentage of average worker (mean) earnings. Replacement rates are generally higher for low earners and vice versa. But there are many more low earners than there are high earners.

The results are shown in the first and second columns of the table for men and women respectively. At the top of the range, the weighted average pension level is just below 95% in the Netherlands for both men and women. In another three countries – Denmark, Hungary, and Turkey – the weighted average pension level is above 80% of the average earnings. At the other end of the scale, in eight OECD countries (Belgium, Ireland, Japan, Korea, Mexico, Slovenia, the United Kingdom and the United States) the weighted average pension level is less than 40% of average earnings for both men and women.

The same type of weighting procedure can also be applied to the pension wealth measure. Pension wealth is the most comprehensive measure of the scale of the pension promise made to today's workers, as it allows for differences between countries in pension ages, life expectancy and indexation policies. Weighted average pension wealth is expressed as a multiple of average worker earnings.

The results are shown in the third and fourth columns of the table. Values well above the average for weighted average pension wealth, between 11.9 and 17.7 for men and 13.3 and 20.4 of average earnings for women, are found in Denmark, Iceland, Israel, Italy, Luxembourg, the Netherlands and Spain. When converted to United States dollars (at market exchange rates) the average pension promise amount to USD 423 000 for men and USD 483 000 for women (fifth and sixth column of the table). These numbers represent the present value of the transfers that societies are promising on average to future retirees under the current pension system rules.

In Denmark, Luxembourg, the Netherlands, Norway, and Switzerland the average pension wealth is more than double the average in USD terms. Pension wealth is relatively low in countries with shorter life expectancy such as Mexico and Poland.

For the non-OECD countries the pension promise in all the countries is well below the OECD34 average, with the exception of Saudi Arabia recording the highest figure on a non-OECD country of USD 846 000 for men and USD 888 000 for women.

### *Definition and measurement*

The indicators build on the calculations of pension entitlements (pension levels and pension wealth) for people earning between 0.3 and 3 times the economy-wide average.

Each level of individual earnings is given a weight based on its importance in the distribution of earnings. The calculations use national data: see in Chapter 7 the indicator of "Earnings: Averages and distribution"). The earnings distribution is skewed in all countries. The mode (or peak) of the distribution and the median (the earnings level both below and above which half of employees are situated) are significantly less than the mean. Thus, there are many people with low earnings, and fewer with high earnings, so low earners are given a larger weight in the calculation of the indicator than high earners.

### *Further reading*

D'Addio, A.C. and H. Immervoll (2010), "Earnings of Men and Women Working in the Private Sector: Enriched Data for Pensions and Tax-Benefit Modelling", *OECD Social, Employment and Migration Working Papers*, No. 108, OECD Publishing, *http://dx.doi.org/10.1787/5km7smt2r7d2-en*.

## 4.22. Weighted averages: Pension levels and pension wealth

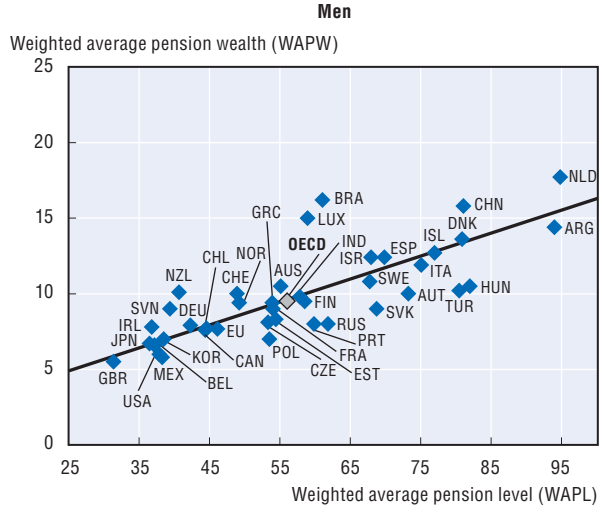
Percentage of average worker earnings

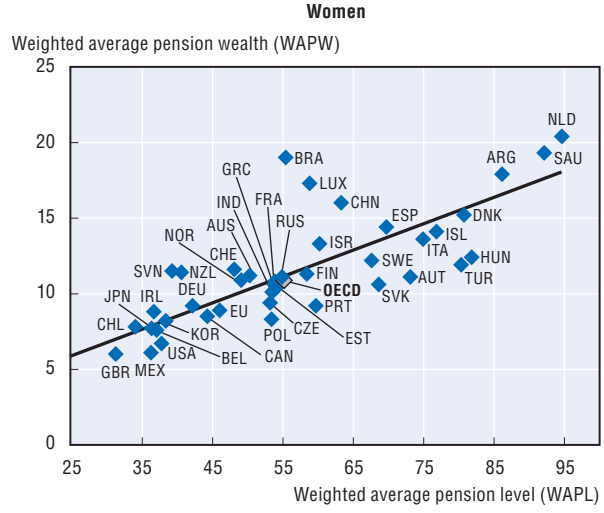
| | Weighted average pension level | | Weighted average pension wealth | | Average pension wealth (USD) | | | Weighted average pension level | | Weighted average pension wealth | | Average pension wealth (USD) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women | | Men | Women | Men | Women | Men | Women |
| **OECD members** | | | | | | | **OECD members** *(cont.)* | | | | | | |
| Australia | 55.0 | 50.3 | 10.5 | 11.2 | 802 000 | 856 000 | Norway | 49.1 | 49.1 | 9.4 | 10.9 | 863 000 | 1 000 000 |
| Austria | 73.1 | 73.1 | 10.0 | 11.1 | 539 000 | 598 000 | Poland | 53.4 | 53.4 | 7.0 | 8.3 | 88 000 | 104 000 |
| Belgium | 37.1 | 37.1 | 6.6 | 7.6 | 401 000 | 462 000 | Portugal | 59.7 | 59.7 | 8.0 | 9.2 | 166 000 | 191 000 |
| Canada | 44.3 | 44.3 | 7.6 | 8.5 | 357 000 | 400 000 | Slovak Republic | 68.6 | 68.6 | 9.0 | 10.6 | 117 000 | 137 000 |
| Chile | 44.5 | 34.1 | 7.7 | 7.8 | 100 000 | 101 000 | Slovenia | 39.3 | 39.3 | 9.0 | 11.5 | 204 000 | 261 000 |
| Czech Republic | 53.2 | 53.2 | 8.1 | 9.4 | 128 000 | 148 000 | Spain | 69.7 | 69.7 | 12.4 | 14.4 | 418 000 | 485 000 |
| Denmark | 80.7 | 80.7 | 13.6 | 15.2 | 943 000 | 1 054 000 | Sweden | 67.6 | 67.6 | 10.8 | 12.2 | 642 000 | 726 000 |
| Estonia | 54.3 | 54.3 | 8.3 | 10.5 | 120 000 | 152 000 | Switzerland | 48.8 | 48.1 | 10.0 | 11.6 | 949 000 | 1 101 000 |
| Finland | 58.4 | 58.4 | 9.5 | 11.3 | 520 000 | 618 000 | Turkey | 80.3 | 80.3 | 10.2 | 11.9 | 157 000 | 184 000 |
| France | 53.9 | 53.9 | 9.0 | 10.8 | 435 000 | 522 000 | United Kingdom | 31.3 | 31.3 | 5.5 | 6.0 | 321 000 | 350 000 |
| Germany | 42.2 | 42.2 | 7.9 | 9.2 | 467 000 | 544 000 | United States | 37.8 | 37.8 | 6.0 | 6.7 | 286 000 | 319 000 |
| Greece | 53.8 | 53.8 | 9.4 | 10.6 | 249 000 | 281 000 | **OECD34** | **55.9** | **55.2** | **9.5** | **10.9** | **423 000** | **483 000** |
| Hungary | 81.8 | 81.8 | 10.5 | 12.4 | 131 000 | 154 000 | | | | | | | |
| Iceland | 76.8 | 76.8 | 12.7 | 14.1 | 601 000 | 668 000 | **Other major economies** | | | | | | |
| Ireland | 36.7 | 36.7 | 7.8 | 8.8 | 336 000 | 379 000 | Argentina | 93.8 | 86.1 | 14.4 | 17.9 | 157 000 | 195 000 |
| Israel | 67.8 | 60.2 | 12.4 | 13.3 | 398 000 | 427 000 | Brazil | 60.9 | 55.4 | 16.2 | 19.0 | 166 000 | 195 000 |
| Italy | 74.9 | 74.9 | 11.9 | 13.6 | 454 000 | 518 000 | China | 80.9 | 63.3 | 15.8 | 16.0 | 119 000 | 120 000 |
| Japan | 36.4 | 36.4 | 6.7 | 7.7 | 371 000 | 426 000 | India | 57.7 | 53.5 | 9.8 | 10.1 | 43 000 | 44 000 |
| Korea | 38.4 | 38.4 | 7.0 | 8.2 | 253 000 | 296 000 | Indonesia | 14.8 | 13.7 | 2.6 | 2.6 | 4 000 | 4 000 |
| Luxembourg | 58.8 | 58.8 | 15.0 | 17.3 | 1 015 000 | 1 170 000 | Russian Federation | 61.7 | 54.9 | 8.0 | 11.1 | 84 000 | 117 000 |
| Mexico | 38.2 | 36.3 | 5.8 | 6.1 | 42 000 | 44 000 | Saudi Arabia | 105.3 | 92.1 | 18.4 | 19.3 | 846 000 | 888 000 |
| Netherlands | 94.6 | 94.6 | 17.7 | 20.4 | 1 083 000 | 1 248 000 | South Africa | 9.6 | 9.6 | 1.5 | 1.9 | 24 000 | 30 000 |
| New Zealand | 40.6 | 40.6 | 10.1 | 11.4 | 428 000 | 483 000 | EU27 | 46.0 | 46.0 | 7.7 | 8.9 | 269 000 | 313 000 |

*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907623

## 4.23. Weighted averages compared: Pension levels versus pension wealth by sex




*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907642

**Key results**

The retirement-income package is divided into different components using the taxonomy from the indicator of the "Architecture of national pension systems" above. This framework divides pension systems into two mandatory tiers. The first is a redistributive part, designed to ensure pensioners achieve an absolute minimum standard of living. A savings part forms the second, with the aim of achieving a target income in retirement compared with earnings when working. This indicator, showing the division of national pension systems between these tiers and between public and private provision, again demonstrates substantial differences in national policies.

To start with, it is important to note that the calculations cover full-career workers only. This is of particular importance for the first tier because all of the first-tier programmes will be much more important for people with incomplete contribution histories.

There are basic schemes in 14 OECD countries (including Korea and Mexico, where other components of the system have the same effect). The value of these benefits does not depend on individual earnings or other pension entitlements. Mandatory pensions for full-career workers in Ireland and New Zealand are entirely from basic schemes. In Japan, Korea and the United Kingdom, basic pensions contribute over 40% of the total pension promise. They are also significant in Canada, Denmark, Estonia, Israel and the Netherlands.

There are minimum pensions in ten countries. In Belgium and the United Kingdom, minimum pension credits have a similar effect: benefits for workers with low earnings are calculated as if the worker had earned at a higher level. These credits form a very large part of overall benefits in Greece and the United Kingdom.

All OECD countries have a safety-net for low-income pensioners. But in most of them, full-career workers, even those with low earnings, will not be eligible. There are seven exceptions. Australia is most striking because the whole of its first-tier provision is means-tested and this scheme makes up almost 39% of the total pension package. In Canada, Chile and Denmark, they also play a very important role by providing between 17% and 20% of the pension promise, respectively.

The balance between first- and second-tier schemes in the retirement-income package is shown in the upper figure. The second tier accounts for 76% or more in half of OECD countries. In some – Austria, Italy, Poland, Spain and Turkey – this reflects high target replacement rates in the second tier. In others, such as Switzerland and the United States, the benefit formula of the public scheme is progressive: redistribution done by the first tier in other countries is carried out by second-tier plans. In the United Kingdom, most of the earnings-related plan goes into benefits from minimum credits.

### *Second-tier schemes*

The second tier of mandatory benefits is divided in the table between public and private providers and between defined-contribution (DC) and defined-benefit (DB) or earnings-related provision. There are public, earnings-related schemes in 25 OECD countries. They provide more than 90% of all benefits for full-career workers in twelve countries: Austria, Belgium, Finland, France, Germany, Hungary, Italy, Portugal, Slovenia, Spain, Turkey and the United States.

In 13 OECD countries, private pensions are mandatory or quasi-mandatory. They are DB in Iceland, the Netherlands and Switzerland, but DC in most cases. In four countries – Australia, Denmark, Israel, and the Netherlands – private pensions account for about 50-60% of the total, mandatory pension package. They are significantly more important in Chile, Iceland and Mexico. The balance between public and private provision of mandatory benefits is shown in the bottom figure. However, it is important to bear in mind that voluntary private pensions (not shown) are significant sources of income in many countries, such as Canada, Ireland, the United Kingdom and the United States.

### *Definition and measurement*

The structure of the pension package is illustrated using the indicator of weighted average pension wealth presented above, divided into different components. The weights derive from earnings-distribution data.

## 4.24. Structure of the retirement-income package

Percentage contribution of mandatory components of the pension system to weighted average pension wealth

| | First tier | | | Second tier | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | Targeted | Basic | Minimum | Public ER | Public DC | Private DB | Private DC | |
| **OECD members** | | | | | | | | |
| Australia | 38.8 | | | | | | 61.2 | 100.0 |
| Austria | | | | 100.0 | | | | 100.0 |
| Belgium | | | 2.1[1] | 97.9 | | | | 100.0 |
| Canada | 17.8 | 31.7 | | 50.5 | | | | 100.0 |
| Chile | 17.0 | | | | | | 83.0 | 100.0 |
| Czech Republic | | 18.2 | | 81.8 | | | | 100.0 |
| Denmark | 19.8 | 25.4 | | | | | 54.8[2] | 100.0 |
| Estonia | | 29.4 | | 28.2 | | | 42.4 | 100.0 |
| Finland | | | 0.5 | 99.5 | | | | 100.0 |
| France | | | | 100.0[3] | | | | 100.0 |
| Germany | | | | 100.0 | | | | 100.0 |
| Greece[4] | | | 45.0 | 55.0 | | | | 100.0 |
| Hungary | | | | 100.0 | | | | 100.0 |
| Iceland | 2.9 | 11.9 | | | | 85.2 | | 100.0 |
| Ireland | | 100.0 | | | | | | 100.0 |
| Israel | | 34.0 | | | | | 66.0 | 100.0 |
| Italy | | | | 100.0 | | | | 100.0 |
| Japan | | 42.7 | | 57.3 | | | | 100.0 |
| Korea | | 54.1[5] | | 45.9 | | | | 100.0 |
| Luxembourg | | 20.2[6] | 1.9 | 77.9 | | | | 100.0 |
| Mexico | | 11.9[7] | 15.6 | | | | 72.5 | 100.0 |
| Netherlands | | 36.7 | | | | 63.3 | | 100.0 |
| **OECD member** *(cont.)* | | | | | | | | |
| New Zealand | | 100.0 | | | | | | 100.0 |
| Norway | | | 0.7 | 88.1 | | | 11.2 | 100.0 |
| Poland | | | | 51.1 | | | 48.9 | 100.0 |
| Portugal | | | 2.8 | 97.2 | | | | 100.0 |
| Slovak Republic | | | | 57.8 | | | 42.2 | 100.0 |
| Slovenia | 6.3 | | | 93.7 | | | | 100.0 |
| Spain | | | | 100.0 | | | | 100.0 |
| Sweden | | | 3.1 | 52.5 | | | 44.4[8] | 100.0 |
| Switzerland | | | | 65.4 | | 34.6 | | 100.0 |
| Turkey | | | 1.1 | 98.9 | | | | 100.0 |
| United Kingdom | 0.1 | 51.0 | 36.4[9] | 12.5 | | | | 100.0 |
| United States | | | | 100.0 | | | | 100.0 |
| **Other major economies** | | | | | | | | |
| Argentina | | 30.4 | | 69.6 | | | | 100.0 |
| Brazil | | 100.0 | | | | | | 100.0 |
| China | | 53.2 | | | 46.8 | | | 100.0 |
| India | | | | 29.8 | 70.2 | | | 100.0 |
| Indonesia | | | | | 100.0 | | | 100.0 |
| Russian Federation | | 22.8 | | 49.1 | | | 28.1 | 100.0 |
| Saudi Arabia | | | | 100.0 | | | | 100.0 |
| South Africa | | 100.0 | | 0.0 | | | | 100.0 |

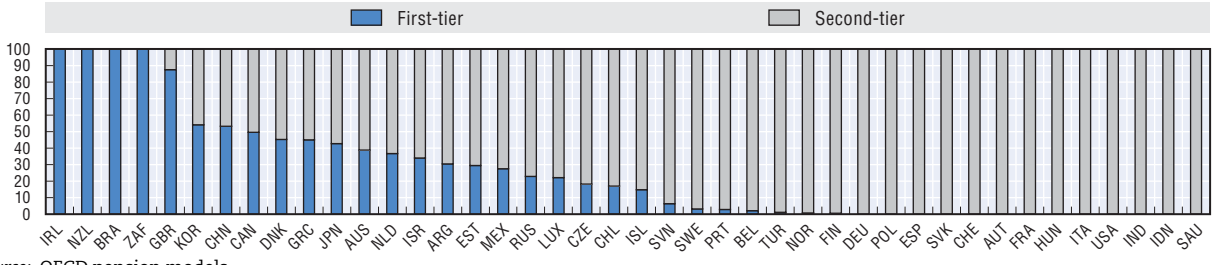
DB = Defined benefit; DC = Defined contribution; ER = Earnings-related.
1. Belgium: includes both minimum pension and minimum credits.
2. Denmark: private DC plans include both quasi-mandatory occupational (49.1%) and the special pension (5.7%).
3. France: public pensions include both the state scheme (80.4%) and the complementary, occupational scheme (19.6%).
4. Greece: public pension is made up of the main (45.0%) and the supplementary components (55.0%).
5. Korea: basic component represents the part of the public pension based on average rather than individual earnings.
6. Luxembourg: basic pension also includes the end-of-the-year allowance.
7. Mexico: basic component calculated from the flat-rate government contribution to DC accounts of 5% the real minimum wage from 1997.
8. Sweden: private DC includes both DC schemes (12.1% and 32.3%).
9. United Kingdom: minimum pension relates to minimum credits in public, earnings-related scheme.

*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907661

## 4.25. Balance between first-tier, redistributive programmes and mandatory, second-tier, income-replacement schemes

Percentage of weighted average pension wealth

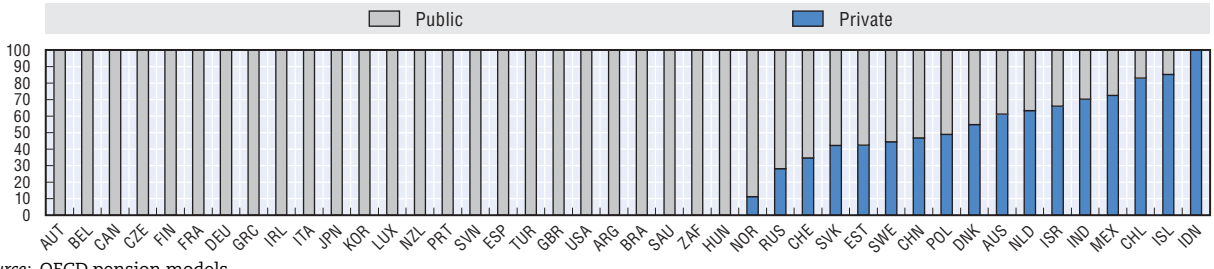



*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907680

## 4.26. Balance between public and private provision of mandatory pensions

Percentage of weighted average pension wealth




*Source:* OECD pension models.

StatLink http://dx.doi.org/10.1787/888932907699

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*Chapter 5*

# Incomes and poverty of older people

*These two sets of indicators look at the economic position of older people in recent years. The first examines the incomes of older people, comparing them with the population as whole. It also shows how incomes vary with the age of older people and by household type and how incomes have changed over time. Data on the sources of income – from publicly provided benefits, earnings and self-employment or private pensions and on other savings – is also presented.*

*The second looks at poverty among older people. It shows the proportion of older people living on incomes of less than half the national average and how this varies with age of older people. It also compares the poverty rates of older people with those of the population as a whole.*

*These indicators are a useful complement to the analysis of pension entitlements in Chapter 4. Calculations of pension entitlements provide a forward looking indicator: they look at the value of benefits for workers entering the labour market today. These indicators of income and poverty are useful in assessing the performance of national pension systems of the past in delivering adequate retirement incomes today.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## Key results

Incomes of older people are generally lower than those of the population, even when differences in household size are taken into account. On average in OECD countries, over-65s had incomes of 86% of the population as a whole in the late 2000s. Older people's incomes grew faster than the population's between the mid-1990s and the late 2000s in 18 out of 27 countries where data are available. In most OECD countries, public transfers provide the bulk of income in old age.

People over 65 had incomes that were 86.2% of population incomes, on average, in the late 2000s. Older people fared best in France, Israel, Luxembourg, Mexico and Turkey, with incomes around 95% of the national average. In Australia and Korea, by contrast, older people's incomes stood at just two-thirds of population average.

People aged 66-75 have higher relative incomes, on average, than those aged over 75: 90% and 80% of population incomes, respectively. Lower incomes for older retirees are partly explained by the fact that the 75+ group consists of people with longer-than-average life expectancy, mostly women who tend to have lower wages, shorter working hours and longer career breaks.

Older people's incomes are shown in absolute (US dollar) as well as in relative terms. These averaged around USD 21 500 in the late 2000s, ranging from USD 7 000 in Mexico and just over USD 10 000 in Estonia and Hungary to nearly USD 44 000 in Luxembourg.

### *Income trends*

In 18 of the 27 countries for which data are available, incomes of older people grew faster than those of the population as a whole between the mid-1990s and the late 2000s. The largest increases were in Israel, Mexico, New Zealand and Portugal. The largest drops in older people's relative incomes over the 15 years were seen in Chile and Sweden.

### *Income sources*

Of the three main sources of income on which older people draw, public transfers (earnings-related pensions, resource-tested benefits, etc.) are the most important. They account for around 60% of older people's incomes on average. The over-65s most reliant on public transfers live in Hungary and Luxembourg: 86% and 82% respectively of their incomes come from that source. Transfers have a small share in Korea because the public pension scheme dates only from 1988.

Work accounts for 24% and capital for about 18% of older people's incomes on average. Work is especially important in Chile, Japan, Korea and Mexico, where it accounts for more than 40% of old-age income. In another seven OECD countries, work accounts for a quarter or more of old-age incomes. In some, such as Israel and the United States, the normal pension age is higher than age 65. And in others, people keep on working to fill gaps in contribution histories. Also, incomes are measured for households; older people are assumed to draw on the earnings of younger that they live with. Work is likely to be a more important income source for older people where many of them live in multi-generational households.

Capital, mostly private pensions, represents 30% or more of old-age income in Australia, Canada, Chile, Denmark, Iceland, Israel, the Netherlands, New Zealand, the United Kingdom and the United States.

### *Definition and measurement*

Incomes from employment, self-employment, capital and public transfers. The data shown are for disposable incomes (i.e. net of personal income tax and social security contributions). Incomes are measured on a household basis and equivalised to adjust for differences in household size. See *Growing Unequal?* (OECD, 2008) for more details on definitions and data sources. The special chapter on "Incomes and poverty of older people" in *Pensions at a Glance 2009* provides a more detailed analysis.

### *Further reading*

OECD (2008), *Growing Unequal? Income Distribution and Poverty in OECD Countries*, OECD Publishing, *http://dx.doi.org/10.1787/9789264044197-en*.

OECD (2009), *Pensions at a Glance 2009: Retirement-income Systems in OECD Countries*, OECD Publishing, *http://dx.doi.org/10.1787/pension_glance-2009-en*.

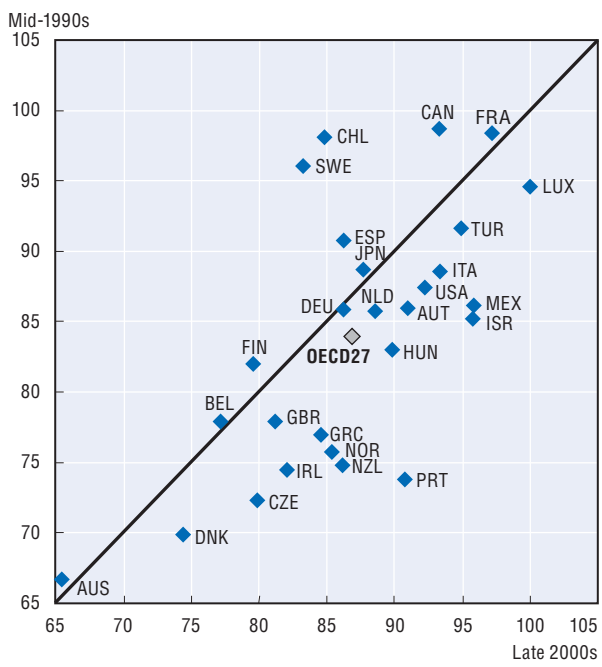
## 5.1. Incomes of older people, late 2000s

| | Incomes of people aged over 65, percentage of population incomes | | | Average incomes of over 65s (USD, PPP) | | Incomes of people aged over 65, percentage of population incomes | | | Average incomes of over 65s (USD, PPP) |
|---|---|---|---|---|---|---|---|---|---|
| | All aged over 65 | Age 66-75 | Aged over 75 | | | All aged over 65 | Age 66-75 | Aged over 75 | |
| Australia | 65.4 | 69.3 | 60.0 | 21 622 | Korea | | 62.4 | | 15 685 |
| Austria | 91.3 | 95.0 | 86.0 | 28 258 | Luxembourg | 99.9 | 101.8 | 96.7 | 43 761 |
| Belgium | 77.1 | 80.2 | 73.5 | 21 180 | Mexico | 95.8 | 98.0 | 92.0 | 7 088 |
| Canada | 93.3 | 95.8 | 89.9 | 31 690 | Netherlands | 88.6 | 93.3 | 81.8 | 26 353 |
| Chile | 84.8 | 85.6 | 83.6 | 12 354 | New Zealand | 86.2 | 97.8 | 69.2 | 24 048 |
| Czech Republic | 79.8 | 82.5 | 75.8 | 13 362 | Norway | 85.3 | 95.3 | 73.0 | 32 083 |
| Denmark | 74.3 | 79.4 | 67.2 | 23 004 | Poland | 87.5 | 87.5 | 87.4 | 12 653 |
| Estonia | 74.5 | 77.7 | 70.1 | 10 135 | Portugal | 90.8 | 97.0 | 83.4 | 16 591 |
| Finland | 79.5 | 86.4 | 71.0 | 22 440 | Slovak Republic | 82.1 | 82.3 | 81.6 | 12 742 |
| France | 97.2 | 103.4 | 90.8 | 27 652 | Slovenia | 85.9 | 90.1 | 79.7 | 19 169 |
| Germany | 85.4 | 89.6 | 80.0 | 24 790 | Spain | 86.1 | 90.6 | 81.5 | 19 098 |
| Greece | 84.4 | 89.6 | 77.9 | 16 418 | Sweden | 83.2 | 94.8 | 66.1 | 22 860 |
| Hungary | 89.8 | 91.0 | 87.9 | 10 239 | Switzerland | 76.9 | 81.7 | 68.9 | 30 275 |
| Iceland | 92.8 | 102.9 | 80.0 | 26 435 | Turkey | 94.9 | 99.2 | 87.0 | 10 886 |
| Ireland | 82.0 | 86.4 | 75.4 | 25 225 | United Kingdom | 81.2 | 86.0 | 75.4 | 24 170 |
| Israel | 95.8 | 100.0 | 90.4 | 19 507 | United States | 92.2 | 102.4 | 79.3 | 32 821 |
| Italy | 93.3 | 99.1 | 86.9 | 23 306 | **OECD34** | **86.2** | **90.1** | **79.9** | **21 480** |
| Japan | 87.7 | 89.0 | 86.1 | 22 404 | | | | | |

*Note:* Purchasing power parity (PPP) exchange rates are based on cross-national comparisons of actual consumption.
*Source:* *OECD Income Distribution Database*; see OECD (2008), Figure 2.4 for relative incomes by age and Table 5.A1.1 for absolute incomes.

StatLink http://dx.doi.org/10.1787/888932907718

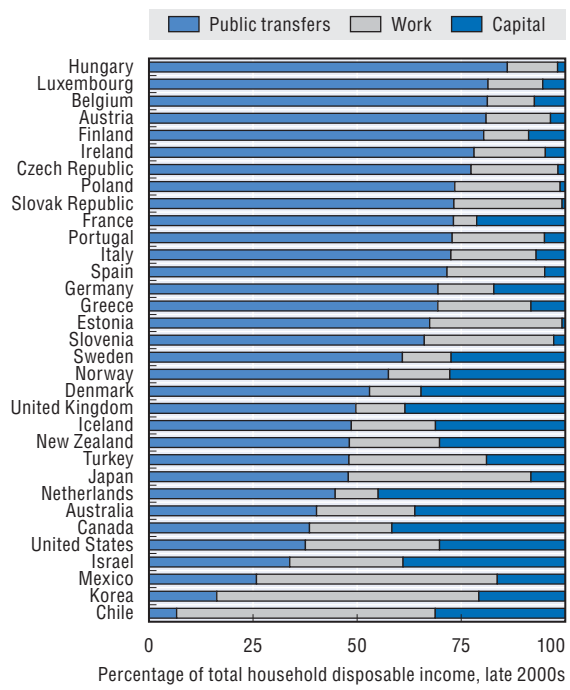
## 5.2. Income trends, mid-1990s to late 2000s




*Source:* *OECD Income Distribution Database*; see OECD (2008), Figure 2.6.

StatLink http://dx.doi.org/10.1787/888932907737

## 5.3. Income sources, late 2000s




*Note:* Income from work includes both earnings (employment income) and income from self-employment. Capital income includes private pensions as well as income from the returns on non-pension savings.
*Source:* *OECD Income Distribution Database.*

StatLink http://dx.doi.org/10.1787/888932907756

**Key results**

On average, 12.8% of over 65s in OECD countries live in income poverty, defined as an income below half the national median. There is large variation between countries, from three with practically no old-age poverty to four with poverty rates double the OECD average. Poverty rates are higher for older people than for the population as whole, which averages 11.3%.

In 2010, poverty rates of people aged over 65 were very high in Korea (47%) and high in Australia (36%), Mexico (28%) and Switzerland (22%). Hungary, Luxembourg and the Netherlands have the fewest poor elderly: below 2%. Poverty rates are close to the OECD average of 12.8% in Austria, Belgium, Italy, New Zealand and Spain.

In 16 out of 34 countries, the population poverty rate is below the old-age poverty rate. The largest differences between the two are found in Australia, Korea and Switzerland. Older people are relatively less likely to be poor in 18 countries. Most notably among these are Canada, Estonia, Hungary, Luxembourg and the Netherlands, where the old-age poverty rate is between 4.7 and 6.1 percentage points lower than the overall rate.

### *Poverty and age*

Poverty among the "younger old" (aged 66-75) is generally rarer than among the "older old" (aged 75 and over); the average poverty rates are 11.3% and 13.8%, respectively. The difference between the two is in double digits in Australia and around 8 percentage points higher in Finland, Slovenia, Sweden and the United States. There are many explanations for this pattern. Most significantly, as real earnings have tended to grow over time, each successive cohort of retirees has a higher starting benefit. Also, women predominate among the old: they make up 53% of 66-75 year olds and 60% of those aged over 75 on average. Nevertheless, in three countries – Chile, Hungary and Poland – the over 75s fare slightly better than their younger counterparts. The differences in Austria, Belgium and the Netherlands are all 0.4 percentage points or lower.

One important factor that explains the varying incidence of old-age poverty is the level at which safety-net retirement benefits are set. In Australia, for example, this benefit was below the poverty thresholds in the late-2000s. By contrast, the basic pension in New Zealand was slightly higher than the country's poverty threshold (see the indicator on "Basic, targeted and minimum pensions"). Korea's very high old-age poverty rate is primarily due to the fact that the public pension scheme was introduced in 1988, so retirees in the mid-2000s had little or no entitlements.

### *Changes over time*

Between 2007 and 2010 the overall population poverty rate increased from 11.2 to 11.3. In contrast though the elderly poverty rate for those aged 65 and over decreased from 15.1% to 12.8%. Overall only eight of the 33 OECD countries, for which data is available, showed an increase in old-age poverty over the three year time period. Despite the 2010 results being only the initial findings following the economic crisis it does indicate that pensioner incomes have been protected in comparison to those of the general population.

Time analysis also shows the sensitivity of poverty figures to benefit levels. For example the old-age poverty rate in New Zealand decreased from 23.5 in 2007 to 12.5% in 2010 purely because of the position of the flat rate benefit to the poverty threshold. The same is also true for Ireland where the rate fell from 13.4% to 8.0% over the same timeframe.

### *Definition and measurement*

For international comparisons, the OECD treats poverty as a "relative" concept. The yardstick for poverty depends on the median household income in a particular country at a particular point in time. Here, the poverty threshold is set at 50% of median, equivalised household disposable income. See OECD (2008), *Growing Unequal?* for more details on definitions and data sources. The special chapter on "Incomes and poverty of older people" in OECD (2009), *Pensions at a Glance* provides a more detailed analysis.

### *Further reading*

OECD (2008), *Growing Unequal? Income Distribution and Poverty in OECD Countries*, Table 5.3, OECD Publishing, *http://dx.doi.org/10.1787/9789264044197-en*.

## 5.4. Income poverty rates

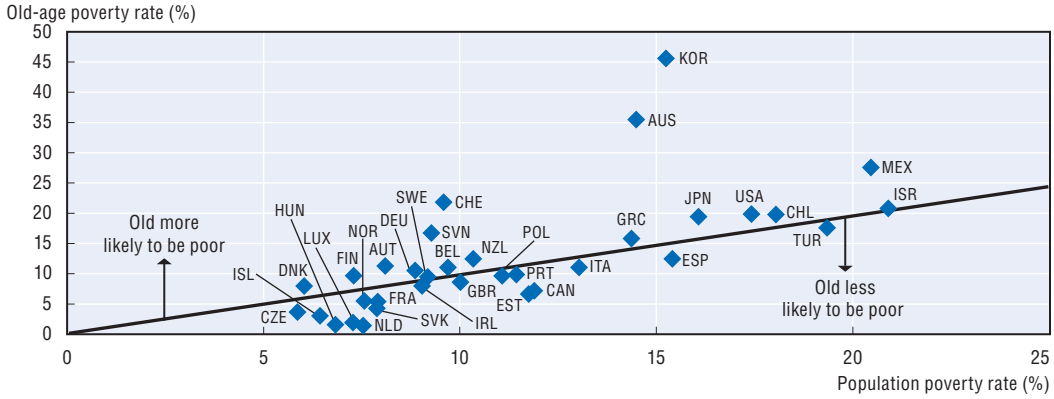
Percentage with incomes less than 50% of median equivalised household disposable income

| | 2007 | | | | 2010 | | | |
|---|---|---|---|---|---|---|---|---|
| | Older people (aged over 65) | | | Whole population | Older people (aged over 65) | | | Whole population |
| | All 65+ | 66-75 | 75+ | | All 65+ | 66-75 | 75+ | |
| Australia | 39.2 | 35.2 | 44.7 | 14.6 | 35.5 | 31.2 | 41.5 | 14.4 |
| Austria | 9.9 | 9.0 | 11.2 | 7.2 | 11.3 | 11.1 | 11.5 | 8.1 |
| Belgium | 13.5 | 12.0 | 15.4 | 9.1 | 11.0 | 10.9 | 11.2 | 9.7 |
| Canada | 5.0 | 5.4 | 4.5 | 11.3 | 7.2 | 6.9 | 7.6 | 11.9 |
| Chile | 21.6 | 21.3 | 22.1 | 19.2 | 19.8 | 20.0 | 19.5 | 18.0 |
| Czech Republic | 3.6 | 3.2 | 4.2 | 5.4 | 3.7 | 3.4 | 4.0 | 5.8 |
| Denmark | 12.1 | 9.3 | 15.8 | 6.1 | 8.0 | 5.7 | 11.2 | 6.0 |
| Estonia | 29.5 | 24.6 | 36.7 | 13.9 | 6.7 | 4.6 | 9.5 | 11.7 |
| Finland | 13.0 | 7.7 | 19.4 | 8.0 | 9.7 | 6.1 | 14.0 | 7.3 |
| France | 5.3 | 3.6 | 6.8 | 7.2 | 5.4 | 4.5 | 6.3 | 7.9 |
| Germany | 10.1 | 8.1 | 13.0 | 8.5 | 10.5 | 8.5 | 13.3 | 8.8 |
| Greece | 15.2 | 11.5 | 20.7 | 13.9 | 15.8 | 13.2 | 19.1 | 14.3 |
| Hungary | 4.7 | 5.1 | 4.3 | 6.4 | 1.6 | 2.2 | 0.7 | 6.8 |
| Iceland | 9.4 | 5.0 | 14.5 | 6.5 | 3.0 | 0.7 | 6.0 | 6.4 |
| Ireland | 13.4 | 12.4 | 14.7 | 9.8 | 8.0 | 6.9 | 9.6 | 9.0 |
| Israel | 22.1 | 21.1 | 23.4 | 19.9 | 20.8 | 20.1 | 21.7 | 20.9 |
| Italy | 14.5 | 14.1 | 15.0 | 12.0 | 11.0 | 10.5 | 11.7 | 13.0 |
| Japan | 21.7 | 19.4 | 24.5 | 15.7 | 19.4 | 16.6 | 22.8 | 16.0 |
| Korea | 44.6 | 43.2 | | 14.8 | 47.2 | 45.6 | | 15.2 |
| Luxembourg | 2.7 | 2.6 | 2.8 | 7.2 | 1.9 | 1.4 | 2.8 | 7.2 |
| Mexico | 29.0 | 28.4 | 30.1 | 21.0 | 27.6 | 26.7 | 29.1 | 20.4 |
| Netherlands | 1.6 | 1.6 | 1.7 | 6.7 | 1.4 | 1.3 | 1.6 | 7.5 |
| New Zealand | 23.5 | 19.7 | 29.3 | 11.0 | 12.5 | 10.2 | 15.8 | 10.3 |
| Norway | 8.0 | 4.0 | 12.6 | 7.8 | 5.5 | 2.7 | 9.0 | 7.5 |
| Poland | 7.7 | 8.6 | 6.4 | 10.1 | 9.7 | 11.2 | 7.7 | 11.0 |
| Portugal | 15.2 | 12.6 | 18.7 | 13.6 | 9.9 | 7.6 | 12.6 | 11.4 |
| Slovak Republic | 7.2 | 6.6 | 8.1 | 6.7 | 4.3 | 3.5 | 5.7 | 7.8 |
| Slovenia | 17.5 | 15.1 | 21.1 | 8.2 | 16.7 | 13.1 | 22.0 | 9.2 |
| Spain | 20.6 | 17.4 | 24.2 | 13.7 | 12.5 | 11.6 | 13.4 | 15.4 |
| Sweden | 9.9 | 5.9 | 15.1 | 8.4 | 9.5 | 6.3 | 14.2 | 9.1 |
| Switzerland | | | | | 21.8 | 19.4 | 25.8 | 9.5 |
| Turkey | 13.7 | 13.9 | 13.1 | 17.0 | 17.6 | 15.9 | 20.7 | 19.3 |
| United Kingdom | 12.2 | 9.9 | 14.9 | 11.3 | 8.6 | 7.0 | 10.5 | 10.0 |
| United States | 22.2 | 18.9 | 26.3 | 17.3 | 19.9 | 16.4 | 24.3 | 17.4 |
| **OECD** | **15.1** | **13.2** | **16.7** | **11.2** | **12.8** | **11.3** | **13.8** | **11.3** |

*Source: OECD Income Distribution Database*; OECD (2008), Table 5.3.

StatLink http://dx.doi.org/10.1787/888932907775

## 5.5. Income poverty rates by age




*Source: OECD Income Distribution Database*; see OECD (2008), Tables 5.1 and 5.3.

StatLink http://dx.doi.org/10.1787/888932907794

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*Chapter 6*

# Finances of retirement-income systems

*These indicators look at the retirement-income system as a whole rather than focus on individuals' pension entitlements and retirement incomes as in the previous two chapters.*

*They begin with an examination of how pensions are financed. The first indicator shows contribution rates for public and mandatory private pensions for countries where these can be separated. It also provides data on the revenues from pension contributions.*

*The first of the three indicators of pension expenditures looks at public spending between 1990 and 2009. It shows how much of national income is needed to pay for public pension benefits. It also shows the importance of public pensions in the overall government budget. Data are also provided, where available, on the cost of "non-cash" benefits. The second spending indicator focuses on private pension, looking at the benefit spending on mandatory, quasi-mandatory and voluntary private schemes. It also shows, where available, information on the cost of public support for private pensions through tax incentives.*

*The final indicator presents at long-term financial projections of pension spending, and in particular the evolution of public expenditures on pensions in the period between 2010 to 2060. This indicator draws on the* EU 2012 Ageing Report *for the EU27 countries plus Norway and on national sources for some further OECD countries and other major economies.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## Key results

Pension contribution rates have remained broadly stable since the mid-1990s. The average contribution rate in the 25 OECD countries that levy separate public contributions increased from 19.2% in 1994 to 19.6% in 2012, reaching a high of 20.0% in 2004. This probably reflects governments' concerns over the effect on employment of high labour taxes. Indeed, these concerns seem to have taken precedence over the pressure on pension-system finances from ageing populations and maturing of schemes.

In the 23 countries for which data are available, revenues from these contributions were worth an average of 5.2% of national income, representing 15.8% of total government revenues raised from taxes and contributions.

Most of the measures presented in *Pensions at a Glance* look at the benefits side of the pension system. These indicators look at the contribution side.

The left-hand side of the table looks at the evolution of contribution rates. Around two-thirds of countries with separate pension contributions saw rates unchanged between 2009 and 2012: Austria, Belgium, Canada, Chile, the Czech Republic, Estonia, France, Greece, Israel, Korea, Luxembourg, the Netherlands, Poland, the Slovak Republic, Slovenia, Spain, Switzerland and Turkey. In addition, there were only very small changes in Germany, Hungary, Italy and Sweden. There were significant increases in contribution rates in the Czech Republic, with a smaller increase also in Finland and Japan. In contrast, there were cuts in contribution rates in the United States.

The right-hand side of the table looks at the money raised from contributions to public pension schemes. The revenue figures complement those for the contribution rate, because they illustrate the effect of other parameters of the pension system. For example, most OECD countries have ceilings on pension contributions, which range from around the level of average earnings to 3.3 times in Italy and 6.0 times in Mexico. A lower ceiling will, of course, reduce revenues for a given contribution rate. In other countries, there are floors to contributions, which can mean that low earners pay little or no contributions. Finally, some countries' revenues may be affected by the size of the informal sector or under-reporting of earnings.

Public revenues from pension contributions are highest in Greece and Spain, at 9.2% of gross domestic product (GDP), followed by Finland and Italy at 9.0%. Despite the contribution rate in Turkey being around the same as the OECD average, it raises just 2.4% of national income in contributions, reflecting the size of the informal sector. Contribution revenues are also low in Canada – 2.6% of GDP – because of the low contribution rate (half the OECD average) and the low ceiling (around average earnings).

On average, employee contributions raise a total of 1.8% of GDP compared with 3.0% of GDP for employers' contributions. Employees pay 35% of the total, on average, compared with 57% of the total paid by employers. (The remainder is mainly accounted for contributions from the self-employed, although it also includes contribution from other groups, such as the unemployed.) The great bulk of contributions is levied on employers in the Czech Republic, Finland, Hungary, Italy and Spain. However, it is important to bear in mind that levies on employers have been shown in numerous economic analyses to be passed, in part or in full, onto workers. This can take the form of lower wages or fewer jobs. In many countries, the contributions are evenly balanced between employer and employee levies, including Canada, Germany, Japan, Korea, Luxembourg, Poland and Switzerland.

The final column of the table shows pension contributions as a percentage of total government revenues from taxes and contributions. This time, Spain is again highest with pension contributions accounting for 28% of total revenues, with Greece next at 25.5%. In Australia, Denmark and New Zealand, pensions are financed by general revenues. For the reasons explained above, pension contributions are a relatively small part of government revenues in Canada, Korea and Turkey.

## 6.1. Public pension contribution rates and revenues

| | Pension contribution rate (% of gross earnings) | | | | | | | Pension contribution revenues, 2011 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | (% of GDP) | | | (% of total taxes) |
| | 1994 | 1999 | 2004 | 2009 | 2012 | Employee 2012 | Employer 2012 | Employee | Employer | Total | |
| **OECD members** | | | | | | | | | | | |
| Australia | | | Private pension contributions only | | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| Austria | 22.8 | 22.8 | 22.8 | 22.8 | 22.8 | 10.3 | 12.6 | 3.5 | 3.7 | 7.8 | 20.1 |
| Belgium | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | 7.5 | 8.9 | 2.3 | 2.0 | 4.7 | 11.5 |
| Canada | 5.2 | 7.0 | 9.9 | 9.9 | 9.9 | 5.0 | 5.0 | 1.2 | 1.2 | 2.6 | 9.1 |
| Chile | | | 29.8 | 29.8 | 29.8 | 28.8 | 1.0 | | | | |
| Czech Republic | 26.9 | 26.0 | 28.0 | 28.0 | 28.0 | 6.5 | 21.5 | 1.8 | 6.0 | 8.3 | 24.7 |
| Denmark | | | Private pension contributions only | | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| Estonia | | | 35.0 | 22.0 | 22.0 | 2.0 | 20.0 | | | | |
| Finland | 18.6 | 21.5 | 21.4 | 21.6 | 22.8 | 5.2 | 17.7 | 1.8 | 6.8 | 9.0 | 22.9 |
| France | 21.5 | 16.7 | 16.7 | 16.7 | 16.7 | 6.8 | 9.9 | | | | |
| Germany | 19.2 | 19.7 | 19.5 | 19.9 | 19.6 | 9.8 | 9.8 | 2.8 | 3.2 | 6.9 | 20.2 |
| Greece | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 6.7 | 13.3 | 3.4 | 4.3 | 9.2 | 25.5 |
| Hungary | 30.5 | 30.0 | 26.5 | 33.5 | 34.0 | 10.0 | 24.0 | 1.4 | 6.4 | 8.3 | 23.0 |
| Iceland | | | No separate pension contribution | | | | | | | | |
| Ireland | | | No separate pension contribution | | | | | | | | |
| Israel | | | 6.1 | 6.9 | 6.9 | 3.9 | 3.1 | | | | |
| Italy | 28.3 | 32.7 | 32.7 | 32.7 | 33.0 | 9.2 | 23.8 | 2.2 | 6.8 | 9.0 | 21.1 |
| Japan | 16.5 | 17.4 | 13.9 | 15.7 | 16.8 | 8.4 | 8.4 | 3.2 | 3.1 | 6.3 | 22.8 |
| Korea | 6.0 | 9.0 | 9.0 | 9.0 | 9.0 | 4.5 | 4.5 | 1.2 | 0.9 | 2.1 | 9.0 |
| Luxembourg | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 8.0 | 8.0 | 2.8 | 2.4 | 5.9 | 17.4 |
| Mexico | | | Private pension contributions only | | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| Netherlands | 17.9 | 17.9 | 17.9 | 17.9 | 17.9 | 17.9 | 0.0 | | | | |
| New Zealand | | | No contributions | | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| Norway | | | No separate pension contribution | | | | | | | | |
| Poland | | 19.5 | 19.5 | 19.5 | 19.5 | 9.8 | 9.8 | 3.0 | 2.6 | 6.8 | 24.1 |
| Portugal | | | No separate pension contribution | | | | | | | | |
| Slovak Republic | 28.5 | 27.5 | 26.0 | 18.0 | 18.0 | 4.0 | 14.0 | 0.9 | 2.5 | 4.3 | 16.4 |
| Slovenia | | | 24.4 | 24.4 | 24.4 | 15.5 | 8.9 | | | | |
| Spain | 29.3 | 28.3 | 28.3 | 28.3 | 28.3 | 4.7 | 23.6 | 1.4 | 6.8 | 9.2 | 28.0 |
| Sweden | 19.1 | 15.1 | 18.9 | 18.9 | 18.4 | 7.0 | 11.4 | 2.5 | 3.6 | 6.2 | 14.6 |
| Switzerland | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 4.9 | 4.9 | 2.7 | 2.7 | 5.9 | 21.5 |
| Turkey | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 9.0 | 11.0 | 1.1 | 1.3 | 2.4 | 12.0 |
| United Kingdom | | | No separate pension contribution | | | | | | | | |
| United States | 12.4 | 12.4 | 12.4 | 12.4 | 10.4 | 4.2 | 6.2 | 2.1 | 2.1 | 4.2 | 18.5 |
| **OECD34** | **19.2** | **19.3** | **20.0** | **19.6** | **19.6** | **8.4** | **11.2** | **1.8** | **3.0** | **5.2** | **15.8** |
| **Other major economies** | | | | | | | | | | | |
| Argentina | | | 28.0 | 23.7 | 23.7 | 11.0 | 12.7 | | | | |
| Brazil | | | 31.0 | 31.0 | 31.0 | 11.0 | 20.0 | | | | |
| China | | | 28.0 | 28.0 | 28.0 | 8.0 | 20.0 | | | | |
| India | | | 24.0 | 24.0 | 24.0 | 12.0 | 12.0 | | | | |
| Indonesia | | | 6.0 | 6.0 | 6.0 | 2.0 | 4.0 | | | | |
| Russian Federation | | | 28.0 | 26.0 | 22.0 | 0.0 | 22.0 | | | | |
| Saudi Arabia | | | 18.0 | 18.0 | 18.0 | 9.0 | 9.0 | | | | |
| South Africa | | | No contributions | | | | | | | | |
| EU27 | | | 23.8 | 22.5 | 22.6 | 8.0 | 14.6 | | | | |

*Note:* In some cases, pension contribution revenues have been calculated assuming that the revenues are split between different social security programmes in the same proportion as the contribution rates. The total contribution includes payments from people who are not employed (principally the self-employed).

*Source:* OECD (various years), *Taxing Wages*; OECD (2013), *Revenue Statistics*; Social Security Administration, United States (various years), *Social Security Programs throughout the World*; OECD pension and tax models.

StatLink http://dx.doi.org/10.1787/888932907813

**Key results**

Public spending on cash old-age pensions and survivors' benefits in the OECD increased 27% faster than the growth in national income between 1990 and 2009, from an average of 6.1% of gross domestic product (GDP) to 7.8%. Public pensions are often the largest single item of government expenditure, accounting for 17% of total government spending on average.

Italy spent the largest proportion of national income on pensions among OECD countries in 2009: 15.4% of GDP. Other countries with high gross public pension spending are also found in continental Europe, with Austria, France and Greece at about 14% to 13% of GDP and Poland and Portugal at about 12%. Pensions generally account for between 24% and 30% of total public expenditure in these countries. High spending partly results from demographics: these six countries are mostly among the oldest of OECD countries.

The left-hand figure compares pension spending in 2009 with the old-age dependency ratio for that year. (The dependency ratio is the percentage of the adult – aged 20 and over – population that is aged 65 and over. It is the inverse of the "Old-age support ratio", presented in the indicator in Chapter 7). There is a strong relationship, but it is far from deterministic. Countries such as Japan, Sweden, Switzerland and the United Kingdom face similar or worse demographics but have significantly lower pension spending than the seven countries at the top of the scale.

Iceland and Mexico spend around 1.7% of GDP on public pensions with Korea at 2.1%. They are all relatively young countries. Also, Korea's pension system is immature: the public, earnings-related scheme was only established in 1988. In Mexico, low spending also reflects relatively narrow coverage of pensions (only around 35% of employees). In Iceland, much of retirement income is provided by compulsory occupational schemes (see the next indicator of "Pension-benefit expenditures: Public and private"), leaving less role for the public sector in providing old-age income.

Spending also tends to be low in other countries with relatively favourable demographics, such as Australia, Canada, Ireland and New Zealand. However, this is not always the case: Turkey spends 6.8% of GDP on public pensions despite being the second youngest OECD country in demographic terms. This is more than Denmark, the Netherlands and the United Kingdom and is equal to that of the United States, despite the fact that these countries have 2-3 times as many over 65s relative to the population as Turkey does.

### *Trends*

Pension spending was a fairly stable proportion of GDP over the period 1990-2009 in six countries: Belgium, Canada, Ireland, Sweden, Switzerland and the United States.

In five countries, public pension spending grew more slowly than national income. In New Zealand, the decline of over 40% reflects two policies: freezing the value of the basic pension in 1992-94 and increasing pension age from 60 to 65. There were significant falls in pension spending in Iceland, Luxembourg, the Netherlands, New Zealand and Norway as well though the latter is now increasing to near 1990s levels.

Public pension expenditure more than doubled relative to national income in six OECD countries. In Korea, Mexico and (to a lesser degree) Turkey, this reflected the low starting point in 1990. But Poland and Portugal moved from spending below the OECD average to well above. The change in Japan results from rapid ageing.

### *Gross and net spending*

The penultimate column of the table shows public spending in *net* terms: after taxes and contributions paid on benefits. The right-hand figure compares this with *gross* pension spending. Net spending is significantly below gross in two of the highest spending countries – Austria and France – and in the Nordic countries, where taxes are relatively high. Gross and net spending are similar where pensions are not taxable (the Slovak Republic) or public benefits are generally below basic tax reliefs (Australia, the Czech Republic, Ireland and the United Kingdom).

### *Non-cash benefits*

The final column of the table shows total gross public spending on older people, including non-cash benefits. In six countries, such benefits exceed 1% of GDP. The most important in Denmark, Finland, Norway and Sweden are residential care and home-help services. Australia and Japan also record high figures for non-cash benefits.

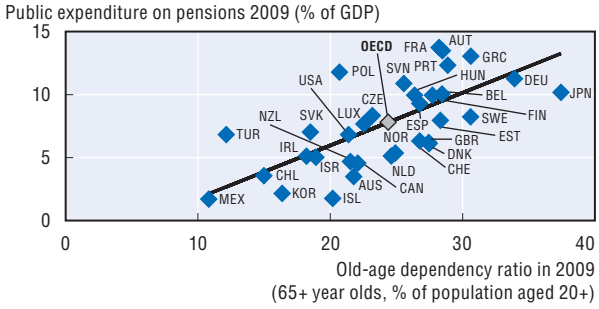
## 6.2. Public expenditure on old-age and survivors benefits

| | Public expenditure on cash benefits for old-age and survivors | | | | | | | | | Total inc. non-cash (% of GDP) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Level (% of GDP) | | | | | Change (%) | Level (% of total government spending) | | Level in net terms (% of GDP) | |
| | 1990 | 1995 | 2000 | 2005 | 2009[1] | 1990-2009 | 1990 | 2009[1] | 2009[1] | 2009[1] |
| Australia | 3.0 | 3.6 | 3.8 | 3.3 | 3.5 | *14.7* | 8.5 | 9.4 | 3.4 | 5.1 |
| Austria | 11.4 | 12.3 | 12.2 | 12.4 | 13.5 | *18.3* | 22.1 | 25.5 | 11.8 | 14.0 |
| Belgium | 9.1 | 9.3 | 8.9 | 9.0 | 10.0 | *10.2* | 17.4 | 18.7 | 8.9 | 10.2 |
| Canada | 4.2 | 4.7 | 4.3 | 4.1 | 4.5 | *7.4* | 8.5 | 10.3 | 4.3 | 4.5 |
| Chile | | 6.7 | 7.3 | 5.7 | 3.6 | | | | 3.5 | 3.6 |
| Czech Republic | 5.8 | 6.1 | 7.2 | 7.0 | 8.3 | *42.9* | | 18.5 | 8.3 | 8.6 |
| Denmark | 5.1 | 6.2 | 5.3 | 5.4 | 6.1 | *19.3* | 9.2 | 10.5 | 4.5 | 8.2 |
| Estonia | | | 6.0 | 5.3 | 7.9 | | | 17.6 | 7.8 | 8.1 |
| Finland | 7.3 | 8.8 | 7.6 | 8.4 | 9.9 | *36.3* | 15.1 | 17.7 | 8.3 | 11.1 |
| France | 10.6 | 12.0 | 11.8 | 12.4 | 13.7 | *29.2* | 21.4 | 24.2 | 12.8 | 14.1 |
| Germany | 9.7 | 10.5 | 11.1 | 11.4 | 11.3 | *15.7* | | 23.4 | 10.9 | 11.3 |
| Greece | 9.9 | 9.7 | 10.8 | 11.8 | 13.0 | *31.2* | | 24.2 | 13.0 | 13.2 |
| Hungary | | | 7.6 | 8.5 | 9.9 | | | 19.4 | 9.9 | 10.5 |
| Iceland | 2.2 | 2.4 | 2.2 | 2.0 | 1.7 | *-21.3* | | 3.4 | 1.6 | 2.2 |
| Ireland | 4.9 | 4.3 | 3.1 | 3.4 | 5.1 | *5.2* | 11.5 | 10.5 | 4.8 | 5.6 |
| Israel | | 4.7 | 4.9 | 5.1 | 5.0 | | | 11.1 | 4.9 | 5.2 |
| Italy | 10.1 | 11.3 | 13.5 | 13.9 | 15.4 | *53.3* | 19.1 | 29.8 | 13.5 | 15.6 |
| Japan | 4.8 | 6.1 | 7.3 | 8.7 | 10.2 | *111.4* | | 19.1 | 9.5 | 11.8 |
| Korea | 0.7 | 1.2 | 1.4 | 1.5 | 2.1 | *193.5* | 3.7 | 6.5 | 2.1 | 2.4 |
| Luxembourg | 8.2 | 8.8 | 7.5 | 7.2 | 7.7 | *-6.1* | 21.6 | 17.8 | 6.9 | 7.7 |
| Mexico | 0.5 | 0.7 | 0.9 | 1.2 | 1.7 | *269.0* | | 7.3 | 1.7 | 1.7 |
| Netherlands | 6.7 | 5.8 | 5.0 | 5.0 | 5.1 | *-23.9* | 12.2 | 9.9 | 4.7 | 6.1 |
| New Zealand | 7.4 | 5.7 | 5.0 | 4.3 | 4.7 | *-36.7* | 14.0 | 11.1 | 4.0 | 4.7 |
| Norway | 5.6 | 5.5 | 4.8 | 4.8 | 5.4 | *-5.2* | | 11.5 | 4.4 | 7.4 |
| Poland | 5.1 | 9.4 | 10.5 | 11.4 | 11.8 | *129.1* | | 26.4 | 10.8 | 11.8 |
| Portugal | 4.9 | 7.2 | 7.9 | 10.3 | 12.3 | *151.9* | | 24.8 | 11.6 | 12.5 |
| Slovak Republic | | 6.3 | 6.3 | 6.2 | 7.0 | | | 16.9 | 7.0 | 7.4 |
| Slovenia | | | 10.5 | 9.9 | 10.9 | | | 22.1 | 10.9 | 11.0 |
| Spain | 7.9 | 9.0 | 8.6 | 8.1 | 9.3 | *17.3* | | 20.1 | 9.0 | 9.9 |
| Sweden | 7.7 | 8.2 | 7.2 | 7.6 | 8.2 | *6.8* | | 15.0 | 6.2 | 10.8 |
| Switzerland | 5.6 | 6.7 | 6.6 | 6.8 | 6.3 | *11.9* | 18.6 | 19.5 | 6.4 | 6.6 |
| Turkey | 2.4 | 2.7 | 4.9 | 5.9 | 6.8 | *188.7* | | 16.8 | 6.8 | 6.9 |
| United Kingdom | 4.8 | 5.4 | 5.3 | 5.6 | 6.2 | *28.1* | 11.6 | 12.1 | 5.9 | 6.8 |
| United States | 6.1 | 6.3 | 5.9 | 6.0 | 6.8 | *12.6* | 16.4 | 16.3 | 6.4 | 6.9 |
| **OECD** | **6.1** | **6.7** | **6.9** | **7.0** | **7.8** | ***27.0*** | | **16.6** | **7.3** | **8.3** |

*Note:* See Adema, W. and M. Ladaique (2009), "How Expensive is the Welfare State? Gross and Net Indicators in the OECD Social Expenditure Database (SOCX)", *OECD Social, Employment and Migration Working Papers*, No. 92, OECD Publishing, Paris, *http://dx.doi.org/10.1787/220615515052* for more details on the data, sources and methodology.
1. Data for Switzerland is 2008.
*Source:* OECD, *Social Expenditures Database (SOCX)*; OECD, *Main Economic Indicators* (database).

StatLink http://dx.doi.org/10.1787/888932907832

## 6.3. Demographic pressures and public pension expenditure




*Note:* Regression line is pension expenditure = -2.408 (1.917) + 0.4186 (0.07774) × dependency ratio, where heteroskedasticity adjusted standard errors are given in parentheses. The coefficient on the dependency ratio is significant at the 1% level and the $R^2$ of the regression is 0.4832.
*Source:* OECD, *Social Expenditures Database (SOCX)*; United Nations, *World Population Prospects: The 2008 Revision – Highlights*.

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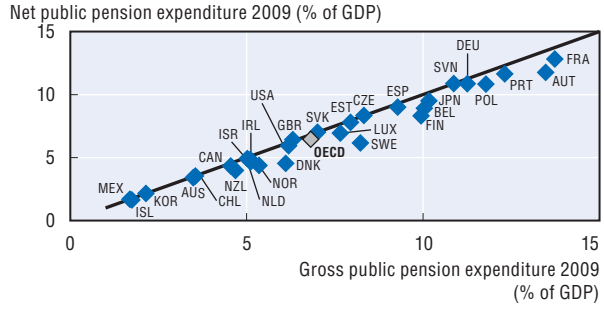
## 6.4. Gross and net public pension expenditure




*Note:* The figure shows a 45° line. See Adema, W. and M. Ladaique (2009), "How Expensive is the Welfare State? Gross and Net Indicators in the OECD Social Expenditure Database (SOCX)", *OECD Social, Employment and Migration Working Papers*, No. 92, OECD Publishing, Paris, *http://dx.doi.org/10.1787/220615515052* for more details on the data, sources and methodology.
*Source:* OECD, *Social Expenditures Database (SOCX)*.

StatLink http://dx.doi.org/10.1787/888932907870

**Key results**

Payments from private pension schemes were worth 1.6% of gross domestic product (GDP) on average in 2009 in the 25 OECD countries for which data are available. This is equivalent to a fifth of average public spending on retirement benefits. Private-pension payments increased 27% faster than GDP between 1990 and 2009.

Private pensions are mandatory or achieve near-universal coverage through industrial relations agreements ("quasi-mandatory") in 10 out of 34 OECD countries. In others, voluntary private pensions – either individual ("personal") or employer-provided ("occupational") – have broad coverage.

The biggest flow of private-pension payments is in Switzerland: 5.8% of GDP in 2009. Added to public spending, total benefits are 9.2% of GDP, a similar figure to public pension expenditure in the Czech Republic and Spain, for example. Swiss occupational plans are compulsory, although the data on private-pension payments includes benefits above the statutory minimum level.

The Netherlands, where occupational plans are "quasi-mandatory", has the next highest figure for private-pension benefits: 5.6% of GDP. The next four countries – Canada, Iceland, the United Kingdom and the United States – record private-pension payments of between 3.7% and 4.6% of GDP. In the United Kingdom, there is a small mandatory component related to individuals who "contract out" of the public earnings-related scheme: see the "Country profiles" in Chapter 9. Japan (where private pensions are voluntary) has the next highest benefit expenditures on private pensions, at 3.1% or more of GDP.

Many countries introduced compulsory private pensions in the 1990s: Australia, Estonia, Hungary, Mexico, Poland, the Slovak Republic and Sweden. In some cases – particularly in Central and Eastern Europe – these new schemes were mainly taken up by younger workers. Many of them have yet to begin paying benefits. Much of the benefit payouts recorded in Australia and Sweden relate to voluntary and quasi-mandatory (respectively) schemes that were already in place before private pensions were made compulsory. In all these cases, it will be some decades before all retirees have spent a full career in compulsory private pension plans.

### *Trends*

The fastest growth in private-pension payments has been from a relatively low base (less than 0.5% of GDP). But there are exceptions, such as Belgium, Iceland and Switzerland. Swiss occupational pensions became compulsory in 1985, which extended coverage significantly. This is now being reflected in the rapid growth in private pension entitlements as each successive generation of retirees has spent longer on average covered by private pensions.

### *Tax breaks*

Most OECD countries offer a favourable tax treatment to retirement savings made through private pension plans. Often, individual contributions are fully or partially deductible from income-tax liabilities and investment returns are fully or partially relieved from tax. Some countries offer tax relief on pension payments (see the indicator of "Tax treatment of pensions and pensioners" in Chapter 4).

The cost of these fiscal incentives is measured in many OECD countries using the concept of "tax expenditures", developed in the 1960s. This attempts to quantify the value of the preferential tax treatment relative to a benchmark tax treatment. The idea is that this is the amount the government would have to provide as a subsidy (a direct expenditure) to achieve the same effect.

Data on tax expenditures for retirement savings are available for 21 OECD countries. More than half of these figures are 0.2% of GDP or less. And in only five countries – Australia, Canada, Iceland, Ireland and the United Kingdom – are reported tax expenditures worth 1% of GDP or more.

Tax expenditure figures come with important caveats: they are not comparable between countries because of differences in the benchmark tax system chosen. Despite their name, they are not equivalent to direct expenditures and so should not be added to numbers for public pension spending.

### *Further reading*

Adema, W. and M. Ladaique (2009), "How Expensive is the Welfare State? Gross and Net Indicators in the OECD Social Expenditure Database (SOCX)", *OECD Social, Employment and Migration Working Papers*, No. 92, OECD Publishing, *http://dx.doi.org/10.1787/220615515052*.

OECD (2010), *Tax Expenditures in OECD Countries*, OECD Publishing, *http://dx.doi.org/10.1787/9789264076907-en*.

Yoo, K.Y. and A. de Serres (2004), "Tax Treatment of Private Pension Savings in OECD Countries and the Net Tax Cost Per Unit of Contribution to Tax-Favoured Schemes", *OECD Economics Department Working Papers*, No. 406, OECD Publishing, *http://dx.doi.org/10.1787/387535760801*.

## 6.5. Pension-benefit expenditures: Public and private, 1990-2009

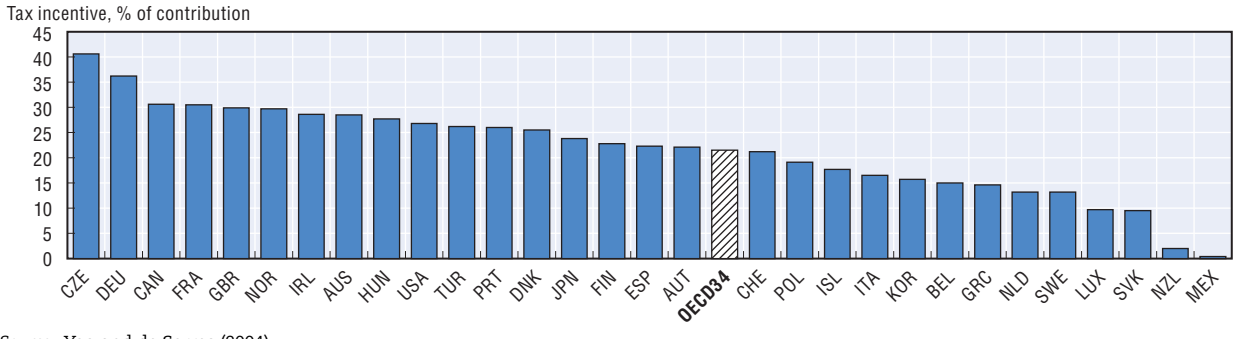
| | Scheme type | Benefit expenditure of private pension schemes | | | | | | Public and private benefit spending (% of GDP) | Tax breaks for private pensions (% of GDP) |
|---|---|---|---|---|---|---|---|---|---|
| | | Level (% of GDP) | | | | | Change (%) | | |
| | | 1990 | 1995 | 2000 | 2005 | 2009[1] | 1990-2009 | 2009 | 2009 |
| Australia | v | | 1.8 | 2.9 | 1.9 | 2.0 | | 5.5 | 2.0 |
| Austria | v | 0.4 | 0.4 | 0.5 | 0.5 | 0.7 | *60.2* | 14.2 | 0.1 |
| Belgium | v | 1.0 | 1.7 | 1.4 | 1.5 | 1.4 | *38.0* | 11.5 | 0.2 |
| Canada | v | 2.6 | 3.5 | 4.0 | 4.3 | 3.7 | *43.9* | 8.2 | 1.3 |
| Chile | m | | 0.9 | 1.1 | 1.3 | 1.3 | | 4.9 | |
| Czech Republic | m | a | a | 0.2 | 0.2 | 0.4 | | 8.8 | 0.1 |
| | v | a | 0.0 | 0.0 | 0.0 | 0.1 | | | |
| Denmark | q/m | 1.5 | 1.8 | 2.0 | 2.3 | 2.5 | *59.3* | 8.6 | |
| Estonia | | | | | | | | 7.9 | |
| Finland | v | 0.1 | 0.4 | 0.3 | 0.2 | 0.3 | *184.3* | 10.2 | 0.1 |
| France | m | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | *-1.4* | 14.1 | 0.0 |
| | v | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | *189.6* | | |
| Germany | v | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | *22.9* | 12.1 | 0.9 |
| Greece | v | 0.4 | 0.4 | 0.5 | 0.5 | 0.4 | *-0.1* | 13.4 | |
| Hungary | | | | | | | | 9.9 | |
| Iceland | v | 1.4 | 1.8 | 2.3 | 2.8 | 3.7 | *166.5* | 5.5 | 1.1 |
| Ireland | v | 0.9 | 1.0 | 0.8 | 0.8 | 1.1 | *23.1* | 6.2 | 1.2 |
| Israel | | | | | | | | 5.0 | |
| Italy | m | 2.7 | 3.1 | 1.2 | 1.1 | 1.2 | *-55.2* | 17.0 | 0.0 |
| | v | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | *0.2* | | |
| Japan | m | 0.2 | 0.3 | 0.5 | a | a | | 13.3 | 0.6 |
| | v | a | a | 3.0 | 2.3 | 3.1 | | | |
| Korea | v | m | 0.0 | 0.0 | 0.0 | 0.0 | | 2.2 | |
| Luxembourg | v | a | a | a | 0.6 | 0.6 | | 8.2 | 0.0 |
| Mexico | | | | | | | | 1.7 | 0.2 |
| Netherlands | m | a | 0.0 | 0.0 | 0.0 | 0.0 | | 10.7 | |
| | q | 3.9 | 4.7 | 4.8 | 5.2 | 5.6 | *44.6* | | |
| New Zealand | | | | | | | | 4.7 | |
| Norway | v | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | *11.2* | 6.0 | 0.9 |
| Poland | | | | | | | | 11.8 | 0.0 |
| Portugal | v | 0.3 | 0.3 | 0.4 | 0.6 | 0.5 | *64.5* | 12.8 | 0.1 |
| Slovak Republic | v | a | 0.1 | 0.2 | 0.4 | 0.3 | | 7.3 | 0.2 |
| Slovenia | | | | | | | | 10.9 | |
| Spain | | | | | | | | 9.3 | 0.2 |
| Sweden | q/m | 1.2 | 1.9 | 1.8 | 2.1 | 2.4 | *99.3* | 10.7 | |
| Switzerland[1] | m | 3.2 | 4.9 | 5.8 | 6.0 | 5.8 | *84.3* | 12.1 | |
| | v | 0.0 | 0.0 | 0.0 | 0.0 | a | | | |
| Turkey | | | | | | | | 6.8 | |
| United Kingdom | v/m | 4.3 | 5.2 | 6.1 | 4.8 | 4.6 | *6.7* | 10.8 | 1.4 |
| United States | v | 2.7 | 3.1 | 3.8 | 3.8 | 3.9 | *44.6* | 10.7 | 0.8 |
| **OECD** | | **1.3** | **1.4** | **1.5** | **1.5** | **1.6** | ***26.7*** | **9.2** | **0.5** |

m = Mandatory private scheme; q = Quasi mandatory; v = Voluntary.
1. Data for Switzerland are from 2009.
*Source:* OECD, *Social Expenditures Database (SOCX)*; OECD, *Main Economic Indicators* (database); see Adema and Ladaique (2009) for more details on the data, sources and methodology.

StatLink http://dx.doi.org/10.1787/888932907889

## 6.6. Tax incentives for private pensions

2003 parameters and rules




*Source:* Yoo and de Serres (2004).

StatLink http://dx.doi.org/10.1787/888932907908

## Key results

Public spending on pensions has been on this rise in most OECD countries for the past two decades, as shown by the previous two indicators. Long-term projections show that pension spending is expected to go on growing in 28 out of 31 OECD countries where data are available. On average pension expenditure is forecast to grow from 9.3% of gross domestic product (GDP) in 2010 to 11.7% of GDP in 2050.

The main driver of growing pension expenditures is demographic change. The projections shown opposite are derived either from the European Union's ageing report – which covers its 27 members plus Norway – or from national projections. In the main, data are presented forwards to 2060, although the horizon is 2050 for six countries. Long-term projections are a vital tool in planning pension policy: there is often a long lag time between a pension reform and the time it begins to affect public pension expenditure.

There are some differences in the range of different programmes covered in the forecasts, reflecting the complexity and diversity of national retirement-income provision. For example, data for a number of countries do not include special schemes for public-sector workers while in others they are included. Similarly, projections can either include or exclude spending on resource-tested benefits for retirees. The coverage of the data also differs from the OECD *Social Expenditures Database (SOCX)*, from which the data on past spending trends in the previous two indicators were drawn. The numbers for 2010 may differ between the SOCX database and the sources used here because of the different range of benefits covered.

Nevertheless, the figures do reveal broad trends. Pension spending is projected to grow faster than GDP over the period 2010 to 2060 on average in both the OECD28 and EU27 groupings by 26% and 21%, respectively. Although this is a significant additional piece of national income, this rate of growth is much slower than demographic change would have delivered. The indicator of the "Old-age support ratio" in Chapter 7 shows a halving of the number of people of working age to the number of people of pension age between 2010 and 2050. This would imply a doubling in the proportion of national income devoted to public pensions.

Pension reforms explain why such an increase is not projected to take place. Cuts in benefits for future retirees and increases in the age at which people first claim pensions will reduce growth in public pension expenditure. In a number of countries – Denmark, France, Italy, Sweden and the United States – pension expenditure is broadly stable over the forecast horizon. Only two countries – Estonia and Poland – expect a substantial reduction in spending over time. Both of these countries have introduced mandatory defined-contribution plans as a substitute for part of public, earnings-related benefits. However, similar reform in the Slovak Republic is not expected to reverse the trend growth in public pension spending.

In two countries, pension spending is expected to double or increase further between 2010 and 2060. In Luxembourg, public spending is already above the OECD average and is projected to exceed 18% of GDP by 2060. The rate of change is also very rapid in Korea. However, the increase is from a low base, and pension spending will still be much below the OECD average in 2060. This rapid increase reflects both the fact that it is the most rapidly ageing OECD country and that the pension scheme was only established in 1988 and so is not yet mature. In Slovenia, spending will increase nearly as rapidly, from 11.2% of GDP in 2010 to 18.3% in 2060.

The rate of growth in pension spending is expected to be close to the average in five countries. In Australia, Switzerland and the United Kingdom, this is from a low starting point, significantly below the OECD average. In Belgium and Norway, in contrast, the base is rather higher than the OECD average.

## 6.7. Projections of public expenditure on pensions, 2010-60

| | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | 2055 | 2060 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **OECD members** | | | | | | | | | | | |
| Australia | 3.6 | 3.6 | 3.7 | | 4.3 | | 4.7 | | 4.9 | | |
| Austria | 14.1 | 14.4 | 15.1 | 16.1 | 16.7 | 16.7 | 16.5 | 16.4 | 16.4 | 16.4 | 16.1 |
| Belgium | 11.0 | 11.9 | 13.1 | 14.5 | 15.5 | 16.2 | 16.5 | 16.7 | 16.7 | 16.8 | 16.6 |
| Canada | 5.0 | 5.4 | 5.8 | 6.3 | 6.6 | 6.6 | 6.5 | 6.4 | 6.3 | 6.3 | 6.2 |
| Chile | | | | | | | | | | | |
| Czech Republic | 9.1 | 8.6 | 8.7 | 8.7 | 8.9 | 9.2 | 9.7 | 10.3 | 11.0 | 11.6 | 11.8 |
| Denmark | 10.1 | 10.4 | 10.8 | 10.6 | 10.7 | 10.5 | 10.3 | 10.0 | 9.6 | 9.5 | 9.5 |
| Estonia | 8.9 | 7.8 | 7.7 | 7.9 | 8.2 | 8.1 | 8.1 | 8.1 | 8.0 | 8.0 | 7.7 |
| Finland | 12.0 | 12.8 | 14.0 | 14.9 | 15.6 | 15.5 | 15.2 | 14.9 | 14.9 | 15.1 | 15.2 |
| France | 14.6 | 14.4 | 14.4 | 14.5 | 14.9 | 15.2 | 15.2 | 15.2 | 15.1 | 15.1 | 15.1 |
| Germany | 10.8 | 10.5 | 10.9 | 11.4 | 12.0 | 12.4 | 12.7 | 12.8 | 13.0 | 13.2 | 13.4 |
| Greece | 13.6 | 14.1 | 13.7 | 13.6 | 14.1 | 14.6 | 14.9 | 15.3 | 15.4 | 15.0 | 14.6 |
| Hungary | 11.9 | 11.9 | 11.5 | 11.4 | 11.1 | 11.4 | 12.1 | 12.8 | 13.5 | 14.2 | 14.7 |
| Iceland | 4.0 | | | | | | | | 6.9 | | |
| Ireland | 7.5 | 8.3 | 9.0 | 9.0 | 9.0 | 9.4 | 10.0 | 10.6 | 11.4 | 11.7 | 11.7 |
| Israel | | | | | | | | | | | |
| Italy | 15.3 | 14.9 | 14.5 | 14.4 | 14.5 | 15.0 | 15.6 | 15.9 | 15.7 | 15.0 | 14.4 |
| Japan | | | | | | | | | | | |
| Korea | 0.9 | 1.1 | 1.4 | 2.0 | 2.5 | 3.1 | 3.9 | 4.8 | 5.5 | 6.0 | 6.5 |
| Luxembourg | 9.2 | 9.9 | 10.8 | 12.4 | 14.0 | 15.4 | 16.5 | 17.6 | 18.1 | 18.7 | 18.6 |
| Mexico | 2.4 | | | | | | | | 3.5 | | |
| Netherlands | 6.8 | 6.8 | 7.4 | 8.3 | 9.1 | 10.0 | 10.4 | 10.5 | 10.4 | 10.4 | 10.4 |
| New Zealand | 4.7 | 4.8 | 5.3 | 5.9 | 6.7 | 7.3 | 7.7 | 7.8 | 8.0 | | |
| Norway | 9.3 | 10.9 | 11.6 | 12.3 | 12.9 | 13.4 | 13.7 | 13.8 | 13.9 | 14.0 | 14.2 |
| Poland | 11.8 | 10.7 | 10.9 | 11.1 | 10.9 | 10.6 | 10.3 | 10.1 | 10.0 | 9.9 | 9.6 |
| Portugal | 12.5 | 13.3 | 13.5 | 13.4 | 13.2 | 13.1 | 13.1 | 13.2 | 13.1 | 12.9 | 12.7 |
| Slovak Republic | 8.0 | 8.1 | 8.6 | 9.1 | 9.5 | 10.0 | 10.6 | 11.3 | 12.2 | 13.2 | 13.2 |
| Slovenia | 11.2 | 11.8 | 12.2 | 12.5 | 13.3 | 14.5 | 15.8 | 16.9 | 17.9 | 18.3 | 18.3 |
| Spain | 10.1 | 10.4 | 10.6 | 10.5 | 10.6 | 11.3 | 12.3 | 13.3 | 14.0 | 14.0 | 13.7 |
| Sweden | 9.6 | 9.7 | 9.6 | 9.8 | 10.1 | 10.2 | 10.2 | 9.9 | 9.9 | 10.1 | 10.2 |
| Switzerland | 6.3 | 6.6 | 6.8 | 7.5 | 8.1 | 8.6 | 8.6 | 8.8 | 8.6 | | |
| Turkey | 7.3 | | | | | | | | 11.4 | | |
| United Kingdom | 7.7 | 7.4 | 7.0 | 7.3 | 7.7 | 8.0 | 8.2 | 8.0 | 8.2 | 8.7 | 9.2 |
| United States | 4.6 | 4.8 | 4.9 | 4.9 | 4.9 | 4.9 | 4.8 | 4.8 | 4.8 | 4.7 | 4.7 |
| **OECD28** | **9.3** | **9.5** | **9.8** | | **10.6** | | **11.2** | | **11.7** | | |
| **Other major economies** | | | | | | | | | | | |
| Argentina | 5.9 | | | | | | | | 8.6 | | |
| Brazil | 8.5 | | | | | | | | 15.8 | | |
| China | 2.2 | | | | | | | | 2.6 | | |
| India | 1.7 | | | | | | | | 0.9 | | |
| Indonesia | 0.9 | | | | | | | | 2.1 | | |
| Russian Federation | 7.1 | 8.5 | 8.9 | 9.0 | 9.0 | 8.7 | 8.4 | 8.0 | 7.5 | 7.2 | 6.9 |
| Saudi Arabia | 2.2 | | | | | | | | 7.1 | | |
| South Africa | 1.3 | 1.7 | 1.8 | 1.8 | 1.7 | 1.6 | 1.6 | 1.5 | 1.5 | 1.5 | 1.4 |
| EU27 | 10.8 | 10.9 | 11.1 | 11.5 | 11.9 | 12.3 | 12.6 | 12.9 | 13.1 | 13.2 | 13.2 |

*Note:* OECD28 figure shows only countries for which complete data between 2010 and 2050 are available. EU27 figure is a simple average of member states (not the weighted average published by the European Commission). Pension schemes for civil servants and other public-sector workers are generally included in the calculations for EU member states: see European Commission, *The 2012 Ageing Report*. Expenditures on these schemes are not included for Canada, Japan, South Africa and the United States. Projections are not available, in some cases, for separate resource-tested programmes for retirees. This is the case for the United States and some EU member states as set out in European Commission, *op. cit*. Similarly, data for Korea cover the earnings-related scheme but not the basic (resource-tested) pension.
*Source:* European Commission (2012), *The 2012 Ageing Report*; Australia: Commonwealth of Australia (2010), *Australia to 2050: Future Challenges*; Canada: Calculations provided by the Office of the Chief Actuary, Office of the Superintendent of Financial Institutions; Korea: National Pensions Research Institute; Russian Federation: World Bank staff estimates; South Africa: OECD Secretariat estimates assuming a universalised basic pension; United States: Social Security Administration (2010), *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, Document 111-137, House of Representatives, United States; Argentina, Brazil, China, Iceland, India, Indonesia, Mexico, Saudi Arabia, Turkey: Standard and Poor's (2010), *Global Aging 2010: An Irreversible Truth*.

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*Chapter 7*

# Demographic and economic context

*Population ageing has been one of the main driving forces behind pension policies and reforms in the past two decades. Ageing is the result of two demographic changes.*

*The first is a decline in the number of births. Fertility rates and how they have changed over time are explored in the first indicator in this section, along with a brief discussion of explanations for the trends. The second factor pushing population ageing is increasing life expectancy. Changes in life expectancy – at birth and at age 65 – over time are shown. There is also a brief discussion of how life expectancy might change in the future.*

*Population ageing itself is addressed by the third indicator. The degree of ageing is measured with the support ratio: the number of people of working age relative to the number of pension age. The old-age support ratio is shown for a century: historical data back to 1960 and projections forward to 2060.*

*The final indicator shows the economic context. It gives data on average (mean) earnings, calculating using the OECD's "average-worker" measure, for 2012. These data are used widely in the report: many values for parameters and results for pension entitlements are reported as percentages of national average earnings.*

*There is also information on the distribution of earnings. The indicators of pension entitlements are often given at median earnings, that is, the level below and above which half the population lie. The earnings-distribution data are also included in the calculation of indicators of the structure of the pension package, pension progressivity and weighted averages of pension levels and pension wealth.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## Key results

The total fertility rate is below the replacement level – the number of children needed to keep the total population constant – in 32 out of 34 OECD countries for 2010-15. The exceptions to this are Israel with a replacement rate of 2.9 and Mexico at 2.2. However in two-thirds of OECD countries there has been a moderate increase in fertility rates over the last decade. Fertility rates have a profound implication for pension systems because they, along with life expectancy, are the drivers of population ageing.

Fertility rates averaged 1.74 across OECD countries in the period 2010-15, well below the level that ensures population replacement. The trend to fewer children has been going on since the 1970s. The fall in fertility rates reflects changes in both individuals' lifestyle preferences and in the constraints of everyday living, such as labour-market insecurity, difficulties in finding suitable housing and unaffordable childcare.

The positive (and widening) gap between the number of children women declare that they want and the number that they actually have shows the influence of these constraints.

Another effect comes from changing marital status. The larger share of women that are unmarried may have depressed fertility rates, particularly in countries where there is a strong link between marriage and maternity, particularly Japan and Korea. The link is also significant in several European countries, such as Greece, Italy, Poland and Switzerland. However, the childbearing patterns of unmarried women have also changed. For example, half or more of births now occur outside of marriage in France, Iceland, Norway and Sweden. The average proportion of births outside marriage in OECD countries is now one-third of the total.

The recent increase in fertility rates is predicted to continue, albeit very slowly, with increases of just 0.03 during each five year period. It is forecast to average 1.9 across OECD countries by 2060-65.

Low fertility rates have wider social and economic consequences. First, the decline in population can become self-reinforcing, as the number of women of childbearing age falls. Secondly, there are fewer family carers to help people in old age. Thirdly, there is a growing tax burden on people of working age to finance pensions and health care for older people. Fourthly, the workforce will also age and so might be less adaptable to technological change, thereby reducing productivity and economic growth. Finally, ageing may result in a smaller pool of savings to finance investment in the economy as older people use their savings to support their consumption.

Among the other major economies, Argentina, India, Indonesia, Saudi Arabia and South Africa all currently have fertility rates well above the replacement level of 2.1. Nevertheless, the trend follows that of the OECD countries, with all falling to below replacement by 2030-35.

### *Definition and measurement*

The total fertility rate is the number of children that would be born to each woman if she were to live to the end of her child-bearing years and if the likelihood of her giving birth to children at each age was the currently prevailing age-specific fertility rates. It is generally computed by summing up the age-specific fertility rates defined over a five-year interval. A total fertility rate of 2.1 children per women ensures broad stability of the population, on the assumptions of no migration flows and unchanged mortality rates.

### *Further reading*

D'Addio, A.C. and M. Mira d'Ercole (2005), "Trends and Determinants of Fertility Rates: The Role of Policies", *OECD Social, Employment and Migration Working Papers*, No. 27, OECD Publishing, *http://dx.doi.org/101787/880242325663*.

OECD (2009), *Society at a Glance 2009: OECD Social Indicators*, OECD Publishing, *http://dx.doi.org/10.1787/soc_glance-2008-en*.

## 7.1. Total fertility rates, 1980-2065

| | 1980-85 | 1990-95 | 2000-05 | 2010-15 | 2020-25 | 2030-35 | 2040-45 | 2050-55 | 2060-65 |
|---|---|---|---|---|---|---|---|---|---|
| **OECD members** | | | | | | | | | |
| Australia | 1.91 | 1.86 | 1.75 | 1.88 | 1.87 | 1.86 | 1.86 | 1.86 | 1.86 |
| Austria | 1.60 | 1.48 | 1.38 | 1.47 | 1.57 | 1.66 | 1.71 | 1.76 | 1.79 |
| Belgium | 1.60 | 1.61 | 1.68 | 1.85 | 1.89 | 1.91 | 1.93 | 1.94 | 1.95 |
| Canada | 1.63 | 1.69 | 1.52 | 1.66 | 1.74 | 1.79 | 1.82 | 1.84 | 1.86 |
| Chile | 2.67 | 2.55 | 2.00 | 1.83 | 1.77 | 1.77 | 1.79 | 1.80 | 1.82 |
| Czech Republic | 2.01 | 1.66 | 1.19 | 1.55 | 1.71 | 1.80 | 1.86 | 1.89 | 1.91 |
| Denmark | 1.43 | 1.75 | 1.76 | 1.88 | 1.91 | 1.92 | 1.93 | 1.94 | 1.95 |
| Estonia | 2.09 | 1.63 | 1.39 | 1.59 | 1.71 | 1.79 | 1.84 | 1.86 | 1.88 |
| Finland | 1.69 | 1.82 | 1.75 | 1.85 | 1.87 | 1.88 | 1.89 | 1.89 | 1.90 |
| France | 1.87 | 1.72 | 1.88 | 1.98 | 1.98 | 1.99 | 1.99 | 1.99 | 1.99 |
| Germany | 1.46 | 1.30 | 1.35 | 1.42 | 1.50 | 1.57 | 1.62 | 1.66 | 1.69 |
| Greece | 1.96 | 1.37 | 1.28 | 1.52 | 1.61 | 1.69 | 1.74 | 1.78 | 1.80 |
| Hungary | 1.82 | 1.74 | 1.30 | 1.41 | 1.53 | 1.62 | 1.69 | 1.74 | 1.77 |
| Iceland | 2.23 | 2.19 | 1.99 | 2.08 | 2.00 | 1.93 | 1.90 | 1.88 | 1.87 |
| Ireland | 2.76 | 1.91 | 1.97 | 2.00 | 1.99 | 1.98 | 1.98 | 1.97 | 1.97 |
| Israel | 3.13 | 2.93 | 2.91 | 2.91 | 2.69 | 2.49 | 2.33 | 2.19 | 2.08 |
| Italy | 1.54 | 1.28 | 1.25 | 1.48 | 1.61 | 1.70 | 1.76 | 1.80 | 1.83 |
| Japan | 1.75 | 1.48 | 1.30 | 1.41 | 1.54 | 1.63 | 1.69 | 1.74 | 1.78 |
| Korea | 2.23 | 1.70 | 1.22 | 1.32 | 1.46 | 1.57 | 1.65 | 1.71 | 1.75 |
| Luxembourg | 1.47 | 1.66 | 1.65 | 1.67 | 1.74 | 1.78 | 1.82 | 1.84 | 1.85 |
| Mexico | 4.25 | 3.16 | 2.54 | 2.20 | 1.94 | 1.80 | 1.74 | 1.74 | 1.76 |
| Netherlands | 1.52 | 1.58 | 1.73 | 1.77 | 1.81 | 1.84 | 1.86 | 1.87 | 1.88 |
| New Zealand | 1.97 | 2.07 | 1.95 | 2.05 | 1.94 | 1.88 | 1.84 | 1.83 | 1.83 |
| Norway | 1.69 | 1.89 | 1.81 | 1.93 | 1.93 | 1.94 | 1.94 | 1.94 | 1.94 |
| Poland | 2.33 | 1.89 | 1.27 | 1.41 | 1.53 | 1.62 | 1.69 | 1.74 | 1.77 |
| Portugal | 2.01 | 1.51 | 1.45 | 1.32 | 1.38 | 1.49 | 1.58 | 1.65 | 1.71 |
| Slovak Republic | 2.27 | 1.87 | 1.22 | 1.39 | 1.52 | 1.61 | 1.68 | 1.73 | 1.77 |
| Slovenia | 1.87 | 1.36 | 1.23 | 1.50 | 1.60 | 1.68 | 1.73 | 1.77 | 1.80 |
| Spain | 1.88 | 1.28 | 1.29 | 1.50 | 1.63 | 1.71 | 1.77 | 1.81 | 1.83 |
| Sweden | 1.64 | 2.01 | 1.67 | 1.92 | 1.95 | 1.97 | 1.98 | 1.99 | 1.99 |
| Switzerland | 1.54 | 1.54 | 1.41 | 1.53 | 1.62 | 1.69 | 1.74 | 1.77 | 1.80 |
| Turkey | 4.07 | 2.87 | 2.33 | 2.05 | 1.89 | 1.80 | 1.76 | 1.75 | 1.77 |
| United Kingdom | 1.78 | 1.78 | 1.66 | 1.89 | 1.89 | 1.90 | 1.90 | 1.90 | 1.90 |
| United States | 1.80 | 2.03 | 2.04 | 1.97 | 1.98 | 1.98 | 1.99 | 1.99 | 1.99 |
| **OECD34** | **2.04** | **1.83** | **1.65** | **1.74** | **1.77** | **1.80** | **1.82** | **1.85** | **1.85** |
| **Other major economies** | | | | | | | | | |
| Argentina | 3.15 | 2.90 | 2.35 | 2.18 | 2.06 | 1.97 | 1.91 | 1.88 | 1.86 |
| Brazil | 3.80 | 2.60 | 2.25 | 1.82 | 1.71 | 1.68 | 1.69 | 1.72 | 1.75 |
| China | 2.69 | 2.05 | 1.55 | 1.66 | 1.72 | 1.76 | 1.80 | 1.82 | 1.84 |
| India | 4.47 | 3.67 | 3.00 | 2.50 | 2.25 | 2.08 | 1.96 | 1.88 | 1.85 |
| Indonesia | 4.11 | 2.90 | 2.48 | 2.35 | 2.12 | 1.98 | 1.89 | 1.85 | 1.84 |
| Russian Federation | 2.04 | 1.55 | 1.30 | 1.53 | 1.66 | 1.74 | 1.79 | 1.83 | 1.85 |
| Saudi Arabia | 7.02 | 5.45 | 3.54 | 2.68 | 2.24 | 1.98 | 1.82 | 1.75 | 1.73 |
| South Africa | 4.56 | 3.34 | 2.80 | 2.40 | 2.18 | 2.01 | 1.91 | 1.85 | 1.82 |
| EU27 | 1.94 | 1.67 | 1.46 | 1.60 | 1.68 | 1.74 | 1.79 | 1.82 | 1.84 |

*Source:* United Nations, *World Population Prospects – 2012 Revision.*

StatLink http://dx.doi.org/10.1787/888932907946

## Key results

The remarkable increase in life expectancy is one of the greatest achievements of the last century. Lives continue to get longer, and this trend is predicted to continue. In 2010-15, life expectancy at birth averaged 77.2 years for men and 82.7 years for women. Among women, the figure was highest in Japan (86.9 years), followed by Spain, France, Italy and Switzerland. For men, life expectancy at birth was highest in Iceland (80.2 years) followed by Australia, Switzerland, Japan and Israel.

Life expectancy at older ages is especially important for the finances of retirement-income systems. And older people are living ever longer. In 2010-15, on average in OECD countries, women aged 65 could expect to live an additional 20.8 years, which is forecast to increase to 25.8 years by 2060-65. Men of the same age could expect to live 17.4 more years in 2010-15, with a projected increase of 4.5 years by 2060-65 to reach 21.9 years. Gender gaps in the longevity of older people are expected to remain broadly constant in relative terms but increase in absolute terms (from 3.4 to 3.9 years on average in OECD countries). Paying a pension from age 65 will become around 20% more expensive under these forecasts.

There is considerable variation between OECD countries in life expectancy at older ages. Women in Japan are predicted to live another 29.7 years on reaching age 65 in 2060-65. In contrast, women in the Slovak Republic are expected to live an extra 21.9 years from age 65 in 2060-65. The figures for Japan and Korea (29.5) are considerably higher than any other country, with France being the next highest at 28.2 years.

For men there is less variation between countries than there is for women. Japan has the longest life expectancy at age 65 of 24.1 years in 2060-65, followed by Korea at 23.8 years. Of the OECD countries, Estonia has the shortest projected life expectancy for 65-year-old men at 17.5 years.

The gender life-expectancy gap at age 65 is predicted to be between three and five years in favour of women for virtually every OECD country in 2060-65. The exceptions to this are France, Japan and Korea, with a differential of nearly 6 years, and Mexico and the United Kingdom with gaps closer to two years.

Given this trend, many OECD countries have increased or plan to increase their pension ages: see Chapter 1 on "Pension ages and life expectancy" in *Pensions at a Glance 2011*. Others have introduced elements into their retirement-income provision that will automatically adjust the level of pensions as people live longer: see Chapter 5 on "Linking pensions to life expectancy" in *Pensions at a Glance 2011*.

Unsurprisingly, life expectancy at birth is also highest in Japan, for women, at 86.9 years, compared to the OECD average of 82.7 years in 2010-15. For men, Japan records one of the highest values. But, at 80.0 years, it lies behind Iceland (80.2), Australia (80.1) and Switzerland (80.1).

Overall longevity gains are due to rising living standards, but also greater access to quality health services. However, gains in life expectancy have been smaller among people from lower socio-economic groups. Socio-economic differences in mortality rates are lower at pension age (above 65) than they are for people of working age.

Turning to the non-OECD major economies, life expectancy is generally lower. Life expectancy at birth is 59.1 years for women and 54.9 years for men in South Africa. These figures are at least nine years below those of any of the other countries covered for women and seven years for men, reflecting the prevalence of HIV/AIDS. The Russian Federation is also an outlier in having much the greatest gender gap in life expectancy at birth of 12.7 years, compared with an OECD average of 5.5 years.

### *Definition and measurement*

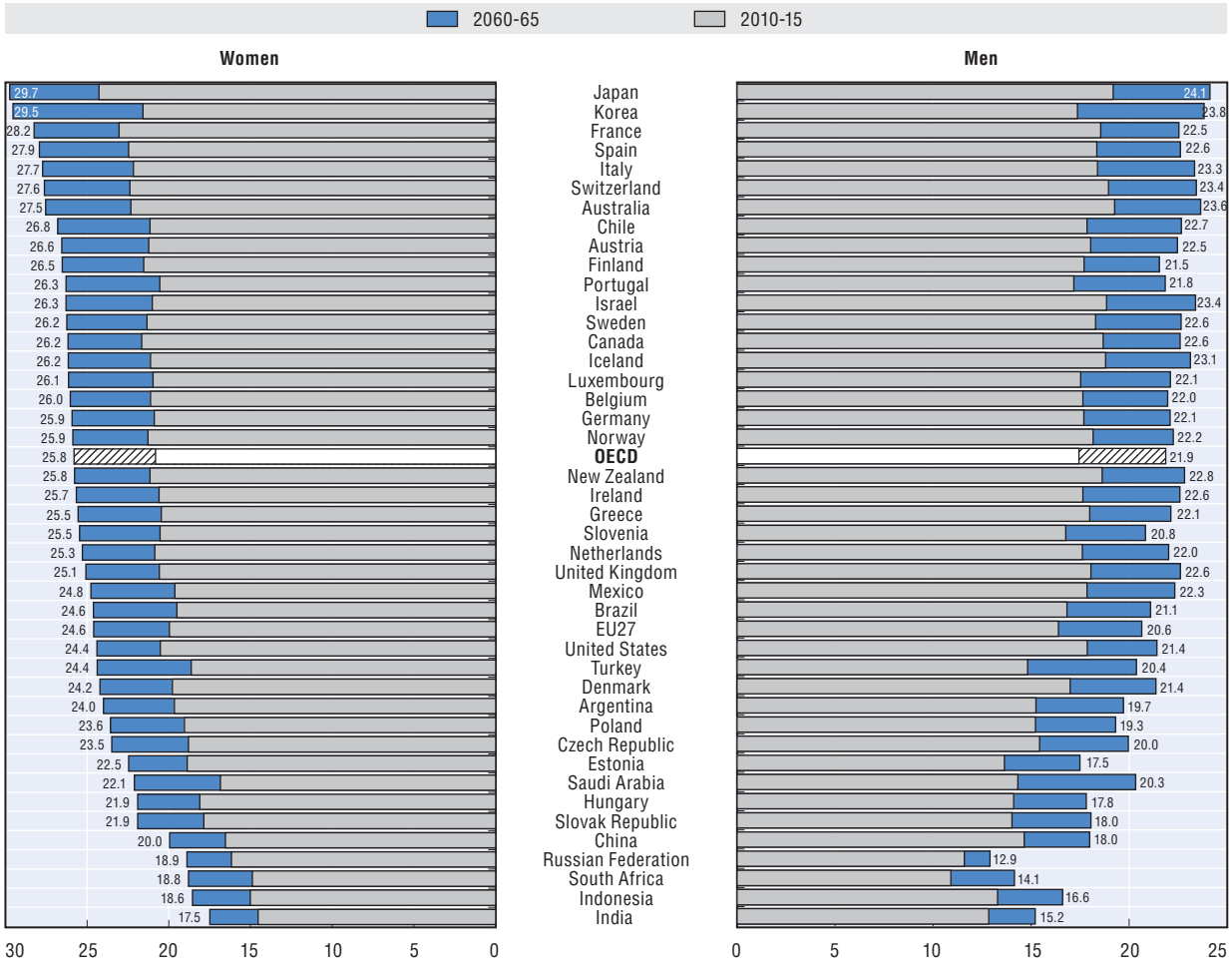
Life expectancy is defined as the average number of years that people of a particular age could expect to live if they experienced the age- and sex-specific mortality rates prevalent in a given country in a particular year: in this case, 2010-15 and 2060-65. Since the determinants of longevity change slowly, life expectancy is best analysed over a long time horizon.

### *Further reading*

Whitehouse, E.R. (2007), "Life-Expectancy Risk and Pensions: Who Bears the Burden?", *OECD Social, Employment and Migration Working Papers*, No. 60, OECD Publishing, *http://dx.doi.org/10.1787/060025254440*.

Whitehouse, E.R. and A. Zaidi (2008), "Socio-Economic Differences in Mortality: Implications for Pension Policy", *OECD Social, Employment and Migration Working Papers*, No. 71, OECD Publishing, *http://dx.doi.org/10.1787/231747416062*.

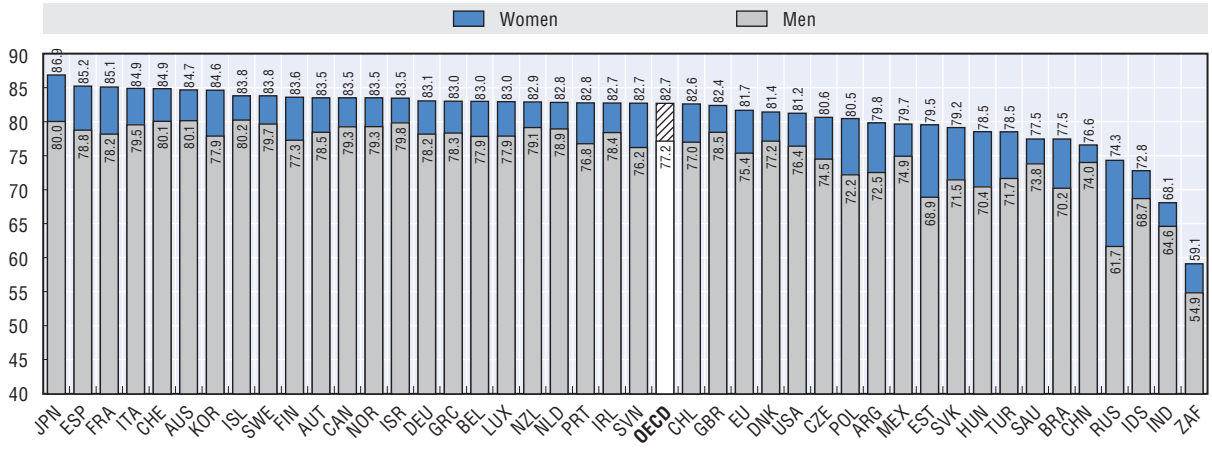
## 7.2. Additional life expectancy at age 65, in years, men and women, 2010-15 and 2060-65




*Source:* United Nations, *World Population Prospects – 2012 Revision.*

StatLink http://dx.doi.org/10.1787/888932907965

## 7.3. Life expectancy at birth, in years, men and women, 2010-15




*Source:* United Nations, *World Population Prospects – 2012 Revision.*

StatLink http://dx.doi.org/10.1787/888932907984

## Key results

Population ageing is one of the main driving forces behind the wave of pension reforms in recent years. The old-age support ratio is an important indicator of the pressures that demographics pose for pension systems. It measures how many people there are of working age (20-64) relative to the number of retirement age (65+). At the moment, there are just under four people of working age for every one of pension age on average.

OECD countries have been ageing for some time: between 1960 and 1980, the average support ratio decreased from 6.4 to 5.1. However, the decline in the more recent period has been slower, with the fall from 5.1 to 3.9 taking 32 years. From 2012, population ageing is expected to accelerate. By 2024, the support ratio is projected to reach three and fall further to 1.9 by 2060.

In 2012, the demographically oldest OECD country was Japan, with a support ratio of only 2.4. Germany and Italy also had support ratios below 3.0.

The youngest countries were Mexico and Turkey, with support ratios of 8.8 and 8.0 respectively, followed by Chile, at 6.3. Four of the five mainly English-speaking OECD members – Australia, Canada, Ireland and the United States – all have a relatively favourable demographic situation. Support ratios range between 4.2 and 5.2. This is partly due to inward migration of workers, although Ireland and the United States have fertility rates currently just below replacement level. Other countries that are currently demographically young are the Slovak Republic and Poland, with support ratios of 5.2 and 4.6 respectively.

The evolution of support ratios depends on mortality, fertility rates and migration. As shown in the previous two indicators, OECD countries have seen continual increases in life expectancy, which most analysts forecast to continue in the future. This increases the number of older people and so the number of pensioners.

There have also been substantial declines in fertility, which, of course, will reduce the number of workers entering the labour market. Since the babies have already been born, we know the scale of the change in the number of people of working age for the next two decades. For example, fertility rates fell below the replacement level on average in OECD countries around 1980, meaning that each new generation will be smaller than that of its parents. By 2000, for example, the number of births implies that the cohort of "millennium babies" will be 20-25% smaller than its parents' generation. In the future, however, there is a great deal of uncertainty over how fertility rates will evolve.

For the OECD as a whole, the decline in the support ratio is forecast to continue at a reasonably steady rate in the future. There is, however, predicted to be a considerable convergence between OECD countries, with demographically younger countries ageing more rapidly. By far the most rapid population ageing among OECD countries will be in Korea. The support ratio is projected to drop from 5.6 in 2012 to 1.3 by 2060. Korea will move from being the fourth youngest country in the OECD to the second oldest, after Japan.

The other OECD countries that are currently demographically young – Chile, Mexico and Turkey – will also age relatively rapidly. However, unlike Korea, they will predominantly remain among the youngest OECD countries in 2060, with support ratios of 2.3 in Mexico and 2.2 in Turkey. The support ratio in Chile will decline to 1.8 in 2060, ranking Chile at 24th of the 34 OECD countries.

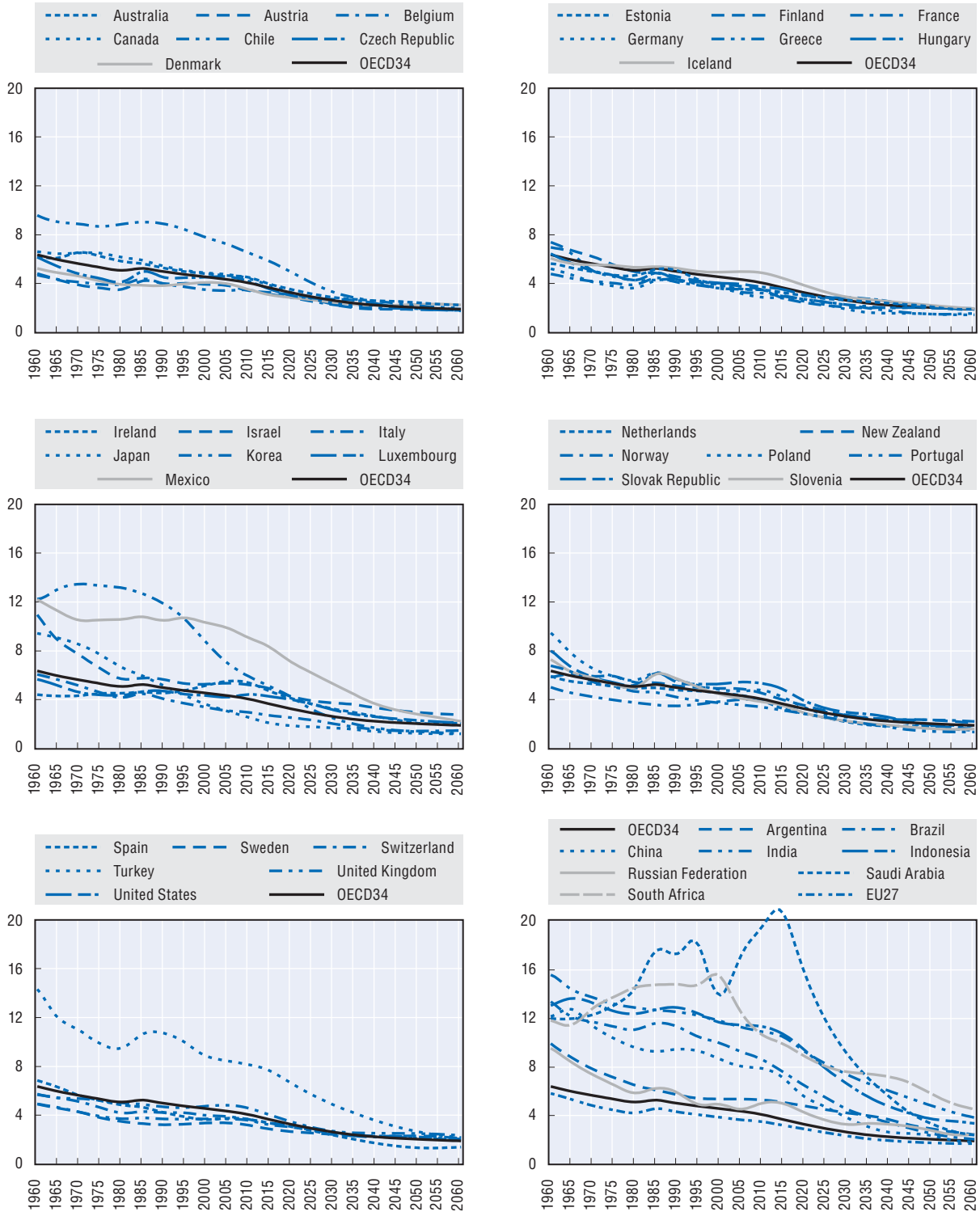
The pattern for the EU27 broadly follows the OECD average. European countries are already older than the OECD average: a support ratio of 3.4 for the EU27 in 2012 compares with an OECD figure of 3.9. By 2060, the support ratio for the European Union is just 1.7.

All of the other major economies have a support ratio above that of the OECD average. However, many face rapid population ageing in the coming decades. In Brazil and China, for example, the support ratio will fall from around 8 now to 2.1 and 1.9, respectively in 2060. By the end of the forecast horizon, only South Africa will be demographically younger than the OECD average situation today, with a support ratios of 4.5, with India having the next highest at 3.8.

### *Definition and measurement*

The projections for old-age support ratios used here are based on the most recent "medium-variant" population projections. They are drawn from the United Nations, *World Population Prospects – 2012 Revision*.

## 7.4. Old-age support ratios: Historical and projected values, 1960-2060




*Source:* United Nations, *World Population Prospects – 2012 Revision.*

StatLink http://dx.doi.org/10.1787/888932908003

**Key results**

"Average earnings" are an important metric underlying the presentation of system parameters and the results of pension modelling. The distribution of earnings is used to calculate composite indicators, such as the progressivity of pension systems, the structure of the retirement-income package and weighted averages.

Table 7.5 reports average earnings levels according to the OECD's average worker earnings (AW) measure for the year 2012. Earnings are defined as gross wages before deductions of any kind (including personal income taxes and social security contributions), but including overtime pay and other cash supplements paid to employees.

Average earnings are displayed in national currencies and in US dollars (both at market exchange rates and at purchasing power parities, PPP). The PPP exchange rate adjusts for the fact that the purchasing power of a dollar varies between countries: it allows for differences in the price of a basket of goods and services between countries. *The Economist* regularly produces a popular and easy-to-understand version of PPP – the "Big-Mac" index – which shows how currencies differ from the level that would mean the burger cost the same worldwide (see *www.economist.com/content/big-mac-index*).

Earnings across the OECD countries averaged USD 42 700 in 2012 at market exchange rates. At PPP, average earnings were USD 36 500. The lower figure for PPP earnings suggests that many OECD countries exchange rates with the US dollar were higher than the rate that would equalise the cost of a standard basket of goods and services.

Average earnings for the other major economy countries are not based on the AW or another consistent basis as such a series is unfortunately not available. Data have been collected from national sources and thus vary between average individual income, average covered wage and average wage for a particular group of workers as available.

### *Mean and median earnings*

Most of the results presented in this report are based around mean earnings. However, many of the key indicators are shown also using estimates of "median" earnings, that is the level below and above which half of workers' earnings lie. The table also shows, from the OECD earnings-distribution database, median earnings as a percentage of mean earnings. There is significant variation between countries. The broad distribution of earnings in Turkey and Mexico means that the median is only around three-fifths of mean earnings. In contrast, the median is almost 90% of the mean in Canada, Denmark, Finland, Norway and Sweden and as high as 95.5% in Iceland.

The table also looks at the top and bottom ends of the earnings distribution. For the lowest decile of earnings (10% of workers earn less than this), the average for the OECD29 is just below 50% of mean earnings, a level which is used as the case of a "low earner" in the main indicators. The top decile -10% of workers earn more than this – averages 166% for the OECD29. In the main results, a "high earner" is assumed to be an individual with 150% of mean earnings.

### *Definition and measurement*

The "average worker" series (AW) was adopted from the second edition of *Pensions at a Glance* (OECD, 2007). This concept is broader than the previous benchmark of the "average manual production worker" (APW) because it covers more economic sectors and includes both manual and non-manual workers. The new AW measure was introduced in the OECD report *Taxing Wages* and also serves as benchmark for *Benefits and Wages*. The third edition of *Pensions at a Glance* (OECD, 2009) also included a comparison of replacement rates under the old and new measures of earnings for eight countries where the results were significantly different.

### *Further reading*

D'Addio, A.C. and H. Immervoll (2010), "Earnings of Men and Women Working in the Private Sector: Enriched Data for Pensions and Tax-Benefit Modelling", *OECD Social, Employment and Migration Working Papers*, No. 108, OECD Publishing, *http://dx.doi.org/10.1787/5km7smt2r7d2-en*.

Gandullia, L., N. Iacobone and A. Thomas (2012), "Modelling the Tax Burden on Labour Income in Brazil, China, India, Indonesia and South Africa", *OECD Taxation Working Papers*, No. 14, OECD Publishing, *http://dx.doi.org/10.1787/5k8x9b1sw437-en*.

OECD (2009), *Pensions at a Glance 2009: Retirement-Income Systems in OECD Countries*, OECD Publishing, *http://dx.doi.org/10.1787/pension_glance-2009-en*.

OECD (2007), *Pensions at a Glance 2007: Public Policies across OECD Countries*, OECD Publishing, *http://dx.doi.org/10.1787/pension_glance-2007-en*.

## 7.5. Average worker earnings (AW) and points of the earnings distribution, 2012

National currency and USD at market price and purchasing-power-parity exchange rates

| | OECD measures of average earnings | | | Exchange rate with USD | | Points of earnings distribution (% of mean earnings) | | |
|---|---|---|---|---|---|---|---|---|
| | National currency | USD, market exchange rate | USD, PPP | Market rate | PPP | Lowest decile | Median | Top decile |
| **OECD members** | | | | | | | | |
| Australia | 73 500 | 76 400 | 48 100 | 0.96 | 1.53 | 49.5 | 83.3 | 167.5 |
| Austria | 40 900 | 53 900 | 47 800 | 0.76 | 0.85 | 48.1 | 82.7 | 164.0 |
| Belgium | 46 100 | 60 700 | 51 800 | 0.76 | 0.89 | 60.4 | 84.5 | 153.4 |
| Canada | 46 900 | 47 000 | 38 300 | 1.00 | 1.22 | 44.6 | 89.1 | 166.9 |
| Chile | 6 218 600 | 13 000 | 15 400 | 478.90 | 403.24 | | | |
| Czech Republic | 300 400 | 15 800 | 21 400 | 19.03 | 14.02 | 49.3 | 85.2 | 153.1 |
| Denmark | 392 500 | 69 400 | 45 500 | 5.66 | 8.62 | 60.9 | 89.0 | 150.4 |
| Estonia | 11 000 | 14 400 | 19 900 | 0.76 | 0.55 | | | |
| Finland | 41 500 | 54 700 | 43 800 | 0.76 | 0.95 | 62.3 | 89.5 | 147.9 |
| France | 36 700 | 48 400 | 40 500 | 0.76 | 0.91 | 55.1 | 81.2 | 159.5 |
| Germany | 44 800 | 59 100 | 53 200 | 0.76 | 0.84 | 43.4 | 87.0 | 165.7 |
| Greece | 20 100 | 26 500 | 28 100 | 0.76 | 0.72 | 42.8 | 68.0 | 147.7 |
| Hungary | 2 749 600 | 12 500 | 19 000 | 220.84 | 144.57 | 37.8 | 74.3 | 176.0 |
| Iceland | 6 079 000 | 47 300 | 42 900 | 128.40 | 141.64 | | 95.5 | |
| Ireland | 32 600 | 43 000 | 35 700 | 0.76 | 0.92 | 45.2 | 82.7 | 169.0 |
| Israel | 119 900 | 32 100 | 31 100 | 3.73 | 3.85 | | | |
| Italy | 28 900 | 38 100 | 32 800 | 0.76 | 0.88 | 56.1 | 85.1 | 156.6 |
| Japan | 4 788 300 | 55 300 | 45 300 | 86.58 | 105.66 | 52.4 | 87.6 | 162.7 |
| Korea | 38 500 000 | 36 100 | 47 800 | 1 065.31 | 804.96 | 39.9 | 81.7 | 181.7 |
| Luxembourg | 51 300 | 67 700 | 51 800 | 0.76 | 0.99 | 48.9 | 77.9 | 167.3 |
| Mexico | 94 100 | 7 300 | 10 600 | 12.96 | 8.91 | 27.4 | 62.2 | 216.7 |
| Netherlands | 46 400 | 61 200 | 54 400 | 0.76 | 0.85 | 51.7 | 84.0 | 158.8 |
| New Zealand | 51 300 | 42 400 | 31 600 | 1.21 | 1.62 | 51.2 | 87.2 | 160.6 |
| Norway | 510 700 | 91 800 | 49 900 | 5.56 | 10.23 | 63.2 | 88.9 | 149.0 |
| Poland | 38 900 | 12 600 | 19 500 | 3.09 | 1.99 | 39.2 | 80.3 | 169.3 |
| Portugal | 15 700 | 20 700 | 22 500 | 0.76 | 0.70 | 40.9 | 69.3 | 189.2 |
| Slovak Republic | 9 800 | 12 900 | 17 400 | 0.76 | 0.57 | 45.1 | 78.7 | 163.5 |
| Slovenia | 17 200 | 22 700 | 26 800 | 0.76 | 0.64 | | | |
| Spain | 25 600 | 33 700 | 33 900 | 0.76 | 0.76 | 52.3 | 78.2 | 171.2 |
| Sweden | 387 300 | 59 500 | 40 500 | 6.51 | 9.55 | 56.0 | 89.8 | 150.9 |
| Switzerland | 86 900 | 94 900 | 51 400 | 0.92 | 1.69 | 56.6 | 84.9 | 153.4 |
| Turkey | 27 500 | 15 400 | 21 700 | 1.79 | 1.27 | 42.0 | 55.2 | 203.7 |
| United Kingdom | 35 900 | 58 300 | 53 600 | 0.62 | 0.67 | 39.6 | 75.5 | 165.9 |
| United States | 47 600 | 47 600 | 47 600 | 1.00 | 1.00 | 36.7 | 77.1 | 177.6 |
| **OECD34** | | **42 700** | **36 500** | | | **48.2** | **81.2** | **166.2** |
| **Other major economies (latest available year)** | | | | | | | | |
| Argentina | 53 600 | 10 900 | 17 500 | 4.92 | 3.07 | | | |
| Brazil | 21 000 | 10 200 | 12 200 | 2.05 | 1.72 | | | |
| China | 46 800 | 7 500 | 12 000 | 6.23 | 3.91 | | | |
| India | 240 400 | 4 400 | 13 100 | 54.85 | 18.29 | | | |
| Indonesia | 16 100 000 | 1 600 | 2 500 | 9 799.95 | 6 533.33 | | | |
| Russian Federation | 321 900 | 10 500 | 14 800 | 30.53 | 21.82 | | | |
| Saudi Arabia | 172 500 | 46 000 | 61 900 | 3.75 | 2.79 | | | |
| South Africa | 135 600 | 16 000 | 23 800 | 8.49 | 5.69 | | | |
| EU27 | | 35 100 | 33 000 | | | | | |

*Note:* Average earnings are rounded to the nearest 100 and exchange rates rounded to decimal places.
PPP = Purchasing power parity.
*Source: OECD Income Distribution Database*; D'Addio and Immervoll (2010).

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*Chapter 8*

# Private pensions and public pension reserves

*The range of indicators of private pensions and public pension reserves follows the format of the last edition of Pensions at a Glance.*

*The first of these eight indicators looks at the proportion of the working age population covered by private pensions. It distinguishes between mandatory, quasi-mandatory and voluntary schemes and between occupational provision, through an employer-provided or industry-wide scheme, and personal provision, arranged by an individual with a pension provider.*

*The institutional structure of private pensions is examined next. This shows the type of vehicle that is used to provide pensions, distinguishing between pension funds, book reserves and insurance contracts. This indicator also examines pension types, split between defined-benefit, defined-contribution and mixed or hybrid schemes.*

*There then follows an analysis of pension gaps. This illustrates the amount that individuals would need to save in voluntary private pensions to achieve a specific level of income in retirement.*

*The fourth indicator reports assets in private pensions and public pension reserves for 2011. The way these assets are invested is explored in the fifth indicator. There then follows an analysis of the investment performance of private pensions and public pension reserves in 2010 and 2011.*

*The seventh indicator looks at operating expenses of private pension schemes and the fees charged to pension members in selected defined-contribution plans.*

*The final indicator focuses on defined-benefit funding ratios, which are presented for 2010 and 2011.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## Key results

Private pension arrangements have been growing in importance in recent years as pension reforms have reduced public pension entitlements. In 18 OECD countries, private pensions are mandatory or quasi-mandatory (that is, they achieve near-universal coverage of employees through collective bargaining agreements). In a further eight OECD countries, voluntary private pensions (occupational and personal) cover more than 40% of the working age population.

Eighteen of the 34 OECD countries have some form of mandatory or quasi-mandatory private pension system in place, ensuring a high coverage of the working age population. In Finland, Iceland, Norway, and Switzerland, occupational pensions are mandatory and cover almost or more than 70% of the working age population: employers must operate a scheme and contribution rates are set by the government. Iceland is one of the countries with the highest coverage rate of any OECD country, reaching 84.8% of the working age population. Other occupational pension systems can be classified as quasi-mandatory: through industry-wide or nation-wide collective bargaining agreements, employers establish schemes that employees must join. As not all sectors may be covered by such agreements, these systems are not classified as mandatory. Examples include the occupational pension systems in Denmark, the Netherlands, and Sweden. In these countries, the coverage is close to the one in countries with mandatory systems, with 60% or more of the working-age population covered.

Mandatory personal accounts systems are prevalent in Latin America and Central and Eastern Europe where they have partly replaced social security benefits. Such plans can be found in Chile, Estonia, Mexico, Poland, and the Slovak Republic. Other OECD countries with such mandatory personal pensions include Denmark, Israel and Sweden. While coverage is nearly universal in Denmark, Estonia, Israel and Sweden, it is still not the case in the other countries, where older workers tend not to be covered by the new systems. The coverage rate of around 40-60% will therefore continue increasing over time as new workers join personal pensions. Some of these countries also have a high incidence of informal employment which limits coverage levels. Only few people are still in the mandatory private pension system in Hungary after the government decision to effectively close it down at the end of 2010.

Coverage of voluntary occupational pension plans varies across countries. These plans are called voluntary in the sense that employers, in some countries jointly with employees, are free to set up an occupational plan. Personal pension plans are voluntary when individuals can freely decide whether to join them or not. The coverage of voluntary pension plans (both occupational and personal) is above 50% in the Czech Republic and New Zealand and close to 50% in the United States. On the other hand, the coverage of voluntary pension plans is very low (below 5%) in countries such as Greece, Luxembourg, Portugal, and Turkey. In these countries the generosity of public pensions may explain the low private pension coverage. Coverage of voluntary pensions is also low in Mexico (1.9%) and Poland (1.3%) which have a mandatory private pension system.

Three countries, Italy, New Zealand and the United Kingdom, have introduced automatic enrolment (with an opt-out clause) into private pension plans at the national level. The results have been mixed. New Zealand has achieved a coverage rate of 64% in the new "KiwiSaver" scheme (introduced in 2007). In Italy, since 2007 the severance pay provision (so called *Trattamento di Fine Rapporto* – TFR) of private sector employees is automatically paid into an occupational pension plan unless the employee makes an explicit choice to remain in the TFR regime. Despite this rule, only 14% of the working-age population is covered by a voluntary pension plan in Italy. It is still too early to assess the success of automatic enrolment in the United Kingdom, as it is gradually phased-in from October 2012.

### *Definition and measurement*

Several measures of private pension coverage coexist. Individuals can be considered as covered by a private pension plan either if they have assets in a private pension plan, they contribute to a plan, or contributions are being made on their behalf. To be a member of a private pension plan from the perspective proposed here, an individual must have assets or have accrued benefits in a plan. Hence, an individual who does not contribute (for various reasons, including unemployment) or on behalf of whom contributions are not made during a year would still be considered as a plan member if he/she has assets or has accrued benefits in the plan. A large difference between the two measures of coverage arises in countries with large informal sectors.

Counting individuals more than once may arise when using administrative data as individuals can be members of both occupational and personal voluntary pension plans. Therefore total voluntary pension plan coverage cannot be obtained by summing occupational and personal coverage data. For example, in the case of the United States, 41.6% of the working age population is member of occupational plans and 22.0% has personal pensions, while overall voluntary pension coverage is 47.1%. This implies that 40% of people with occupational pension plans also have a personal plan.

## 8.1. Coverage of private pension schemes by type of plan, 2011

As a percentage of working age population (15-64 years)

| | Mandatory/ quasi-mandatory | Voluntary | | |
|---|---|---|---|---|
| | | Occupational | Personal | Total |
| Australia | 68.5 | x | 19.9 | 19.9 |
| Austria | x | 19.6 | 18.0 | .. |
| Belgium | x | 45.2 | .. | .. |
| Canada | x | 33.4 | 32.8 | .. |
| Chile | 75.6 | .. | .. | .. |
| Czech Republic | x | x | 62.1 | 62.1 |
| Denmark | ATP: 83.7<br>QMO: 61.9 | x | 23.6 | 23.6 |
| Estonia | 68.9 | x | .. | .. |
| Finland | 74.2 | 6.4 | 19.1 | 25.4 |
| France | x | 16.5 | 5.4 | .. |
| Germany | x | 56.4 | 35.2 | 71.3 |
| Greece | x | 0.2 | .. | .. |
| Hungary | 1.5 | x | 20.0 | 20.0 |
| Iceland | 84.8 | x | 41.9 | 41.9 |
| Ireland | x | 31.0 | 12.0 | 41.3 |
| Israel | 81.8 | x | x | x |
| Italy | x | 7.5 | 6.9 | 14.0 |
| Japan | .. | .. | .. | .. |
| Korea | 12.2 | x | 23.4 | 23.4 |
| Luxembourg | x | 3.0 | .. | .. |
| Mexico | 59.5 | 1.9 | x | 1.9 |
| Netherlands | 88.0 | x | 28.3 | 28.3 |
| New Zealand | x | 7.9 | 63.7 | .. |
| Norway | 68.1 | .. | 23.2 | .. |
| Poland | 56.5 | 1.3 | .. | .. |
| Portugal | x | 3.3 | 5.1 | .. |
| Slovak Republic | 44.4 | x | .. | .. |
| Slovenia | x | .. | .. | 38.2 |
| Spain | x | 3.3 | 15.7 | 18.6 |
| Sweden | PPS: ~100<br>QMO: ~90 | x | 27.1 | 27.1 |
| Switzerland | 70.5 | x | .. | .. |
| Turkey | 0.9 | 0.2 | 4.7 | .. |
| United Kingdom | x | 30.0 | 11.1 | 43.3 |
| United States | x | 41.6 | 22.0 | 47.1 |

*Note:* Coverage rates are provided with respect to the total working age population (i.e. individual aged 15 to 64 years old) for all countries except Germany, Ireland and Sweden for which coverage rates are provided with respect to employees subject to social insurance contributions for Germany and to total employment for Ireland and Sweden.
PPS = Premium Pension System; QMO = Quasi-mandatory occupational; .. = Not available; x = Not applicable.
*Source:* OECD, Global Pension Statistics, estimates and OECD calculations using survey data.

StatLink http://dx.doi.org/10.1787/888932908041

## Key results

Private pension plans can be funded through various financing vehicles. In 2011, for OECD countries for which data are available, on average, 76% of OECD private pension assets was held by pension funds, 19% was held in pension insurance contracts run by life and pension insurance companies, 4% was held in retirement products provided by banks or investment management companies, and 1% were book reserves.

Within pension funds, DC plans are playing an increasing role, even if DB plans still dominate pension fund assets in some countries, largely due to their historical prominence as the favoured arrangement for occupational (workplace) pensions in many countries.

Occupational pensions are overwhelmingly funded through pension funds in most OECD countries, the main exception being countries such as Belgium, Denmark, France, Korea, Norway and Sweden where pension insurance contracts play a larger role, and Germany and Austria where book reserves – provisions sponsoring employers' balance sheets – are the main type of financing vehicle for occupational pension plans. Personal pension plans are often funded through pension insurance contracts or financial products provided by banks and asset managers. The main exception to this general trend are the mandatory personal pension plans established in countries such as Chile, Estonia, Mexico, Poland, and the Slovak Republic. These systems can only be financed via pension funds during the asset accumulation stage (before retirement). At retirement, the accumulated assets may (or in some cases have to) be converted into an annuity, which is classified as a pension insurance product.

In 2011, for countries for which data are available, on average, 76% of OECD private pension markets was held by pension funds, 19% was held in pension insurance contracts run by life and pension insurance companies, 4% was held in retirement products provided by banks or investment management companies, and 1% were book reserves.

In broad terms, and depending on how pension benefits are calculated and who bears the inherent risk, pension plans can either be defined benefit (DB) or defined contribution (DC) in nature. In DC plans, participants bear the brunt of risk, while in traditional DB plans sponsoring employers assume most of the risks. Employers in some countries have introduced hybrid and mixed DB plans, which come in different forms, but effectively involve some degree of risk sharing between employers and employees. In the conditional indexation plans in countries such as Canada and the Netherlands, benefit levels (either fully or partially) are conditional on the fund's solvency status. Cash balance plans (another type of hybrid DB plan) provide benefits based on a fixed contribution rate and a guaranteed rate of return (the guarantee is provided by the sponsoring employer, hence these plans are classified as DB). Such plans are increasingly popular in Belgium (where by law, employers must provide a minimum return guarantee), Germany, Japan and the United States. Mixed plans are those where the plan has two separate DB and DC components which are treated as part of the same plan. For instance, the plan may calculate benefits under a DC formula up to a certain age before retirement and apply a DB formula thereafter. There are also DC plans such as those in Denmark and Iceland which offer guaranteed benefits or returns and in which risks are borne collectively by plan members. They are classified as DC as whenever there is no recourse to the sponsoring employer in case of underfunding. Such plans, however, provide a degree of predictability over future benefits similar to that of DB plans.

Occupational pension plans in OECD countries have traditionally been DB. However, in recent years, occupational pension plan sponsors have in many countries shown a growing interest in DC plans, as demonstrated by the number of employers that have closed DB plans to new entrants and encouraged employees to join DC plans (and in some cases also frozen benefit accruals for existing employees). DB plans, however, still play an important role, largely due to their historical prominence as the favoured arrangement for occupational (workplace) pensions in many countries. In 2011, DB assets accounted for most of pension funds' assets in countries like Canada, Finland, Germany, Korea, Israel, Luxembourg, Norway, Portugal, Switzerland, Turkey and the United States, where public sector pension funds remain overwhelmingly DB. At the other extreme, all pension funds are classified as DC in Chile, the Czech Republic, Estonia, France, Greece, Hungary, Poland, the Slovak Republic and Slovenia. In other OECD countries, the DB-DC split varies.

### *Definition and measurement*

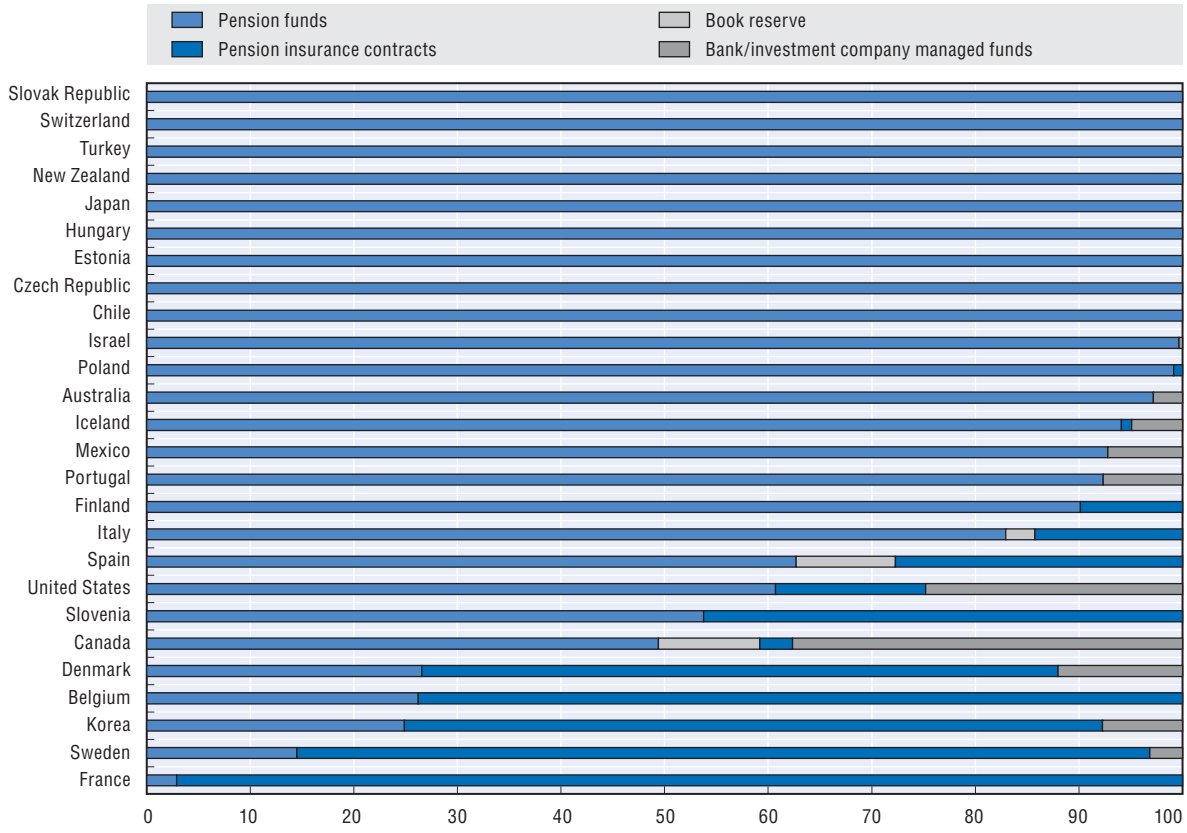
The OECD has established a set of guidelines for classifying private pensions (see OECD, 2005). The analysis uses this framework. Data is readily available for pension funds. On the other hand, not all countries collect and report information on pension insurance contracts or retirement saving products offered by banks or investment management companies. Information on book reserves, which refer to pension provisions made by plan sponsors on their balance sheets (without legal separation of assets), is also only available for a few countries. The split by type of plan is therefore only presented for pension funds.

### *Further reading*

OECD (2005), *Private Pensions: OECD Classification and Glossary*, OECD Publishing, *http://dx.doi/org/10.1787/9789264017009-en-fr*.

## 8.2. Private pension assets by type of financing vehicle in selected OECD countries, 2011

As a percentage of total assets

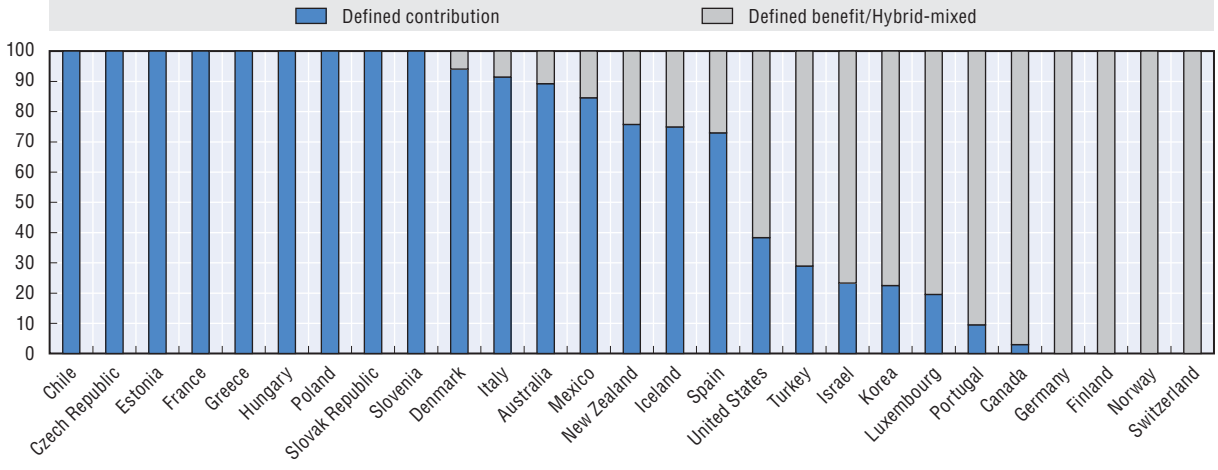



*Source:* OECD, Global Pension Statistics.

StatLink http://dx.doi.org/10.1787/888932908060

## 8.3. Relative shares of DB, DC and hybrid pension fund assets in selected OECD countries, 2011

As a percentage of total assets




*Source:* OECD, Global Pension Statistics.

StatLink http://dx.doi.org/10.1787/888932908079

## Key results

There are 17 countries with a mandatory pension scheme giving a replacement rate below the average for the 34 OECD countries. This pension gap is over 26% of pay for an average female earner in Mexico. It also exceeds 25% for men in Mexico and 21% for average earners in the United Kingdom.

Pension contributions required to fill the pension gap and bring the overall replacement rate up to the OECD average can be up to 7.5% of earnings if contributions are made for the full career. However, most workers do not start paying into a voluntary private pension until well into their careers. As a result, contribution rates of 10-15% would be required in three countries for workers with 20 years missing from their contribution records.

The calculations include all *mandatory* programmes for providing retirement income, which can include compulsory private pensions and broad social-assistance schemes. This group of 17 countries includes all six of the mainly English speaking members of the OECD: Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States. It also includes the two East Asian OECD members – Japan and Korea – and a selection of continental European countries, including Belgium and Germany.

In the United Kingdom, private pension schemes would need to deliver a replacement rate of 21.5% to bring the overall pension of an average earner up to the level of the OECD average. Australia, Estonia and Norway have the smallest pension gap of the 17 countries analyzed at 1.6%, 1.8% and 1.9% of earnings, respectively. For the 17 countries as a whole, the replacement rate from mandatory pensions is 41.0% for average earners. This implies a pension gap of 13.1% on average. For Mexico, the results for men and women are different because annuities are calculated on a sex-specific basis and so women must spread their accumulation over a longer retirement period.

The countries in the filling the pension gap are listed in the same order as the first figure for comparative purposes. The results are affected by differences between countries in pension ages: a lower pension age (as in Estonia, for example), meaning a shorter contribution period and a longer retirement duration. In Germany, the United Kingdom and the United States contribution rates are lower than they would otherwise be, because normal pension ages are increasing to 67 and 68 in the long term.

Differences in life expectancy also have an effect. In Mexico, for example, 65-year-olds are projected to live an extra 23.5 years, while this figure is 26.9 years in Japan. Longer life expectancy, of course, increases the required contribution rate because the pension that it finances must be paid for a longer period.

With a full contribution history, the proportion of earnings that would need to be paid into retirement savings plans to fill the pension gap is not generally large: around 5% in Japan and the United Kingdom and around 4% in Ireland and the United States. In many countries – Belgium, Canada, Chile, the Czech Republic and Germany – the required contribution rate is 2.1%-3.5%.

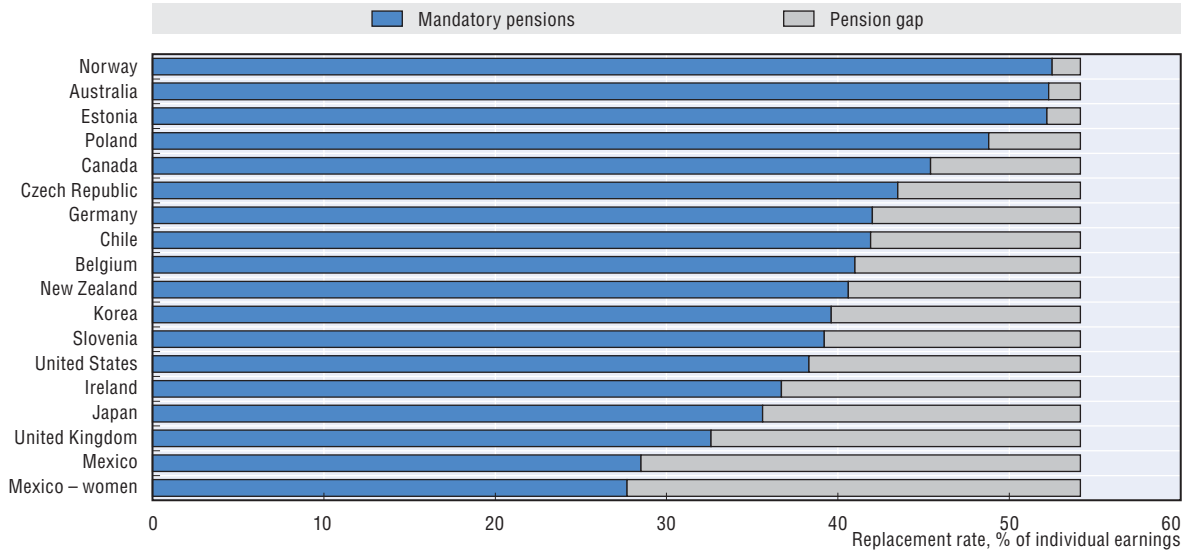
However workers are not always going to have a full career and could have several years where contributions are not being made. The examples here are for individuals delaying the start of their career by 10 and 20 years. For the countries shown, the average of the required contribution rate increases from 3.4% with a full career to 4.7% with ten missing years and to 7.1% with 20 years missing. With 20 years missing the required contribution level would be 11.2% in Japan and 9.7 in the United Kingdom, more than double the level required for a full career.

### *Definition and measurement*

The pension gap measures how much people would have to contribute to voluntary, private pensions to lift overall replacement rates from the national, mandatory level to the average for OECD countries. For simplicity and comparability, the calculations assume that people with voluntary pensions have a defined-contribution plan, where the value of the benefit depends on contributions and investment returns. The modelling makes the same general assumptions as with the calculations for the other indicators. In particular it assumes an annual real return of 3.5% on pension savings, net of administrative charges.

## 8.4. Pension gap level

Gross replacement rate for an average earner from mandatory pension schemes and difference from OECD average replacement rate

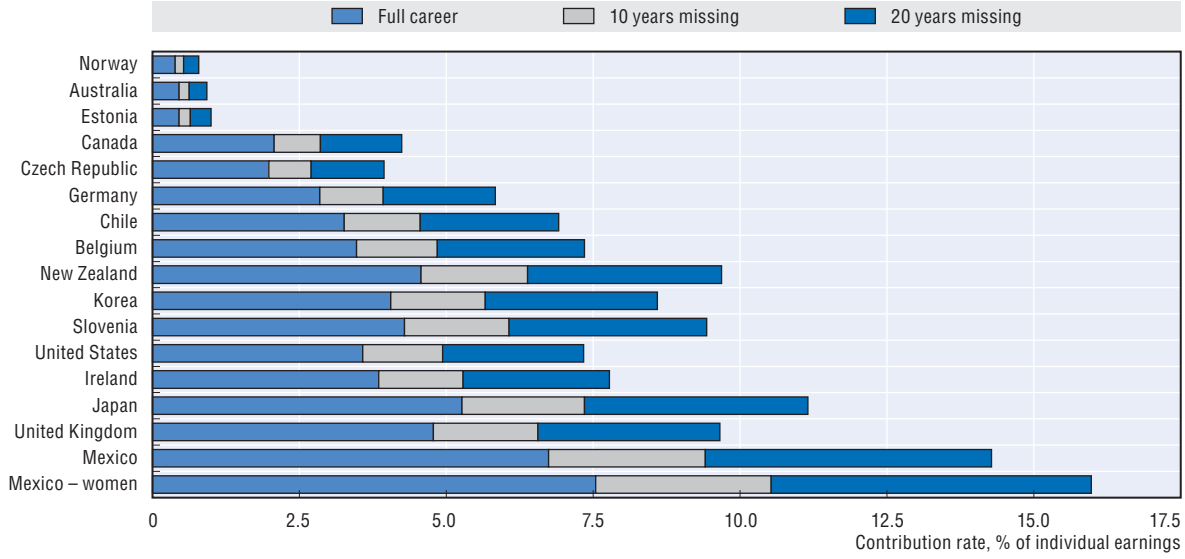



*Source:* OECD pension models; *OECD Income Distribution Database*.

StatLink http://dx.doi.org/10.1787/888932908098

## 8.5. Filling the pension gap

Contribution rate required for average earner to reach OECD average gross replacement rate




*Source:* *OECD Income Distribution Database*.

StatLink http://dx.doi.org/10.1787/888932908117

**Key results**

Substantial assets have been accumulated in most OECD countries to help meet future pension liabilities. Total OECD pension funds' assets were the equivalent to 74% of gross domestic product (GDP) in 2011. Half of OECD countries have also built up public pension reserves to help pay for state pensions. For these countries, total public pension reserves were worth nearly 19% of GDP.

OECD pension fund assets reached USD 20.6 trillion in 2011. The United States had the largest pension fund market within the OECD member countries with assets worth USD 10.8 trillion, representing 52.6% of the OECD total. Other OECD countries with large pension fund systems include the United Kingdom with assets worth USD 2.3 trillion and a 11.2% share of OECD pension fund market in 2011; Japan, USD 1.5 trillion, 7.1%; Australia, USD 1.3 trillion and 6.5%; the Netherlands, USD 1.1 trillion and 5.5%; and Canada, USD 1.1 trillion and 5.4%.

In 2011, only three countries achieved asset-to-GDP ratios higher than 100% – the Netherlands (135.5%), Iceland (128.7%), and Switzerland (110.7%). In addition to these countries, Australia (93.2%), Finland (75.0%) and the United Kingdom (95.8%) exceeded the OECD weighted average asset-to-GDP ratio of 73.8%. In such countries, funded pensions have been in place for a long time, and with the exception of the United Kingdom, have mandatory or quasi-mandatory private pension systems. Pension fund assets were of varying importance relative to GDP in the other countries.

Only 13 out of 34 countries had asset-to-GDP ratios above 20%. Other countries have introduced mandatory funded pension systems in recent years. Of these, Chile has the longest history and has accumulated assets not much below the OECD average (58.5%). Growth prospects are also very positive in countries like Estonia, Mexico, Poland and the Slovak Republic, countries that introduced mandatory private pensions in the late 1990s and early 2000s. Assets have grown rapidly since that point, reaching between 13% and 15% of GDP in Mexico and Poland. These figures will continue growing over coming years and decades as more people join the new retirement-income system and existing members make further contributions.

Some prefunding also occurs in state pension systems, which are normally financed on a pay-as-you-go basis. Public pension reserve funds (PPFRs) are expected to play a major role in the future financing of some public pension systems, alleviating the impact of population ageing on the public purse. By the end of 2011, the total amounts of PPRFs assets were equivalent to USD 5.1 trillion for the 16 OECD countries for which data are available. The largest reserve was held by the US social security trust fund at USD 2.7 trillion, accounting for 52.8% of total OECD assets, although the assets consist of non-tradable IOUs issued by the US Treasury to the social security trust. Japan's Government Pension Investment Fund was second at USD 1.4 trillion – 26.8% of the OECD total. Of the remaining countries, Korea, Canada and Sweden had also accumulated large reserves, respectively accounting for 6.2%, 3.7% and 2.7% of the total.

In terms of total assets relative to the national economy, on average, PPRF assets accounted for 18.9% of GDP in the OECD area in 2011. The highest ratio was observed in the Korean National Pension Fund with 28.2% of GDP. Other countries where the ratio was of a significant size included Sweden with 25.0% and Japan with 23.2%. PPRFs in Australia, Belgium, Chile, New Zealand and Poland have been established relatively recently (between 2002 and 2006), explaining the low level of assets accumulated up to now. The expansion of this pool of assets should continue over the coming years, although some countries such as France and Spain have already started withdrawing some of the savings to cover social security deficits. Ireland used part of the funds for the banking rescue and bail-out.

### *Definition and measurement*

A pension fund is a pool of assets forming an independent legal entity that are bought with the contributions to a pension plan for the exclusive purpose of financing pension plan benefits. The plan/fund members have a legal or beneficial right or some other contractual claim against the assets of the pension fund.

PPRFs are reserves established by governments or social security institutions to support public pension systems, which are otherwise financed on a pay-as-you-go basis. The assets in such reserve funds form part of the government sector, broadly defined.

## 8.6. Assets in pension funds and public pension reserve funds in OECD countries, 2011

As a percentage of GDP and in millions of USD

| | Pension funds | | Public pension reserve funds | |
|---|---|---|---|---|
| | % of GDP | USD million | % of GDP | USD million |
| **OECD members** | | | | |
| Australia | 93.2 | 1 345 506 | 5.0 | 75 366 |
| Austria | 4.9 | 20 534 | x | x |
| Belgium | 4.2 | 21 740 | 5.0 | 25 574 |
| Canada | 63.7 | 1 106 091 | 10.9 | 189 755 |
| Chile | 58.5 | 145 512 | 1.9 | 4 750 |
| Czech Republic | 6.5 | 14 019 | x | x |
| Denmark | 49.7 | 165 741 | x | x |
| Estonia | 5.3 | 1 577 | x | x |
| Finland | 75.0 | 199 809 | x | x |
| France | 0.3 | 6 954 | 4.3 | 119 520 |
| Germany | 5.5 | 195 358 | x | x |
| Greece | 0.0 | 102 | x | x |
| Hungary | 3.8 | 5 287 | x | x |
| Iceland | 128.7 | 18 089 | x | x |
| Ireland | 46.2 | 100 556 | 8.6 | 18 658 |
| Israel | 49.4 | 120 101 | x | x |
| Italy | 4.9 | 106 889 | x | x |
| Japan | 25.1 | 1 470 350 | 23.2 | 1 360 686 |
| Korea | 4.5 | 49 721 | 28.2 | 314 917 |
| Luxembourg | 1.9 | 1 156 | x | x |
| Mexico | 12.9 | 149 010 | 0.1 | 1 539 |
| Netherlands | 135.5 | 1 134 726 | x | x |
| New Zealand | 15.8 | 24 734 | 8.8 | 14 046 |
| Norway | 7.4 | 35 977 | 5.0 | 24 410 |
| Poland | 15.0 | 77 433 | 0.8 | 4 325 |
| Portugal | 7.7 | 18 410 | 5.2 | 12 340 |
| Slovak Republic | 8.4 | 8 065 | x | x |
| Slovenia | 2.9 | 1 666 | x | x |
| Spain | 7.8 | 116 355 | 6.2 | 92 928 |
| Sweden | 9.2 | 49 635 | 25.0 | 134 620 |
| Switzerland | 110.7 | 703 448 | x | x |
| Turkey | 4.1 | 32 090 | x | x |
| United Kingdom | 95.8 | 2 313 484 | x | x |
| United States | 72.2 | 10 839 889 | 17.8 | 2 677 925 |
| **OECD34** | **73.8** | **20 600 013** | **18.9** | **5 071 358** |
| **Other major economies** | | | | |
| Argentina | 0.0 | 0 | 10.8 | 46 566 |
| Brazil | 13.8 | 308 240 | x | x |
| EU27 | .. | .. | .. | .. |
| China | .. | .. | .. | .. |
| India | 0.2 | 2 848 | .. | .. |
| Indonesia | 1.8 | 15 058 | .. | .. |
| Russian Federation | 3.2 | 54 740 | x | x |
| Saudi Arabia | .. | .. | .. | .. |
| South Africa | 82.5 | 300 276 | x | x |

*Note:* OECD34 represents the weighted average of funds' assets as a % of GDP or total funds' assets in millions of USD for countries for which data are shown.
x = Means not applicable.
*Source:* OECD, Global Pension Statistics.

StatLink http://dx.doi.org/10.1787/888932908136

**Key results**

At the end of 2011, traditional asset classes (primarily bonds and equities) were still the most common kind of investment in pension fund and public pension reserve fund portfolios. Proportions of equities and bonds vary considerably across countries but there is, generally, a greater preference for bonds.

In most OECD countries for which 2011 data were available, bonds and equities remain the two most important asset classes, accounting for over 80% of total pension funds' portfolio at the end of 2011 in 11 OECD countries. In Belgium, for example, 46.0% of total pension funds' assets were invested in bonds, while 34.8% were in equities, giving Belgian pension funds an aggregate average weighting of 80.7% in equities and bonds. The combined proportion of bonds and equities relative to the total pension funds' portfolio in 2011 was 99.1% for Mexico, 98.6% for Chile, 94.5% for Hungary, 93.1% for Poland, 91.3% for Norway, 87.3% for Sweden, 87.1% for the Czech Republic, 85.4% for Israel, 82.8% for Luxembourg and 82.8% for Estonia. At the other extreme, this combined proportion was below 50% for Germany (44.7%), Japan (44.6%) and Korea (5.4%).

Proportions of equities and bonds vary considerably in pension funds' portfolio across countries. Although there is, in general, at the end of 2011, a greater preference for bonds, the reverse is true in some OECD countries, namely Australia, where equities outweigh bonds by 49.7% to 9.0%; Finland by 41.3% to 35.4%; and the United States by 45.7% to 22.3%.

Within the "bonds" category, public sector bonds, as opposed to corporate bonds, comprise a significant share of the combined direct (i.e. excluding investment via mutual funds) bond holdings of pension funds in many countries. For example, public sector bonds comprise 94.7% of total direct bond holdings in Poland, 92.5% in Hungary, 88.1% in Austria, 87.1% in Iceland, and 85.1% in Israel, but only 45.1% in Slovenia, 38.1% in Norway, 21.9% in Australia, and 8.8% in Germany.

Cash and deposits also account for a significant share of pension funds' portfolio in some OECD countries. For example, the proportion of cash and deposits in total portfolio in 2011 was as high as 28.8% for the Slovak Republic, 31.6% for Slovenia, 40.4% for Greece, and 59.0% for Korea.

In most OECD countries, loans, real estate (land and buildings), unallocated insurance contracts and private investment funds (shown as "other" in the figure) only account for relatively small amounts of pension funds' assets although some exceptions exist. Real estate, for example, is a significant component of pension fund portfolios in Switzerland, Portugal, Finland, Canada and Australia (in the range of 5 to 10% of total assets). Anecdotal evidence shows that pressure to decreased DB funding gaps and raise returns is driving a move into alternative investments with pension funds increasingly using derivatives to hedge risks and as an alternative to direct investment in the underlying markets.

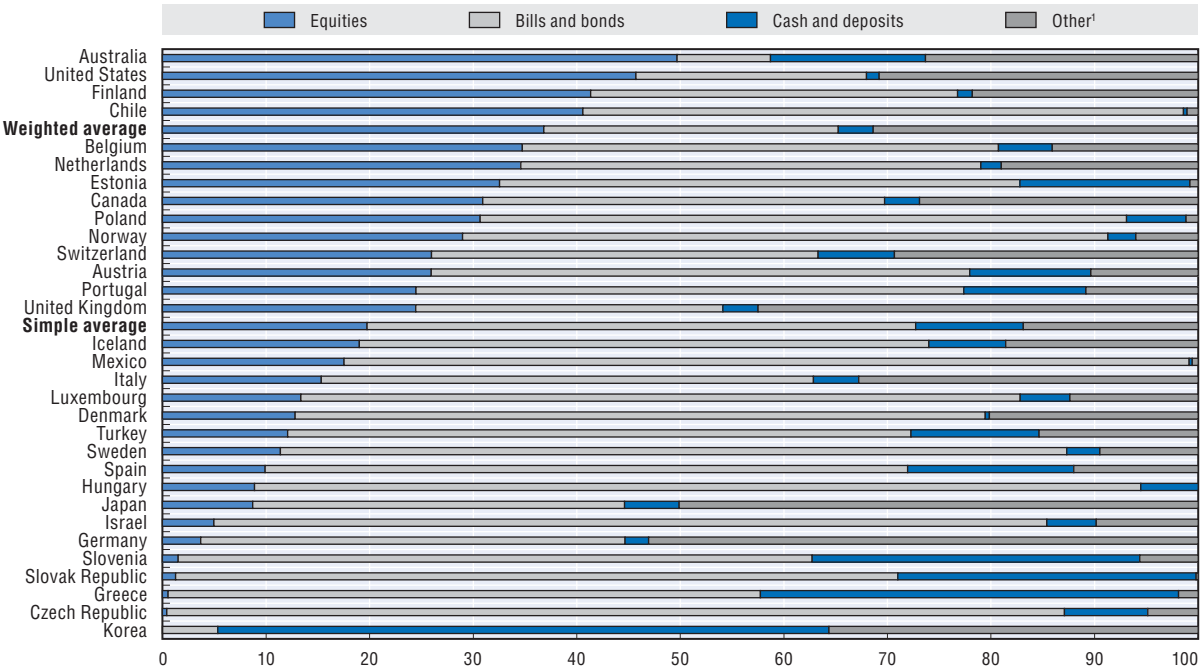
Bonds and equities were also the predominant asset classes within PPRF portfolios at the end of 2011. There was also a strong equity bias in some reserve funds, which reflects their long-term investment outlook and generally greater investment autonomy. For example, in 2011, Norway's Government Pension Fund invested 57.3% of its assets in equities and 37.4% in bonds, while the figures for Sweden AP funds were around 50% and 36% (AP2, AP3 and AP4 funds), 42.1% and 21.3% for the Quebec Pension Plan. The reserves in the main Canadian reserve fund, Canada Pension Plan Investment Board (CPPIB), were roughly evenly split between public equities (34.3%) and bonds (33.6%). On the other hand, reserve funds in Chile, Japan, Mexico, Portugal and Poland invested much more in bonds than equities in 2011.

The extreme cases are those of the Belgian, Spanish and US PPRFs, which are by law fully invested in government bonds (except 1.5% of total assets invested in cash and deposits for the Spanish fund, which is otherwise practically fully invested in domestic government bonds).

Some PPRFs also started to invest in real estate and non-traditional asset classes like private equity and hedge funds. For example, the funds with the highest allocation to private equity and hedge funds were Australia (25.1% of total in 2011), Canada (16.3%) and New Zealand (11.3%).

## 8.7. Pension funds' asset allocation for selected investment categories in selected OECD countries, 2011

As a percentage of total investment




*Note:* The *OECD Global Pension Statistics Database* provides information about investments in Collective Investment Schemes and the look-through Collective Investment Schemes investments in cash and deposits, bills and bonds, shares and other. When the look-through was not provided by the countries, estimates were made assuming that Collective Investment Schemes' investment allocation in cash and deposits, bills and bonds, shares and other was the same as pension funds' direct investments in these categories. Therefore, asset allocation data in this Figure include both direct investment in shares, bills and bonds and indirect investment through Collective Investment Schemes.

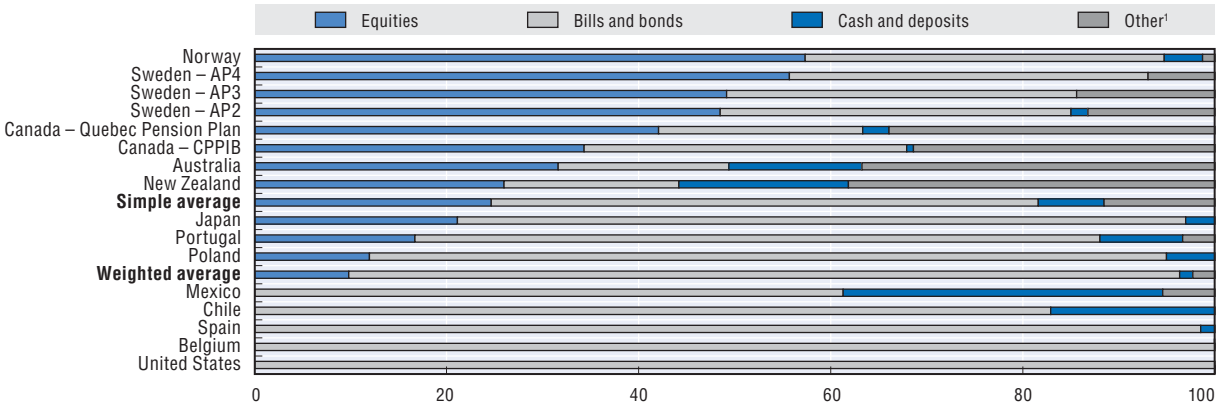
1. The "Other" category includes loans, land and buildings, unallocated insurance contracts, hedge funds, private equity funds, structured products, other mutual funds (i.e. not invested in cash, bills and bonds, shares) and other investments.

*Source:* OECD, Global Pension Statistics.

StatLink http://dx.doi.org/10.1787/888932908155

## 8.8. Public pension reserve funds' asset allocation for selected investment categories in selected OECD countries, 2011

As a percentage of total investment




1. The "Other" category includes loans, land and buildings, private equity, unlisted infrastructure investment, hedge funds, commodities, and other investments.

*Source:* OECD, Global Pension Statistics.

StatLink http://dx.doi.org/10.1787/888932908174

## Key results

After a year of positive returns in 2010, pension funds experienced negative rates of return in more than half of the OECD countries in 2011. During 2011, pension funds experienced a negative real investment rate of return of -1.3% on average. Public pension reserve funds experienced the same trend, with positive returns in 2010 and a null performance in 2011 on average.

In 2009 and 2010 buoyant stock markets brought good returns for pension funds and public pension reserve funds after the steep declines at the height of the global financial crisis. Renewed uncertainty in the world economy in 2011 reversed the positive trend in stock markets and impacted negatively on many pension funds and reserve funds, especially those most exposed to equities. Performance was also hampered by bond portfolios in pension funds and reserve funds most exposed to the European sovereign debt crisis. On the other hand, pension funds and reserve funds with high exposure to sovereign bond safe havens benefited from major revaluation gains.

In 2010, OECD pension funds experienced on average a positive return of 1.7% in real terms. The best performing pension funds amongst OECD countries in 2010 were in New Zealand (11.0%), the Netherlands (8.8%), Chile (8.3%) and Canada (7.9%). On the other hand, in countries like Greece and Japan, pension funds experienced, on average, negative investment returns (respectively, -7.8% and -5.2%). The negative figure for Greece was due to the collapse of the Athens Stock Exchange Market, as well as the drop in price of Greek bonds.

The net investment rate of return varied considerably across national markets in 2011. On the basis of the weighted average across OECD countries, for the countries for which information is available, pension funds experienced an annual, real rate of investment return of -1.3%, ranging from 12.1% for the highest performer (Denmark) to -10.8% for the lowest (Turkey). The performance of Danish pension funds was driven to a large extent by gains on bond investments and interest hedging operations. After Denmark, the highest returns in 2011 were in Australia (5.2%), the Netherlands (4.3%), Iceland (2.3%) and New Zealand (2.3%). On the other hand, in countries like Italy, Japan, Spain, the United Kingdom and the United States, pension funds experienced average investment returns in the range of -2.3% to -3.6%. Nine other OECD countries saw pension fund returns of worse than -4% in real terms. As the real net investment return is the combination of the nominal performance of pension funds and inflation, a low figure can be accounted for by either low gains and income or inflation.

Most PPRFs performed positively in 2010, with an average (weighted by the assets managed at the end of the year) net investment rate of return of 3% in real terms. Only three reserve funds experienced negative returns during that year in Portugal (-2.4%), Ireland (-4.2%) and Chile (-8.4%). The highest performers in 2010 were in Norway (12.2%), Canada (11.4% for Quebec Pension Plan) and New Zealand (11.0%).

2011 has been a year of null returns on average for PPRFs in real terms. Returns were negative in 16 funds out of the 23 for which information was available. Real rate of investment return ranked from -38.2% in Ireland to 9.9% in Chile. The extreme negative figure for the National Pension Reserve Fund in Ireland is due to the reductions in the valuations of the ordinary and preference shares of Allied Irish Banks and Bank of Ireland held by the fund. This part of the fund experienced a negative nominal return of -58.1%, while the discretionary portfolio delivered a positive return of 2.1%.

### *Definition and measurement*

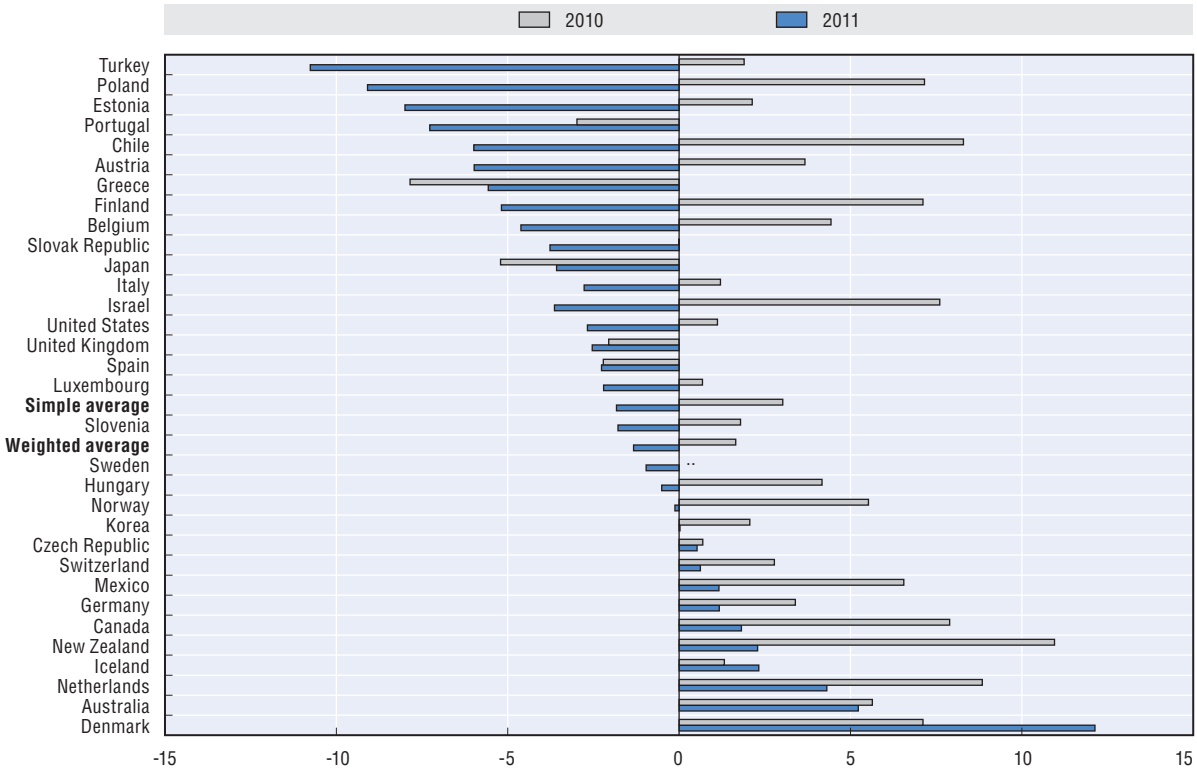
Real (after inflation) returns are calculated in local currency after investment management expenses.

The average nominal net investment returns for pension funds are the results of a calculation using a common formula for all countries, except for Austria, Israel, Korea, Sweden and the United States, for which the nominal returns have been provided by the countries, using their own formula. The common formula corresponds to the ratio between the net investment income at the end of the year and the average level of assets during the year.

For PPRFs, nominal returns have been provided by the funds directly, using their own formula and methodology.

## 8.9. Pension funds' real net investment return in selected OECD countries, 2010-11

Percentage

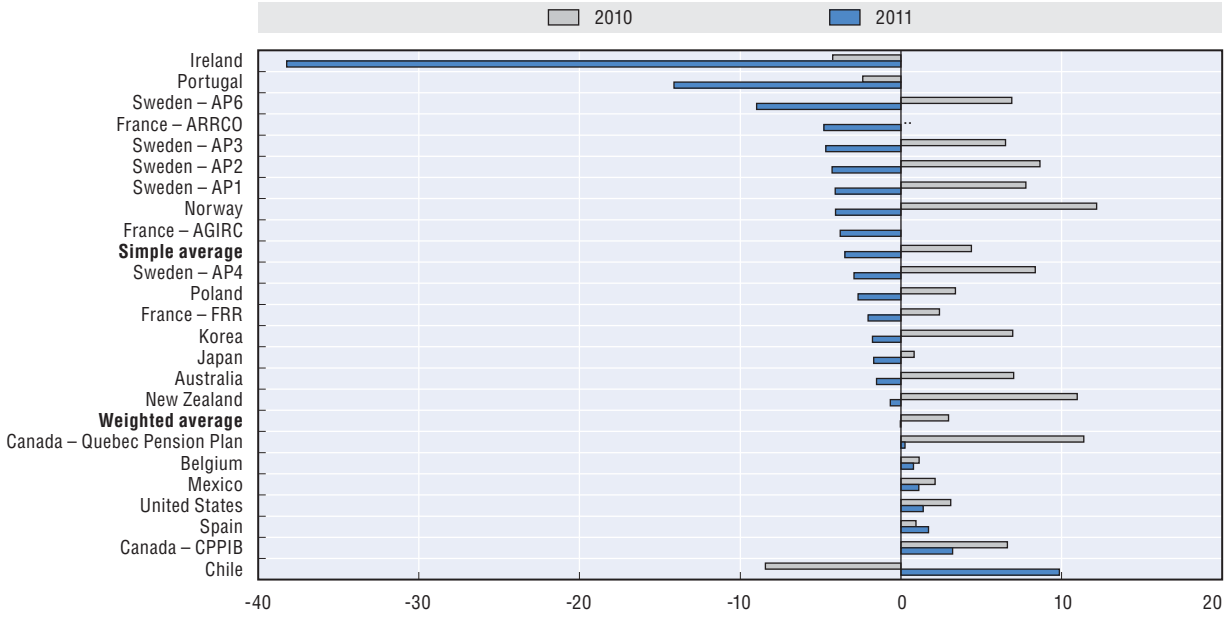



*Source:* OECD, Global Pension Statistics.

StatLink http://dx.doi.org/10.1787/888932908193

## 8.10. PPRFs' real net investment return in selected OECD countries, 2010-11

Percentage




*Source:* OECD, Global Pension Statistics.

StatLink http://dx.doi.org/10.1787/888932908212

**Key results**

Private pension systems efficiency, as measured by the total operating costs in relation to assets managed, varies considerably between countries, ranking from 0.1% of assets under management annually to 1.3%. Fees charged to plan members to cover these costs also vary considerably in structure and level across countries.

The efficiency of private pension systems can be judged by looking at the total operating costs in relation to assets managed. The total operating costs of private pension systems include all costs of administration and investment management involved in the process of transforming pension contributions into retirement benefits.

The figure shows the operating costs of the pension fund industry reported by OECD countries in 2011. In general, countries with defined-contribution systems and those with large numbers of small funds appear to have higher operating costs than countries with only a few funds offering defined benefit, hybrid, or collective defined-contribution pension arrangements. For instance, operating costs accounted for 1.3% of assets under management in Spain, 1.0% in Hungary, 0.9% in Slovenia, Greece and Mexico, 0.8% in Australia and Turkey, and 0.7% in the Czech Republic. On the other hand, they accounted for less than 0.3% of total assets in Germany (0.2%), Portugal (0.2%), Luxembourg (0.1%), the Netherlands (0.1%) and Denmark (0.1%).

In defined-contribution private pension systems, providers cover their operating costs through the fees they charge to plan members. The structure of charges across countries is fairly complex. The analysis considers fees in selected DC systems only. While there is a tendency for countries from the same region (e.g. Latin America, Central and Eastern Europe) to have similar fee structures, they can vary greatly across wider geographical regions.

Variable fees on contributions can be expressed as percentages of salaries or as percentages of contributions. They can be found in Chile, Hungary, Israel, Poland, Slovak Republic and Turkey. In Chile only, fees are expressed as percentages of salary. Such fees on contributions are not charged in Austria, the Czech Republic, Estonia, Greece, Korea, Mexico, Spain and the United Kingdom. In Mexico, as of March 2008, Afores may only charge a fee on assets, while before that date they could charge fees both on assets and on contributions.

A variable fee on the stock of funds can be levied either on the value of the fund or on returns. Such fees may encourage pension companies to seek higher investment returns. Fees on assets can be found in all countries presented in the table, except in Chile. Most countries only charge fees on assets, while the Czech Republic and the Slovak Republic charge fees both on assets and on returns.

### *Definition and measurement*

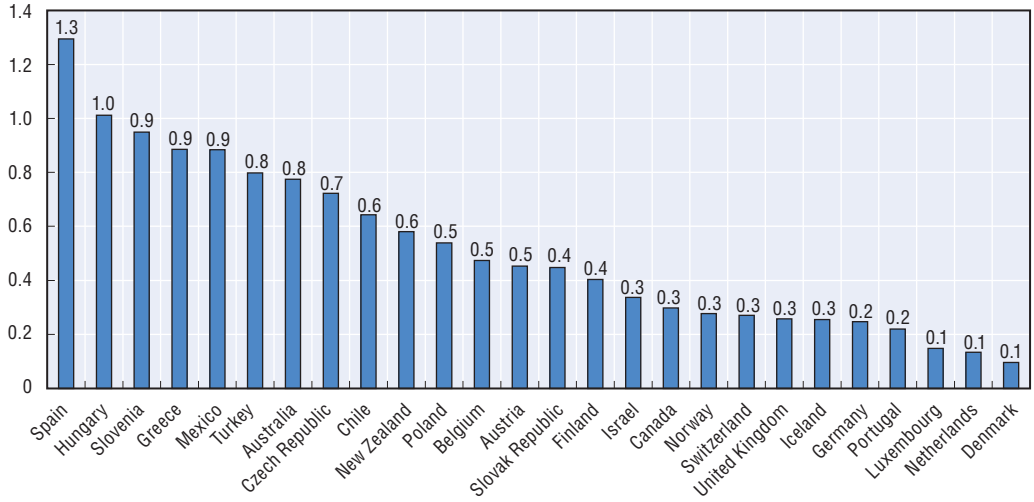
Operating costs include marketing the plan to potential participants, collecting contributions, sending contributions to investment fund managers, keeping records of accounts, sending reports to participants, investing the assets, converting account balances to annuities, and paying annuities.

Some costs may not be fully reported. For example, in Chile pension funds that invest in international mutual funds deduct management costs directly from the fund. These costs are reported separately by each pension fund administrator to the Superintendence of Pensions. However, they are not included in the fees charged to members and thus not included in the operating expenses.

Fees can either be fixed or variable. Fixed fees are characterised by the fact that their levels depend neither on salaries nor on funds. A variable fee may take the form of a percentage of the inflow of contributions, of the amount of assets managed, or of the investment return on the assets under management. The table only reports variable fees.

## 8.11. Pension funds' operating expenses as a share of total investments in selected OECD countries, 2011

As a percentage of total investment




*Source:* OECD, Global Pension Statistics.

StatLink http://dx.doi.org/10.1787/888932908231

## 8.12. Average administration fee in DC systems in selected OECD countries, 2011

| | Fees on (%) | | | |
|---|---|---|---|---|
| | Contributions | Salary | Assets | Returns |
| Austria | | | 0.50 | |
| Chile | | 1.42 | | |
| Czech Republic | | | 0.60 | 15.00 |
| Estonia | | | 1.49 | |
| Greece | | | 0.90 | |
| Hungary | 4.50 | | 0.80 | |
| Israel | 4.07 | | 0.35 | |
| Korea | | | 0.70 | |
| Mexico | | | 1.50 | |
| Poland | 3.50 | | 0.46 | |
| Slovak Republic (2nd pillar) | 1.50 | | 0.30 | 5.60 |
| Slovak Republic (3rd pillar) | | | 0.083-0.165 | |
| Spain (occupational) | | | 0.19 | |
| Spain (personal) | | | 1.44 | |
| Turkey | 3.52 | | 1.80-2.55 | |
| United Kingdom | | | 1.50 | |

*Source:* National supervisory authorities' data, IOPS, OECD, World Bank.

StatLink http://dx.doi.org/10.1787/888932908250

**Key results**

Average funding ratios of defined-benefit pension plans varied greatly across countries at the end of 2011. For the countries that report such data to the OECD, funding levels improved in 2011 relative to 2010, with the exception of the Netherlands where they declined substantially, partly as a result of declining interest rates. Funding levels are calculated using national (regulatory) valuation methodologies and hence cannot be compared across countries.

About 60% of OECD pension assets are in defined-benefit and other plans which offer return or benefit guarantees. Funding levels reflect very different situations in a selection of OECD countries at the end of 2011. Pension funds in Portugal, Germany, Sweden, and Norway were overfunded that year, with an average funding ratio around 110%. In contrast, pension funds were underfunded at the end of 2011 in the Netherlands, Austria and Iceland. For Iceland, the very low funding ratio of 53% refers to pension funds for public sector workers. Since the start of the global financial crisis, the Icelandic government has not made additional contributions to these plans, while assets have declined sharply.

Funding levels remained stable between 2010 and 2011 in Norway, Spain, and Iceland. In Portugal and Germany, pension funds have improved their funding position, increasing the average funding ratio by 5 percentage points in Portugal (from 107% to 112%) and by 2 percentage points in Germany (from 110% to 112%). The opposite trend can be observed in the Netherlands, where pension funds saw their funding position worsen between 2010 and 2011 by as much as 9 percentage points (from 107% to 98%). The decline in funding ratio was driven to a large extent by the decline in interest rates.

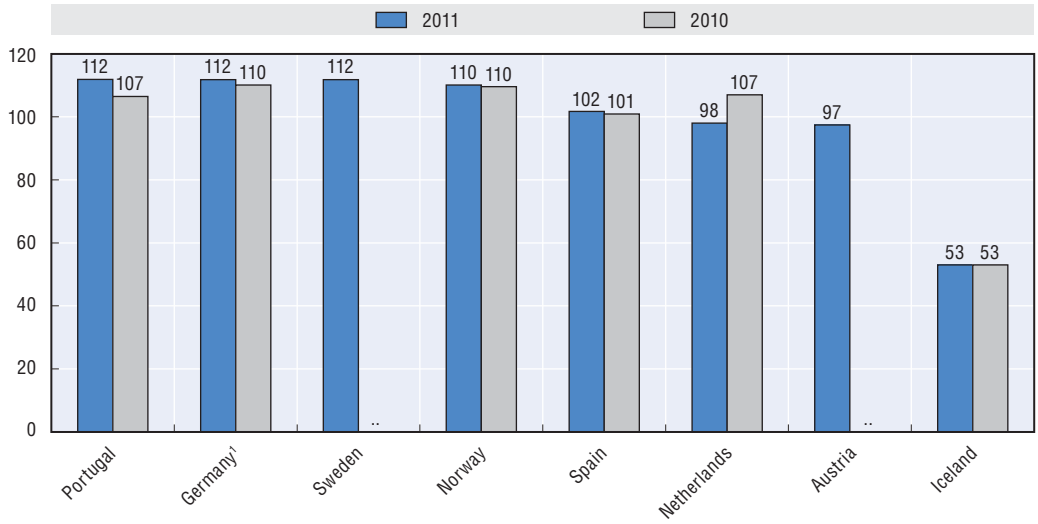
Funding levels are calculated using national (regulatory) valuation methodologies and hence cannot be compared across countries. Differences in methodology are substantial as some countries like Germany and Spain use fixed discount rates while others like the Netherlands and Sweden use market rates. Discount rates have a major impact on funding levels, a 1% decline in the discount rate causing a roughly 20% increase in a pension fund liabilities. Recently, the Netherlands and Sweden announced changes to the methodology for setting the discount rate. Pension funds in the Netherlands will be able to use an ultimate forward rate (UFR) for long maturities as the discount rate, based on long-term assumptions about growth and inflation. In Sweden, the regulator has a set a floor on discount rate.

### *Definition and measurement*

The level of funding, that is, the ratio of pension plan assets to liabilities, is estimated using country-specific methodologies. Methodologies differ across countries with respect to the formula used, the discount rate (e.g. a market discount rate, or a fixed discount rate), or with the way future salaries are accounted for (e.g. liabilities can be based on current salaries or on salaries projected to the future date that participants are expected to retire). In addition, some countries calculate a funding ratio for each pension funds and calculate an average (simple or weighted) thereafter, while other countries only calculate an aggregate funding ratio for the whole pension fund industry.

## 8.13. Average funding ratio of DB pension plans in selected OECD countries, 2010-11

Percentage




*Note:* The average DB funding ratios are regulatory funding ratios directly provided by national pension authorities.

1. Data refer to *Pensionskassen* and *Pensionsfonds*.

*Source:* OECD, Global Pension Statistics.

StatLink http://dx.doi.org/10.1787/888932908269

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*Chapter 9*

# *Pensions at a Glance 2013:* Country profiles

*This part of* Pensions at a Glance *presents profiles of national pension systems. Each country profile summarises the architecture of national schemes and provides key indicators on demographics, public pension spending and average earnings. It then goes on to provide the detailed parameters and rules of the pension system in 2012, explains the calculation of pension entitlements and show the main results.*

*First, there is a brief guide to the contents of the national profiles.*

# Guide to the country profiles

The country profiles use a common framework. First, there is a brief summary of the national retirement-income system and a table of key indicators. This background table comprises average worker earnings, public pension expenditures, life expectancy and the dependency ratio (the number of pensioners for every 100 workers). Data both for the country in question and the average for the OECD as a whole are presented.

Secondly, there is a detailed description of the rules and parameters of the pension schemes that make up each country's retirement-income system. These are structured as follows.

- *Qualifying conditions:* pension eligibility (or "retirement") age and years of contributions required to receive a pension.
- *Benefit calculation:* the rules for each schemes making up the pension system, such as basic, resource-tested and minimum pensions as well as public, earnings-related and mandatory private plans.
- *Voluntary private pensions:* the parameters of typical voluntary plans are provided for the countries for which replacement rates under these schemes were modelled in the indicator of "Gross replacement rates from public and private pensions" in Chapter 7.
- *Variant careers 1:* the rules and conditions under which workers can retire early or continue to work beyond the standard retirement age and the impact on pension entitlements.
- *Variant careers 2:* rules for protecting pensions for people who are out of paid work due to caring for children or unemployment.

The treatment of pensioners under the personal income tax and social security contributions, for reasons of space, is not described in this edition (for all OECD countries, taxes and social security contributions paid by workers are those in force in the year 2012). However, the on-line version of the country profiles, available at *www.oecd.org/pensions/pensionsataglance.htm*, do include this information. For details on the taxes and social security contributions paid by workers, see OECD (2013), *Taxing Wages*.

Values of all pension parameters and other relevant figures such as minimum wages are given in national currencies and as a proportion of average earnings. (See the indicator of "Earnings: Averages and distribution" in Chapter 7.)

In each country profile, a table gives expected relative pension values, replacement rates and pension wealth at different individual levels of earnings for mandatory pension schemes. (See Chapter 6 of this report for definition and measurement of the different indicators.) These are given in both gross and net terms (the latter taking account of taxes and contributions paid when working and when drawing the pension).

Summary figures show the breakdown of the gross relative pension value into the different components of the pension scheme (the first row of the figures). As far as possible, the same, terminology is used to describe these schemes. The particular national scheme that is described can be found in the text of the country study. Some standard abbreviations are used in the legends of the figures:

- SA: social assistance.
- Targeted: separate resource-tested schemes for older people.
- Minimum: a minimum pension within an earnings-related scheme.
- Basic: a pension based only on number of years of coverage or residency.
- Earnings-related: all public earnings-related programmes, including notional accounts and points schemes as well as traditional defined-benefit plans.
- DC: defined contribution, mandatory private plans.
- Occupational: mandatory or quasi-mandatory pensions, which can be provided by employers, industry-wide schemes (the Netherlands), profession-based schemes (Sweden) or publicly (Finland, France).

The second row of country figures shows the effect of personal income taxes and social security contributions on relative pension values and replacement rates, giving the gross and net values.

The figures use a standard scale to ease comparisons between countries: the scale for replacement rates runs to 125% while that for relative pension values runs to 2.5 times average earnings. The figures show pension entitlements for people earning between 50% and 200% of average worker earnings (AW).

# Argentina

**Argentina: Pension system in 2012**

The pension system has two main components: a basic component and an additional social insurance component. For those aged 70 and above there is also an additional age-related social insurance component, as well as a social assistance component.

**Key indicators**

| | | Argentina | OECD |
|---|---|---|---|
| Average worker earnings (AW) | ARS | 53 600 | 209 900 |
| | USD | 10 900 | 42 700 |
| Public pension spending | % of GDP | | 7.8 |
| Life expectancy | At birth | 76.2 | 79.9 |
| | At age 65 | 17.4 | 19.1 |
| Population over age 65 | % of working-age population | 19.2 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908288

## Qualifying conditions

Retirement age for the basic pension is 65 for men and 60 for women with at least 30 years of service. To meet the contribution qualifying condition, the insured may substitute two years of age after the retirement age for one year of missing contributions.

Additional pension (social insurance): Age 65 (men) or age 60 (women) with at least 30 years of service.

Advanced old-age pension (social insurance): Aged 70 or older with at least ten years of service, with contributions paid while employed or self-employed, including at least five of the last eight years before leaving employment. A self-employed person must have been insured for at least five years.

Non-contributory old-age pension (social assistance): Needy persons aged 70 or older residing in Argentina.

## Benefit calculation

### *Old-age pension*

The monthly pension is ARS 1 022.84 (as of March 2013).

### *Additional pension (social insurance)*

The monthly pension is 1.5% of the insured's average adjusted monthly earnings in the last ten years (weighted average adjusted amounts for all periods for self-employed persons) for each year of lifetime service.

### *Advanced-age old-age pension*

The monthly pension is 70% of the basic old-age pension, plus the additional pension.

The minimum monthly advanced-age old-age pension is ARS 2 165.00 (as of March 2013).

The combined minimum monthly old-age pension (the sum of all contributory pensions) is ARS 2 165.00 (as of March 2013).

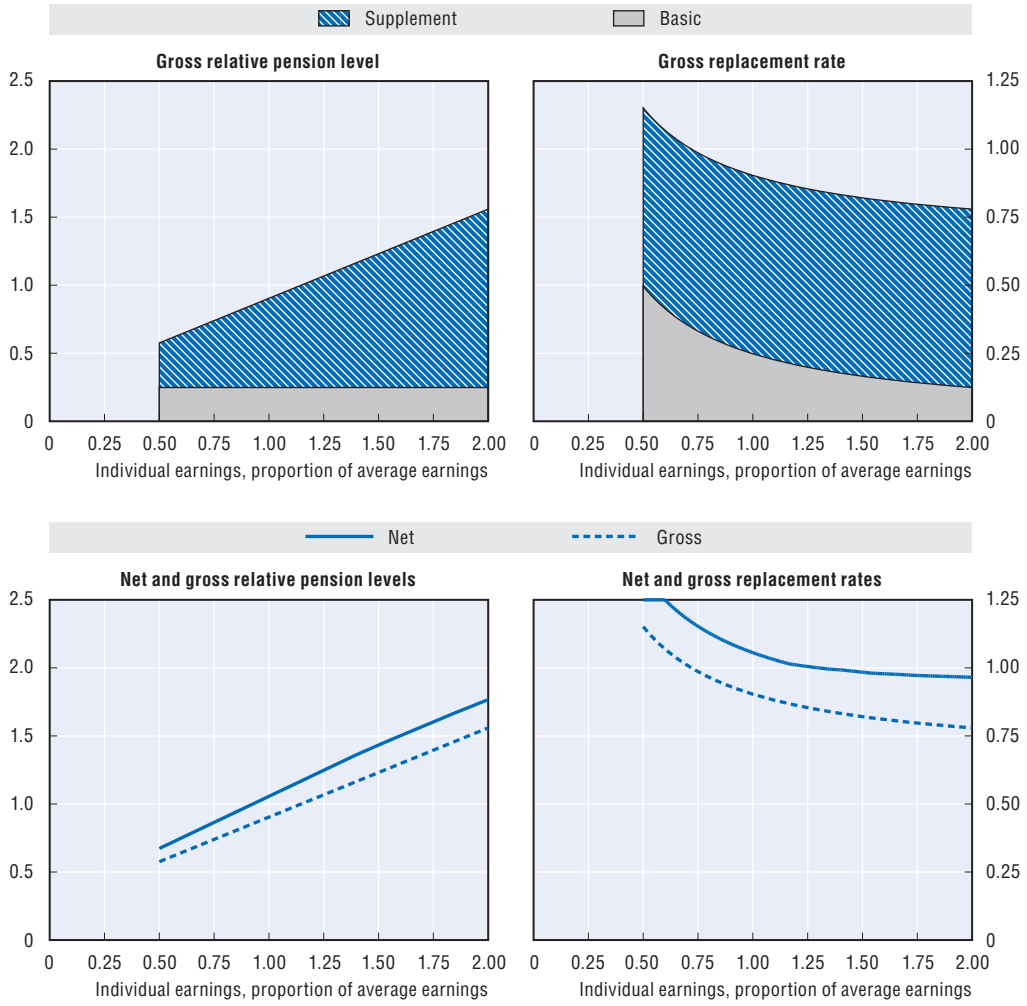
The maximum monthly old-age pension (sum of the basic and social insurance pensions) is ARS 15 861.24 (as of March 2013).

Pensions are paid monthly with a 13th payment equal to the regular monthly payment divided in half and paid in June and December. Benefits are adjusted automatically in March and September based on changes in tax revenue, wage indexes, and revenue of the National Social Security Administration.

### *Non-contributory old-age pension (social assistance)*

The monthly pension is ARS 1 515.50 (70% of the minimum pension of ARS 2 165.00).

## Pension modelling results: Argentina




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 77.9 | 57.6 | 74.0 | 90.4 | 123.1 | 155.9 |
| *(% average gross earnings)* | *72.0* | *53.9* | *68.5* | *83.1* | *112.2* | *141.3* |
| Net relative pension level | 91.0 | 67.3 | 86.4 | 105.6 | 143.2 | 176.6 |
| *(% net average earnings)* | *84.1* | *63.0* | *80.1* | *97.1* | *131.1* | *162.2* |
| Gross replacement rate | 96.2 | 115.2 | 98.6 | 90.4 | 82.1 | 77.9 |
| *(% individual gross earnings)* | *88.9* | *107.9* | *91.3* | *83.1* | *74.8* | *70.7* |
| Net replacement rate | 112.4 | 134.6 | 115.3 | 105.6 | 98.4 | 96.5 |
| *(% individual net earnings)* | *103.9* | *126.1* | *106.7* | *97.1* | *90.1* | *88.6* |
| Gross pension wealth | 14.7 | 17.6 | 15.1 | 13.8 | 12.5 | 11.9 |
| *(multiple of individual gross earnings)* | *18.3* | *22.2* | *18.8* | *17.1* | *15.4* | *14.5* |
| Net pension wealth | 14.2 | 17.1 | 14.6 | 13.4 | 12.1 | 11.2 |
| *(multiple of individual gross earnings)* | *17.7* | *21.5* | *18.2* | *16.6* | *14.9* | *13.8* |

StatLink http://dx.doi.org/10.1787/888932908307

# Australia

### Australia: Pension system in 2012

Australia's retirement income system has three components: a means-tested Age Pension funded through general taxation revenue; the superannuation guarantee, a compulsory employer contribution to private superannuation savings; and voluntary superannuation contributions and other private savings. Superannuation savings are encouraged through taxation concessions.

### Key indicators

| | | Australia | OECD |
|---|---|---|---|
| Average worker earnings (AW) | AUD | 73 500 | 41 100 |
| | USD | 76 400 | 42 700 |
| Public pension spending | % of GDP | 3.5 | 7.8 |
| Life expectancy | At birth | 82.4 | 79.9 |
| | At age 65 | 20.8 | 19.1 |
| Population over age 65 | % of working-age population | 23.1 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908326

## Qualifying conditions

The Age Pension is payable from age 65 for men. Women's pensionable age – currently 64.5 – will increase gradually to become 65 by 2014. Pension age will then be increased by six months every two years from 2017 until it reaches 67 by 2023. The minimum age for withdrawing superannuation benefits is currently 55, but this will increase gradually to 60 by 2025.

## Benefit calculation

### *Defined contribution*

The superannuation guarantee was introduced in 1992. It consists of a mandatory employer contribution to a private pension plan. The pension plans may be operated by employers, industry associations and financial service companies or even by individuals themselves. The mandatory contribution rate has been 9% of employee earnings since the 2002-03 tax year. Starting in 2013-14, the superannuation guarantee has started to gradually increase to 12% by 2019-20. (Prior to the recent federal election, the government – when in opposition – announced that it will keep the rate unchanged at 9.25% until June 2016 and then gradually increase the rate to 12% by 2021-22.) The Australian system also includes taxation concessions to encourage additional private retirement savings.

Employers need not contribute for workers earning less than AUD 450 a month (equivalent to AUD 5 400 a year), but they can choose to contribute for these workers (note that this minimum has not been increased in the past). There is also a limit to the earnings covered by the superannuation guarantee: employers need not contribute for employees' pay above this threshold. For each quarter of the financial year 2012-13 this amount was AUD 45 750. This limit is worth almost 2½ times average wages and is indexed to a measure of average earnings.

The withdrawal stage of the superannuation guarantee complicates the calculations. Although there are some defined-benefit occupational plans, most employees are members of defined-contribution schemes. Members can withdraw the accumulated capital as a lump

sum or as an income stream. Currently, most benefits are taken as a lump sum, at least in part. For comparison with other countries (where defined-benefit plans predominate), the capital from the superannuation guarantee is assumed to be converted to a price-indexed annuity. The annuity calculation is based on mortality data for Australia.

### *Targeted*

The Age Pension is designed to provide a safety net for those unable to save enough through their working life and to supplement the retirement savings of others. An income test and an assets test (means tests) are used to target age pension payments.

Australia's Age Pension cannot be compared directly to benefits for the aged provided by other OECD countries, which are primarily aimed at income replacement. Australia's Age Pension is a flat rate payment and redistributive in nature. It aims to provide age pensioners with an income adequate to ensure a basic living standard. In addition to cash payments provided by the Age Pension, Australian seniors can be eligible for a comprehensive system of concessions and assistance for health, rent assistance, pharmaceuticals and other living expenses. The Australian Government supports private retirement incomes through its superannuation arrangements, subsidised by taxation concessions.

The Australian Government delivered pension reform in September 2009 which improved the adequacy and sustainability of the pension system.

A key feature of the pension reforms was improved indexation arrangements. A new cost of living indicator, the Pensioner and Beneficiary Living Cost Index (PBLCI), was introduced to better reflect price changes facing pensioners. The wages benchmark linking the pension to community living standards was increased from 25% to around 27.7% for single pensioners, or 41.8% for pensioner couples combined.

To improve incentives for Age Pensioners to undertake paid employment, the Work Bonus, an income tested concession on employment income, was introduced.

Measures to promote sustainability included tighter means testing and a future increase in pension age from 65 to age 67 by 2023.

The value of the Age Pension is adjusted biannually and is paid fortnightly. In September 2012 the maximum single rate of pension and pension supplement was AUD 772 a fortnight, increasing to AUD 808 in March 2013 (all values have been rounded to the nearest dollar). This gives a maximum annual benefit of AUD 21 018.

The Age Pension's value is increased in line with the greater movement of price increases as measured by the Consumer Price Index (CPI) and the PBLCI. Where necessary, a further increase is made to ensure that the combined couple rate does not fall below 41.8% of pre-tax Male Total Average Weekly Earnings on the national definition (which is slightly different from the earnings measure used in OECD analysis).

The Age Pension starts to be reduced once annual income from other sources exceeds a threshold known as the "free area". This is adjusted annually in July. The amounts for 2010-12 were AUD 150 in the first half and AUD 152 in the second half of the year (again calculated fortnightly). An assets test also applies. Almost 41% of all pensioners have their benefits reduced by the means test and are therefore on part-rate Age Pension. Within this group 69% have their pension reduced as a result of the income test and 31% as a result of the assets test. About 59% of pensioners are on the maximum rate Age Pension.

## Variant careers

### *Early retirement*

Access to superannuation benefits (including superannuation guarantee benefits) is currently possible for retirement on or after preservation age, currently age 55 (increasing to age 60). Individuals who are still working can also access their benefits from preservation age, but only in the form of a non-commutable income stream. The Age Pension is not paid earlier than the qualifying age, which is 65 for men and 64 for women, increasing to 65 by 2014. General qualifying age will rise to 67 by 2023.

### *Late retirement*

It is possible to defer claiming superannuation after 65. Employers are required to make superannuation contributions under the superannuation guarantee arrangements for their eligible employees.

The Work Bonus is an income test concession that allows age pensioners to earn up to AUD 250 a fortnight without it being assessed as income under the income test. Pensioners who earn less than AUD 250 in a fortnight can accrue the unused amount of fortnightly concession up to AUD 6 500 to offset future employment income. The combination of the Work Bonus and the pension income free area, allows a single pensioner with no other income to earn up to around AUD 10 450 each year without it affecting their pension.

### *Childcare*

There is no specific protection for periods out of work in the superannuation guarantee system. Voluntary contributions are possible for periods out of paid work.

The means-tested structure of the Age Pension provides some protection for people with periods out of the workforce, in that it provides a safety net and supplements the retirement incomes of those unable to save enough during their working life.

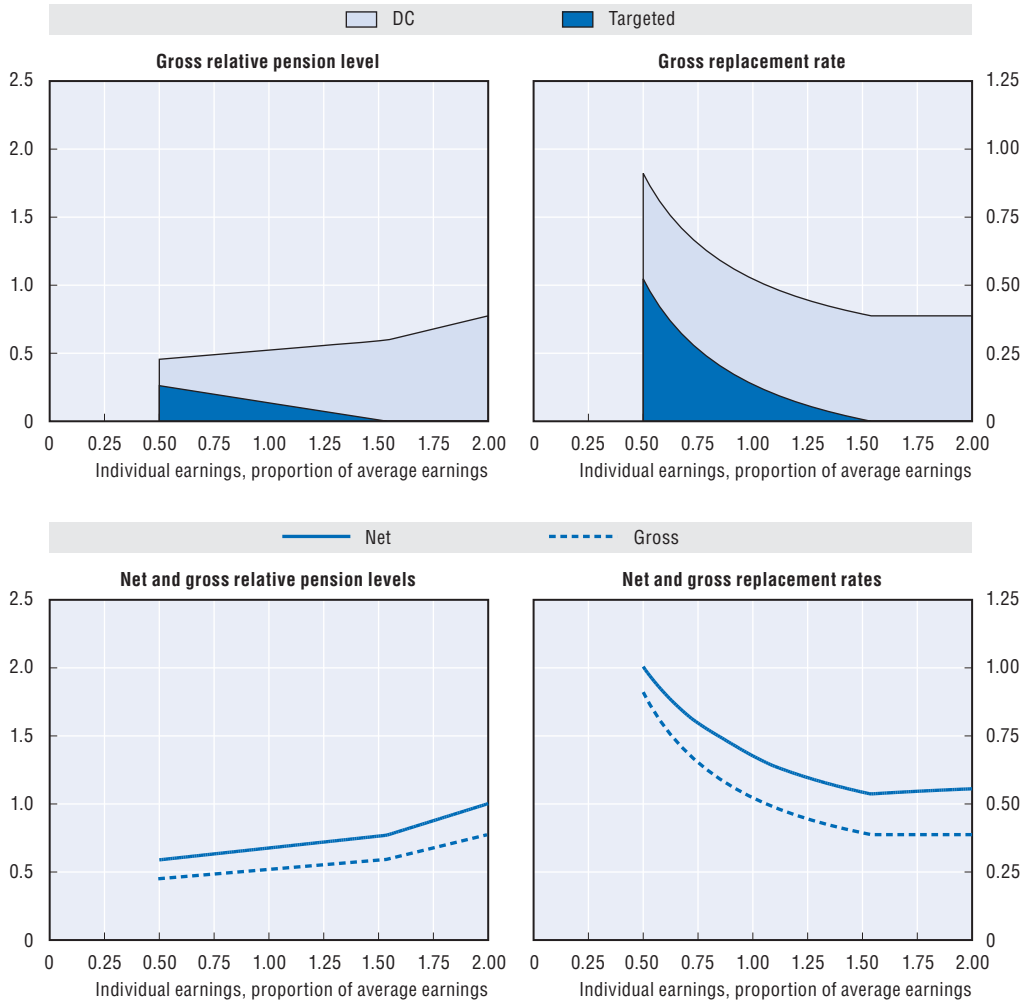
### *Unemployment*

There is no specific protection in the superannuation guarantee system for periods out of work. Voluntary contributions are possible for periods out of paid work.

There are no credits in the superannuation scheme for periods of unemployment.

The means-tested structure of the Age Pension provides some protection for people with periods out of the workforce, in that it provides a safety net and supplements the retirement incomes of those unable to save enough during their working life.

## Pension modelling results: Australia




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 50.0 | 45.5 | 48.9 | 52.3 | 59.0 | 77.5 |
| *(% average gross earnings)* | *46.3* | *43.3* | *45.6* | *47.8* | *52.3* | *68.6* |
| Net relative pension level | 64.7 | 58.9 | 63.3 | 67.7 | 76.4 | 100.3 |
| *(% net average earnings)* | *59.9* | *56.1* | *59.0* | *61.9* | *67.7* | *88.7* |
| Gross replacement rate | 60.2 | 91.1 | 65.2 | 52.3 | 39.4 | 38.7 |
| *(% individual gross earnings)* | *55.8* | *86.6* | *60.8* | *47.8* | *34.9* | *34.3* |
| Net replacement rate | 75.6 | 100.5 | 79.7 | 67.7 | 54.3 | 55.6 |
| *(% individual net earnings)* | *70.0* | *95.6* | *74.3* | *61.9* | *48.2* | *49.2* |
| Gross pension wealth | 10.9 | 17.3 | 11.9 | 9.3 | 6.6 | 6.5 |
| *(multiple of individual gross earnings)* | *11.6* | *19.0* | *12.8* | *9.7* | *6.6* | *6.5* |
| Net pension wealth | 10.9 | 17.3 | 11.9 | 9.3 | 6.6 | 6.5 |
| *(multiple of individual gross earnings)* | *11.6* | *19.0* | *12.8* | *9.7* | *6.6* | *6.5* |

StatLink http://dx.doi.org/10.1787/888932908345

# Austria

**Austria: Pension system in 2012**

The pension system consists of a defined-benefit public scheme with an income-tested top-up for low-income pensioners.

**Key indicators**

| | | Austria | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 40 900 | 32 400 |
| | USD | 53 900 | 42 700 |
| Public pension spending | % of GDP | 13.5 | 7.8 |
| Life expectancy | At birth | 81.0 | 79.9 |
| | At age 65 | 19.6 | 19.1 |
| Population over age 65 | % of working-age population | 29.7 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908364

## Qualifying conditions

Normal pension age is 65 for men. For women, retirement age is currently 60 years but will be increased to 65 between 2024 and 2033. There is a coverage condition: 180 months (15 years) in the last 30 years or 300 months (25 years) during the full lifetime. Alternatively, 180 months of contributions actually paid (as opposed to coverage alone) are sufficient. Insured months are either contributory months (from employment or voluntary contributions) or supplementary (i.e. credited months, known as *Ersatzzeiten*) for which only limited contributions are paid. Within the pension reform 2005 the number of contribution years due to gainful employment required for old-age-pension has been reduced from 15 to 7 years. The remaining minimum insurance period of eight years can be reached, e.g. by child raising periods.

## Benefit calculation

### *Earnings-related*

The pension benefit currently accrues at 1.78%. The earnings measure is currently the best 24 years' earnings. The valorisation procedure is complex although in practice adjustments have been closer to price inflation than to earnings growth. The averaging period is being extended; it will reach 40 years from 2028. Valorisation for the new pension account system – since 2005 – is in line with earnings growth. The modelling takes this full-career measure and assumes that earlier years' earnings are revalued in line with earnings growth, though the final year is not adjusted.

Contributions are payable up to a ceiling of EUR 59 220 a year, corresponding to 145% of average earnings.

The yearly adjustment for pensions in payment is basically in line with CPI.

In 2012, most pensions were valorised according to the consumer price index. Only for very high pensions above the level of EUR 3 300 gross per month a reduced indexation applies.

### *Targeted*

There is a means-tested top-up (*Ausgleichszulage*) that ensures a minimum retirement income of EUR 814.82 per month for single people and EUR 1 221.68 for a couple. There are 14 annual payments. Again, adjustment of the safety-net income is discretionary; the modelling implicitly assumes that it will rise in line with average earnings.

## Variant careers

### *Early retirement*

Early retirement is currently possible on the grounds of:

1. *Long-term insurance periods* ("Vorzeitige Alterspension bei langer Versicherungsdauer"), currently an insurance period of at least 37.5 insurance years is necessary this pension is phased out in 2017: retirement age in July 2012: 63 years and eight months for men, 58 years and eight months for women, and rising further to 65 for men and 60 for women in 2017 also the eligibility criteria will be stepwise increased from 37.5 to 40 insurance years in the period 2013 until 2017.
2. *Long-term insurance contributions* ("Langzeitversichertenpension – Hacklerregelung"), currently a contribution period of 40 (women)/45 (men) contributory years or more is required (with increasingly aggravated access as from 2014; current retirement age: 60 for men, 55 for women; as from 2014: 62 for men, 57 for women, stepwise to 62 (deduction per year: 4.2%).
3. *Physically hard work combined with long-term insurance periods* of 45 insurance years or more ("Schwerarbeitspension"), retirement age: 60 for men, 55 for women (deduction per year: 1.8%).
4. *Corridor-pension* ("Korridorpension") at the age of 62 for both sexes, when having 37.5 insurance years or more. The eligibility criteria will be stepwise increased from 37.5 to 40 years in the period 2013 until 2017 (deduction per year: 5.1%).
5. *Disability:* Reform of the disability pension scheme on the basis of the philosophy "Rehabilitation and Prevention before Pension"; for those who were born 1964 or later medical or occupational rehabilitation instead of a temporary disability pension from 2014 onwards.

### *Late retirement*

For retirement between the ages of 65 and 68 the pension is increased by 4.2% per year and there is no such increment after 68. Workers who defer their pension continue to pay contributions thereby increasing their pension entitlements.

Combining work and pensions is possible but there is an earnings limit. If pensioners below the age of 65 earn more than EUR 376.26 the pension is fully withdrawn. After age 65, unlimited earnings from work and pension receipt are permitted.

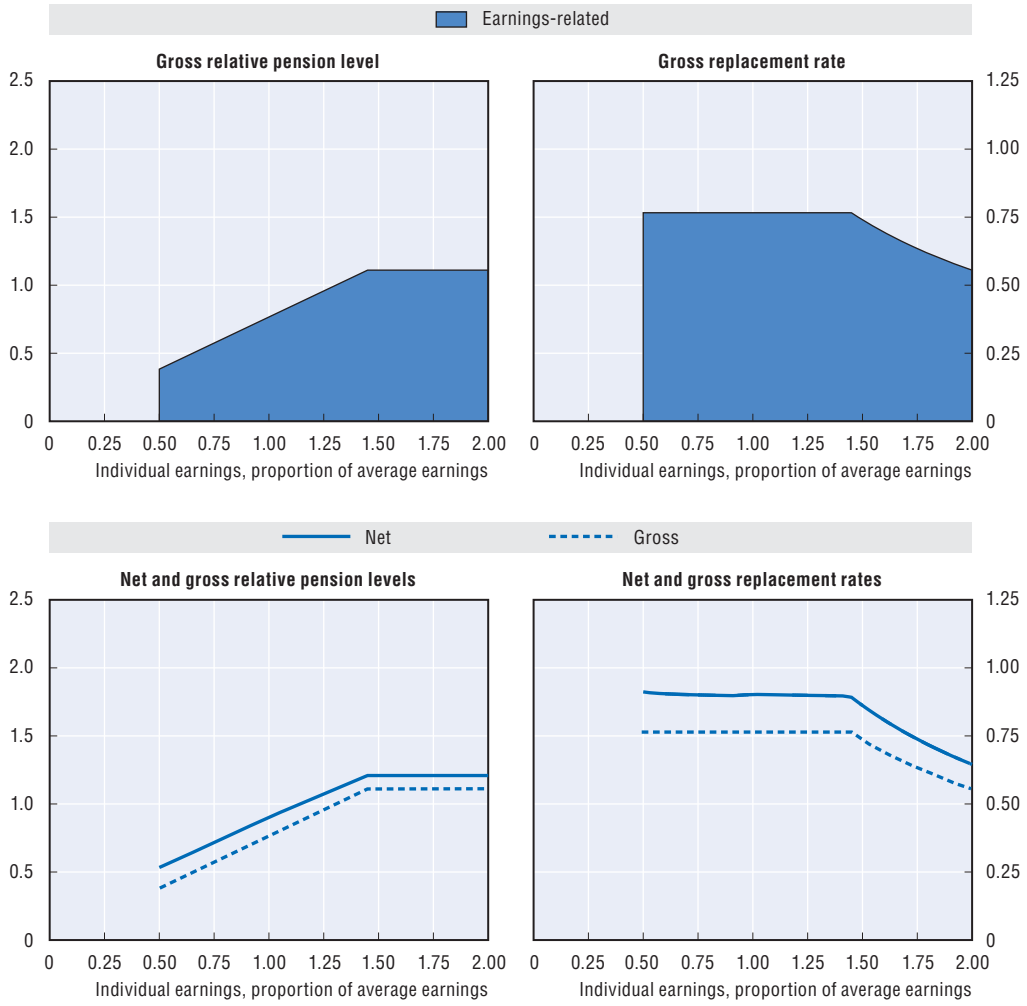
### *Childcare*

Periods spent out of paid work for childcare are taken into account in two different ways. Childcare periods of up to four years per child are credited on the basis of a fictitious pensionable salary of EUR 1 570 per month But only two years per child are covered years and count towards the qualifying period for pension entitlement (four years for those who were born after 1955 – see above, section "Qualifying conditions").

### *Unemployment*

Periods of receiving unemployment insurance benefits and unemployment assistance (at 70% of the assessment basis) count as contribution years.

## Pension modelling results: Austria




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 63.6 | 38.3 | 57.5 | 76.6 | 111.1 | 111.1 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 77.6 | 53.3 | 71.7 | 90.2 | 120.9 | 120.9 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 76.6 | 76.6 | 76.6 | 76.6 | 74.0 | 55.5 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 89.9 | 91.2 | 90.1 | 90.2 | 86.2 | 64.5 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 10.5 | 10.5 | 10.5 | 10.5 | 10.1 | 7.6 |
| *(multiple of individual gross earnings)* | *11.6* | *11.6* | *11.6* | *11.6* | *11.2* | *8.4* |
| Net pension wealth | 8.6 | 9.8 | 8.7 | 8.3 | 7.4 | 5.5 |
| *(multiple of individual gross earnings)* | *9.5* | *10.8* | *9.7* | *9.1* | *8.2* | *6.1* |

StatLink http://dx.doi.org/10.1787/888932908383

# Belgium

**Belgium: Pension system in 2012**

The pension system has two components: an earnings-related public scheme with a minimum pension and a means-tested safety net.

**Key indicators**

| | | Belgium | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 46 100 | 32 400 |
| | USD | 60 700 | 42 700 |
| Public pension spending | % of GDP | 10.0 | 7.8 |
| Life expectancy | At birth | 80.4 | 79.9 |
| | At age 65 | 19.4 | 19.1 |
| Population over age 65 | % of working-age population | 29.6 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908402

## Qualifying conditions

Normal pensionable age is 65 for all. Following legal rules in Belgium a full pensions requires a 45 years career.

## Benefit calculation

### *Earnings-related*

The rate for the calculation of the pension for a single pensioner is 60% and for those with a dependent spouse, 75%. The estimated annual accrual rate is therefore 60%/45 = 1.33% for men). The earnings measure is average lifetime pay (under the modelling simplifying assumptions). Earlier years' earnings are revalued in line with prices and at the same time a revaluation coefficient is applied in order to revalue elderly wages in line with the increase of living standards (different coefficient for each year). The application of these revaluations of elderly wages used for the calculation of the retirement pension is not modelled.

The full pension is paid provided the qualifying conditions above are met. For shorter contribution histories, the pension will be provided, but calculated on the lower number of career years.

For the calculation, a ceiling to yearly pensionable earnings is applied. This ceiling is of EUR 51 092.44 for 2012, corresponding to 111% of average earnings.

Pensions in payment are uprated in line with a consumer price index (so-called "Health index" that excludes some goods). There have also been discretionary real increases (called "adaptations to well-being"). However, these increments have recently been more targeted to the lowest or the longest-running pensions. From 2008 onwards, legislation obliges the government to make decisions on uprating of pensions every two years, based on advice of the social partners.

There are additional payments ("holiday" and "supplementary" allowances), payable once a year. These are equal to the value of the monthly pension up to a ceiling of EUR 603.61 for a single person and EUR 754.52 for pensioners with a dependent spouse (amounts payable in May 2012).

## Minimum annual credit

In cases of pensioners with low earnings or part-time work throughout their career, there is a minimum annual credit designed to increase the attributed pension entitlements for them. Annual earnings of less than EUR 21 326.67 (amount applicable 1 January 2012 – EUR 22 189.36 for pensions starting from 1 December 2012 onwards) are inflated to this level. To qualify for the minimum credits, at least 15 years' insurance is necessary, for an equivalent of at least one third of a full-time employment (this gives an effective minimum pension for a full-career worker for a single person with a 45 year contribution history raised to this level for each year of the career). The application of this minimum annual credit cannot lead to the attribution of a pension superior to EUR 17 513.00 for a pension at "family pension"-rate or EUR 14 012.34 for a pension at "isolated person" rate. If the pension calculation should result in such a pension, the "minimum annual credit" application will not be applied for all eligible career years, until the pension passes under this ceiling (EUR 17 866.12 and EUR 14 292.82 from 1 December 2012 and onwards).

## Minimum earnings-related pension

There is also a minimum earnings-related pension which at 1 February 2012 corresponds to EUR 13 052.28 for pensioners meeting the full contribution condition (45 years) (EUR 13 313.61 from 1 December 2012) for a single person or EUR 16 310.21 (EUR 16 636.77 from 1 December 2012 onwards) with a dependent spouse. The benefit will be a proportion of this minimum in the case of less-than-full careers, if the beneficiary has at least two-thirds of the full number of years. In the other case, the benefit value will simply be obtained through the application of the benefit formula (there will be no "levelling up" of the benefit in line with the minimum pensions).

The minimum pension is indexed to prices, excluding certain goods. Benefits are increased by 2% each time cumulative inflation exceeds a certain threshold (2%) since the last adjustment.

Pensioners will receive the higher of the minimum pension described here and the pension calculated (eventually with application of the "minimum annual credit" for those career years fulfilling the conditions).

### *Pension bonus*

For pensions starting from 1 January 2007 onwards and before 2013, work after the age of 62 to maximally the normal legal retirement age or beyond 44 years of contributions will be credited with a bonus [EUR 2.25 (amount 1 February 2012)] for each day worked (indexed to prices), limited to EUR 702 for each full year of work, following the "generation pact". The government has taken the decision to reform this system from 1 January 2014 onwards, making the pension bonus progressive in function of how much longer one works (from EUR 1.5 per day up to EUR 2.5 per day when working six years longer).

Working after normal retirement age can also be used to plug career gaps to obtain a full pension or can improve the pension amount, since only the 45 last years are used in the calculation.

### *Safety-net income: Targeted*

In the case of elderly people, who have no pension rights based on a professional activity or whose pension rights are very low, a means tested safety net income can be attributed. This so-called GRAPA (*Garantie de revenu aux personnes âgées*) is a part of the social assistance measures, which are complementary to the social security provisions (e.g. legal pension for workers of the private sector as modelled).

The means tested safety-net income for the elderly is EUR 11 668.68 for a pensioner living alone and EUR 7 779.12 for an older person living with others. Indexation is again to prices excluding certain goods. For the means test, "normal" pension revenue is taken into account for only 90% of its real amount.

Age limits correspond to the legal age: 65.

## Voluntary private pensions

A scheme of sectoral complementary pensions was introduced in 2003 to further extend the 2nd pillar pension system. The contribution rates are fixed through (sectoral) collective labour agreements, and can vary between economic sectors (the modelled contribution rate is 4.25%).

## Variant careers

### *Early retirement*

Since 2005, early retirement is possible from age 60, subject to 35 years contributions. This will increase to age 62 with 40 years contribution between 2013 and 2016 (see table below). There is no actuarial reduction in the pension calculation in the scheme of wage-earners. The pension however, can be incomplete, due to the possible incompleteness of the career (less than 45 years). There is an earnings test limiting the opportunity to combine an early retirement pension with work. This is stricter than the earnings test applied after normal pension age.

| Starting date | Early retirement age | Career length | Exceptions |
|---|---|---|---|
| 1 January 2013 | 60.5 | 38 | Age 60 and 40 years career |
| 1 January 2014 | 61 | 39 | Age 60 and 40 years career |
| 1 January 2015 | 61.5 | 40 | Age 60 and 41 years career |
| 1 January 2016 | 62 | 40 | Age 60 and 42 years career or age 61 and 41 years career |

### *Late retirement*

It is possible to defer pension after the normal retirement age. For people who continue working after normal retirement age, this can permit to plug career gaps to obtain a full(er) pension or can improve the pension amount, since only the last 45 years are used in the calculation of the pension benefit.

Otherwise, it is possible to combine pensions and earnings (after normal pension age) within limits. For annual earnings under EUR 21 436.50 (single) or EUR 26 075.00 (with a dependent child), the pensions will not be reduced (EUR 21 865.32 and EUR 26 596.50 in 2013). Above this ceiling, the pension will be reduced by the amount that earnings surpass these limits. If actual earnings are 15% above the limits above then the pension will

be completely withdrawn (for as long as the earnings surpass the ceiling). From 2013 further reforms will be applicable, so that for a retiree older than 65 with a career of at least 42 years the ceiling will be lifted entirely.

Before the legal (normal) pension age, the limits for cumulating pensions and earnings are limited to EUR 7 421.57 or EUR 11 132.37 respectively (EUR 7 570 and EUR 11 355.02 in 2013), with the same 15% earnings restriction.

### *Childcare*

A maximum of three years in total caring for children may count as gainful employment, if the person benefits from the so-called "tijdskrediet". Tijdskrediet is a right for all employees in the private sector and they could benefit from a full suspension of labour activities or of a half-time reduction of labour time if they had worked more than three-quarters of full time for at least 12 months preceding the start of "tijdskrediet". They also need to have worked for the same employer for more than a year, during the 15 months before the application for the start of the "tijdskrediet" period. When a person withdraws totally from the labour market, no compensation is made. These years count in the numerator of the benefit formula. The value for earnings in the formula is the last earnings before the labour-market absence.

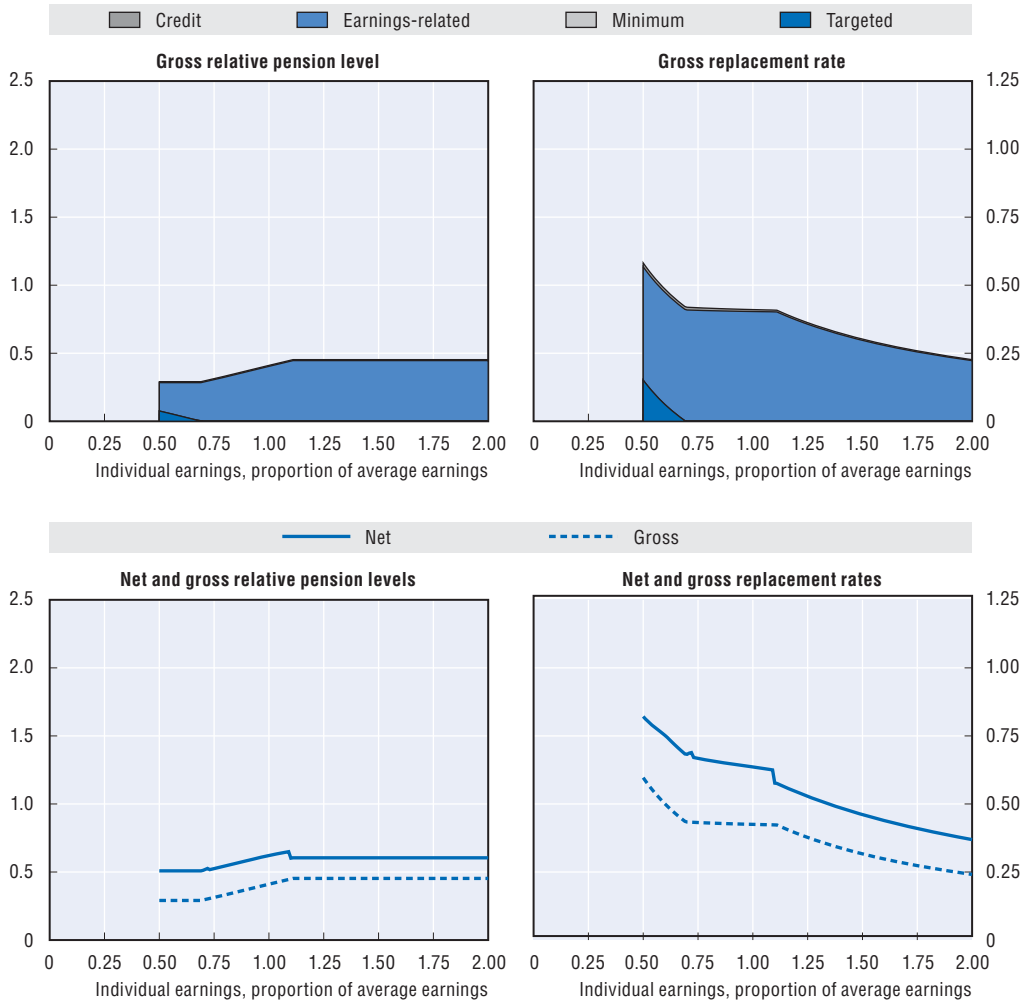
### *Unemployment*

Periods on unemployment insurance benefits are credited under the pension system. The unemployment years count in the numerator of the benefit formula, and until 2012 earnings prior to the period of unemployment are used in the calculation base for the entire unemployment period.

There is no limit to the number of years credited. The application of this crediting however, will lead to a slightly lower pension benefit than in case of a full active career as this credit amount does not necessarily follow completely the full real wage growth over the credited period. Unemployment above the age of 62 or after 42 years of career will not allow for the application of the "pension bonus" for these years.

From 1 January 2013 and onwards, the crediting of unemployment periods for pension rights has been modified. For the unemployment periods compensated by a lump sum allowance (starting after max. 48 months of unemployment), the crediting will be done on the basis of the so-called "minimal annual credit".

## Pension modelling results: Belgium




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 35.2 | 29.1 | 31.3 | 41.0 | 45.3 | 45.3 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 56.4 | 50.8 | 52.5 | 62.1 | 60.4 | 60.4 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 41.4 | 58.2 | 41.7 | 41.0 | 30.2 | 22.6 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 63.9 | 80.7 | 65.3 | 62.1 | 44.6 | 35.4 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 7.0 | 9.9 | 7.1 | 7.0 | 5.1 | 3.8 |
| *(multiple of individual gross earnings)* | *8.0* | *11.3* | *8.1* | *7.9* | *5.8* | *4.4* |
| Net pension wealth | 6.4 | 9.9 | 6.8 | 6.0 | 3.9 | 2.9 |
| *(multiple of individual gross earnings)* | *7.3* | *11.3* | *7.8* | *6.9* | *4.5* | *3.3* |

StatLink http://dx.doi.org/10.1787/888932908421

# Brazil

**Brazil: Pension system in 2012**

The *Regime Geral de Previdência Social* (RGPS), covers the private sector workforce. It is financed through payroll taxes, shared by the employer and the employee, revenues from sales taxes and federal transfers that cover shortfalls of the system. It is a mandatory, pay-as-you-go financed single-pillar scheme, which is operated by the National Social Security Institute.

**Key indicators**

| | | Brazil | OECD |
|---|---|---|---|
| Average worker earnings (AW) | BRL | 21 000 | 87 500 |
| | USD | 10 200 | 42 700 |
| Public pension spending | % of GDP | | 7.8 |
| Life expectancy | At birth | 73.8 | 79.9 |
| | At age 65 | 18.2 | 19.1 |
| Population over age 65 | % of working-age population | 12.2 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908440

## Qualifying conditions

Private-sector employees are entitled to retire with a full pension at age 65 for men and 60 for women if they have a contribution record of at least 15 years. Alternatively, it is possible to retire after having contributed to social security for 35 years for men and 30 years for women, irrespective of the retiree's age. For the models we assume retirement for men at 55 and at 50 for women.

## Benefit calculation

### *Old-age pension*

For all workers the benefit is the average of 80% of the best monthly earnings from July 1994 up to the date of retirement. This average is multiplied by the "Factor Previdenciario" only if this factor is higher than 1.0. The "Factor Previdenciario" is an actuarial coefficient based on the insured's contribution rate, contribution period, age, and life expectancy. The "Factor Previdenciario" is not applied to arduous work with 15, 20 or 25 years of contributions. The minimum monthly earnings for benefit calculation purposes are equal to the legal monthly minimum wage (BRL 622). The maximum monthly earnings for benefit calculation purposes are BRL 3 916.20. The minimum pension for minimum monthly contributions is equal to the legal monthly minimum wage.

Contributions vary by earnings level at 8% for monthly earnings up to BRL 1 174.86, 9% for earnings from BRL 1 174.87 to BRL 1 958.10 and 11% for earnings from BRL 1 958.11 to BRL 3 916.20.

There are 13 payments a year with benefits adjusted annually according to changes in the consumer price index. No benefit could be less than the minimum wage which is also annually adjusted.

### *Retirement for length of contribution*

For workers who qualify for this kind of retirement, men with 35 years of contribution and women with 30 years of contribution, the benefit is the average of 80% of the best

monthly earnings from July 1994 up to the date of retirement. This average is multiplied by the "Factor Previdenciario" that, for young retirees, could be well below 1.0. The minimum monthly earnings for benefit calculation purposes are equal to the legal monthly minimum wage. The maximum monthly earnings for benefit calculation purposes are BRL 3 916.20. The minimum pension for minimum monthly contributions is equal to the legal monthly minimum wage.

There are 13 payments a year with benefits adjusted annually according to changes in the consumer price index. No benefit could be less than the minimum wage which is also annually adjusted.

### *Social assistance programmes for old-age population*

There is a benefit for those who do not qualify for a retirement benefit. The BPC-LOAS was created to assist old-age people (65 years old and more, both male and female) or disabled people whose household income per capita is under one-quarter on the minimum wage (floor). They received the amount equal to the minimum wage and their conditions are revised every two years. This benefit is exclusive: beneficiaries cannot receive any another non-contributory benefit from the government. The logistics is made by the INSS (medical certification and means-test), but the responsibility for the benefit is given to the Ministry of Social Development and Fight Against Hunger – MDS.

There is another benefit called *Previdencia Rural* (Rural Pension) for those males aged 60 and females aged 55 or older, who have at least 180 months of work in rural areas. The benefit is equal to the minimum wage.

## Variant careers

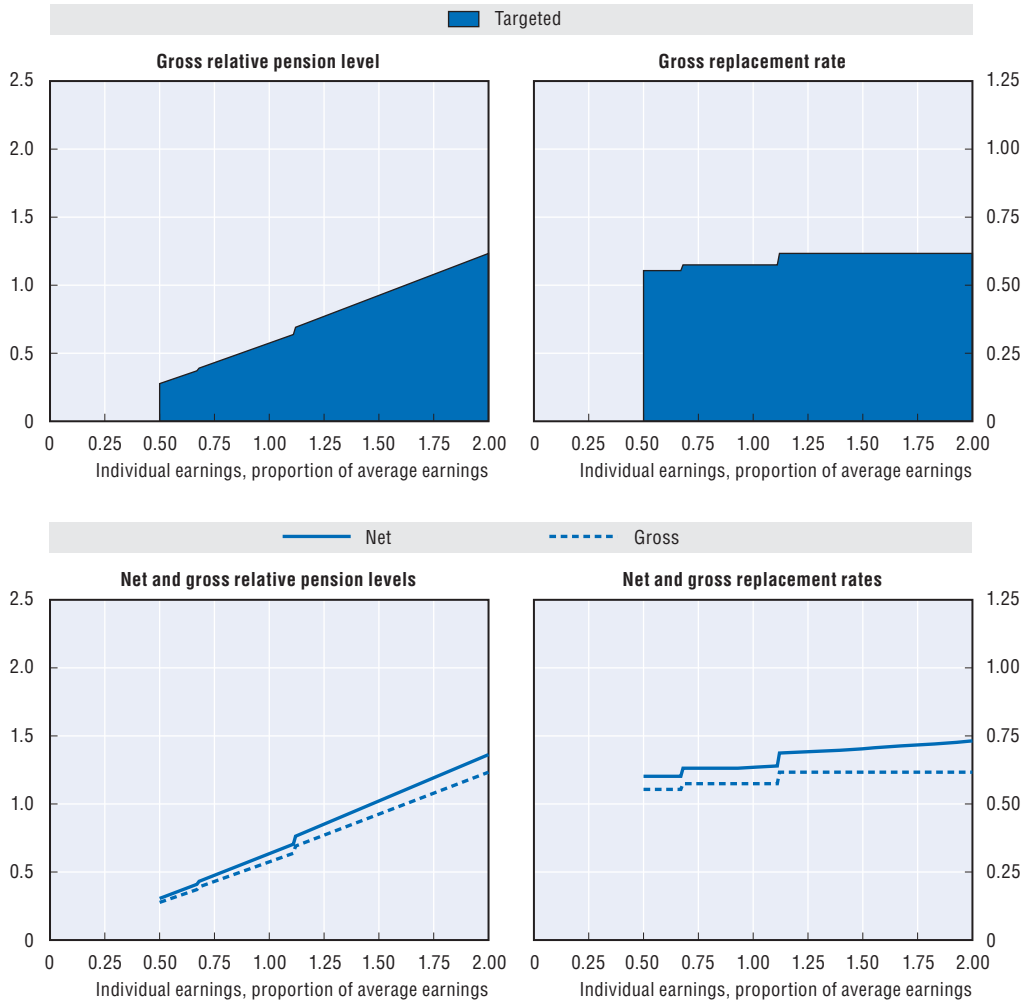
### *Early retirement*

Early retirement is allowed at age 53 with at least 30 years of contributions (men) or age 48 with at least 25 years of contributions (women).

### *Late retirement*

Pensions can be claimed along with employment, and there is therefore no incentive to delay payment.

## Pension modelling results: Brazil




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 46.5 | 27.7 | 43.1 | 57.5 | 92.5 | 123.3 |
| *(% average gross earnings)* | *42.3* | *25.2* | *39.2* | *52.3* | *84.1* | *112.2* |
| Net relative pension level | 51.4 | 30.6 | 47.6 | 63.5 | 102.2 | 136.3 |
| *(% net average earnings)* | *46.8* | *27.8* | *43.3* | *57.7* | *93.0* | *123.9* |
| Gross replacement rate | 57.5 | 55.4 | 57.5 | 57.5 | 61.7 | 61.7 |
| *(% individual gross earnings)* | *52.3* | *50.3* | *52.3* | *52.3* | *56.1* | *56.1* |
| Net replacement rate | 63.1 | 60.2 | 63.1 | 63.5 | 70.3 | 73.2 |
| *(% individual net earnings)* | *57.4* | *54.7* | *57.4* | *57.7* | *64.0* | *66.6* |
| Gross pension wealth | 16.1 | 15.5 | 16.1 | 16.1 | 17.3 | 17.3 |
| *(multiple of individual gross earnings)* | *18.9* | *18.2* | *18.9* | *18.9* | *20.3* | *20.3* |
| Net pension wealth | 16.1 | 15.5 | 16.1 | 16.1 | 17.3 | 17.3 |
| *(multiple of individual gross earnings)* | *18.9* | *18.2* | *18.9* | *18.9* | *20.3* | *20.3* |

StatLink http://dx.doi.org/10.1787/888932908459

# Canada

**Canada: Pension system in 2012**

The pension system offers a universal flat-rate benefit, which can be topped up with an income-tested benefit, and earnings-related public schemes.

**Key indicators**

| | | Canada | OECD |
|---|---|---|---|
| Average worker earnings (AW) | CAD | 46 900 | 42 600 |
| | USD | 47 000 | 42 700 |
| Public pension spending | % of GDP | 4.5 | 7.8 |
| Life expectancy | At birth | 81.4 | 79.9 |
| | At age 65 | 20.2 | 19.1 |
| Population over age 65 | % of working-age population | 23.7 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908478

## Qualifying conditions

The basic old age security (OAS) pension is subject to a residence test, with 2.5% of the maximum pension earned for each year of residence after age 18 up to a maximum of 40 years. A minimum of ten years' residence is required to receive any benefit. It is currently payable from age 65.

In June 2012, the Government of Canada introduced changes to the OAS Programme. Commencing in April 2023, the age of eligibility for the basic OAS pension and GIS benefit will gradually increase from 65 to 67, with full implementation expected by January 2029.

For the earnings-related scheme, a full pension requires about 40 years' contributions but a single valid contribution is sufficient to generate an entitlement. Normal pension eligibility age is 65 but an early pension can be claimed from age 60.

## Benefit calculation

### *Basic*

The 2012 full pension level for the OAS pension was CAD 6 510.60. The value of the basic pension is price-indexed.

This pension is subject to an income test operated through the tax system (a "claw-back"). For income above CAD 69 562 a year, the basic pension in 2012 was withdrawn at a 15% rate. It is also indexed to prices.

### *Targeted*

The guaranteed income supplement (GIS) is added to the basic OAS pension. The combination gave a maximum benefit of CAD 15 338.52 in 2012 for a single pensioner.

The GIS is reduced against income other than the basic pension at a 50% rate. The target benefit level is price-indexed.

### *Earnings-related*

Earnings-related pensions and benefits are provided by the Canada Pension Plan (CPP)/ Québec Pension Plan (QPP). The CPP and QPP offer broadly similar benefits. The scheme targets a replacement rate of 25% of earnings up to the Yearly Maximum Pensionable Earnings (YMPE), based on average lifetime salary (excluding the 15% of years with the

lowest earnings). Earlier years' pay is re-valued in line with economy-wide earnings. As noted previously, the full benefit requires about 40 years' contributions with proportional reductions for shorter work histories. The maximum earnings-related retirement pension for 2012 was CAD 986.67 a month.

People earning less than CAD 3 500 a year are not required to contribute. The ceiling, or YMPE, for contributions was CAD 50 100 in 2012. The ceiling is indexed to increases in average earnings while the contribution floor is frozen in nominal terms.

The value of the earnings-related pension after retirement is uprated annually in line with prices.

### *Voluntary private pensions*

There is an additional voluntary pension which is assumed to be defined contribution. The contribution rate is assumed to be 8.5%.

## Variant careers

### *Early retirement*

Early retirement beginning at age 60 is possible in the state earnings-related scheme subject to a benefit reduction. The reduction was 6% per year in 2011 and is gradually being increased to 7.2% per year over a period of five years starting in 2012. Early retirement is not possible in the other two public schemes (basic and means-tested).

### *Late retirement*

The earnings-related pension can be deferred, earning an increment for each year after age 65 – up to a maximum of five years. The increment was 6% per year in 2010 and is gradually being increased over a period of three years to 8.4% per year in 2013. Currently, the basic and income-tested benefits cannot be deferred. The income-test for the latter includes earnings, whilst for the former there is a claw-back against large incomes, again including earnings.

Starting in July 2013, individuals will have the option to defer the basic pension for up to five years. The deferred pension will be adjusted upward by 0.6% per month for each month after the first eligible age.

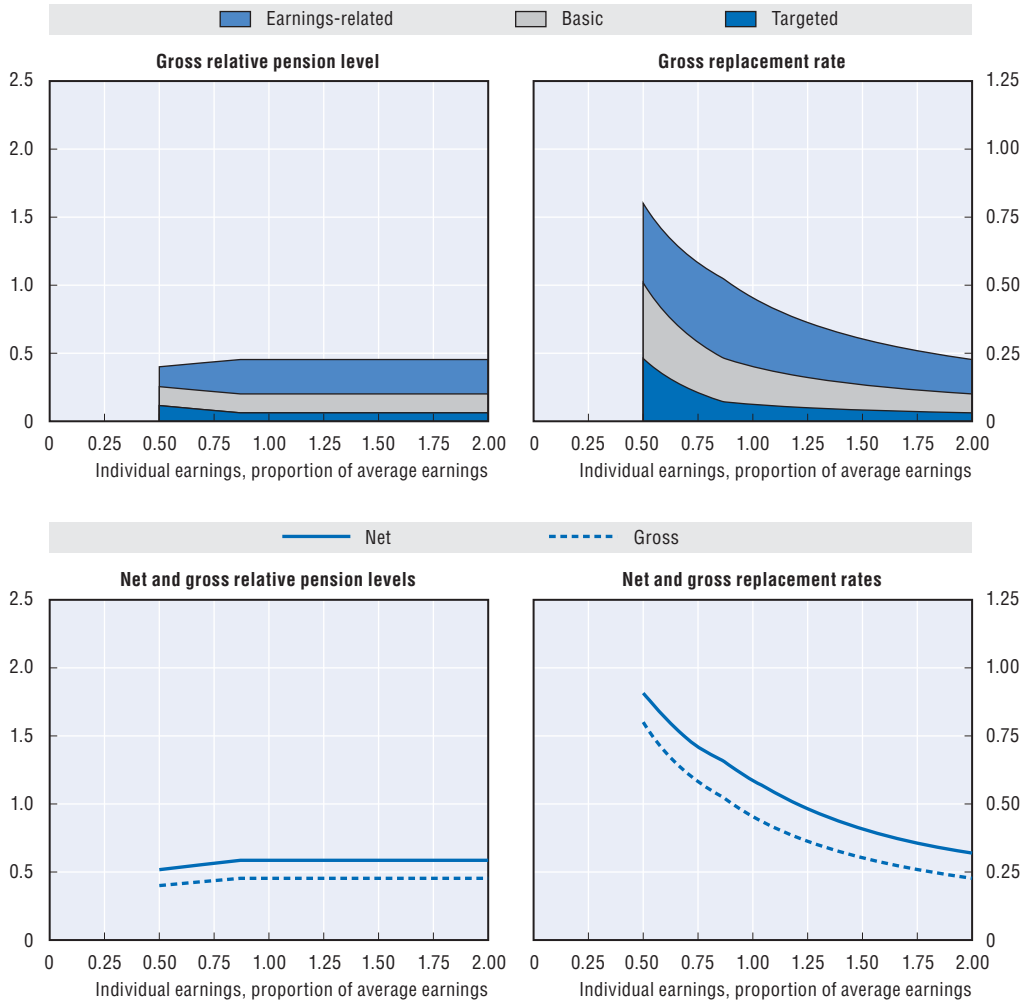
### *Childcare*

Years of caring for children under the age of seven are excluded from the averaging period in the pension calculation and these years are excluded from the contributory period under the earnings-related scheme.

### *Unemployment*

Up to 15% of the contributory period may be excluded in calculating average earnings in the earnings-related scheme. This drop-out is intended to compensate for periods of unemployment, illness, schooling, etc. There are no credits for periods of unemployment.

## Pension modelling results: Canada




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 45.4 | 40.0 | 43.7 | 45.4 | 45.4 | 45.4 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 58.6 | 51.7 | 56.4 | 58.6 | 58.6 | 58.6 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 51.0 | 80.1 | 58.2 | 45.4 | 30.2 | 22.7 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 64.4 | 90.7 | 70.9 | 58.6 | 40.8 | 32.0 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 8.2 | 12.9 | 9.4 | 7.3 | 4.9 | 3.7 |
| *(multiple of individual gross earnings)* | *9.3* | *14.6* | *10.6* | *8.3* | *5.5* | *4.1* |
| Net pension wealth | 8.2 | 12.9 | 9.4 | 7.3 | 4.9 | 3.7 |
| *(multiple of individual gross earnings)* | *9.3* | *14.6* | *10.6* | *8.3* | *5.5* | *4.1* |

StatLink http://dx.doi.org/10.1787/888932908497

# Chile

**Chile: Pension system in 2012**

The pension system has three components: a redistributive first tier, a second tier of mandatory individual accounts and a voluntary third tier. The individual accounts, introduced in 1981, are of the defined-contribution type. The redistributive first tier was substantially extended in a pension reform in 2008.

**Key indicators**

| | | Chile | OECD |
|---|---|---|---|
| Average worker earnings (AW) | CLP (million) | 6.22 | 20.45 |
| | USD | 13 000 | 42 700 |
| Public pension spending | % of GDP | 3.6 | 7.8 |
| Life expectancy | At birth | 79.8 | 79.9 |
| | At age 65 | 19.5 | 19.1 |
| Population over age 65 | % of working-age population | 16.0 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908516

## Qualifying conditions

### *Defined contribution*

Normal retirement age is 65 for men and 60 for women. Pension benefits can be drawn at any point from that age. Individuals are not required to stop working to claim pension.

### *Basic and supplementary schemes*

The basic solidarity pension (PBS) is payable from age 65 to the 60% poorest share of the population on condition that people have lived in the country for at least 20 years and at least four of the five years prior to the claim. The qualifying conditions for the supplementary welfare pension are the same.

## Benefit calculation

### *Defined contribution*

The contribution rate for individual accounts is 10% of earnings. Administrative fees are levied on top of this contribution (not out of the mandatory contribution).

There is a ceiling on contributions, which in December 2012 was set at 67.4 "Unidades de Fomento" (UF) (real, that is inflation adjusted, units), which was CLP 1 542 559 per month, equal to 8.0 times the minimum wage in December 2012 and almost three times average earnings. The ceiling is indexed to average earnings.

At retirement, the accumulated capital can be used to buy an immediate life annuity, to get a temporary income with a deferred life annuity, to take programmed withdrawals, or to buy an immediate life annuity with programmed withdrawals. A withdrawal of 15 UFs is made from the individual account to cover for funeral expenses. For comparison with other countries, replacement rates have been calculated assuming an actuarially fair annuity, using sex-specific annuity rates.

### *Basic*

The basic solidarity pension (PBS) was CLP 80 528 in December 2012. It is indexed to prices. The 2008 reform also introduced a pension-income-tested supplement as a replacement for the previous minimum pension. The objective of this new supplementary

pension is to improve the living standards of low-income workers when they move into retirement. This is payable to all individuals whose defined-contribution pension is less than a specified amount: the maximum welfare pension threshold (PMaS).The PMaS is indexed in line with prices.

In general terms, the supplementary benefit is defined as the value of the basic pension (PBS) – the ratio of PBS to the value of the maximum welfare pension (PMaS) multiplied by the value of the defined-contribution pension. The key ratio of PBS to PMaS is 29%.

## Variant careers

### *Early retirement*

Early retirement is allowed at any age in the defined-contribution scheme as long as the capital accumulated in the account is sufficient to finance a pension above particular thresholds. The first condition is that the benefit must be at least worth 80% of the PMaS. The second condition is that a minimum 70% replacement rate is reached, relative to earnings in the ten years prior to drawing the pension.

The normal retirement age is reduced by one or two years for each five years of work under arduous conditions in specified occupations. The maximum reduction of the normal retirement age is ten years.

### *Late retirement*

It is possible to defer pension claiming after normal retirement age.

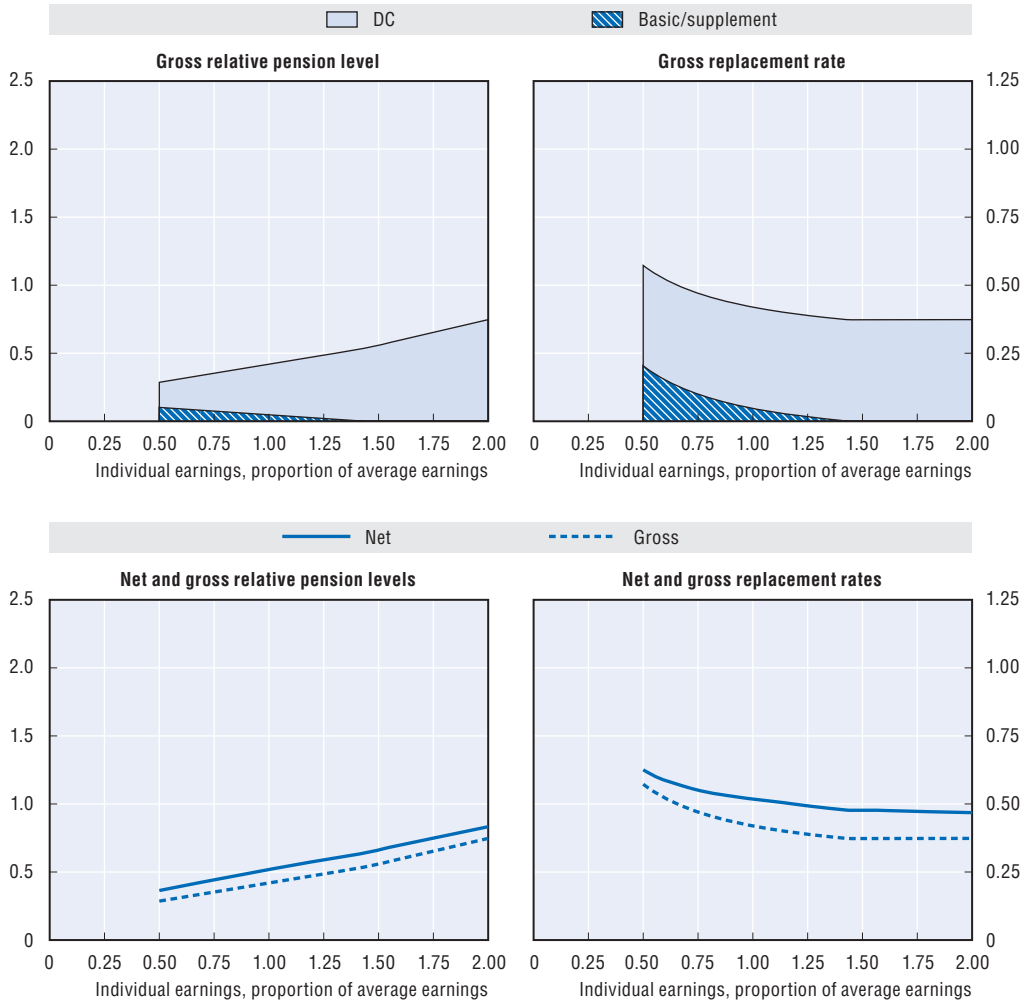
### *Childcare*

A pension voucher is given to women for each child that they have had when they reach 65 years of age. The voucher is equivalent to 10% of 18 months' minimum wages at the time of birth plus the average net rate of return on defined-contribution pension plans from the birth until the pension claim. The average interest rate is calculated for "fund C" of the private pensions: the middle one in terms of the risk-return trade-off. This is transformed into a pension flow when the woman claims her pension.

### *Unemployment*

No credits are given. A separate unemployment insurance system is in place since 2002.

## Pension modelling results: Chile




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 36.9 | 28.6 | 35.3 | 41.9 | 55.9 | 74.7 |
| *(% average gross earnings)* | *29.6* | *24.2* | *28.6* | *33.0* | *41.8* | *50.6* |
| Net relative pension level | 46.1 | 36.4 | 44.2 | 51.8 | 66.3 | 83.3 |
| *(% net average earnings)* | *37.6* | *31.0* | *36.3* | *41.6* | *51.6* | *60.9* |
| Gross replacement rate | 45.5 | 57.3 | 47.0 | 41.9 | 37.3 | 37.3 |
| *(% individual gross earnings)* | *36.6* | *48.3* | *38.1* | *33.0* | *27.9* | *25.3* |
| Net replacement rate | 54.1 | 62.5 | 55.1 | 51.8 | 47.7 | 46.8 |
| *(% individual net earnings)* | *44.1* | *53.2* | *45.2* | *41.6* | *37.2* | *34.2* |
| Gross pension wealth | 7.8 | 9.8 | 8.1 | 7.2 | 6.4 | 6.4 |
| *(multiple of individual gross earnings)* | *8.1* | *10.7* | *8.4* | *7.3* | *6.2* | *5.6* |
| Net pension wealth | 6.8 | 8.7 | 7.1 | 6.2 | 5.3 | 5.0 |
| *(multiple of individual gross earnings)* | *7.2* | *9.6* | *7.5* | *6.4* | *5.3* | *4.7* |

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# China

### China: Pension system in 2012

China has a two-tier pension system, consisting of a basic pension and a mandatory employee contribution to a second-tier plan. This system, which was introduced in 1998, was significantly revised in 2006. It covers urban workers and many of the parameters depend on province-wide (rather than national) average earnings.

### Key indicators

| | | China | OECD |
|---|---|---|---|
| Average worker earnings (AW) | CNY | 46 800 | 266 100 |
| | USD | 7 500 | 42 700 |
| Public pension spending | % of GDP | 3.0 | 7.8 |
| Life expectancy | At birth | 75.3 | 79.9 |
| | At age 65 | 15.6 | 19.1 |
| Population over age 65 | % of working-age population | 13.1 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908554

## Qualifying conditions

Normal pension age is 60 for men, 50 for women blue collar, and 55 for women white collar.

## Benefit calculation

### *Basic*

The basic pension pays 1% of the average of the indexed individual wage and the province-wide average earnings for each year of coverage, subject to a minimum of 15 years of contributions. The pension in payment is indexed to a mix of wages and prices, which may be between 40% and 60% of average earnings growth. The modelling assumes 50% indexation to wages.

### *Defined contribution (funded or notional accounts)*

The second-tier system comprises individual accounts. In addition to the north-eastern provinces (Liaoning, Jilin and Heilongjiang), a further eight have funded individual account systems. In other cases, the accounts are largely notional and are credited with a notional interest rate.

Employees pay 8% of wages to the individual account system. The accumulated balance in the fund or the notional account is converted into a stream of pension payments at the time of retirement by dividing the balance by a government-determined annuity factor, depending on individual retirement age and average national life expectancy. In all provinces, these annuity factors for both males and females (for monthly benefits) are:

| Age | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
|---|---|---|---|---|---|---|---|
| Factor | 233 | 216 | 195 | 170 | 139 | 101 | 56 |

Pensions in payment are indexed to a mix of wages and prices (see the description of the basic pension above).

## Variant careers

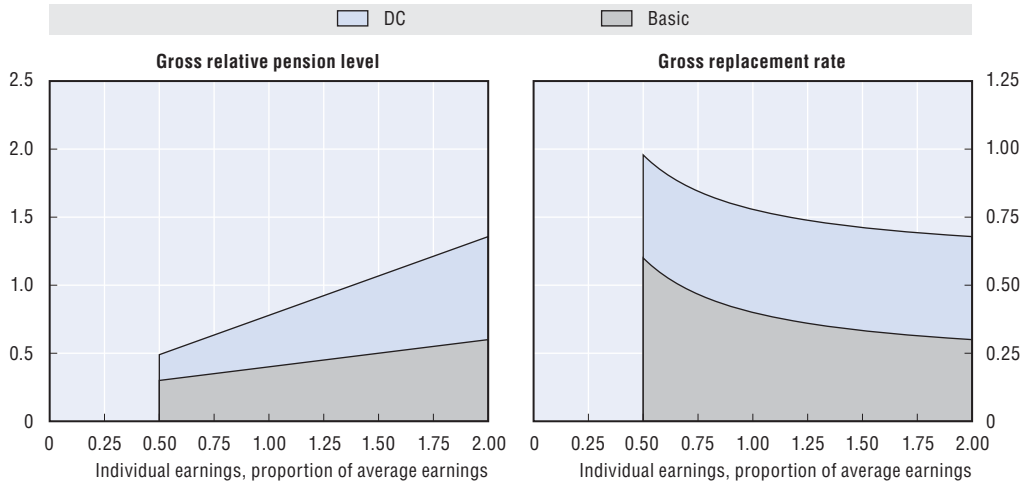
### *Early retirement*

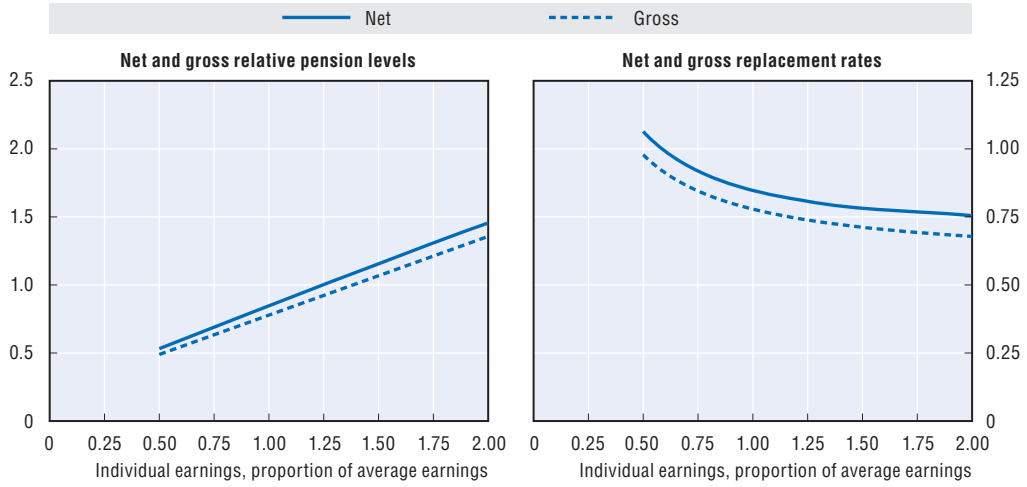
It is possible to claim pensions at 55 for men and 50 for women if the individual engaged in physical work. If the individual is totally disabled, pensions will commence at 50 for men and 45 for women subject to 15 years of contributions.

### *Late retirement*

It is possible to defer pension payments until after normal pension age, but the pension benefit is not valorised.

## Pension modelling results: China




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 66.9 | 48.9 | 63.4 | 77.9 | 106.8 | 135.7 |
| *(% average gross earnings)* | *52.7* | *39.2* | *50.1* | *61.0* | *82.7* | *104.5* |
| Net relative pension level | 72.7 | 53.2 | 69.0 | 84.7 | 115.6 | 145.5 |
| *(% net average earnings)* | *57.4* | *42.7* | *54.5* | *66.3* | *90.0* | *113.2* |
| Gross replacement rate | 82.5 | 97.9 | 84.5 | 77.9 | 71.2 | 67.9 |
| *(% individual gross earnings)* | *65.1* | *78.5* | *66.8* | *61.0* | *55.2* | *52.2* |
| Net replacement rate | 89.7 | 106.4 | 91.9 | 84.7 | 78.2 | 75.5 |
| *(% individual net earnings)* | *70.8* | *85.3* | *72.6* | *66.3* | *60.9* | *58.7* |
| Gross pension wealth | 16.1 | 19.1 | 16.5 | 15.2 | 13.9 | 13.3 |
| *(multiple of individual gross earnings)* | *16.3* | *19.7* | *16.8* | *15.3* | *13.8* | *13.1* |
| Net pension wealth | 16.1 | 19.1 | 16.5 | 15.2 | 13.9 | 13.1 |
| *(multiple of individual gross earnings)* | *16.3* | *19.7* | *16.8* | *15.3* | *13.8* | *13.0* |

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# Czech Republic

### Czech Republic: Pension system in 2012

The Czech pension system consists of a public pension scheme and a mandatory funded private scheme with voluntary entry.

The public pension scheme has a basic element and an earnings-related part calculated according to a progressive formula.

### Key indicators

| | | Czech Republic | OECD |
|---|---|---|---|
| Average worker earnings (AW) | CZK | 300 400 | 812 600 |
| | USD | 15 800 | 42 700 |
| Public pension spending | % of GDP | 8.3 | 7.8 |
| Life expectancy | At birth | 77.6 | 79.9 |
| | At age 65 | 17.1 | 19.1 |
| Population over age 65 | % of working-age population | 25.3 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908592

## Qualifying conditions

The standard retirement age is gradually increased by two months per birth cohort without any upper limit for men (and later on for women too). The pension eligibility age for women is increased by four months and from 2019 by six months to be unified with men (fully for individuals born in 1975 at the age 66 years and eight months). A minimum required 25 years' coverage will be gradually increased to 35 years, by one year per year from 2010. However people with 15 years' coverage (gradually increasing to 20 years) can receive a pension from the age five years higher than standard retirement age for males the same year of birth.

## Benefit calculation

### *Basic*

The value of the basic pension in 2012 is CZK 2 270 or 9% of the legislated average wage which was CZK 25 136 in 2012.

### *Earnings-related*

The earnings-related pension gives 1.5% of earnings for each service year. The earnings measure currently averages across all years starting from 1986, but it will gradually reach lifetime average. Earlier years' earnings are indexed by the growth of economy-wide average earnings.

There is a progressive benefit formula, under which income thresholds are applied to reduce average career earnings into the calculation basis. In the final state the first threshold is 44% of average wage and second 400% of average wage.* The first reduction threshold is equal to CZK 11 061 and the second is CZK 100 548 in 2012. Up to first threshold the earning will be replaced by 100% and between first and second by 26%. Earnings over the second threshold will not be taken into account.

* Due to a five-year transition period, the figures effective in 2012 are different from those which apply to a future pensioner (after the transition period), but in terms of wages and prices of 2012.

There will be a statutory indexation requirement for the earnings-related pension component in payment to reach the state that the combined total average pension benefit (flat-rate and earnings-related components) is increased by 100% of price inflation (only one-third of price inflation in 2013-15) plus one-third of real wage growth.

### *Minimum*

The total value of the minimum monthly newly granted public pension benefit is CZK 3 040, which is made up of a minimum earnings-related pension of CZK 770 plus the basic component of CZK 2 270. It is worth 12.1% of average earnings.

### *Social assistance*

The living minimum is composed of one component and created by living minimum ensuring subsistence and other basic personal needs. The living minimum of individual (and therefore also living-alone pensioner) amounted to CZK 3 410 per month. The social protection in housing is solved within the framework of the state social benefit system, providing housing benefits and in the system of assistance in material need by surcharge for housing.

### *Voluntary private pensions*

As of January 2013 every insured person can voluntarily opt into a privately managed funded define-contribution pension system. Participation in the funded system cannot be revoked. The mandatory fully funded scheme is financed by contributions of 5% of gross earnings. At the same time the individual's contribution rate to earnings-related public pension scheme is lowered by 3 percentage points (from 28% to 25%). As a result the total contribution rate for participants increases to 30% of gross earnings. The lower contribution rate to public pension scheme affects the accrual rate of the earnings-related component of public pensions. The accrual rate is decreased to 1.2% annually (instead of 1.5%) for each year the individual contributes to the funded scheme.

The contributions are accumulated in individual accounts managed by private pension companies and invested according to an individual investment strategy chosen by the participant as a combination of savings allocation in pension funds in time. Each pension company offers exactly four pension funds with different revenue-risk profiles.

After a pension from the public pension scheme is granted, the participant can start drawing his/her savings from the funded scheme. Three withdrawal options are available – a lifelong annuity, lifelong annuity with additional three year survivor pension or a temporary 20-year annuity.

There is an additional voluntary pension which is assumed to be defined contribution. The contribution rate is assumed to be 2.8%.

The voluntary private pension systems are not modelled in the base case.

## Variant careers

### *Early retirement*

It is possible to retire three years (increasing to five years, but no earlier than age 60) before the standard retirement ages subject to 25 years' coverage, increasing in line with general qualification conditions to 35 years. The total accrual factor (i.e. number of years of contributions multiplied by the accrual rate) is permanently reduced by 0.9% for each

90 days of the first 360 days of early retirement (3.6% per year), 1.2% for each 90 days between 361 and 720 days (4.8% per year) and 1.5% for each 90 days thereafter (6% per year). For a full-career worker, this is equivalent to a decrement in the pension level (rather than the replacement rate) for early retirement of 3.6/64.5 (1.5% times 43 years) = 5.6%.

### *Late retirement*

It is possible to defer claiming the pension beyond the normal pension age. The total accrual factor is increased by 1.5% for each 90-day period of deferral (6% per year). There is no additional pension accrual for deferred retirement. It is also possible to combine pension receipt while continuing to work. If claiming the full pension it will increase by 0.4% for each 360 days of work, whilst if claiming only half the old-age pension it will increase by 1.5% for every 180 days of work.

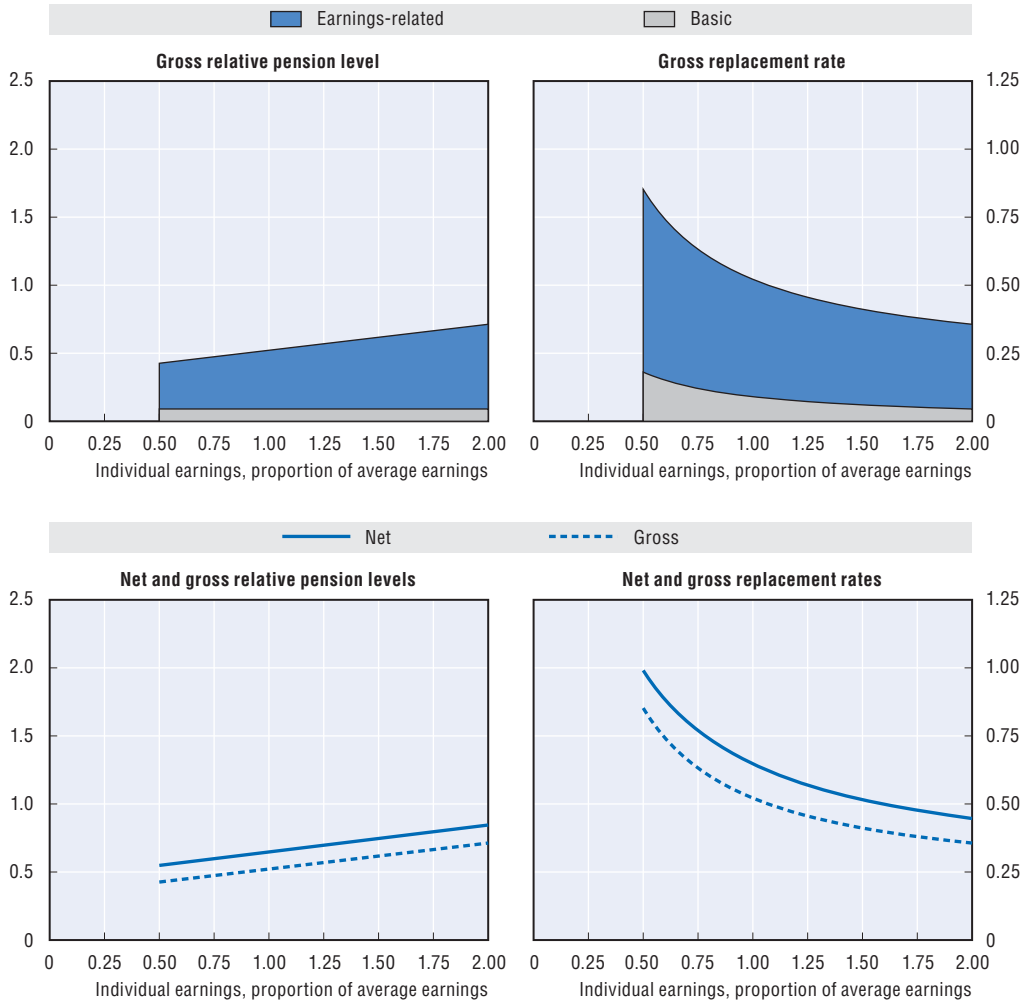
### *Childcare*

There are credits for labour-market absences during periods caring for children up to four years old (or older in case of severe disability). These years are then ignored in the calculation of earnings for pension purposes so that these absences do not reduce the assessment base. (This approach is used for all non-contributory periods).

### *Unemployment*

Periods on earnings-related unemployment insurance are credited in the pension system. The duration of unemployment insurance entitlement varies with age: five months up to age 50, eight months from 50 to 55 and 11 months for over 55s. In addition, up to three years spent unemployed without entitlement to unemployment insurance are also credited (but only one year of unemployment without benefits before the age of 55 is credited). The unemployment period used for the pension calculation is reduced to 80%, meaning that if an individual had five years' unemployment over the career, this would count as four years for pension purposes. If the unemployment period is in the decisive (reference) period for the average assessment base calculation, this period is excluded from the calculation and only the income from which the premium is paid is used.

## Pension modelling results: Czech Republic




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 48.5 | 42.6 | 47.4 | 52.2 | 61.7 | 71.3 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 61.0 | 54.8 | 59.8 | 64.7 | 74.6 | 84.5 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 59.9 | 85.2 | 63.2 | 52.2 | 41.2 | 35.6 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 73.4 | 99.1 | 77.0 | 64.7 | 51.6 | 44.7 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 8.5 | 12.1 | 9.0 | 7.4 | 5.8 | 5.1 |
| *(multiple of individual gross earnings)* | *10.4* | *14.7* | *10.9* | *9.0* | *7.1* | *6.2* |
| Net pension wealth | 8.3 | 12.0 | 8.7 | 7.1 | 5.5 | 4.6 |
| *(multiple of individual gross earnings)* | *10.0* | *14.6* | *10.6* | *8.6* | *6.6* | *5.6* |

StatLink http://dx.doi.org/10.1787/888932908611

# Denmark

**Denmark: Pension system in 2012**

There is a public basic scheme. A means-tested supplementary pension benefit is paid to the financially most disadvantaged pensioners. There is also a scheme based on individuals' contribution records, viz. the ATP. In addition, compulsory occupational schemes negotiated as part of collective agreements cover about 90% of full-time employees.

**Key indicators**

| | | Denmark | OECD |
|---|---|---|---|
| Average worker earnings (AW) | DKK | 392 500 | 241 600 |
| | USD | 69 400 | 42 700 |
| Public pension spending | % of GDP | 6.1 | 7.8 |
| Life expectancy | At birth | 79.3 | 79.9 |
| | At age 65 | 18.4 | 19.1 |
| Population over age 65 | % of working-age population | 29.9 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908630

## Qualifying conditions

The normal pension age is currently 65 but will be increased gradually to age 67 in the period 2019-22. A full public old-age pension requires 40 years' residence. Shorter periods qualify for a pro-rated benefit.

A full entitlement under the labour-market supplementary pension (ATP) requires a full career of contributions. The ATP scheme was established in 1964.

## Benefit calculation

### *Basic*

The full basic pension amount is DKK 5 713 per month or DKK 68 556 per year, equivalent to around 17% of average earnings. There is an individual earnings test which means that the basic pension will be reduced if earned income exceeds DKK 291 200 (approximately 75% of average earnings). The benefit is reduced at a rate of 30% against earned income above this level.

### *Targeted*

The full pension supplement is DKK 5 933 per month or DKK 71 196 per year for single persons and DKK 34 416 per year for couples. The actual amounts are tested against all sources of personal income (including ATP and occupational pensions) apart from public pension. If household personal income exceeds DKK 64 300, the targeted pension supplement is reduced by 30.9% of the excess income for single persons. The couples household income test is calculated for income above DKK 128 900 at a rate of 16%.

Connected with the public old-age pension, a supplementary pension benefit of DKK 11 200 is paid. The supplementary pension benefit is taxable and paid once a year. The benefit is means-tested and targeted to the poorest pensioners without significant cash savings (maximum cash savings are DKK 77 700).

The public old-age pension (the basic and pension supplement amounts plus the supplementary pension amount) is adjusted annually in line with average earnings. The adjustment is based on an index of wage increases during the two preceding years. If nominal earnings growth exceeds 2%, a maximum of 0.3% of the excess increase is allocated to a social spending reserve. Thus, indexation of pensions and other social benefits is based upon wage increases less any allocation to the reserve.

In 2008 a special tax deduction for worker-related earnings was introduced to defer full exit from labour market. From July 2008 each pensioner under the old-age pensions system can subtract work income up to DKK 30 000 yearly in calculation of basic and targeted pensions.

### *Occupational*

These schemes are fully funded defined-contribution schemes agreed between the social partners. Coverage of these schemes is almost universal. Contributions are typically between 9% and 17% of earnings. In 2006, the percentage for the majority of Danish workers was raised to 10.8% and this contribution rate is used for the modelling. Benefits are usually withdrawn as an annuity. The assumed interest rate is 1.5% for recent contributions or new schemes. However, the schemes operate on a "with-profit" basis, with pension increases depending on the return on assets and mortality experience of the fund. Many schemes also allow lump sum withdrawals. Since 2000, the annuity calculation must use unisex mortality tables.

### *Defined contribution*

ATP (the Danish Labour Market Supplementary Pension) is a statutory, fully funded, collective insurance based, defined-contribution scheme. ATP provides a lifelong pension from the age of 65 and a survivors' lump sum benefit for dependents in the case of the death of the individual member. ATP covers all wage earners and almost all recipients of social security benefits. ATP membership is voluntary for the self-employed. ATP covers almost the entire population and comes close to absolute universality.

Technically, the old-age pension of ATP is a guaranteed deferred annuity. The contribution is a fixed amount – as opposed to a percentage of income – varied only against the number of hours worked. A full-time employee will pay DKK 3 240 in 2012. Contributions are split, with two-thirds paid by the employer and one-third by the worker. The contribution schedule (the sum of employer and employee contribution) against hours worked is shown in the following table (for monthly paid workers):

| | | | | |
|---|---|---|---|---|
| Monthly hours | < 39 | 39-77 | 78-116 | > 116 |
| Contribution, DKK/month as from 2008 | 0 | 81 | 163 | 244 |
| Monthly hours | < 39 | 39-77 | 78-116 | > 116 |
| Contribution, DKK/month as from 2009 | 0 | 90 | 180 | 270 |

The contribution is adjusted if and when the social partners decide to do so as part of collective agreements. Over the past 20 years the contribution has been increased in steps more or less in line with average earnings. The modelling assumes that the contribution will increase in line with average earnings. An increase of approximately 10% has been agreed for 2009.

Until 2002, each DKK 396 of contributions earned DKK 100 of pension benefits paid from 65 regardless of the age at which they were made. This implied an average (across all accruing cohorts) interest rate of around 4.5%. From 2002, a nominal interest rate of 1.5% has been assumed. In the model, it is assumed that the ATP earns the same interest rate as assumed for funded defined-contribution schemes in other OECD countries.

The ATP scheme increases pensions in payment and pension rights alike if its' financial condition allows. This is done in the form of bonus allowances. Increases are guaranteed as are earned rights.

The modelling assumes full indexation to price inflation.

An entirely new ATP pension accrual system has been introduced as from 2008. The model is based on swap interest rates as opposed to a fixed nominal interest rate of e.g. 1.5%. The new pension accrual system will abandon the age-differentiated allocation to the guarantee and bonus pools and instead adopt a uniform division, with 80% of all contributions going to the guarantee pool and 20% going to the bonus pool.

## Variant careers

### *Late retirement*

It is possible to defer the public old-age pension for up to ten years. The increment for deferring pension for a year is the ratio of the period of deferral to average life expectancy at the time the pension is drawn. For example, population projections show life expectancy for a 68 year old to be 17.1 years. Thus, the increment for deferring for a year from age 67 would be 1/17.1 = 5.8%.

### *Childcare*

For periods on maternity/paternity/parental benefits, double the amount of contributions is paid for ATP. The beneficiary will pay one third of the contribution, with two-thirds being paid by the government/municipality. Maternity/paternity/parental benefits can be paid for up to 52 weeks in total. The four weeks prior to the birth and the first 14 weeks after the birth are reserved for the mother. The father is entitled to two weeks of leave during the first 14 weeks after the birth (paternity leave). The last 32 weeks can be divided or shared between the father and the mother (parental leave). Those out of the labour market caring for children beyond the maternity period typically switch to another scheme which also carries an ATP contribution. It is not common for young parents not to resume work when the leave period ends unless the child is e.g. ill or disabled in which cases there normally will be possibilities for drawing on some sort of public benefit with contribution to ATP. There are no credits or contributions for occupational pension schemes for periods out of paid work caring for children.

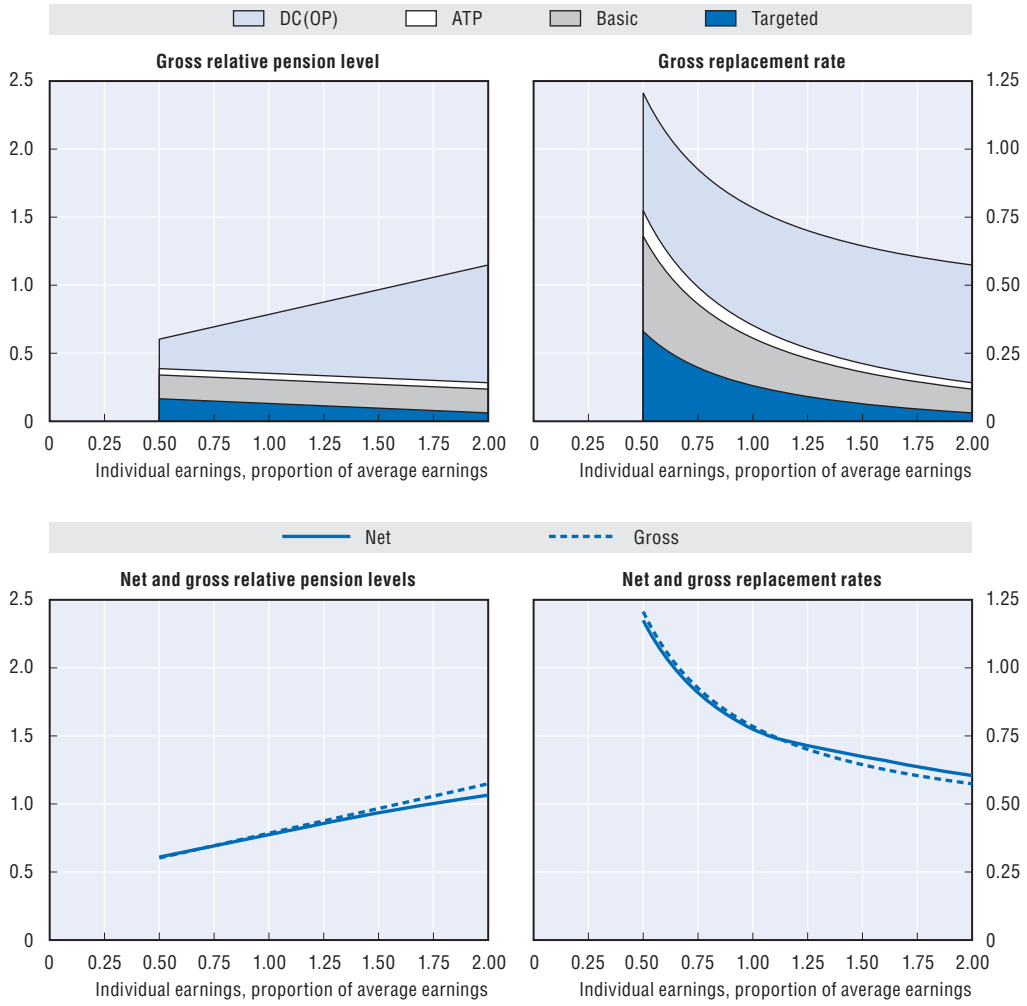
### *Unemployment*

During unemployment, the unemployment insurance (or municipality if not insured) take over the payment obligation of the employer, and ATP contributions are paid at the double rate when receiving benefit from the unemployment insurance (normal rate if social assistance benefit). The government pays two-thirds of the payment when unemployment insurance is exhausted and the individual is on unemployment/social assistance. There are no credits or contributions for occupational pension schemes for periods of unemployment.

There is also a voluntary early retirement programme linked with unemployment insurance, which pays benefits between ages 60 (gradually increasing to age 62 between 2014 and 2017) and until the normal pension age. To qualify, individuals must have been members of the unemployment insurance fund for at least 30 years and have paid voluntary early-retirement contributions during this period. They must also satisfy the conditions for entitlement to unemployment benefits in the event of unemployment at the time of transition to the voluntary early-retirement scheme. The benefit amount corresponds to the rate of unemployment benefits, subject to a limit of 91% of the maximum rate of unemployment benefit, equivalent to DKK 3 585 per week for full-time workers and DKK 2 390 for part-time workers (2012 figures). It is not possible to combine receipt of voluntary early-retirement benefits with the social pension.

People who defer the take up of voluntary early-retirement benefits for at least two years after they have become entitled to the benefit and are still working receive a higher rate of voluntary early-retirement benefit that is equivalent to the maximum rate of unemployment benefit (or DKK 3 940 per week in 2012). For three years' full-time work when an individual qualifies for voluntary early-retirement or the equivalent, a one-off lump-sum is paid up to a maximum of DKK 147 516 in 2012.

## Pension modelling results: Denmark




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 74.5 | 60.3 | 69.4 | 78.5 | 96.7 | 114.8 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 73.8 | 61.0 | 69.2 | 77.4 | 93.4 | 106.5 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 83.7 | 120.7 | 92.5 | 78.5 | 64.4 | 57.4 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 82.4 | 117.5 | 90.9 | 77.4 | 67.4 | 60.5 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 13.9 | 20.5 | 15.5 | 13.0 | 10.4 | 9.2 |
| *(multiple of individual gross earnings)* | *15.5* | *23.0* | *17.3* | *14.5* | *11.6* | *10.2* |
| Net pension wealth | 9.5 | 14.4 | 10.7 | 8.8 | 7.0 | 5.9 |
| *(multiple of individual gross earnings)* | *10.7* | *16.1* | *12.0* | *9.9* | *7.8* | *6.6* |

StatLink http://dx.doi.org/10.1787/888932908649

# Estonia

**Estonia: Pension system in 2012**

The system combines an earnings-related public scheme with mandatory contributions to funded pensions. There is also a flat-rate, basic element and a safety-net, national pension.

**Key indicators**

| | | Estonia | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 11 000 | 32 400 |
| | USD | 14 400 | 42 700 |
| Public pension spending | % of GDP | 7.9 | 7.8 |
| Life expectancy | At birth | 74.2 | 79.9 |
| | At age 65 | 16.3 | 19.1 |
| Population over age 65 | % of working-age population | 29.1 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908668

## Qualifying conditions

The pension eligibility age is 63 for men and will reach 63 for women from 2016. After that, retirement age will increase gradually to 65 in 2026 for both men and women. The qualification period is at least 15 years of pensionable service.

## Benefit calculation

### *Basic*

The flat-rate base amount was EUR 120.2 per month in April 2012 and is only payable along with an earnings-related pension.

### *Earnings-related*

Pension benefits are calculated on the amount of contributions paid on an individual's behalf relative to the average contribution paid. This is the annual pension-insurance coefficient of the person. The accumulation of those coefficients at retirement is multiplied by the value of a year of pensionable service to calculate pension entitlements. The value of a year of pensionable service was EUR 4.34 in July 2011 and EUR 4.52 in April 2012.

There is no ceiling to earnings for contribution or benefit purposes.

Pensions in payment are indexed to 20% consumer prices and 80% contribution revenues annually each April. This applies to the base amount, the value of a year of pensionable service in the earnings-related scheme and the value of the benefit under the targeted scheme.

### *Targeted*

A minimum retirement-income guarantee is provided by the national pension. This was EUR 134.1 in April 2012.

### *Defined contribution*

Individuals choosing the funded option must make an additional contribution of 2% of earnings into their pension fund. Full contributions resumed from 2012 after paying only half in 2011 and nothing between June 2009 and 2011. Four per cent of the total social security contribution is then also diverted to this fund. New labour-market entrants (that

is, those born in 1983 or after) are required to take the funded option. From 2011 only new entrants into the labour force can join the second pillar. Over 630 000 people have taken out individual accounts.

## Variant careers

### *Early retirement*

The public pension can be claimed up to three years before the standard age (i.e. from age 60 in the long term) provided that the individual retires and if the condition of a 15-year qualification period is met. The pension is reduced by 4.8% for each year that an individual retires early.

### *Late retirement*

The public pension can be deferred after the normal pension age. Deferring pension earns an increment of 10.8% per year. During the deferral period, the worker continues to contribute and earn extra entitlement. It is also possible to combine work and pension receipt. In this case, contributions are again paid and the pension is recalculated annually.

### *Childcare*

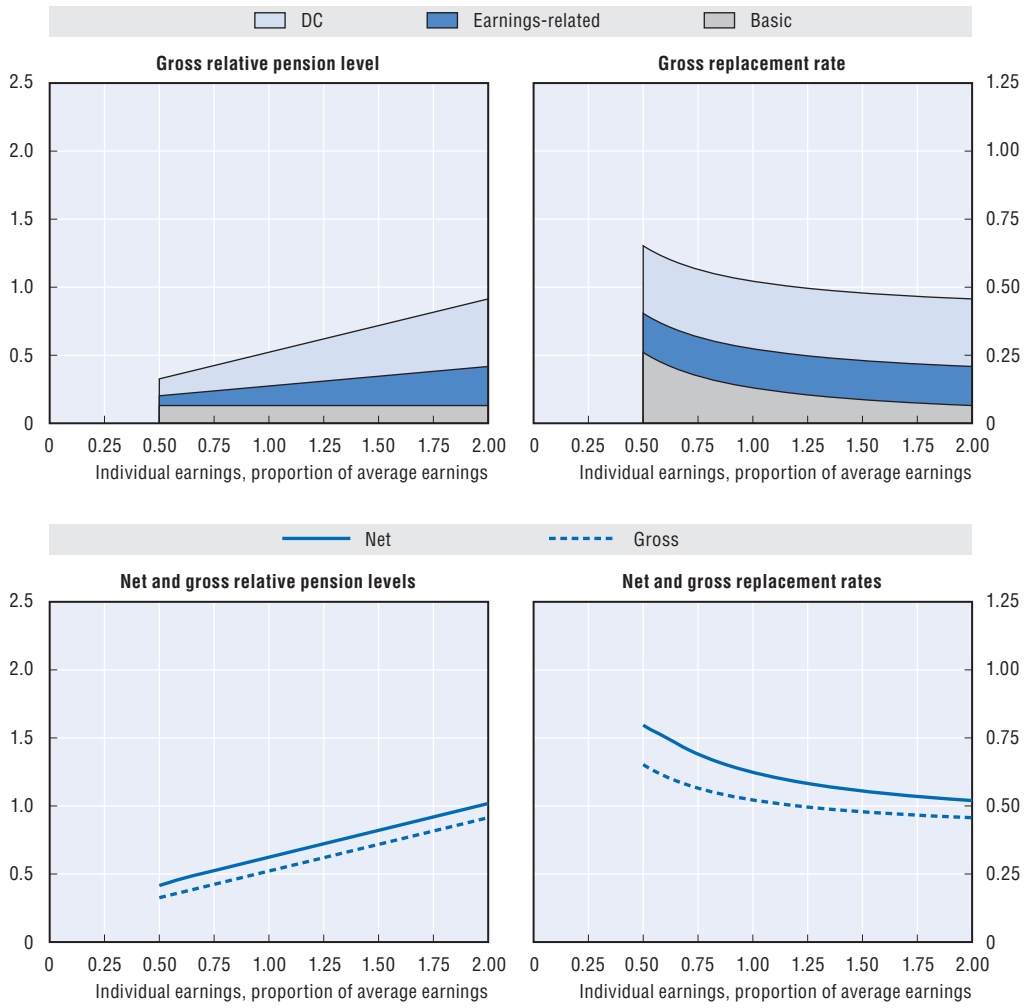
The state pays the employer contribution on behalf of recipients of childcare allowance up to three years per child. This is 20% on assumed earnings of minimum wage (EUR 290 in 2012). Individuals who receive parental benefits need to pay the contributions (contribution rate is 1%) to the defined-contribution scheme.

From 2013 the system will change. One parent will get monthly contributions equal to 4% of national average wage into the earnings-related pension scheme for a maximum duration of three years per child for children born after 2013. In addition parents will get up to three pensionable service years per child for children born before 2013. This rule depends on the exact date of birth, since some parents already have extra pensionable service year per child due to old rules.

### *Unemployment*

There are no credits for periods of unemployment.

## Pension modelling results: Estonia




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 44.8 | 32.6 | 42.4 | 52.2 | 71.8 | 91.4 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 54.9 | 41.5 | 52.5 | 62.4 | 82.1 | 101.8 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 55.3 | 65.2 | 56.5 | 52.2 | 47.9 | 45.7 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 67.1 | 79.7 | 69.0 | 62.4 | 55.5 | 52.0 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 8.4 | 10.1 | 8.7 | 8.0 | 7.2 | 6.9 |
| *(multiple of individual gross earnings)* | *10.7* | *12.8* | *11.0* | *10.0* | *9.1* | *8.7* |
| Net pension wealth | 8.1 | 10.1 | 8.4 | 7.5 | 6.5 | 6.0 |
| *(multiple of individual gross earnings)* | *10.3* | *12.8* | *10.7* | *9.4* | *8.2* | *7.6* |

StatLink http://dx.doi.org/10.1787/888932908687

# Finland

### Finland: Pension system in 2012

There is a basic state pension (national pension and guarantee pension), which is pension income-tested, and a range of statutory earnings-related schemes, with very similar rules for different groups. Some of the schemes for private-sector employees are partially pre-funded while the public-sector schemes are pay-as-you-go financed (with buffer funds to even out future increases in pension contributions). Pre-funding has no direct impact on the benefit level.

### Key indicators

| | | Finland | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 41 500 | 32 400 |
| | USD | 54 700 | 42 700 |
| Public pension spending | % of GDP | 9.9 | 7.8 |
| Life expectancy | At birth | 80.4 | 79.9 |
| | At age 65 | 19.6 | 19.1 |
| Population over age 65 | % of working-age population | 30.9 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908706

## Qualifying conditions

The national pension is subject to a residency test (but no actual contribution requirements), withdrawn against pension income from the earnings-related schemes. The national old-age pension is payable from age 65. The full old-age national pension benefit is payable with 40 years residence as an adult, with *pro rata* adjustments for shorter periods of residence. It is possible to retire to early old-age national pension between ages of 62 and 65. The earliest eligibility age to early old-age pension is 63 for those born in 1952 or later.

There are no waiting periods or euro limits to obtain a right to earnings-related pension, even though there are minimum earning levels for pension insurance. Pension accrues on the basis of every earned euro of the insured person. Pension accrues after the age of 18 to the age of 68. Old-age pension is payable from age 63. The possibility to take out early old-age pension at 62 is possible for persons born before 1952.

## Benefit calculation

### *Earnings-related*

Among different earnings-related schemes, the scheme for private sector employees (TyEL) is covered here. This scheme covers over 50% of employed people in Finland. The rules of other earnings-related pension schemes are very similar to TyEL.

From 2005, the accrual rate is 1.5% of pensionable earnings at ages 18-52, 1.9% at ages 53-62 and 4.5% at ages 63-67.

Pensionable earnings are, from 2005, based on average earnings of the whole career. However, as pension accrues differently in different age groups (see above), the earnings received by older workers have more weight in the total pension. When the pensionable earnings are calculated the amount corresponding to employee's pension contribution is deducted from the earnings. In 2012, the employee's pension contribution was 5.15% for employees under 53 years old and 6.5% for employees 53 years old or older. Note, however, that the replacement rates are shown relative to total gross earnings (for comparison with other countries) rather than this measure of pensionable earnings.

Earlier years' earnings are re-valued in line with a mix of economy-wide earnings and prices. From 2005, wage growth has an 80% weight and price inflation, 20%. At the baseline assumptions for prices and wages growth, this policy reduces the value of the pension to 91.5% compared with a policy of full earnings valorisation of earlier years' pay. After retirement, the earnings-related pension is uprated using a formula of 20% of earnings inflation and 80% of price inflation.

From 2010 new earnings-related pensions have been reduced according to increases in life expectancy from 2009. (The calculations use lagged mortality data: for 2012, for example, the data are the average for 2006-10 compared to base year which is based on data for 2003-07.) Between 2012 and 2050, the Statistics Finland mortality projections imply an increase in life expectancy at age 63 from 21.6 years to 26.8 (calculated from unisex mortality rates). The adjustment takes the form of an annuity calculation using a discount rate of 2% per year. The adjustment expected in the year 2050, based on the mortality projections, is to reduce benefits to 81.7% of their value under the pre-reform rules. The life expectancy coefficient is calculated for each cohort at the age of 62.

There is no contribution floor and no ceiling to contributions or pensionable earnings, which means there is no pension ceiling either. However, there are minimum earnings limit for pension insurance. Voluntary contributions are possible also for earnings below these limits.

The Finnish Centre for Pensions co-ordinates the schemes, resulting in a single pension payment even for people who have been members of different earnings-related pension schemes.

### *Minimum (national pension and guarantee pension)*

The full basic monthly benefit for a single pensioner in 2012 was EUR 608.63 (around a fifth of average earnings). The national pension is reduced by 50% of the difference between other pension income and a small disregard which in 2012 was EUR 644.40 per year. No pension is payable once other pension income from Finland and other countries exceeds EUR 1 257.96 or EUR 1 120.46 per month.

The guarantee pension took effect in 2011. This pension guarantees a minimum pension level of EUR 713.73 per month to Finnish pensioners should the national and earnings-related pension together remain under the mentioned level.

From 2005 on, earnings-related (employment) pension accrued after the age of 63 will be disregarded when national pension entitlement is calculated.

The basic pension benefit, the parameters of the income test and pension payable are uprated annually in line with prices. In practice there have been additional increases based on separate decisions.

## Variant careers

For non-standard careers a salary base is used when calculating pension for unpaid periods. If the pension accrual is based on the salary on which the benefit is based there is no deduction of pension contribution (see Benefit calculation/earnings-related above). Usually the corresponding amount has already been deducted when the wage for the calculation of the benefit has been calculated.

### *Early retirement*

Early national old-age pension is available from the beginning of the month following one's 63rd birthday (62 for those born before 1952). Its amount is permanently reduced (in

comparison with the ordinary old-age pension) by 0.4% for each month the pension is to be paid before the normal pensionable age of 65 years. The pension will not rise to its regular level when the recipient reaches the age of 65. These rules operate from 2005.

Early retirement is possible at age 62 under the earnings-related scheme only for persons born before 1952, subject to a 0.6% benefit reduction per month of early retirement until the age of 63. After the age of 63 there is no reduction in pension. However, there is more rapid accrual of earnings-related benefits after this age (see above).

### *Late retirement*

The national pension can be deferred after the age of 65 and the pension is then increased by 0.6% for each month by which retirement is postponed.

From 2005 onwards, the increment for late retirement is reduced to 0.4% for each month (4.8% per year) in the earnings-related scheme after age 68. There is no adjustment between ages 63 and 68 because of the accelerated accrual of pension at those ages.

It is possible to combine receipt of pension and earnings from work. From 2005 after taking the old-age pension, earnings accrue additional pension and the accrual rate is 1.5% per year until the age of 68.

### *Childcare*

From 2005 onwards, during periods of maternity, paternity and parent's allowance, the pension accrues based on 1.17 times the salary, on which the family benefit is based. The maximum paid parental leave period is 11 months.

For unpaid periods of childcare by either parent during which child home-care allowance is claimed, pensions accrue as if the person received a salary of EUR 675.98 per month (2012), which is around a fifth of average earnings. This is the case until the child reaches the age of three.

People on parental leave are not liable for pension contributions. The pension accruing for paid parental leave is paid by the earnings-related pension system. The state finances the pension for periods of unpaid childcare leave.

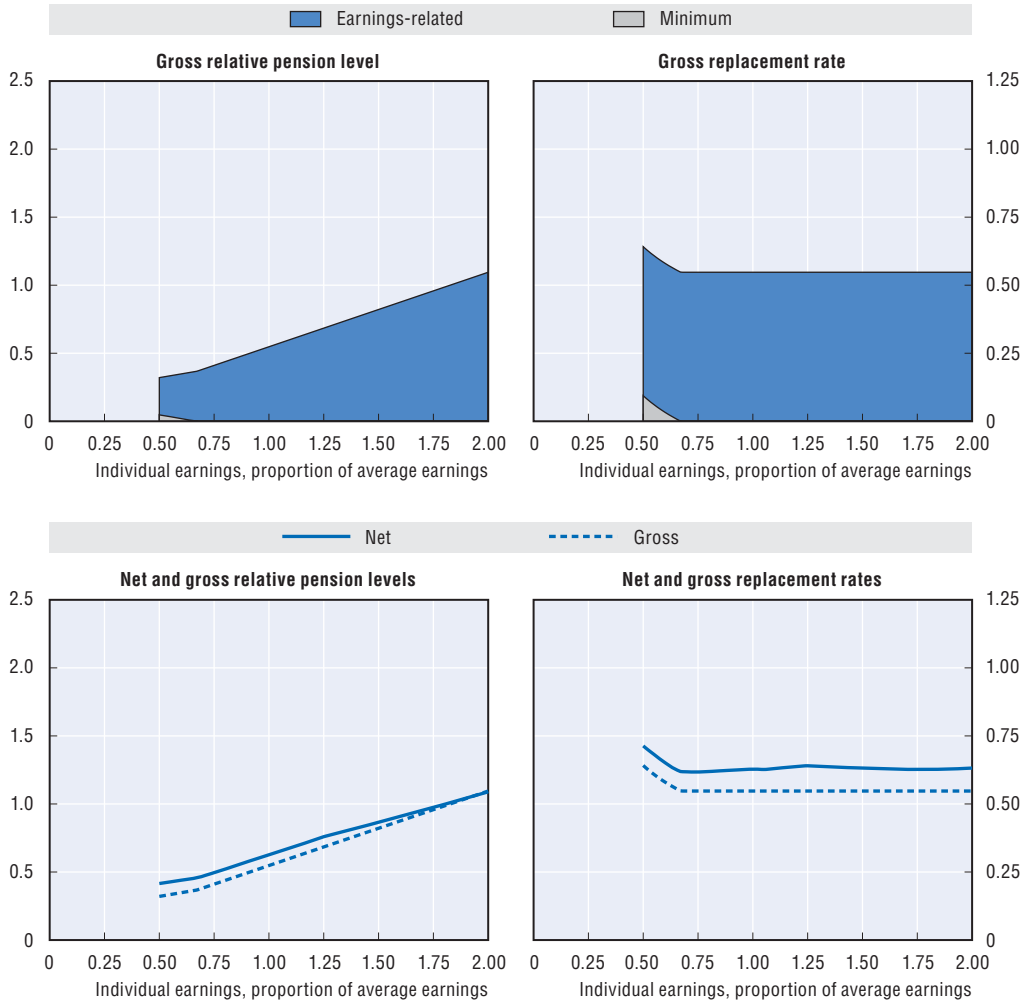
The part of the pension that is based on unpaid periods of child care (and studies) is not included in the income test of the national pension.

### *Unemployment*

Following the 2005 reform, earnings-related unemployment benefits accrue pension rights based on the proportion of the salary (75%) on which the benefit is based. Only unemployment benefit received before the age of 63 generate a pension credit.

Unemployment-insurance benefits are paid for 500 days (around 23 months, with average 21.5 days per month). If an unemployed person reaches age 59 before the 500 days have accrued (age 60 for persons born in 1955 or after), earnings-related unemployment can be paid until age 65. Individuals receiving allowance after 500 days are entitled to choose claiming old-age pension from age 63 (62 possible for persons born before 1958). In such cases, there is no reduction for early retirement and earnings-related unemployment benefits cease. After the period with earnings-related unemployment benefits, flat-rate or income-tested (under various conditions) unemployment assistance could be claimed but the period under these benefits are not credited for the pension entitlement.

## Pension modelling results: Finland




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 49.3 | 32.1 | 41.1 | 54.8 | 82.1 | 109.5 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 57.5 | 41.5 | 49.5 | 62.8 | 86.6 | 108.9 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 54.8 | 64.1 | 54.8 | 54.8 | 54.8 | 54.8 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 62.4 | 71.3 | 61.7 | 62.8 | 63.2 | 63.2 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 9.5 | 11.1 | 9.5 | 9.5 | 9.5 | 9.5 |
| *(multiple of individual gross earnings)* | *11.2* | *13.1* | *11.2* | *11.2* | *11.2* | *11.2* |
| Net pension wealth | 7.7 | 10.0 | 8.0 | 7.6 | 7.0 | 6.6 |
| *(multiple of individual gross earnings)* | *9.1* | *11.8* | *9.4* | *9.0* | *8.3* | *7.8* |

StatLink http://dx.doi.org/10.1787/888932908725

# France

### France: Pension system in 2012

In the private sector, the pension system has two mandatory tiers: an earnings-related public pension and occupational schemes, based on a points system. The public scheme also has a without means test minimum contributory pension (*minimum contributif*). In addition there is a targeted minimum income for the elderly (*minimum vieillesse*).

### Key indicators

| | | France | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 36 700 | 32 400 |
| | USD | 48 400 | 42 700 |
| Public pension spending | % of GDP | 13.7 | 7.8 |
| Life expectancy | At birth | 81.6 | 79.9 |
| | At age 65 | 20.8 | 19.1 |
| Population over age 65 | % of working-age population | 30.0 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908744

## Qualifying conditions

A full rate public pension requires either both a minimum contributory record (increasing from 40 years to 41.5 years) and to have reached the minimum legal pension age (increasing from 60 to 62 years) or to have reached the age of the full rate pension (increasing from 65 to 67 years). The minimum contributory period is set by law to increase in line with increases in life expectancy.

The 2010 reform plans a gradual increase of the minimum pension age from 60 to 62 by 2017, which depends of the year of birth and of the age of the full rate pension from 65 to 67, between 2016 and 2022. The minimum contributory pension (*minimum contributif*) compensates the pension's level when the retiree reaches the legal conditions of the full rate pension.

In the modelling, the main assumptions are an entry in the labour market occurs at 20 in 2012; a contribution period of 47 years is assumed. These assumptions correspond to a pension age of 67 in 2059 (five more years that the retirement age of 62).

## Benefit calculation

### *Earnings-related*

The public pension targets a replacement rate of 50% after a full career (which is increasing as described above). For each missing quarter, the pension is reduced by two means:

- The pension rate is reduced by 1.25% (or by 5% for each missing year), these rates (décote) concern people born from 1953.
- In addition, the pension amount is reduced *pro rata* (0.61% – 1/N – for one missing quarter – N being the number of quarters for a full career).

The earnings measure is based on a number of best years of earnings, valorised in line with price inflation. From 2008 onwards, pay is averaged over 25 years.

Because of the threshold in the number of years included in the earnings measure for calculating pension benefits and the policy of valorisation in line with prices, the replacement rate in the French public system is sensitive to the time profile of earnings throughout the worker's career. Given the baseline assumption of continuous real earnings growth of 2% over a worker's career, combined with the fact that the OECD calculations use the lifetime revalued average earnings as reference salary, the replacement rates calculated are lower than those calculated using the observed salary progression in France, where increases are actually concentrated primarily in the first half of the career.

There is a ceiling on eligible earnings, which in 2012 was EUR 36 372. This is approximately equal to average earnings on the OECD measure. Benefits in payment are indexed to prices.

### *Contributory minimum pension ("minimum contributif")*

There is an untargeted minimum pension in the "regime general" and in related schemes – regardless of the amount of pension received from other basic or supplementary schemes. To be eligible for this benefit, 41.5 years of contributions, or being aged 65 and over (planned to be extended to 67 from 2023) are needed (the minimum pension is pro-rated for shorter periods). In 2012, the annual amount was EUR 7 451.10. This amount is increased to EUR 8 142.01 when the pensioner has contributed at least 120 quarters. This is worth 22% of average earnings on the OECD measure. The value of the minimum pension is indexed to prices.

### *Mandatory occupational*

The ARRCO scheme covers private and agricultural sectors employees ("non-cadres and cadres"). In addition, different rules apply to "cadres" (those in professional or managerial positions) under the AGIRC programme; the following regulations apply to non-cadres.

Although actual contributions are higher, benefits are only earned on 6% of earnings under the ceiling of the public scheme. Between one and three times the public-scheme ceiling, benefits are earned on 16% of pay. Thus, the ARRCO ceiling is three times that of the public pension scheme: EUR 109 116 (the ceiling for the AGIRC scheme for cadres is eight times that of the public pension scheme).

Each year, the number of points earned is the value of contributions divided by the cost of a pension point. At retirement, the accumulated number of points is converted into a pension benefit by multiplying them by the value of a pension point. The pension-point value was EUR 1.2135 from April 2011 to April 2012 and EUR 1.2414 from April 2012 to April 2013, giving an annual figure for calendar 2012 of EUR 1.2344. The pension-point cost was EUR 15.0528 for calendar year 2012.

Uprating of the cost and value of pension points is agreed between the social partners. The current agreement, valid until 2012, is to increase the cost of pension points in line with earnings and the value of pension points in line with at least prices. The modelling assumes that this differential uprating between the cost and value of a point will continue. Again, this policy of effective valorisation of earlier years' entitlements to prices results in lower benefits than valorisation to earnings.

It is important to note that the uprating policy for these two parameters affects both the path of pensions in payment (here termed "indexation") and the change in value of pension entitlements between the time they were earned and the time they are withdrawn (akin to the process of "valorisation" in earnings-related schemes).

### *Targeted minimum pension (Allocation de solidarité aux personnes âgées, APSA)*

There is a means tested minimum income benefit for people reaching pension age worth EUR 8 907.34 a year for a single person (EUR 14 181.30 for a couple) from 1 April 2011 to 1 April 2012 (respectively EUR 9 325.98 and EUR 14 479.10 from 1 April 2012 to 1 April 2013). This benefit, equivalent to 24% of average earnings on the OECD measure, is adjusted in line with prices. Full-career workers will rarely be eligible for the old-age assistance programme, since the mandatory occupational pension supplements the public pension benefit.

## Variant careers

### *Early retirement*

Early retirement, namely before the minimum legal retirement age, is allowed in the public pension scheme, for people with full contributory periods. Retirement is possible at age 56 (and eight months) for people born in 1952 who have entered the labour force before 16 and have made at least 43.5 years of effective contributions; or at 59 (and four months) for people who have entered the labour force before age 16 and have validated at least 43.5 years (with at least 42.5 years of effective contributions); or at age 60 for people who have entered the labour force before age 20 and have validated at least 43.5 years (with at least 41.5 years of effective contributions). As the models assume entry at age 20 the early retirement age is 62.

Under the occupational pension, early retirement is also possible, often subject to reductions related either to age of retirement or years of contributions or both. Retirement is possible at age 60 with a full contributory record without a reduction. With less than the full contributory record, the pension is adjusted as shown in the table with the adjustment being that which is more favourable: relating to the retirement age or to the number of missing years. For retirement five years before the full pension retirement age, for example, the pension is reduced to 78% of the full value. However, if the individual retires missing only one year of contributions, the reduction is only to 96%.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Distance to full pension age (increasing from 65 to 67) | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Missing years to full contributory record | | | | | | 5 | 4 | 3 | 2 | 1 |
| Coefficient | 0.43 | 0.50 | 0.57 | 0.64 | 0.71 | 0.78 | 0.83 | 0.88 | 0.92 | 0.96 |

### *Late retirement*

When people work after age the minimum legal retirement age and have reached the qualifying contributory conditions for a full pension (which is 41 years' coverage in 2012), each additional year increases the benefit under the public scheme by 5%. For the period of deferred retirement, people continue to accumulate ARRCO points.

Work and pension receipt can be combined without limit when people have full rate pensions. If not, it is subject to some limits.

### *Childcare*

For children born or adopted since 2010, a credit of four quarters is given to the mother for each of her children in the public scheme, whether she continued to work or not during that time. Besides, another credit is given to one of the biologic parents for four years (a quarter per year of education). Both parents can receive a 10% increase in final pension payout in the public plan if they have raised three or more children for at least nine years before age 16.

Periods out-of-work or working part time caring for a child are also credited in the public and occupational pension schemes (Assurance Vieillesse des Parents au Foyer – AVPF). Credits are awarded as if the parent had earned the minimum wage. The three-year maximum applies to the first two children: credited periods are longer for subsequent children (qualifying conditions include entitlement to family benefits and earnings conditions). This credit can be cumulated with the two years credited per child in the public scheme.

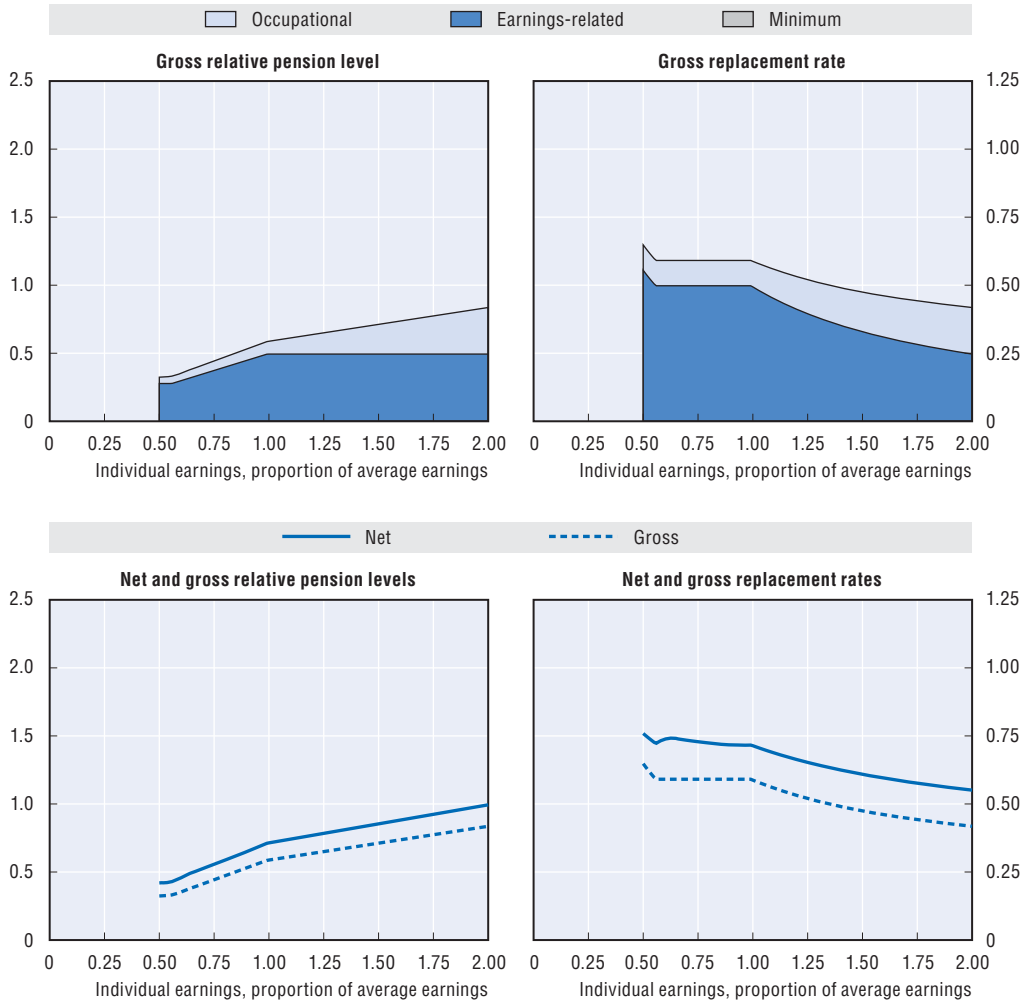
### *Unemployment*

Each period of involuntary unemployment is credited towards the state pension, in a limit of one year when people are under 55 years old (five years at 55 and more), when unemployment benefits are not received. When unemployment benefits are received each completed 50 days attributes one quarter of contributions, with a maximum of four quarters per year. These periods do not enter into the calculation of the average reference wage (salaire annuel moyen) based on the 25 best years of earnings and therefore not into the pension calculation.

There is also a credit for the first period of unemployment without unemployment payments to a maximum of one year (one year and a half for unemployment periods at the beginning of the working life). Subsequent periods of involuntary unemployment without unemployment payments are credited to a maximum of one year only if this follows a period of unemployment with unemployment benefits. There is no credit for periods in receipt of social assistance (*revenu minimum d'insertion*).

In the mandatory occupational plans, periods of unemployment enable accumulation of pension points if the person had contributed to one of these plans before the beginning of unemployment. These points are calculated according to a "daily reference wage" (*salaire journalier de référence*) which is the last wage (on a year basis) divided by 365.

## Pension modelling results: France




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 47.9 | 32.4 | 44.3 | 58.8 | 71.2 | 83.6 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 59.4 | 42.0 | 55.7 | 71.4 | 85.4 | 99.4 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 59.1 | 64.8 | 59.1 | 58.8 | 47.5 | 41.8 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 72.3 | 75.9 | 72.9 | 71.4 | 60.9 | 55.1 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 9.6 | 10.5 | 9.6 | 9.5 | 7.7 | 6.8 |
| *(multiple of individual gross earnings)* | *11.4* | *12.5* | *11.4* | *11.4* | *9.2* | *8.1* |
| Net pension wealth | 8.5 | 9.7 | 8.6 | 8.3 | 6.6 | 5.8 |
| *(multiple of individual gross earnings)* | *10.2* | *11.6* | *10.3* | *9.9* | *7.9* | *6.9* |

StatLink http://dx.doi.org/10.1787/888932908763

# Germany

### Germany: Pension system in 2012

The statutory public pension system has a single tier and is an earnings-related PAYG system. Calculation of pensions is based on pension points. If individual old-age provision from all income sources is not sufficient, additional means-tested benefits can be claimed from social assistance.

### Key indicators

| | | Germany | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 44 800 | 32 400 |
| | USD | 59 100 | 42 700 |
| Public pension spending | % of GDP | 11.3 | 7.8 |
| Life expectancy | At birth | 80.6 | 79.9 |
| | At age 65 | 19.3 | 19.1 |
| Population over age 65 | % of working-age population | 34.8 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908782

## Qualifying conditions

At present the regular old-age pension is payable from age 65 and one month with at least five years' contributions. Less than five years' contributions earn no benefit. Commencing with the year 2012 the statutory retirement age will be gradually increased to 67 during the next two decades. For those born 1964 or later, the statutory retirement age will be 67.

## Benefit calculation

### *Earnings-related*

A year's contribution at the average earnings of contributors earns one pension point. The relevant average earning is approximately identical to the National Accounts average earnings. Contributions based on lower or higher income earn proportionately less or more pension points. Contributions are levied on annual earnings up to EUR 67 200 in 2012. The ceiling is equivalent to 207% of the relevant average earnings. The relevant earnings were EUR 32 446 in 2012. This is only equivalent to 72% of the OECD average earnings measure.

At retirement, the pension points of every year are summed up. The sum of pension points is then multiplied by a "pension-point value", which was EUR 336.84 in 2012. The pension point value is valid for newly retired and already retired pensioners. The pension point value is adjusted annually in relation to the gross wage growth as a starting point. In addition, the "contribution factor" accounts for changes of the contribution rate to the statutory pension scheme and to the subsidised (voluntary) private pension schemes. An increase of contribution rates will reduce the adjustment of the pension point value. The "sustainability factor", that measures the change of the number of standardised contributors in relation to the number of standardised pensioners, links the adjustment of the pension point value to the changes in the statutory pension scheme's dependency ratio, the ratio of pensioners to contributors . These two factors in the indexation formula can alter the size of adjustment, resulting in an expected 14% lower growth of the pension point value in relation to gross wages per capita in the long run. Furthermore, the increase of the contribution rate will be limited from currently 19.6% to 22%.

The relevant average earnings for calculating the pension points as well as the pension-point value are slightly different in the new Länder. This difference is assumed to disappear in the long run as wages will align.

### *Social assistance*

If individual old-age provision from all income sources is not sufficient, additional means-tested benefits can be claimed from social assistance. Those benefits refer to the individual primary needs. Means-tested provision results as the difference between the individual need and the weighted household equivalence income (including pension benefits). The average of these needs amounts to EUR 8 484 per capita in 2011 for all, who received means-tested old-age provision. This is equivalent to 28% of relevant average gross earnings (EUR 30 300 in 2011) and 19% of OECD average earnings (EUR 43 700 in 2011).

### *Voluntary private pensions*

There is an additional voluntary and private pension which can be provided by banks, insurance companies or investment funds (so-called Riester pension). Riester pension is tax-promoted and subsidised by government. The modelling assumes a contribution rate of 4%.

## Variant careers

### *Early retirement*

Early retirement is possible at the age of 63 for persons with an insurance record of at least 35 years. However, the pension benefit will be reduced by a permanent deduction, which increases in line with the rise of the statutory retirement age. If retiring before the age of 67, benefits are permanently reduced by 3.6% for each year pensioners fall short of the statutory retirement age. In addition, retiring at age 63 compared to someone retiring at 67, pension entitlements are significantly lower due to working four years less and not earning additional pension points. Besides this, old-age pension for severely handicapped people can be claimed. People with an assessed degree of disability of at least 50% and at least 35 years of contribution period can presently retire at age 60 with a maximum reduction of 10.8%. The retirement age of this pension will be gradually increased from age 60 to 62 years.

An exception to the increase of the statutory retirement age to 67 is as follows: People can still retire at the age 65 without reductions if they complete 45 years of insured employment, child care or from child-raising periods up to age 10.

### *Late retirement*

Postponing the retirement age will yield a higher pension accrual of 0.5% for each month worked after the statutory retirement age.

### *Childcare*

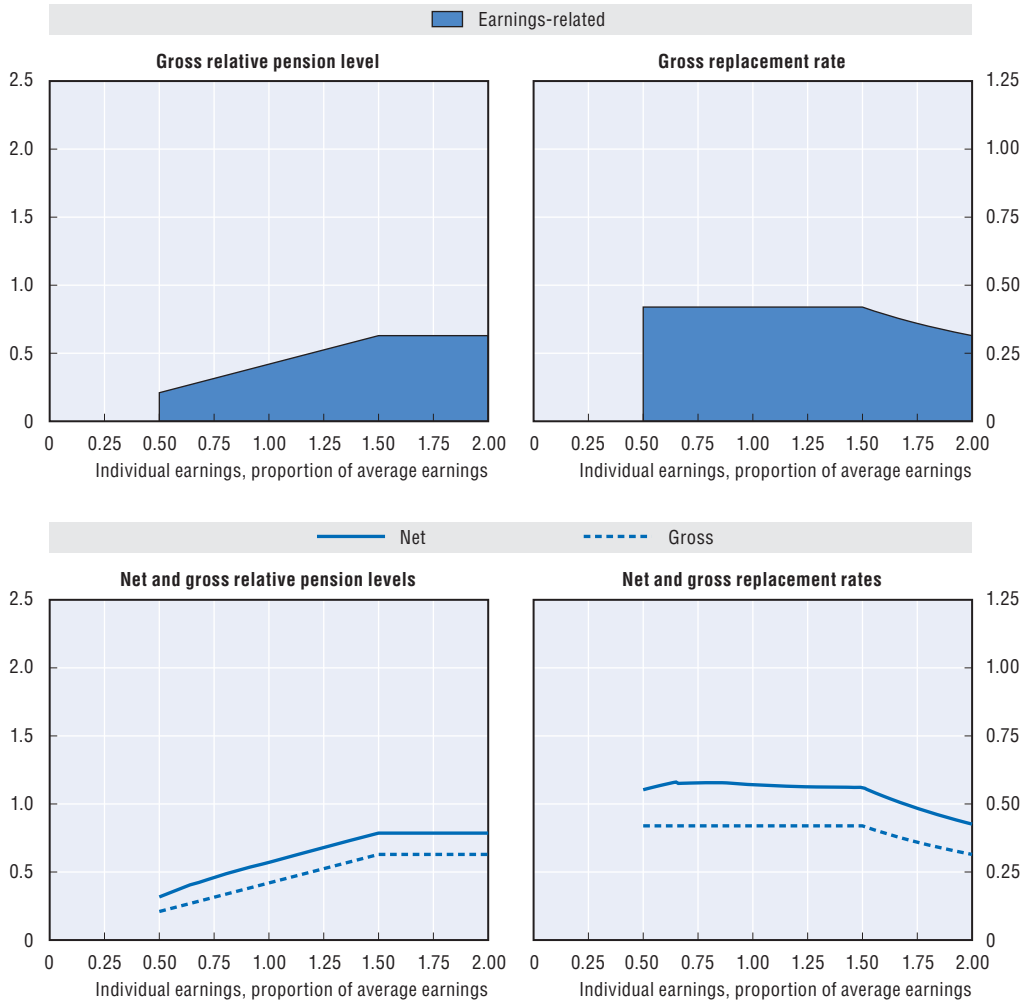
For children born in 1992 or later one parent is credited for a period of three years with one pension point per year (equal to contributions based on average earnings). For children born before 1992 only one pension point is credited. These entitlements can be taken by either an employed or non-employed parent or can be shared between parents. There are also credits for periods caring for children up to age of 10. These years count towards the

number of years needed to qualify for a pension (Berücksichtigungszeit) and in addition have an effect on the pension entitlement. If people work while their children are under 10 or if at least two children under 10 are parented, they receive a bonus of up to 0.33 pension points per year. However, this cannot result in a total accrual exceeding one pension point per year. Those child-related benefits in the public pension system are tax-financed.

### *Unemployment*

The unemployment insurance contributes to the pension scheme on behalf of the unemployed. During the first period of unemployment benefits (*Arbeitslosengeld I*), contributions are paid on the basis of 80% of previous gross earnings. The first period lasts between 6 and 24 months depending both on age and contribution years. Thereafter, the unemployed person moves to the second type of unemployment benefit (*Arbeitslosengeld II*), which is means-tested and paid at a lower rate. For this period, the unemployment insurance provides no financial contributions to the pension scheme.

## Pension modelling results: Germany




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 36.5 | 21.0 | 31.5 | 42.0 | 62.9 | 62.9 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 51.8 | 31.7 | 45.9 | 57.1 | 78.6 | 78.6 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 31.5 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 57.8 | 55.2 | 57.7 | 57.1 | 56.1 | 42.6 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 6.2 |
| *(multiple of individual gross earnings)* | *9.6* | *9.6* | *9.6* | *9.6* | *9.6* | *7.2* |
| Net pension wealth | 6.9 | 7.4 | 7.1 | 6.7 | 6.1 | 4.6 |
| *(multiple of individual gross earnings)* | *8.1* | *8.6* | *8.4* | *7.8* | *7.1* | *5.4* |

StatLink http://dx.doi.org/10.1787/888932908801

# Greece

**Greece: Pension system in 2012**

Pensions are provided through an earnings-related public scheme plus a series of minimum pensions/social safety nets.

**Key indicators**

| | | Greece | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 20 100 | 32 400 |
| | USD | 26 500 | 42 700 |
| Public pension spending | % of GDP | 13.0 | 7.8 |
| Life expectancy | At birth | 80.7 | 79.9 |
| | At age 65 | 19.2 | 19.1 |
| Population over age 65 | % of working-age population | 31.7 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908820

## Qualifying conditions

From 1 January 2013 and onwards the normal pension age is 67 for both men and women. A pension from this age requires a minimum of 4 500 days of contributions (equivalent to 15 years). Workers with a contribution record of 12 000 working days (40 years) can retire on a full benefit on condition that they are 62. There are concessions for people who work in arduous or unhygienic occupations and for women with dependant or disabled children. The minimum old-age pension requires 15 years' contributions.

## Benefit calculation

### *Earnings-related*

The earnings-related pension accrual rate (from 1 January 2015) increases from 0.80% per year (for 300 days of insurance to 4 500 days of insurance) up to 1.5% per year (for wages from 11 701 days of insurance to 15 000 days of insurance).

As of 1 January 2013 the payments of the Christmas, Easter and Summer bonuses (the so-called 13th and 14th pension) have ceased to exist.

There is a maximum old-age pension for all insured persons from 1 January 1993 and onwards. The maximum gross pension was equal to EUR 2 773.40 in 2011.

From 1 January 2014 and onwards pensions are indexed by half the annual change of GDP growth and half the changes in Consumer's Price Index (CPI), with the annual change of CPI being the ceiling for adjustment.

### *Basic pension*

From 1 January 2015 the basic pension will be granted by all Social Security Organisations provided that the beneficiaries are at least 67 years old and have permanent residency in Greece for at least a minimum of 15 years and can fulfill certain criteria based on their previous income.

## Variant careers

### *Early retirement*

Early retirement is possible. This usually entails a penalty (1/200 per month) with the exemption of certain cases including, very long careers (40 years – age 62) and employment at arduous and unhealthy occupations, where a full old-age pension is paid under favourable prerequisites.

| Number of years | Eligibility age | Conditions |
|---|---|---|
| 15 | 67 | No reduction |
| 15 | 62 | With reduction (1/200) |
| 40 | 62 | No reduction |

### *Late retirement*

Late retirement is possible and no compulsory retirement exists with the exception of employees in public sector. It is also possible to combine income from work and pension withdrawal provided that the pensioner is no younger than 55 years of age. In that case the part of pension income that exceeds EUR 1 007.00 is reduced by 70% but there is an increment of six wages for dependent children.

### *Childcare*

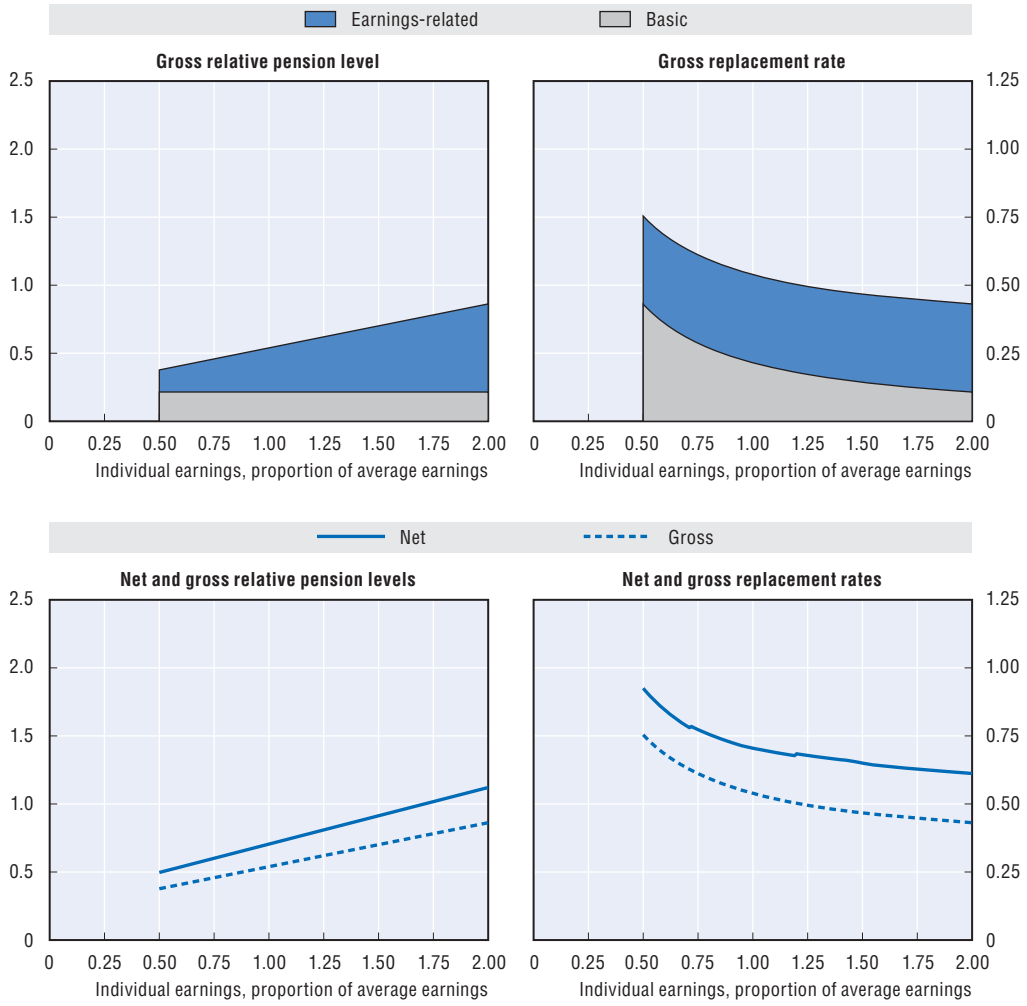
For mothers entitled to an old-age pension with the retirement conditions that applied until 31 December 2010, there is a credit towards the pension qualifying conditions of one year for the first child (300 days of insurance) and two years (600 days of insurance) for each subsequent child up to a maximum of three children, for children born after 1 January 2000.

For insured persons entitled to an old-age pension with the new retirement conditions that apply from 1 January 2011 and onwards, either parent may use fictitious insurance period due to the fact that they raised children (one year or 300 days for the first child, two years for the second and each subsequent child with a maximum of five years all together) in order to fulfil the required conditions for entitlement to a pension. From 2013, the maximum on any fictitious insurance period is six years.

### *Unemployment*

For insured persons entitled to an old-age pension based on the stricter requirements that came into force from 1 January 2011 and onwards any period of (voluntary or involuntary) unemployment can be used as fictitious insurance period, towards the fulfilment of the minimum prerequisites for retirement. Note that subsidised unemployment cannot exceed one year or 300 days during lifetime and that the maximum of six years of fictitious period from 2013 applies. All the fictitious periods taken into account in order to qualify for pension cannot exceed seven years, from 2014 onwards.

## Pension modelling results: Greece




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 43.5 | 37.7 | 45.8 | 53.9 | 70.1 | 86.2 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 57.2 | 49.7 | 60.1 | 70.5 | 91.3 | 112.1 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 64.0 | 75.4 | 61.1 | 53.9 | 46.7 | 43.1 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 79.6 | 92.5 | 77.3 | 70.5 | 65.0 | 61.2 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 10.2 | 12.1 | 9.8 | 8.6 | 7.5 | 6.9 |
| *(multiple of individual gross earnings)* | *11.5* | *13.5* | *10.9* | *9.7* | *8.4* | *7.7* |
| Net pension wealth | 10.0 | 11.9 | 9.6 | 8.4 | 7.3 | 6.7 |
| *(multiple of individual gross earnings)* | *11.2* | *13.3* | *10.7* | *9.4* | *8.1* | *7.5* |

StatLink http://dx.doi.org/10.1787/888932908839

# Hungary

**Hungary: Pension system in 2012**

The Hungarian pension system is a mandatory, uniform, defined-benefit pay-as-you-go system with an earnings-related public pension combined with a minimum pension.

**Key indicators**

| | | Hungary | OECD |
|---|---|---|---|
| Average worker earnings (AW) | HUF (million) | 2.75 | 9.43 |
| | USD | 12 500 | 42 700 |
| Public pension spending | % of GDP | 9.9 | 7.8 |
| Life expectancy | At birth | 74.5 | 79.9 |
| | At age 65 | 16.1 | 19.1 |
| Population over age 65 | % of working-age population | 27.2 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908858

## Qualifying conditions

The standard retirement age is currently 62 years and six months for both men and women. The standard retirement age is currently increasing as from 2010 until reaching 65 by 2022. In addition, 20 years' service is required for both the earnings-related pension and the minimum pension. 15 years' service is required to receive a partial pension. Retirement is not necessary.

On 1 January 2012 the mandatory social insurance pension system was reformed. From this date and onwards the formerly early retirement pensions will not be paid as pensions, and a pension can only be awarded after reaching the standard retirement age.

## Benefit calculation

### *Earnings-related*

The earnings-related public pension system is a mandatory uniform, defined-benefit system, where the earnings-related pension is calculated as 33% of average earnings for the first ten years of coverage, adding 2% for each additional year from 11 to 25 years of coverage. For each additional year between 26 and 36 years of coverage each year adds an additional 1% and for between 36 to 40 years of coverage each year adds 1.5%. For each year of coverage above 40 years of coverage each year adds an additional 2%.

The earnings base used to be net-gross (i.e. gross wage less employee's contribution) pay in all years since 1988, moving towards the full lifetime. This was changed into net pay from 2008. Earlier years' earnings were valorised with economy-wide average earnings to a point two years before retirement in 2006. The last three years' earnings prior to retirement were entirely unvalorised. This was changed from 1 January 2008, to full valorisation (to the year preceding retirement, in 2009 as well). The pension in payment has been indexed half to wages and half to prices since 2001 but further ad hoc increases were applied. Annual adjustment rules are changed in effect from 1 January 2010. From 1 January 2012 pensions in payment are adjusted to changes in consumer prices, thus the indexation is inflation-based. Until 2012 there was a ceiling of HUF 21 000 per day of pensionable earnings, but from 1 January 2013 the ceiling has been abolished.

### *Minimum*

There is a minimum pension, which is worth HUF 28 500 per month (around 12% of average earnings). The government decides upon the discrete increases. The amount has remained unchanged since 2009.

### *Reversal of mandatory private pension*

From 1 November 2010 to 31 December 2011 all payments to the mandatory funded defined-contribution scheme were suspended, and all contributions were redirected to the public pension scheme. Members of the defined-contribution scheme had to decide by 31 January 2011 whether to remain in the scheme or transfer back to pay-as-you-go public pension system.

Before the reversal approximately 3.1 million people (more than 70% of the labour force) were members of the mixed system (end of 2010). After the reversal only 102 000 scheme members have decided to remain in the defined-contribution scheme. From 31 December 2011 all of the social security contributions (employee's and employer's contribution) go to the Pension Insurance Fund. The private pension fund members have had the possibility of doing voluntary contributions to their personal accounts. Members who previously have opted out have also had the possibility of returning to the public earnings-related pension (until 31 March 2012). The accumulated amount in the defined-contribution private pension scheme must be converted into an annuity on retirement. According to the current legislation the annuity must provide at least the same indexation of the pension in payment as the public pension scheme. Unisex life tables must be used to calculate annuity rates.

## Variant careers

### *Early retirement*

From 1 January 2011 a new early retirement option has been introduced with 40 years eligibility period for women. It is available for those women, regardless of age, who has gained at least 40 years of eligibility and ceasing gainful activity. Eligibility period includes: period gained with gainful activity or pregnancy-confinement benefit, child care fee, child home care allowance, and child raising support or nursing fee. At least 32 years of gainful activity is needed besides these periods due to child care; or 30 years of gainful activity in case of Nursing Fee. Eligibility period is decreased by one year for each child in households with five or more children; altogether a maximum of seven years is possible.

Before 1 January 2012 several generous early retirement options where available within the public pension system. Individuals with long service periods could claim advanced pension or advanced pension with reduced benefit. Persons working in jobs arduous to health could claim early retirement due to hazardous working conditions. Moreover, early retirement pensions could be claimed by artists or miners regardless of age and if the person had at least 25 years of service in the profession specified in the legislation. Special pension rules applied also to personal in the armed forces, who could retire very early, while generous rules applied to former mayors and members of the parliament. Transitional rules apply to those persons who currently are in receipt of the former early retirement options.

### *Late retirement*

It is possible to defer the earnings-related pension. The pension is increased by 0.5% for each month of deferral. Since 1 January 2008, adjustment is provided for gainfully employed pensioners after completing 365 days service period. As of 1 January 2011, adjustment equals 0.5% per month as a percentage of the annual income gained divided by 12.

### *Childcare*

Since 1998 pension contribution has to be paid after these benefits, and if amounts of childcare benefits are favourable for the insured, these benefits will be counted into the pension base. People can receive the following benefits: pregnancy confinement benefit, child care fee, child care allowance and child raising support.

Pregnancy confinement benefit (*terhességi gyermekágyi segély*) is for women in the pregnancy period or giving birth, for twenty-four weeks (168 days). The benefit is 70% of the daily average gross earnings of the previous year. Child care fee (*gyermekgondozási díj*) could be claimed by one of the parents on day after the expiry period of pregnancy confinement benefit and it is provided as long as the insurance period of the parent takes, but maximum to the age of two years of the child (maximum 84 weeks). The benefit amount is 70% of the daily average gross earnings of the previous year up to the maximum of twice of the minimum wage (HUF 130 200 in 2013). It's obligatory to pay individual pension contribution which rate was 10% in 2012. Child care allowance (*gyermekgondozási segély*) is for one of the parents who cares for the child until the child's third birthday (maximum 36 months), or in case of twin children until the end of the year they reach school age, or in case of a permanently ill or seriously disabled child until they are ten years of age (maximum 120 months). The monthly amount is equal to the minimum old-age pension of HUF 28 500 as from January 2008 irrespective of the number of children in the family, and in case of twins the amount is equal to the minimum old-age pension per child. After the child's first birthday, also grandparents can claim the benefit. It's obligatory to pay the individual pension contribution which was 10% in 2012. Child raising support (*gyermeknevelési támogatás*) for one of the parents who cares for the child and who raises three or more underage children for the period between the third and the eighth birthday of the youngest child (maximum 60 months). The monthly amount is equal to the minimum old-age pension, irrespective of the number of children.

The total amount of periods taken off work is not maximised and entitlements are not added up, though it depends on the age and number of the children and the composition of the family.

In 2012, pension contribution after child care benefits is paid by:

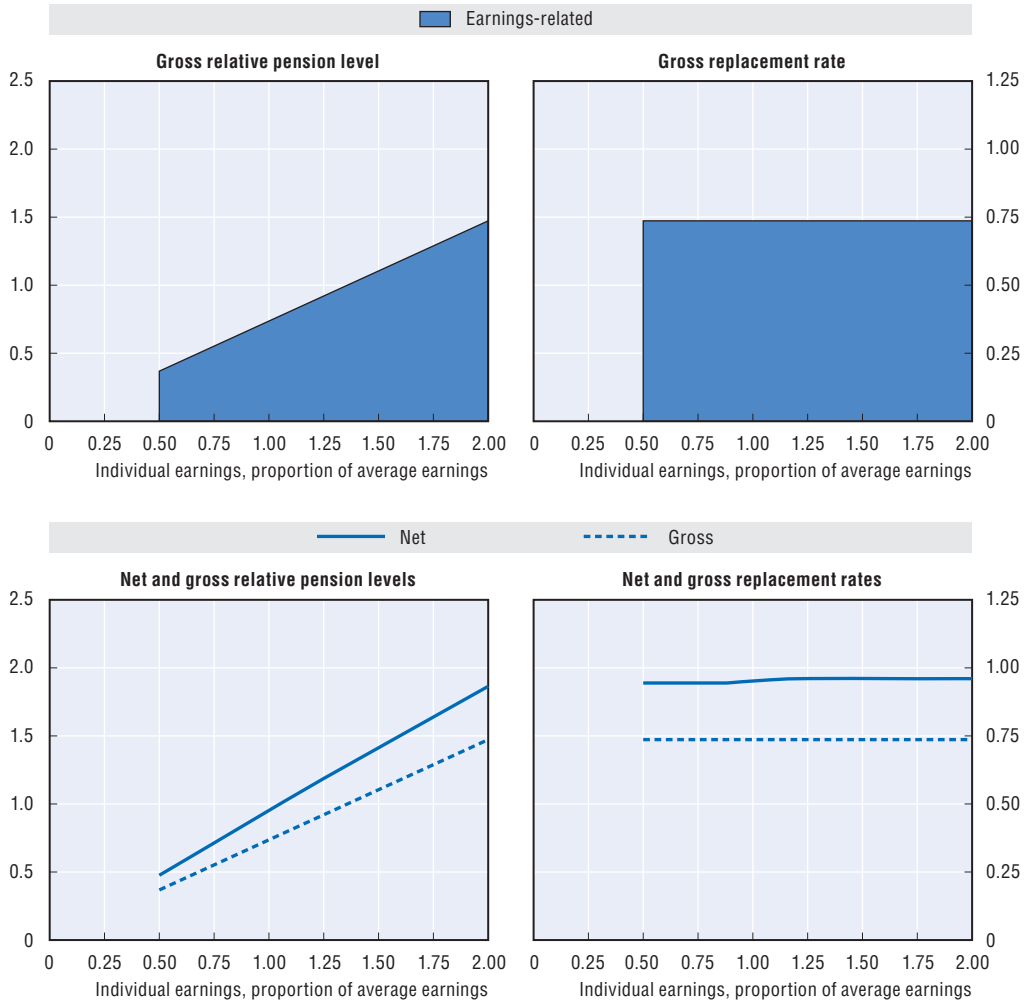
| | Individual | Employer | Government |
|---|---|---|---|
| Pregnancy confinement benefit | - | - | - |
| Child care fee | X | - | |
| Child care allowance | X | - | |
| Child raising support | X | - | |

### *Unemployment*

The unemployed are covered by the earnings-related pension system. Generally, the periods of unemployment are qualified as a pensionable service. The earnings measure for the period of unemployment is the most favourable of: *i)* the amount of unemployment benefits; or *ii)* the average of previous and subsequent earnings.

Older unemployed people can receive special pre-retirement benefits if they have received unemployment insurance benefits for 140 days, will reach pensionable age within five years, have exhausted their unemployment benefit entitlement within eight years of pensionable age and have contributed to the pension scheme for at least 20 years.

## Pension modelling results: Hungary




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 54.5 | 36.8 | 55.2 | 73.6 | 110.5 | 147.3 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 70.4 | 47.6 | 71.4 | 95.2 | 141.3 | 186.4 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 73.6 | 73.6 | 73.6 | 73.6 | 73.6 | 73.6 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 94.4 | 94.4 | 94.4 | 95.2 | 96.1 | 96.0 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 |
| *(multiple of individual gross earnings)* | *12.4* | *12.4* | *12.4* | *12.4* | *12.4* | *12.4* |
| Net pension wealth | 8.8 | 8.8 | 8.8 | 8.8 | 8.7 | 8.6 |
| *(multiple of individual gross earnings)* | *10.5* | *10.5* | *10.5* | *10.5* | *10.3* | *10.2* |

StatLink http://dx.doi.org/10.1787/888932908877

# Iceland

**Iceland: Pension system in 2012**

There is a basic state pension (national pension), which is income-tested. There are also mandatory occupational pensions.

**Key indicators**

| | | Iceland | OECD |
|---|---|---|---|
| Average worker earnings (AW) | ISK (million) | 6.08 | 5.48 |
| | USD | 47 300 | 42 700 |
| Public pension spending | % of GDP | 1.7 | 7.8 |
| Life expectancy | At birth | 82.0 | 79.9 |
| | At age 65 | 20.0 | 19.1 |
| Population over age 65 | % of working-age population | 21.1 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908896

## Qualifying conditions

The normal pension age is 67. A full basic pension is earned with 40 years' residency. The pension is proportionally reduced for shorter periods of residency, with a minimum of three years required between the ages of 16 and 67. The pension age is also 67 for members of private-sector occupational plans but is 60 for seamen who have been working in this occupation for at least 25 years. The social security system guarantees a minimum pension to everyone, even when very little, or nothing, has been paid into a pension fund. Pension payments are subject to income tax in the same way as earned income.

## Benefit calculation

### *Basic*

The full basic pension value is ISK 393 300 per year, equivalent to 6.5% of average earnings. The national pension may be reduced when income is gained from other sources, or withdrawn if it exceeds a certain amount. Income in this respect does not include social security benefits or social assistance. Withdrawal begins once income (from labour income, occupational pension or capital income) exceeds ISK 2.58 million or equivalent to 42% of average earnings, and ceases at ISK 4.15 million or equal to 68% of average earnings.

### *Targeted*

A second element is the pension supplement. The maximum value of this benefit is ISK 1.24 million per year for a single person, some 20% of average earnings. This benefit is withdrawn against labour income above ISK 480 000 per year (around 8% of average earnings), occupational pension above ISK 120 000 and capital income above ISK 98 640. The withdrawal rate for the income-test in the pension supplement is 45%.

According to the Social Assistance Act, various social assistance benefits may be granted in addition to the national pension in special circumstances or when it is shown that the beneficiary cannot support him- or herself without this assistance. These are for instance the household supplement for a single person, the special supplement for support and further supplements.

### *Mandatory occupational*

All working people are required to be members of a pension fund and pay to the fund a specific percentage of their wages. Employers pay a counter-contribution to these funds for each employee. Coverage is mandatory for people aged 16 to 70.

There is a minimum contribution to occupational schemes of 12% of earnings. The employee pays 4% of the total wages, while the employer pays 8%. In the public sector and certain other sectors, the employer's contribution is higher.

The law requires schemes to target a replacement rate of 56% with 40 years' contributions, giving an accrual rate of 1.4% for each year of service.

The earnings base in this calculation is average lifetime salary for each year of membership. There is no ceiling to pensionable earnings. Past earnings are valorised in line with inflation plus 3.5% interest rate.

Payment of pension is assumed to begin at the age of 67 years. The commencement of pension payments can be brought forward to the age of 65 years, and it can be delayed to the age of 70 years.

## Variant careers

### *Early retirement*

Under the mandatory occupational scheme, early retirement rules vary between funds, depending on the structure of fund membership. In the private sector, the normal retirement age is 67 and the pension can be claimed from 65.

In general, pensions are reduced by 7% for each year that pension is claimed early. It is not possible to claim the basic or targeted pensions before the normal pension age.

### *Late retirement*

It is possible to defer the basic pension and the pension supplement (i.e. claim them at a later date) up to the age of 72 years. In this case, benefits are increased by 0.5% for each additional month. A maximum increase of 30% is possible.

Under the mandatory occupational scheme, workers can defer receiving their pension up to the age of 70. The amount of benefits increases by around 8% for each year pension payments are deferred.

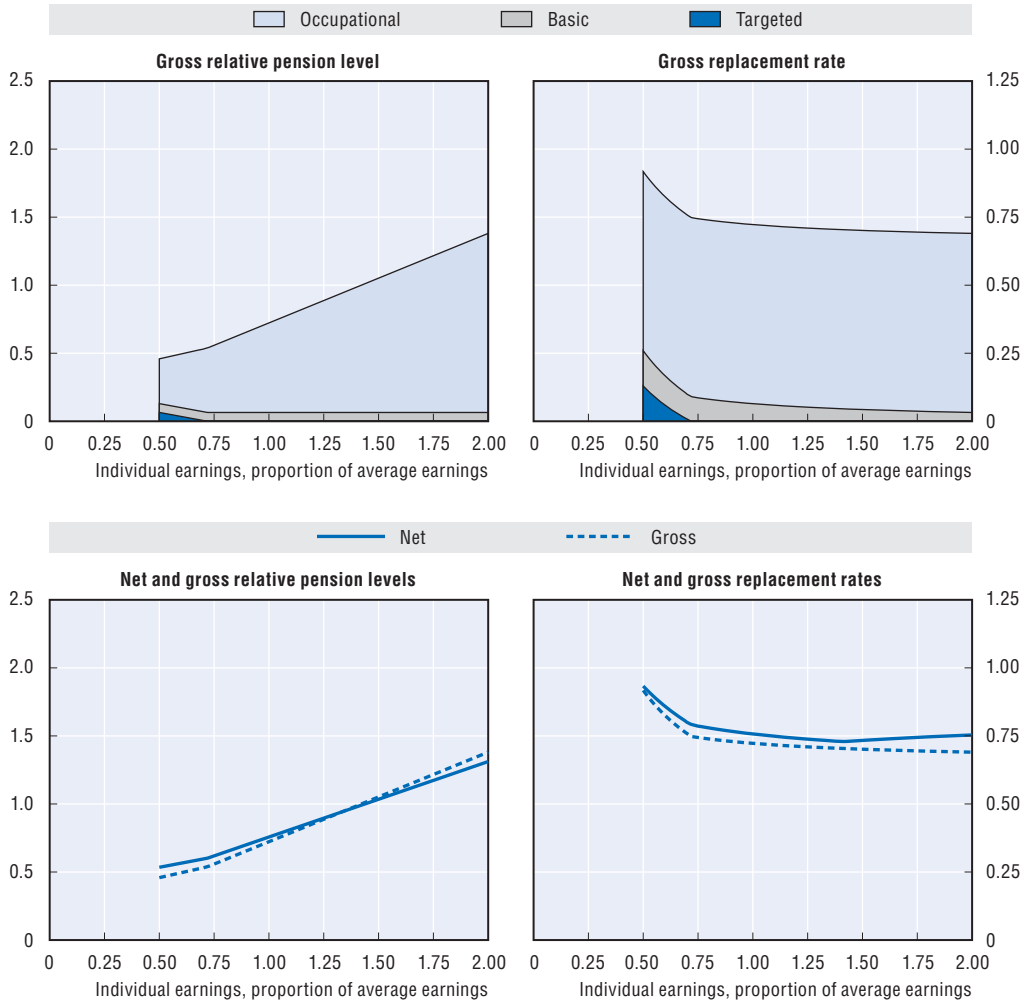
### *Childcare*

The government social assistance scheme contains benefits for parents who must take care of children with long-term illnesses or disabilities. There are three kinds of payments; payments to parents on the labour market, to parents who are engaged in studies and base payments, to parents who are neither working nor studying.

### *Unemployment*

The contribution base, on which the minimum 10% contribution is levied, includes unemployment insurance benefits as well as earnings but excludes all other benefits.

## Pension modelling results: Iceland




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 59.8 | 45.9 | 55.8 | 72.3 | 105.2 | 138.1 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 65.2 | 53.5 | 61.9 | 75.7 | 103.4 | 131.2 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 73.8 | 91.7 | 74.4 | 72.3 | 70.1 | 69.0 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 77.8 | 93.3 | 78.6 | 75.7 | 73.3 | 75.4 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 12.4 | 16.1 | 12.6 | 12.1 | 11.7 | 11.5 |
| *(multiple of individual gross earnings)* | *13.8* | *17.9* | *13.9* | *13.5* | *13.0* | *12.7* |
| Net pension wealth | 9.6 | 13.3 | 9.9 | 9.0 | 8.2 | 7.7 |
| *(multiple of individual gross earnings)* | *10.7* | *14.8* | *11.0* | *10.0* | *9.0* | *8.6* |

StatLink http://dx.doi.org/10.1787/888932908915

# India

### India: Pension system in 2012

Workers are covered under the earnings-related employee pension scheme and defined-contribution employee provident fund administered by the Employees Provident Fund Organization (EPFO) and other employer managed funds. Civil Employees of Central Government who have joined services on or after 1 January 2004 are covered under the defined contribution based New Pension System (NPS).

### Key indicators

| | | India | OECD |
|---|---|---|---|
| Average worker earnings (AW) | INR | 240 400 | 2 342 100 |
| | USD | 4 400 | 42 700 |
| Public pension spending | % of GDP | | 7.8 |
| Life expectancy | At birth | 66.4 | 79.9 |
| | At age 65 | 13.7 | 19.1 |
| Population over age 65 | % of working-age population | 9.3 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908934

## Qualifying conditions

Normal pension age for earnings-related pension scheme is 58 with minimum of ten years of contribution and for earnings-related provident fund schemes, it is 55 years.

## Benefit calculation

### *Employees Provident Fund Scheme (EPF)*

The employee contributes 12% of his monthly salary towards this fund and the employer matches this contribution. 3.67% of the employer's share goes towards the EPF. This combined 15.67% accumulates as a lump-sum.

There is no annuity and full accumulations are paid on retirement from service after attaining 55 years of age. For comparison with other countries, for replacement rate purposes the pension is shown as a price-indexed annuity based on sex-specific mortality rates.

### *Employees Pension Scheme (EPS)*

Of the 12% contribution payable by the employer as mentioned above, 8.33% is diverted to EPS and the Central Government contributes a subsidy of 1.17% of the salary into the EPS. This accumulation is used to pay various pension benefits on retirement or early termination. The kind of pension a member gets under the scheme depends upon the age at which they retire and the number of years of eligible service.

Monthly pension = (pensionable salary × pensionable service)/70

The maximum possible replacement rate is roughly 50%. To obtain the maximum benefit, a member would not only need to be in the scheme for 35 years, but would also need to opt for contributions at higher salary at the time of joining the scheme. This option cannot be exercised retrospectively. Otherwise, there is a ceiling to contributions of INR 6 500 per month.

## Variant careers

### *Early retirement*

The EPS can be claimed from age 50 with ten years of contribution and the benefits are reduced by 3% per year of early retirement. If a member leaves his job before rendering at least ten years of service, he is entitled to a withdrawal benefit. The amount he can withdraw is a proportion of his monthly salary at the date of exit from employment. This proportion depends on the number of years of eligible services he has rendered. No pension is payable in cases where there is a break in service before ten years.

In case of EPF, there are multiple scenarios which allow for early access to the accumulation. Partial withdrawals relate to marriage, housing advance, financing life insurance policy, illness of members/family members, withdrawals are also permitted one year before retirement, etc. In addition to various permitted partial withdrawals, employees can close their account and withdraw the full corpus in case they move from one employer to another or decide to retire early.

No gratuity can be claimed before five years of service.

### *Late retirement*

It is not possible to delay claiming pension after normal pension age.

### *National Pension System (NPS)*

In India, in the absence of a country-wide social security system (formal pension coverage being about 12% of the working population), while the ageing and social change are important considerations for introducing pension reform in the unorganised sector, fiscal stress of the defined-benefit pension system was the major factor driving pension reforms for employees in the organised public sector (government employees).

### *Introduction of the New Pension System*

The government had introduced the New Pension System (NPS) from 1 January 2004 through a notification dated 22 December 2003 for new entrants to Central Government service, except to Armed Forces. The government has constituted an interim regulator, the Interim Pension Fund Regulatory and Development Authority (PFRDA) through a government resolution in October 2003. The design features of the New Pension System (NPS) are self-sustainability, scalability, individual choice, maximising outreach, low-cost yet efficient, and pension system based on sound regulation.

### *Establishment of Institutional Framework of NPS*

The National Securities Depository Limited (NSDL) has been selected as the Central Record keeping and Accounting Agency (CRA) by PFRDA and has commenced operation. The contributions under NPS are now being sent to CRA. PFRDA has appointed three pension fund managers, a custodian and a trustee bank. The accumulation and contribution of subscribers of NPS, who are Central Government Employees, are invested based on the investment guidelines prescribed for the non-government provident funds by the Ministry of Finance. However, the investment guidelines for NPS for all citizens have been prescribed by PFRDA and are available at *www.pfrda.org.in*.

### *Extension of NPS to State Governments, Autonomous Bodies and Un-organised Sector*

NPS has also been extended to new segments (autonomous bodies, State Governments and un-organised sector). Twenty seven State Governments and Union Territories have notified adoption of NPS for their new employees. After receiving government's approval for extending the NPS to all citizens including the unorganised sector workers PFRDA has rolled out the NPS architecture for all citizens of the country on a voluntary basis from 1 May 2009.

In order to expand the reach of the NPS countrywide, Interim PFRDA invited the Department of Posts to join the NPS as a POP. The Department of Posts has been offering NPS at 807 branches as on 31 December 2011 but proposes to eventually extend its NPS network to all of its electronically connected branches. This will enable the Department of Posts to make NPS available within the easy reach of all citizens in the remotest corners of the country. Several new initiatives were started like:

1. Adding a second tier to the NPS that will serve as a savings account for the pension subscriber with effect from 1 December 2009.
2. Launch of Co-contributory Scheme NPS – Lite ("Swavalamban*") – a low cost version of NPS meant to enrol people of lower economic strata like self help groups, affinity groups, etc.
3. Increasing the maximum entry age under the NPS to 60 years, as against the prevailing 55 years to enable more people to join the NPS.

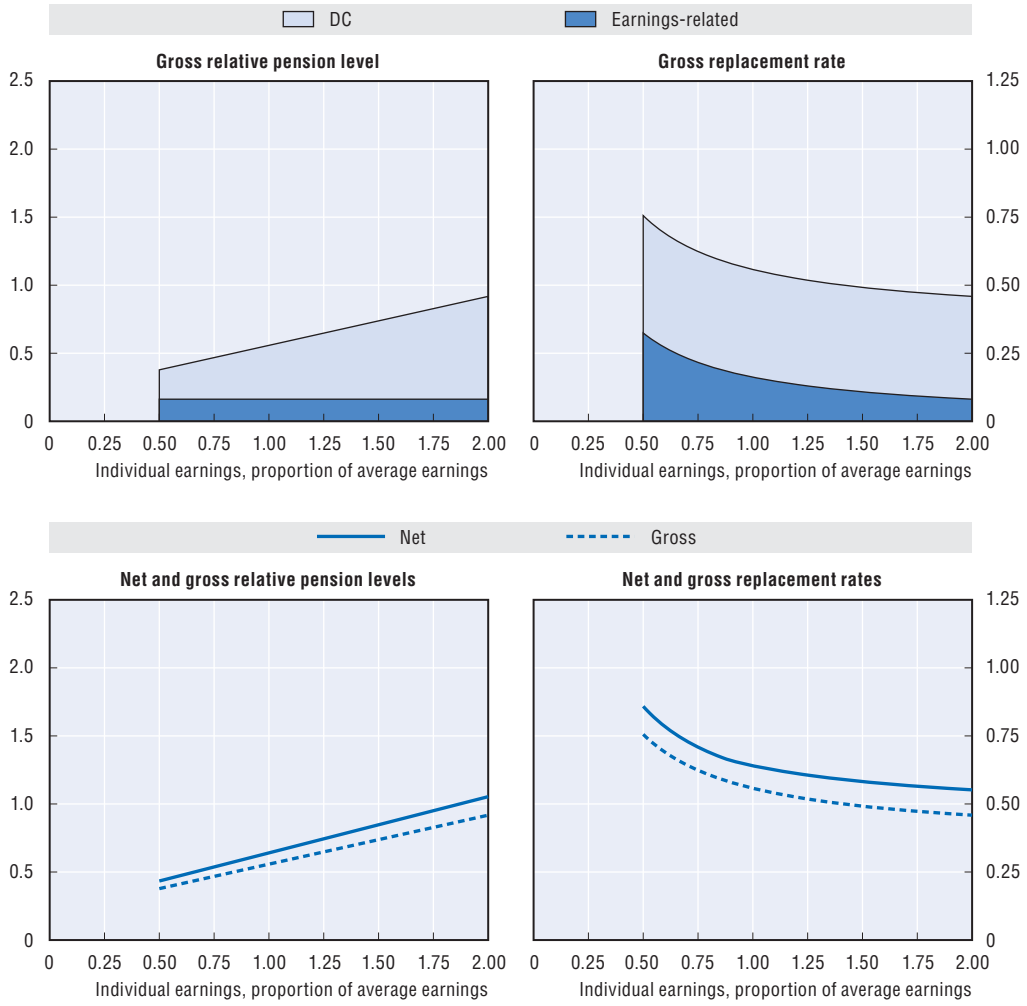
Government's NPS Swavalamban initiative is an important initiative to test if co-contributions can motivate higher voluntary participation among low income unorganised workforce. Following the central government initiative, state governments like Haryana and Karnataka have announced additional co-contributions over and above what central government has promised. Workers in these States can get up-to INR 2 200 annually as co-contribution.

**National pension system status, March 2013**

| | Employer/sector | Number of subscribers | Corpus under NPS (in USD million) |
|---|---|---|---|
| 1 | Central government | 1 125 871 | 3 099 |
| 2 | State government | 1 585 349 | 1 778 |
| 3 | Private sector | 202 679 | 228 |
| 4 | NPS-Lite | 1 579 690 | 75 |

* To encourage people from the unorganised sector to voluntarily save for their retirement and to lower the cost of operations of the New Pension System (NPS) for such subscribers, a co-contributory scheme called "Swavalamban", was launched on 1 April 2010 by the Central Government. The Scheme is to be administered by PFRDA. The Central Government contribute INR 1 000 per annum to members. Membership in the Swavalamban scheme is possible if the member is not a part of any statutory pension scheme of the Government and if he or she contributes between INR 1 000 and INR 12 000 per annum. The Swavalamban Scheme is open until the financial year 2016-17. PFRDA expects that the scheme will benefit about 7 million NPS subscribers of the unorganised sector during this period.

## Pension modelling results: India




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 48.9 | 37.8 | 46.8 | 55.8 | 73.8 | 91.8 |
| *(% average gross earnings)* | *45.6* | *35.6* | *43.7* | *51.8* | *68.0* | *84.1* |
| Net relative pension level | 56.2 | 43.4 | 53.7 | 64.1 | 84.7 | 105.4 |
| *(% net average earnings)* | *52.2* | *40.7* | *49.9* | *59.2* | *77.7* | *96.2* |
| Gross replacement rate | 60.4 | 75.6 | 62.4 | 55.8 | 49.2 | 45.9 |
| *(% individual gross earnings)* | *56.3* | *71.2* | *58.3* | *51.8* | *45.3* | *42.1* |
| Net replacement rate | 68.7 | 85.9 | 70.9 | 64.1 | 58.2 | 55.2 |
| *(% individual net earnings)* | *64.0* | *80.9* | *66.2* | *59.2* | *53.5* | *50.5* |
| Gross pension wealth | 10.0 | 12.4 | 10.3 | 9.3 | 8.2 | 7.7 |
| *(multiple of individual gross earnings)* | *10.4* | *13.0* | *10.7* | *9.6* | *8.4* | *7.9* |
| Net pension wealth | 10.0 | 12.4 | 10.3 | 9.3 | 8.2 | 7.7 |
| *(multiple of individual gross earnings)* | *10.4* | *13.0* | *10.7* | *9.6* | *8.4* | *7.9* |

StatLink http://dx.doi.org/10.1787/888932908953

# Indonesia

**Indonesia: Pension system in 2012**

Employees in private sectors are covered by defined-contribution plan.

**Key indicators**

| | | Indonesia | OECD |
|---|---|---|---|
| Average worker earnings (AW) | IDR (million) | 16.1 | 418.46 |
| | USD | 1 600 | 42 700 |
| Public pension spending | % of GDP | | 7.8 |
| Life expectancy | At birth | 70.8 | 79.9 |
| | At age 65 | 14.1 | 19.1 |
| Population over age 65 | % of working-age population | 9.0 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932908972

## Qualifying conditions

Normal pension age is 55. Retirement is not required. Any employees having reached age 55 with 15 years of contributions are qualified for a periodical pension benefit while those having less than 15 years qualify for a lump-sum payment.

## Benefit calculation

### *Defined contribution*

Employees in private sectors are covered by defined-contribution pension plans. During 1993 to 2013 this refers to one of the Employees Social Security Programmes (*Jamsostek*) and in this case the *Jaminan Hari Tua* (JHT) or Old Age Security (OAS) based on Law No. 3 of 1992. The total contribution rate is 5.7% of wages. The JHT is a compulsory programme for all employees and the retired may opt for a partly lump-sum, periodical until death and lump-sum payment. Employees contribute 2% of earnings and employers pay 3.7% of the payroll. Pension is paid in lump sum or payable monthly up to a maximum of five years if the balance is more than IDR 3 million. For comparison with other countries, for replacement rate purposes the pension is shown as a price-indexed annuity based on sex-specific mortality rates.

A new National Social Security System (NSSS) will be implemented on 1 July 2015 (Law No. 40: 2004). The new social security pension will be defined benefit and complement the defined-contribution scheme. The total contribution rate in the new defined-benefit scheme is proposed to be 8%. The benefit calculation is still undecided and therefore this benefit is not modelled.

**NSSS Programme and contribution rates as of wages**

| No. | Programmes | Shared contributions (%) | | | Remarks |
|---|---|---|---|---|---|
| | | Employer | Employee | Total | |
| 1 | Health care | 3.0 | 2.0 | 5.0 | Proposed |
| 2 | Work accident | 0.25-0.75 | - | 0.25-0.75 | |
| 3 | Provident fund | 3.7 | 2.0 | 5.7 | Jamsostek |
| 4 | **Pension plan** | **5.0** | **3.0** | **8.0** | **Proposed** |
| 5 | Death benefit | 0.3 | - | 0.3 | Jamsostek |
| **Total** | | **12.25-12.75** | **7.0** | **19.25-19.75** | |

*Source:* National Social Security Council (2012).

## Variant careers

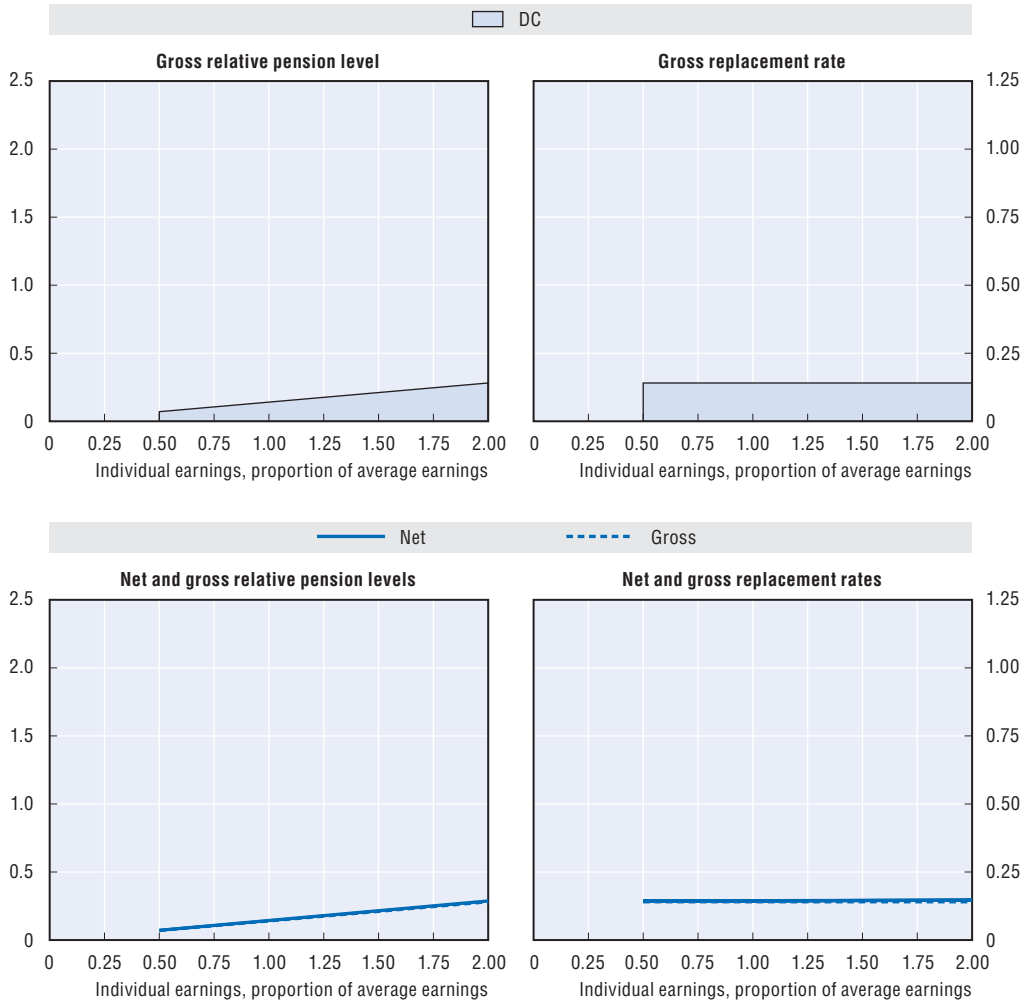
### *Early retirement*

It is possible to start claiming pension at any age with a minimum of five years of contribution.

### *Late retirement*

It is not possible to start claiming pension after normal pension age.

## Pension modelling results: Indonesia




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 11.4 | 7.0 | 10.6 | 14.1 | 21.1 | 28.1 |
| *(% average gross earnings)* | *10.5* | *6.5* | *9.7* | *13.0* | *19.4* | *25.9* |
| Net relative pension level | 11.6 | 7.2 | 10.8 | 14.4 | 21.5 | 28.7 |
| *(% net average earnings)* | *10.7* | *6.6* | *9.9* | *13.2* | *19.8* | *26.5* |
| Gross replacement rate | 14.1 | 14.1 | 14.1 | 14.1 | 14.1 | 14.1 |
| *(% individual gross earnings)* | *13.0* | *13.0* | *13.0* | *13.0* | *13.0* | *13.0* |
| Net replacement rate | 14.4 | 14.4 | 14.4 | 14.4 | 14.5 | 14.6 |
| *(% individual net earnings)* | *13.2* | *13.2* | *13.2* | *13.2* | *13.4* | *13.5* |
| Gross pension wealth | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| *(multiple of individual gross earnings)* | *2.6* | *2.6* | *2.6* | *2.6* | *2.6* | *2.6* |
| Net pension wealth | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| *(multiple of individual gross earnings)* | *2.6* | *2.6* | *2.6* | *2.6* | *2.6* | *2.6* |

StatLink http://dx.doi.org/10.1787/888932908991

# Ireland

**Ireland: Pension system in 2012**

The public pension is a basic scheme paying a flat rate to all who meet the contribution conditions. There is also a means-tested pension to provide a safety net for the low-income elderly. Voluntary occupational pension schemes have broad coverage: over half of employees.

**Key indicators**

| | | Ireland | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 32 600 | 32 400 |
| | USD | 43 000 | 42 700 |
| Public pension spending | % of GDP | 5.1 | 7.8 |
| Life expectancy | At birth | 80.6 | 79.9 |
| | At age 65 | 19.1 | 19.1 |
| Population over age 65 | % of working-age population | 19.4 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909010

## Qualifying conditions

The State Pension (Contributory) is payable from age 66. As State pension age is being standardised to age 66 from 2014, State Pension (transition) will be abolished from 2014. State pension age is being increased to 67 in 2021 and 68 in 2028.

Full entitlement to both benefits requires an average of 48 weeks contributions or credits per year throughout the working life. The pension value is reduced for incomplete contribution histories. However, State Pension (contributory) requires a minimum average of ten weeks' contributions per year and the State Pension (transition) requires a minimum of 24 weeks per year. There is also a minimum total period of paid (as opposed to credited) contributions of 520 weeks (equivalent to ten years' full coverage).

The means-tested pension is payable from age 66.

## Benefit calculation

### *Basic*

The maximum values of the State Pension (contributory) and the State Pension (transition) are both EUR 230.30 per week (paid for 52 weeks per year) for 2010, which is 37% of average earnings. For those who qualify there is an additional EUR 153.50 for a dependant adult of working age and EUR 206.30 for a dependant aged 66 or over. Pensions are usually increased on an annual basis, decided by government in the context of the annual budget. In recent years though, they have remained static.

Pensioners are entitled to many benefits-in-kind. The government estimates that the price of these goods and services would be EUR 904 per year, excluding health benefits. (Note that the modelling covers only cash benefits and not benefits-in-kind.)

### *Targeted*

The maximum value of the means-tested benefit is EUR 219 per week for a single person with an extra EUR 144.70 for an adult dependant for 2010. The single person's benefit is worth 35% of average earnings. There is a small weekly disregard of EUR 30 in the means test, and there is an additional earnings disregard of EUR 200: otherwise, the benefit is withdrawn at 100% of income. There is also an assets test, with capital of more than EUR 20 000 being converted to income using a standard formula.

### *Voluntary private pensions*

There is an additional voluntary pension which is assumed to be defined contribution. The contribution rate is assumed to be 10%.

## Variant careers

### *Early retirement*

Pensions cannot be claimed before the normal eligibility age.

### *Late retirement*

Work and pension can be combined subject to earnings being less than EUR 38 per week under the State Pension (transition), which is payable for one year. However, the State Pension (contributory) is not subject to an earnings test. It is not possible to defer claiming the pension.

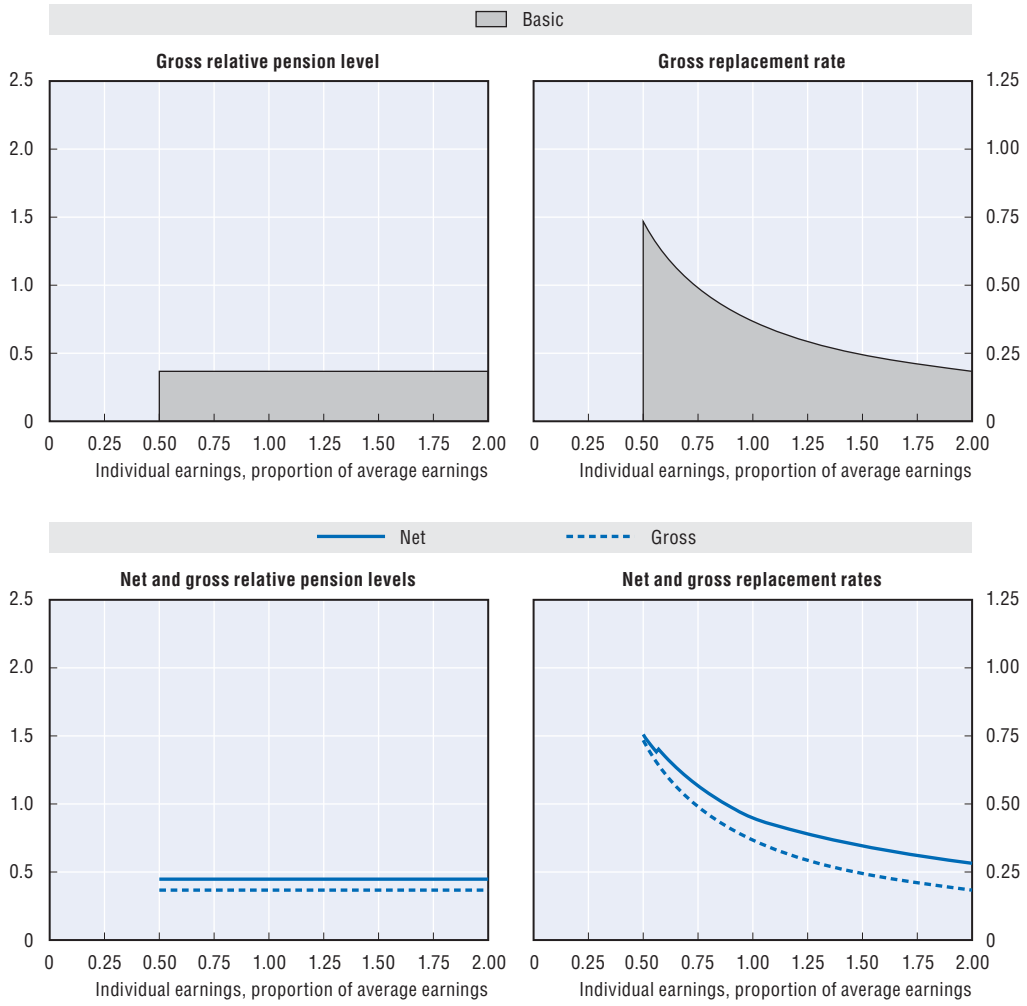
### *Childcare*

Eventual public pension entitlement is not affected by periods out of paid work for caring purposes.

### *Unemployment*

Eventual public pension entitlement is not affected by periods of unemployment.

## Pension modelling results: Ireland




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 36.7 | 36.7 | 36.7 | 36.7 | 36.7 | 36.7 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 44.8 | 44.8 | 44.8 | 44.8 | 44.8 | 44.8 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 44.2 | 73.4 | 48.9 | 36.7 | 24.5 | 18.4 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 52.2 | 75.5 | 56.7 | 44.8 | 34.6 | 28.2 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 8.3 | 13.8 | 9.2 | 6.9 | 4.6 | 3.5 |
| *(multiple of individual gross earnings)* | *9.5* | *15.7* | *10.5* | *7.9* | *5.2* | *3.9* |
| Net pension wealth | 8.3 | 13.8 | 9.2 | 6.9 | 4.6 | 3.5 |
| *(multiple of individual gross earnings)* | *9.5* | *15.7* | *10.5* | *7.9* | *5.2* | *3.9* |

StatLink http://dx.doi.org/10.1787/888932909029

# Israel

**Israel: Pension system in 2012**

The state pension comprises a universal insurance pension combined with means-tested income support. Until 2008 second-pillar pensions were common, but voluntary. As of January 2008 mandatory contributions to defined-contribution pension funds have been introduced.

**Key indicators**

| | | Israel | OECD |
|---|---|---|---|
| Average worker earnings (AW) | ILS | 119 900 | 159 400 |
| | USD | 32 100 | 42 700 |
| Public pension spending | % of GDP | 5.0 | 7.8 |
| Life expectancy | At birth | 81.7 | 79.9 |
| | At age 65 | 19.9 | 19.1 |
| Population over age 65 | % of working-age population | 19.4 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909048

## Qualifying conditions

A schedule gradually increasing the ages of entitlement to the state pension began in 2004 with increases from 65 to 67 years for men and from 60 to 62 for women. Men's retirement age reached 67 years in 2010 while women's is 62 and not due to reach 64 years, subject to legislation, until 2017. There are limits on the earnings from work for entitlement to the pension until age 70 for men and as of 2009, age 67 for women (this is being increased to 70 years).

## Benefit calculation

### *Old-age pension*

For those covered under the system they contribute 0.22% of earnings below, plus 3.85% of earnings above, 60% of the national average wage, which was ILS 8 619 in January 2012.

The minimum earnings for contribution purposes are ILS 4 100, equal to the minimum wage. Anyone earning less than this amount pays contributions as if earning the minimum.

The maximum earnings for contribution purposes are five times the national average wage in 1 January 2012.

### *Social insurance*

A single pensioner receives 17.7% of the old-age basic amount a month, with a couple receiving 26.6%. The old-age basic amount is ILS 8 370.

There is a seniority increment where the pension is increased by 2% for each year of insurance coverage exceeding ten years, up to a maximum equal to 50% of the pension.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

The income supplement is paid if income, including the pension, is less than the minimum level for subsistence. Rates vary between 28.8% and 62.9% of the old-age basic amount a month, depending on marital status and the number of children. The resulting amount is increased by an additional 7%.

Income support is withdrawn at a rate of 60% in the presence of income from defined-contribution pensions.

### *Defined contribution*

Mandatory contributions have applied to earnings up to the average wage for all employees since January 2008. Initially the rates were modest with a total contribution of 2.5% but are scheduled to increase to 15% (5% from employees and 10% from employers) by 2013. Half of the employers' contribution also provides severance insurance which, if utilised, diminishes the pension.

### *Minimum*

The minimum is covered within the social insurance referenced above.

## Variant careers

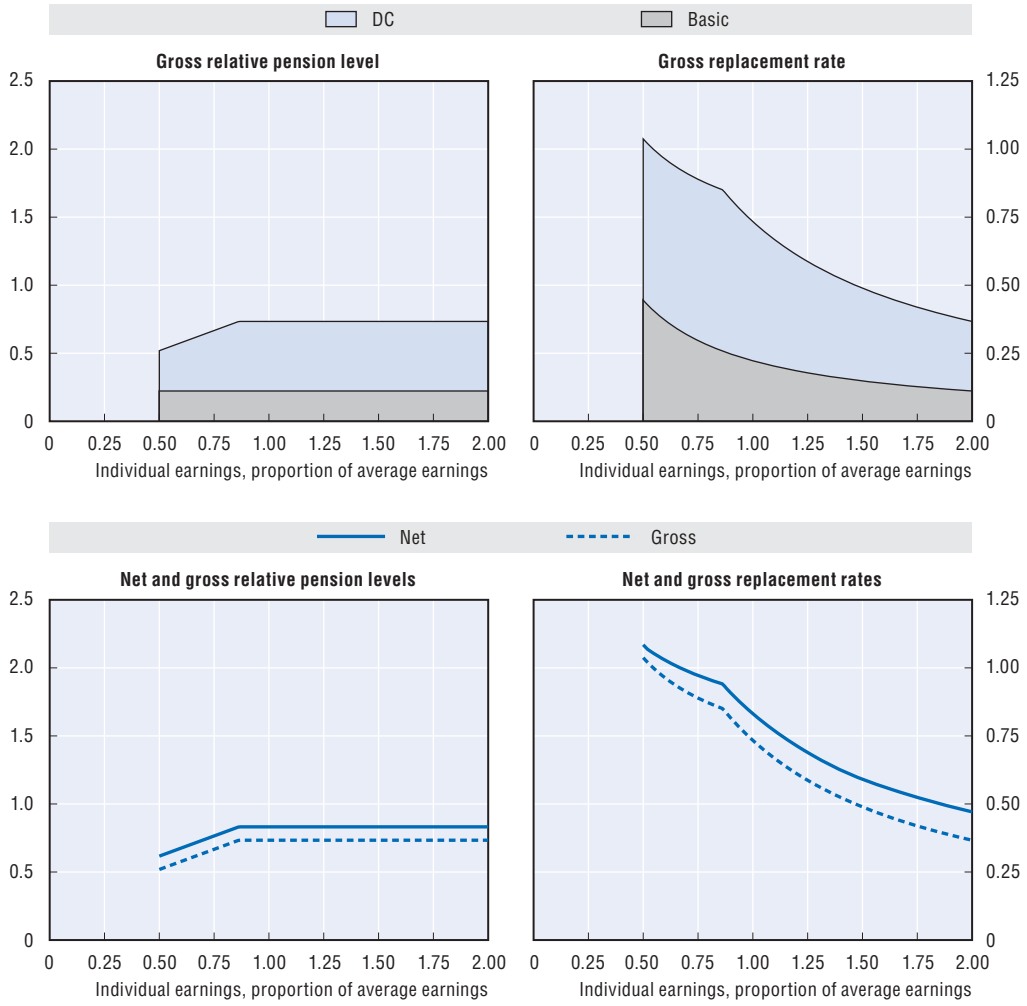
### *Early retirement*

It is not possible to receive a pension prior to the normal pension age.

### *Late retirement*

The pension is increased by 5% for each year of deferred retirement.

## Pension modelling results: Israel




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 70.2 | 51.9 | 66.7 | 73.4 | 73.4 | 73.4 |
| *(% average gross earnings)* | *62.2* | *46.9* | *59.3* | *64.8* | *64.8* | *64.8* |
| Net relative pension level | 80.1 | 61.7 | 76.5 | 83.2 | 83.2 | 83.2 |
| *(% net average earnings)* | *72.0* | *56.2* | *69.1* | *74.7* | *74.7* | *74.7* |
| Gross replacement rate | 86.7 | 103.7 | 88.9 | 73.4 | 48.9 | 36.7 |
| *(% individual gross earnings)* | *76.8* | *93.9* | *79.0* | *64.8* | *43.2* | *32.4* |
| Net replacement rate | 95.5 | 108.5 | 97.2 | 83.2 | 59.1 | 47.1 |
| *(% individual net earnings)* | *85.9* | *98.8* | *87.8* | *74.7* | *53.0* | *42.3* |
| Gross pension wealth | 14.3 | 17.1 | 14.7 | 12.1 | 8.1 | 6.1 |
| *(multiple of individual gross earnings)* | *15.2* | *18.6* | *15.7* | *12.9* | *8.6* | *6.4* |
| Net pension wealth | 13.2 | 16.5 | 13.6 | 11.1 | 7.4 | 5.6 |
| *(multiple of individual gross earnings)* | *14.3* | *18.0* | *14.8* | *12.0* | *8.0* | *6.0* |

StatLink http://dx.doi.org/10.1787/888932909067

# Italy

### Italy: Pension system in 2012

The new Italian pension system is based on notional accounts. After the reform of 2011, all workers currently contribute to a NDC scheme. Contributions earn a rate of return related to GDP growth. At retirement, the accumulated notional capital is converted into an annuity taking account of average life expectancy at retirement. It applies in full to labour-market entrants from 1996 onwards.

### Key indicators

| | | Italy | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 28 900 | 32 400 |
| | USD | 38 100 | 42 700 |
| Public pension spending | % of GDP | 15.4 | 7.8 |
| Life expectancy | At birth | 82.2 | 79.9 |
| | At age 65 | 20.3 | 19.1 |
| Population over age 65 | % of working-age population | 34.5 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909086

## Qualifying conditions

The normal pension age under the new system will increase gradually for men and women. In 2012, it was 62 for women employed in the private sector; 63 for self-employed women and 66 for men (both employed and self-employed). For women, the reform has established gradual increases in pension age, so as to equal men's at 66 years by 2018. Further increases in line with life expectancy evolution will take place after 2018 to achieve 67 at least in 2021. The 2011 pension reform has however introduced a flexible window of retirement between 62 and 70 years. Old-age pensions can be obtained with a minimum length of 20 year of contributions and whether the pension amount is not lower that 1.5 times the social assistance (see below).

## Benefit calculation

### *Earnings-related scheme*

Under the contribution-based regime the private and public employees contribution rate is 33%, of which about one third is paid by the employee and two-thirds by the employer; the amount of pension is calculated as a product of two factors: the total lifelong contributions, capitalised with the nominal GDP growth rate (in line with a five-year moving average) and the transformation coefficient whose calculation is mainly based on the probabilities of death, the probabilities of leaving any widow or widower and the number of years that a survivor's benefit will be withdrawn. As a consequence, benefits are strongly related to retirement age – the lower the age, the lower the pension.

The transformation coefficients are reviewed every three years. According to the 2011 reform and to allow a flexible retirement window, they will be available for the age bracket 62-70. The latest available coefficients, applicable from the 1 January 2013 to 31 December 2015 are as follows:

| Age | Divisor | Value (%) |
|---|---|---|
| 57 | 23.236 | 4.304 |
| 58 | 22.647 | 4.416 |
| 59 | 22.053 | 4.535 |
| 60 | 21.457 | 4.661 |
| 61 | 20.852 | 4.796 |
| 62 | 20.242 | 4.940 |
| 63 | 19.629 | 5.094 |
| 64 | 19.014 | 5.259 |
| 65 | 18.398 | 5.435 |
| 66 | 17.782 | 5.624 |
| 67 | 17.163 | 5.826 |
| 68 | 16.541 | 6.046 |
| 69 | 15.917 | 6.283 |
| 70 | 15.288 | 6.541 |
| Discount rate = 1.5% | | |

*Source: Gazzetta Ufficiale*, 24 May 2012.

The baseline assumption in modelling all countries is 2% annual real wage growth. Given the projected decline in the Italian labour force, a consistent assumption is that real GDP growth is 1.6% per year.

For employees, in 2012, minimum pay for contribution purposes was EUR 192.21 per week (35% of average earnings). Maximum earnings for benefits were EUR 96 056 per year under the new scheme, or just over 332% of average earnings.

The indexation of pensions in payment is progressive and lower pensions are indexed more generously than higher pensions. The indexation of pension benefits according ISTAT "cost-of-life" index has been suspended for 2012 and 2013. For 2012 the suspension concerns pension benefits higher than EUR 1 400 a month and for 2013 it concerns pension benefits higher than EUR 935 a month (twice the minimum). The general rule has since January 2009, been to index benefits up to five times the minimum pension with full price indexation above this threshold, pensions in payment have been up rated with 75% of price inflation.

### *Social assistance*

Under the contributive scheme, the amount of the pension is determined solely on the basis of contributions. However, for people with a contributory pension below a minimum level (EUR 481 a month in 2012), the system offers the possibility of social payments to reach EUR 6 253 of pension income per year. People without a contributory pension can claim a means-tested tax-exempted social assistance benefit from the age of 65: the *assegno sociale*. From 2013, this age is increased to 65 years and three months and the entitlement age will increase in line with life expectancy, in the same way as pensions do. Including supplements, the 2012 value of the *assegno sociale* for a single person was EUR 5 582.33 per year, or EUR 429.41 a month with 13 payments a year. In 2013, the benefit will rise to EUR 442.30 per month (EUR 5 749.90 per year). Beneficiaries of the *assegno sociale*

aged at least 70 can have an increase of their monthly pension for up to EUR 188.03; thus reaching a maximum income from social transfers of EUR 8 026.72 a year. The value of the minimum contributory pension and the *assegno sociale* for a person aged 65 years are equivalent to 22% and 28% of average earnings, respectively.

### *Voluntary private pensions*

There is an additional voluntary, supplementary occupational system. It consists of both open funds and closed collectively agreed funds. The closed funds can be funded by both employers and employees as well as from the TFR. The open funds provide an annuity based on contributions. The current TFR contribution rate is 6.91% of gross salary. The invested funds are capitalised each year with the application of a fixed rate of 1.5% and a variable component, equal to 75% of the annual increase in the consumer-price index. The number of workers enrolled in a private pension fund is still low. For this reason, the Finance Act for 2007 has anticipated (with some changes) the pension reform recently passed which introduced further measures in order to faster the development of the second pillar: *a)* higher fiscal incentives; and *b)* silence-as-assent for the transfer of the private severance pay (TFR). In particular, the latter means that the current severance pay accumulation is supposed to be transferred to private pension funds, unless he/she applies for communicating his/her refusal. However, enrolments in the private pension funds remain on a voluntary basis.

## Variant careers

### *Early retirement*

The 2011 reform has stressed the importance to ensure an adequate contribution record for workers wishing to retire before pension age. For this reason, the former system of quotas – which allowed the departure satisfying age/contribution requirements in different combinations – has been abolished. Under the previous system, workers could retire at age 61 if they had contributed to the system for 35 years. Today, for people who used to be fully enrolled in the defined-benefit scheme before the 2011 reform, retirement without penalty is possible from age 62 if contributions have been paid for at least 42 years and one month for men and 41 years and one month for women. These requirements will be lengthened in line with life expectancy. In 2013 the necessary requirement has increased with four months for both men and women. For every year of early retirement, pension entitlements are reduced by 1%-age point. This reduction increases to 2%-age points for each additional year if the age of departure is two years below the minimum of 62. The penalty, however, does not apply to workers who will meet the contribution requirement by 2017. For people under the contributive or mixed system, early retirement is possible only if the person fulfils the contribution requirement, without penalties due to age. Alternatively, these workers can retire at age 63 given the condition that they have paid contributions for at least 20 years.

### *Late retirement*

It is possible to retire after age 65, the new transformation coefficients being defined between age 62 and 70. Between 2004 and 2008, people who continued working after reaching pension age had the right to a monthly "bonus" in their payroll, equivalent to 32.7% of the salary (i.e. the amount of the contribution due). This benefit was non-taxable.

### *Childcare*

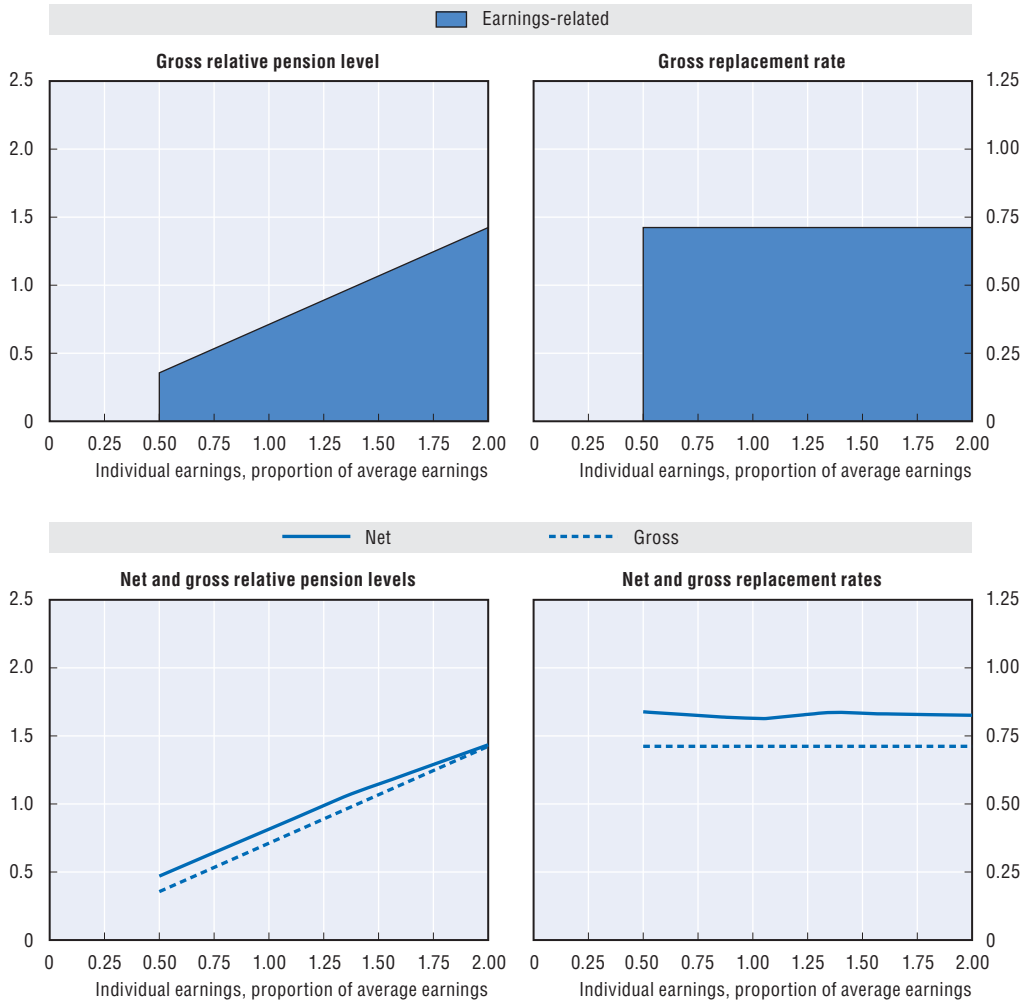
The pension is increased for mothers by giving them a more generous transformation coefficient. For mothers of one or two children this is the transformation coefficient of their actual retirement age plus one year. For three or more children this is the actual retirement age plus two years. Thus, according to the projected transformation coefficients, the effect is to increase the pension by around 3% for one or two children, and 6% for three or more children. Alternatively, working mothers under the contributive or mixed scheme have the possibility to anticipate retirement of four months for every child, up to a maximum of 12 months.

### *Unemployment*

For businesses facing situations of distress, public assistance intervenes to grant earnings to workers through the *Cassa Integrazione Guadagni* (CIG). The CIG is payable to all employees excluding executives, trainees/apprentices and home workers. The length of the coverage varies, but the benefit is generally offered for up to 12 or 24 months. The allowance is equivalent to 80% of the last salary, but there are ceilings. In 2012, the maximum payable benefit was of EUR 931.28 per month for workers with a working salary up to EUR 2 014.77 per month, or EUR 24 177 per year. For higher earnings, the allowance could be as high as EUR 1 119.32 per month. The payment is subject to a reduction of 5.84% for social contributions. For this reason, the maximum monthly net benefits were EUR 876.89 and EUR 1 053.95 respectively. This benefit is then subject to normal income taxation.

For people in unintentional unemployment, there is the opportunity of a monthly allowance for up to eight months if the worker is aged below 50 years or up to 12 months otherwise. Entitlement to such benefit requires a minimum of one year of full contribution in the two years before the dismissal. Lower requirements apply to former trainees/apprentices or employees in the construction or agricultural sector. The benefit is equivalent to 60% of the average salary in the three months before the dismissal. After the first six months, the benefit lowers to 50% of the average salary. There is no reduction due to contribution rates. In 2012, the ceilings to payments were of EUR 931.28 and EUR 1 119.32 per month for workers with an average salary within and above EUR 2 014.77 per month, respectively. The unemployment allowance has been reformed in 2012 and new rules apply from 1 January 2013.

## Pension modelling results: Italy




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 60.5 | 35.6 | 53.4 | 71.2 | 106.8 | 142.4 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 71.1 | 47.0 | 64.3 | 81.5 | 114.6 | 143.5 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 71.2 | 71.2 | 71.2 | 71.2 | 71.2 | 71.2 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 82.0 | 83.9 | 82.6 | 81.5 | 83.3 | 82.6 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 11.9 | 11.9 | 11.9 | 11.9 | 11.9 | 11.8 |
| *(multiple of individual gross earnings)* | *13.7* | *13.7* | *13.7* | *13.7* | *13.7* | *13.5* |
| Net pension wealth | 9.7 | 10.9 | 10.0 | 9.5 | 8.9 | 8.2 |
| *(multiple of individual gross earnings)* | *11.1* | *12.5* | *11.4* | *10.8* | *10.1* | *9.4* |

StatLink http://dx.doi.org/10.1787/888932909105

# Japan

**Japan: Pension system in 2012**

The public pension system has two tiers: a basic, flat-rate scheme and an earnings-related plan (employees' pension scheme).

**Key indicators**

| | | Japan | OECD |
|---|---|---|---|
| Average worker earnings (AW) | JPY (million) | 4.79 | 3.70 |
| | USD | 55 300 | 42 700 |
| Public pension spending | % of GDP | 10.2 | 7.8 |
| Life expectancy | At birth | 83.5 | 79.9 |
| | At age 65 | 21.7 | 19.1 |
| Population over age 65 | % of working-age population | 42.2 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909124

## Qualifying conditions

The basic old-age pension is paid from the age of 65 with a minimum of 25 years' contributions. The law passed in 2012, and the basic old-age pensions will be paid with a minimum of ten years' contributions from October 2015. The full basic pension requires 40 years of contributions, with benefits adjusted proportionally for shorter or longer contribution periods.

The employees' pension is paid from the age of 65. The employees' pension is paid in addition to the basic pension, with a minimum of one month contribution, provided a pensioner is entitled to the basic pension. A "specially provided" employees' pension age is gradually being raised from 60 to 65 years (between 2001 and 2013 for men and between 2006 and 2018 for women) for the flat-rate component and from 60 to 65 years (between 2013 and 2025 for men and between 2018 and 2030 for women) for the earning-related component. The employee's pension is adjusted for the remuneration and shorter or longer contribution periods.

## Benefit calculation

### *Basic*

The full basic pension for 2012 was JPY 786 500 per year, corresponding to 16% of average worker earnings. The basic pension is price indexed.

### *Social assistance*

There is social assistance as other income security system. The social assistance amount for single household aged 60 to 69 in Tokyo in 2012 is JPY 969 840 per year excluding housing benefit and other relevant benefit.

### *Earnings-related*

The employees' pension is paid from the age of 65. The amount of pension benefit is adjusted for the remuneration and the period of contributions.* There is a ceiling on earnings

* Monthly amount of average pensionable remuneration) × 0.7125% × (the period of contributions until March 2003) + (amount of average pensionable remuneration including bonuses) × 0.5481% × (the period of contributions after April 2003).

subject to contributions of JPY 620 000 a month equivalent to 155% of average worker earnings. Until 2025, a "specially provided" employees' pension is partially available between 60 and 64. A "specially provided" employees' pension has a flat-rate and earnings-related component. The flat-rate benefit depends on year of birth. In 2012, it ranged between JPY 1 676 and JPY 3 143 per month of contributions. The earnings-rated benefit depends on remuneration and the period of contributions, similar to the employees' pension. A "specially provided" employees' pension will be phased out by 2013 for men, by 2018 for women.

The employees' pension in payment is price indexed.

### *Contracting out*

Employers, who have at least 1 000 employees, may "contract out" a portion of the earnings-related pension (substitution part) if they cover their employees themselves; around 15% of employees participate in these schemes. Contracting-out requires that employers offer at least 150% (before 2005: 110%) of the benefit that the public earnings-related scheme would have provided. The calculation of the pension required for contracting out is based on lifetime average nominal earnings. Indexation of pensions in payment and valorisation of past earnings is financed by the government.

The contribution rate in contracted-out schemes is determined by the government depending on the age structure of the covered employees and the actuarial assumption. Until 1996, however, the rate was uniform across plans. Since 2005, the rate ranges between 2.4% and 5% of total remuneration.

Since 2001, the government has also been promoting defined-contribution pension schemes and defined-benefit occupational pension schemes. As a consequence, several employees' pension funds have been dissolved.

## Variant careers

### *Early retirement*

Until 2001, a "specially provided" employees' pension was available at age 60. This is being phased out and retirement with a full benefit will not be possible before age 65.

Early retirement at a reduced benefit is possible in both the basic and earnings-related schemes. The benefit is reduced by 0.5% per month of early retirement, i.e. 6% per year. Individuals can claim the flat-rate component of the employees' pension between 60 and 65. The pension in payment is indexed to net average earnings until the pensioner reaches age 65 and price-indexed after age 65.

### *Late retirement*

It is possible to defer receipt of the basic and earnings-related pensions. Deferral increases the pension benefit by 0.7% per month, i.e. 8.4% per year. Pension rights continue to accrue for each year of contributions beyond 65.

From 2006, combining work and pension after age 65 became possible provided total income (from earnings and pension) does not exceed JPY 480 000. Above this limit, half of the excess will be reduced from the full earnings-related pension payment but basic pension will be paid in full. From April 2007, the reduction has also been applied to the workers over 70 but they do not need to pay contribution.

### *Childcare*

Periods spent out of paid work for childcare are credited in the earnings-related scheme. As of 2005, the maximum period has been extended from one to three years. If additional children are born while caring for a child, this period is extended until when the last child becomes three years old. During this period, contributions are considered to be made fully based on the earnings just before leave, and in calculating the benefit and qualifying conditions the entire exemption period is credited. In case parents work part-time because of childcare responsibilities, the contribution will be made based on the current earnings but the pension benefits will be calculated based on their full-time previous earnings. From 2012 maternity leave are exempt from social insurance premiums.

If people stay out of paid work after three years and income level drops, the rule under unemployment, below, also applies.

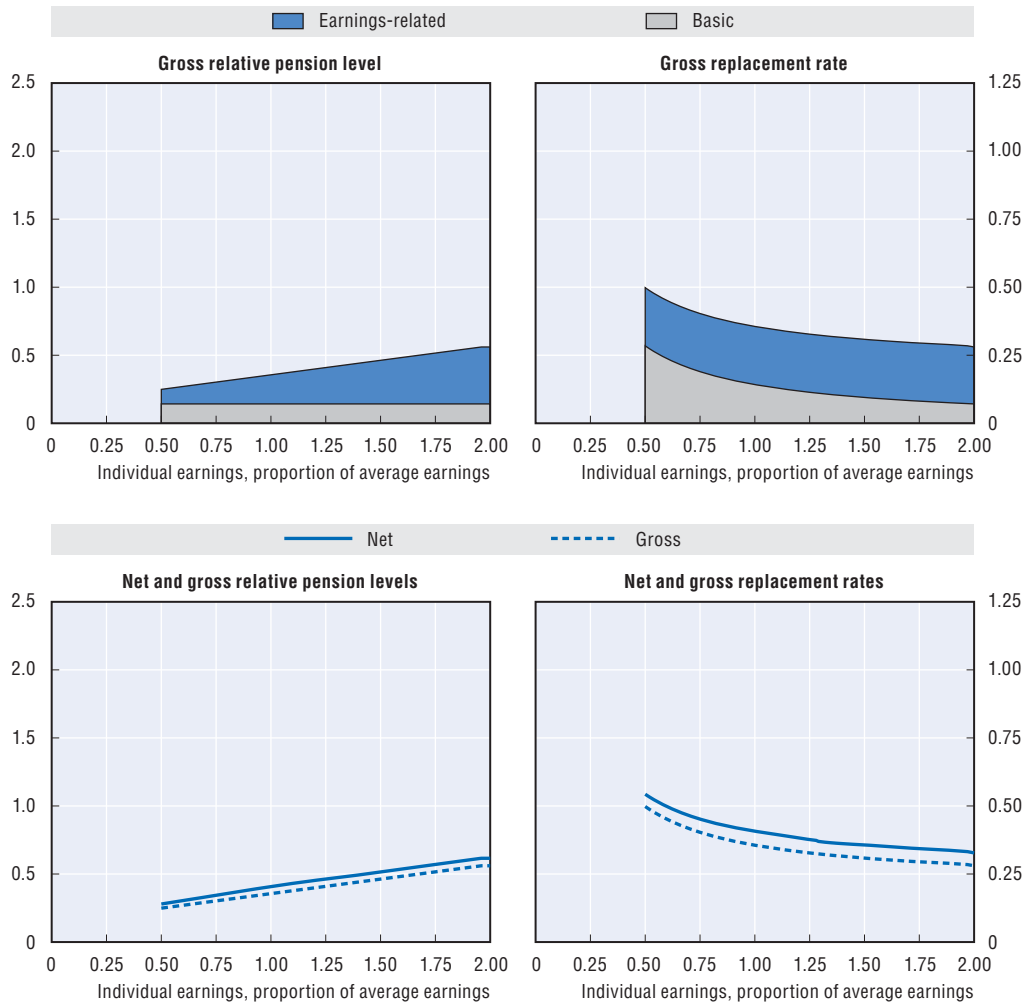
### *Unemployment*

Workers who become unemployed or whose income is below a certain level do not need to contribute to the earnings-related scheme but they need to contribute to the basic scheme. Unemployed people may be exempted from paying all, three-quarters, a half or one-quarter of contributions, depending on the household income level. A single person with previous year's income less than JPY 570 000 is exempted from paying any contribution. People with income less than JPY 930 000 are entitled to one-quarter of contributions, those with income lower than JPY 1 410 000 pay one-half of contributions and those with income less than JPY 1 890 000 pay three-quarters of contributions.

For the periods of full exemption, people are entitled to one-third (after April 2009, one-half) of the basic pension and for the period with one-quarter of contribution, one-half (after April 2009, five-eighths) of the basic pension. For the periods with one-half contribution, people gain two-thirds (after 2009, three-quarters) of the basic pension and for the period with three-quarters of contribution, five-sixths (after April 2009, seven-eighths) of the basic pension is credited. The exempted period is counted as full contribution period in assessing the qualifying conditions.

It is possible to pay contributions later to receive higher pension after retirement.

## Pension modelling results: Japan




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 33.0 | 24.9 | 30.2 | 35.6 | 46.3 | 56.1 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 37.7 | 28.0 | 34.4 | 40.8 | 51.5 | 61.6 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 37.5 | 49.8 | 40.3 | 35.6 | 30.8 | 28.0 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 42.5 | 54.3 | 45.2 | 40.8 | 35.7 | 32.8 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 6.8 | 9.1 | 7.4 | 6.5 | 5.6 | 5.1 |
| *(multiple of individual gross earnings)* | *7.9* | *10.5* | *8.5* | *7.5* | *6.5* | *5.9* |
| Net pension wealth | 6.2 | 8.0 | 6.6 | 5.9 | 4.9 | 4.4 |
| *(multiple of individual gross earnings)* | *7.1* | *9.3* | *7.6* | *6.8* | *5.7* | *5.1* |

StatLink http://dx.doi.org/10.1787/888932909143

# Korea

**Korea: Pension system in 2012**

The Korean public pension scheme was introduced relatively recently. It is an earnings-related scheme with a progressive formula, since benefits are based on both individual earnings and the average earnings of the insured as a whole.

**Key indicators**

| | | Korea | OECD |
|---|---|---|---|
| Average worker earnings (AW) | KRW (million) | 38.50 | 45.49 |
| | USD | 36 100 | 42 700 |
| Public pension spending | % of GDP | 2.1 | 7.8 |
| Life expectancy | At birth | 81.3 | 79.9 |
| | At age 65 | 19.5 | 19.1 |
| Population over age 65 | % of working-age population | 17.9 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909162

## Qualifying conditions

The pension is currently available from age 60 provided the individual has contributed for ten years or more. A reduced, early pension can be drawn from age 55.

The normal pension age is gradually being increased reaching 65 from 2033. The modelling assumes the long-term pension age of 65 and that the early pension age will be raised from 55 to 60.

## Benefit calculation

### *Earnings-related*

The earnings replacement rate of the pension for 40 years of contributions is 48% in 2012 and has be reduced 0.5% for every year between 2009 until 2012 and will continue to be reduced until reaching 40% in 2028. The earnings measure is the average of individual lifetime average earnings, valorised in line with wage growth, and average earnings of the insured of the national pension, measured over the previous three years and valorised in line with prices (A value). There is a ceiling on pensionable earnings of KRW 3.89 million per month, equivalent to 206% of the A value in 2012. (A value in 2012 = KRW 1 891 771.)

The maximum level of benefit is 100% of individual earnings. The benefit is indexed to prices after retirement. People aged 60 and over do not pay contributions and benefits are not accrued after this age.

### *Basic age pension*

Some 70% of those aged 65 and over can get the means tested "basic age pension". This benefit is a flat rate of 5% of the three-year average earnings of the insured of the national pension every year. The benefit is reduced in phases according to income and assets of the aged. Couple rate is 80% of single rate each.

## Variant careers

### *Early retirement*

When, starting in 2013, the normal pension age increases from 60 to 65, the early pension age is assumed to increase from 55 to 60. At 60, the early old-age pension will then be 70% of the normal old-age pension. The benefit is increased by 6% every year, so a person who retires at age 64 will be entitled to 94% of the full old-age pension.

### *Late retirement*

People can earn extra pension from retiring late. The benefit is increased by 7.2% every year and the maximum deferral is five years until age 70. Every pensioner below 65 can apply the deferred pension once.

If the pensioners between 60 and 64 have earnings higher than the average earnings of the insured as a whole, their pension paid at 60 will be 50% of full old-age pension with the benefit increasing by 10% according to age increase, which is known as the "active old-age pension". Therefore, if the pensioner between 60 and 64 is working, they can choose either the "deferred pension" or the "active old-age pension".

### *Childcare*

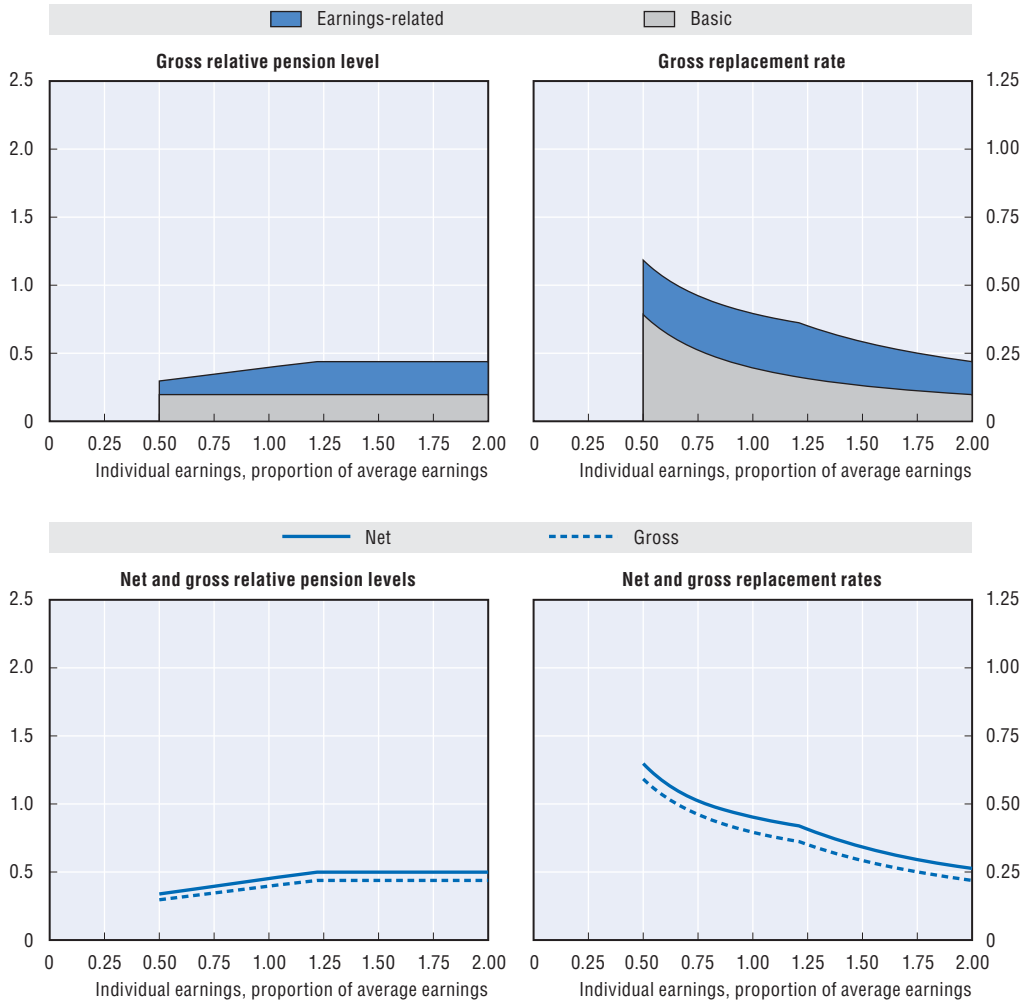
A person who is not engaged in labour market activities for childcare could apply for contribution exemption and be exempted from payment of contributions during the period requested. They are able to increase the insured period by paying the exempted contributions by themselves after resuming income-earning activities.

The insured who gives birth to a child, except for the first child, after 1 January 2008 can get pension credits. The credits given are 12 months to a maximum of 50 months according to the number of children being born after that time.

### *Unemployment*

An unemployed person could apply for contribution exemption and be exempted from payment of contributions during the period requested. They are able to increase the insured period by paying the exempted contributions by themselves after resuming income-earning activities.

## Pension modelling results: Korea




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 36.0 | 29.6 | 34.6 | 39.6 | 43.8 | 43.8 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 41.1 | 33.9 | 39.5 | 45.2 | 49.9 | 49.9 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 43.9 | 59.2 | 46.1 | 39.6 | 29.2 | 21.9 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 49.1 | 64.8 | 51.2 | 45.2 | 34.2 | 26.3 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 7.9 | 10.6 | 8.3 | 7.1 | 5.2 | 3.9 |
| *(multiple of individual gross earnings)* | *9.2* | *12.4* | *9.6* | *8.3* | *6.1* | *4.6* |
| Net pension wealth | 7.8 | 10.6 | 8.2 | 7.0 | 5.2 | 3.9 |
| *(multiple of individual gross earnings)* | *9.1* | *12.3* | *9.6* | *8.2* | *6.0* | *4.5* |

StatLink http://dx.doi.org/10.1787/888932909181

# Luxembourg

**Luxembourg: Pension system in 2012**

The public pension scheme has two components: a flat-rate part depending on years of coverage and an earnings-related part. There is also a minimum pension.

**Key indicators**

| | | Luxembourg | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 51 300 | 32 400 |
| | USD | 67 700 | 42 700 |
| Public pension spending | % of GDP | 7.7 | 7.8 |
| Life expectancy | At birth | 80.4 | 79.9 |
| | At age 65 | 19.2 | 19.1 |
| Population over age 65 | % of working-age population | 22.6 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909200

## Qualifying conditions

An early pension is payable from age 57 with 40 years' (compulsory or voluntary) contributions. With 40 years' coverage of compulsory, voluntary or credited contributions, the pension can be paid from age 60. Since the modelling assumes a full career from age 20, it is assumed in the base case that workers retire at age 60. Otherwise, the normal pension age is 65 (subject to at least ten years' contributions).

## Benefit calculation

### *Basic*

This was worth EUR 436 per month in 2013, subject to 40 years' coverage. This is equivalent to around 10% of average earnings. For incomplete insurance, the benefit is reduced proportionally; formally, the basic pension is 23.613% of a reference amount, which was EUR 1 846 in 2013.

There is also an "end-of-year allowance", which adds EUR 59 per month to the pension for 40 years' contributions. This is proportionally reduced for insurance periods under 40 years, implying around EUR 1.48 per month for each year covered. The end-of-year allowance is indexed to nominal earnings (see below).

### *Earnings-related*

The accrual rate for the earnings-related pension is 1.844%. The earnings measure used in the formula is lifetime average pay re-valued in line with nominal earnings.

The accrual rate is higher for older workers and those with longer contribution periods. For each year beyond 93 (age + contribution years), the accrual rate is increased by 0.011 percentage points. The maximum accrual rate is 2.05% per year. Under the standard assumption of a full career starting at age 20, the accrual rate is 1.921%.

The maximum pension in 2013 was EUR 7 692 per month (formally specified as 4.17 times the reference amount). This is just under 180% of average earnings.

Benefits are automatically indexed to changes in the cost of living (if cumulative inflation is at least 2.5%). In addition, adjustments to increases in real wages must be considered every year. From 1 January 2013 adjustments of pensions to wages are only possible as long as annual income from contributions exceeds pension expenditure.

### *Minimum*

The minimum is EUR 1 662 per month (defined as 90% of the reference amount), conditional on 40 years' coverage, equivalent to about 39% of average earnings. This is proportionally reduced for shorter periods subject to a minimum of 20 years of service periods (compulsory, voluntary or credited contributions).

### *Social assistance*

The social-assistance safety-net level is EUR 1 315 per month for a single person.

## Variant careers

### *Early retirement*

It is possible to retire at 57 with 40 years' paid contributions and at 60 with 40 years' paid or credited contributions. Early retirees may work provided earnings and the premium benefit do not exceed the average of the five best yearly incomes of the career. There is no actuarial adjustment to benefits for early retirement.

In addition, there are a number of pre-retirement programmes. Relevant here are the pre-retirement solidarity and pre-retirement adaptation schemes. The first allows early retirement on the condition that the employer hires a job seeker assigned by the employment administration. The second allows early retirement for older workers losing their jobs due to restructuring or bankruptcy. Both schemes apply from age 57 up to age 60. The pre-retirement benefit is 85% of prior earnings in the first year, 80% in the second year, and 75% in the third. The earnings measure is pay in the preceding three months.

### *Late retirement*

The pension has to be claimed at the retirement age of 65. After this age, it is possible to combine work and pension benefits without reductions in the pension benefit.

### *Childcare*

"Baby years" (two years for one and four years for two children) are credited as insured time. Pensionable earnings are based on pay immediately before the baby years are claimed. The period counts as qualifying conditions and enters in the flat rate component of the pension formula.

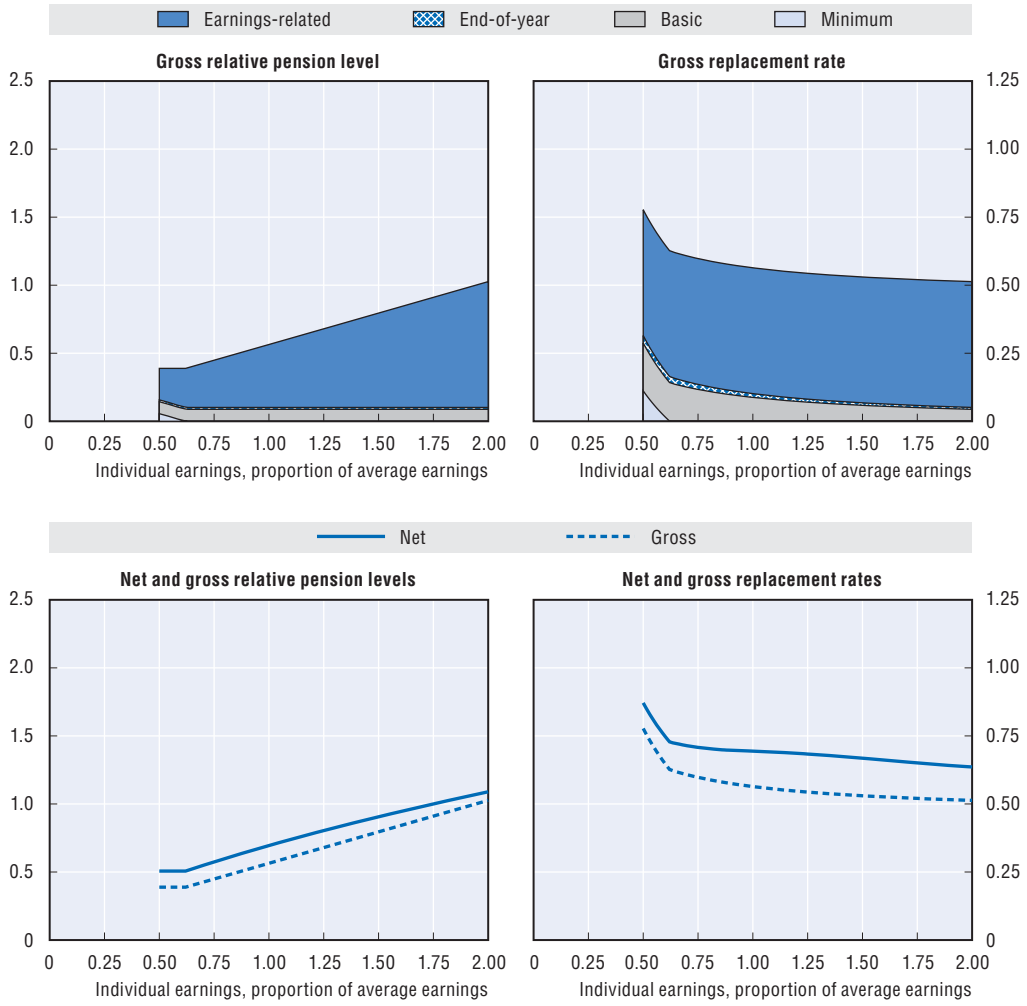
Employees who could not claim baby-years due to an insufficient contribution period have the right to a special monthly allowance in retirement of EUR 106 per child.

Non-contributory periods bringing up children under age six count towards the qualifying conditions.

### *Unemployment*

Periods of receiving unemployment benefits are credited: pension contributions from the benefits are paid by state (two-thirds) and beneficiary (one-third). The period unemployed counts towards the qualifying conditions and enters in the earnings-related component of the pension formula. For this period, unemployment benefit is used as a base for pension calculation.

## Pension modelling results: Luxembourg




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 46.2 | 38.9 | 44.8 | 56.4 | 79.5 | 102.6 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 58.8 | 50.7 | 57.3 | 69.4 | 90.7 | 108.9 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 59.3 | 77.7 | 59.8 | 56.4 | 53.0 | 51.3 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 70.5 | 87.1 | 70.8 | 69.4 | 66.8 | 63.6 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 15.0 | 19.7 | 15.2 | 14.3 | 13.5 | 13.0 |
| *(multiple of individual gross earnings)* | *17.3* | *22.7* | *17.5* | *16.5* | *15.5* | *15.0* |
| Net pension wealth | 13.8 | 18.6 | 14.0 | 12.7 | 11.1 | 10.0 |
| *(multiple of individual gross earnings)* | *15.9* | *21.4* | *16.1* | *14.6* | *12.7* | *11.5* |

StatLink http://dx.doi.org/10.1787/888932909219

# Mexico

**Mexico: Pension system in 2012**

Old-age pensions for private sector workers that entered either after 1 April 2007 or before that date but opted for the new regime, are covered under a mandatory defined-contribution (DC) scheme. Under the new DC schemes, there is a minimum pension.

**Key indicators**

| | | Mexico | OECD |
|---|---|---|---|
| Average worker earnings (AW) | MXN | 94 100 | 553 600 |
| | USD | 7 300 | 42 700 |
| Public pension spending | % of GDP | 1.7 | 7.8 |
| Life expectancy | At birth | 77.3 | 79.9 |
| | At age 65 | 18.7 | 19.1 |
| Population over age 65 | % of working-age population | 11.4 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909238

## Qualifying conditions

Private sector workers: Normal retirement age is 65 for men and women, subject to 1 250 weeks (around 24 years) of contribution.

## Benefit calculation

### *Funded scheme*

Private sector workers: Workers and employers contribute a total of 6.275% of earnings to an individual account, to which is added a government contribution equivalent to 0.225% of earnings. An additional 5% contribution is made to an individual housing sub-account (a scheme known as Infonavit) which reverts to the retirement account when it is not used. Finally, the government contributes a fixed amount quarterly indexed to inflation into individual retirement accounts per day of contribution called *cuota social* or social fee. As of May 2009, the Social Security Law was amended in order to establish a progressive social fee, seeking to benefit workers who earn the lowest salaries. The social fees as of December 2012 are as follows: for workers who earn up to one minimum wage, the social fee is MXN 4.44; for those who earn between 1.01 and four times the minimum wage, MXN 4.25; for those in the 4.01 to seven times the minimum wage bracket, MXN 4.07; for those in the 7.01 to ten times the minimum wage bracket, MXN 3.88 and finally, for those who earn between 10.01 and 15 times the minimum wage, MXN 3.70. For higher wage earners there is no social fee contribution. The social fee is indexed to inflation every three months.

There is a ceiling on contributions which is 25 times the minimum wage.

The pensioner who opts for the alternative of phased withdrawals, can hire at any time a life annuity if the monthly life annuity value is greater than the guaranteed pension.

At retirement, the individual converts the accumulated account balance (discounting the premium for survivors' benefits insurance) into a price-indexed annuity or a phased withdrawal. Annuity rates are sex-specific and given the case annuities consider disability.

There is a ceiling on contributions which is ten times the minimum wage.

The pensioner who opts for the alternative of phased withdrawals, can hire at any time a life annuity if the monthly life annuity value is greater than the guaranteed pension.

The calculations assume a private sector worker that converts the accumulated account balance (discounting a survival insurance that must be bought to cover the survivors' benefits) into a price-indexed annuity at normal pension age. Annuity rates are sex-specific.

### *Minimum pension*

Private sector workers: The minimum (guaranteed) pension is equivalent to a 1997 minimum wage value indexed to inflation (MXN 26 112 in 2012).

## Variant careers

### *Early retirement*

Private sector workers: Early retirement is possible from age 60 up to 64 for men and women. Conditions are that the worker is not employed and that at least 1 250 weekly contributions have been made.

Members may retire at any age prior to 60 years old, if the accumulated capital in their account allows them to buy a life annuity that is at least 30% higher than the minimum guaranteed pension. In this case, the worker still has to complete the 1 250 weeks of contributions.

### *Late retirement*

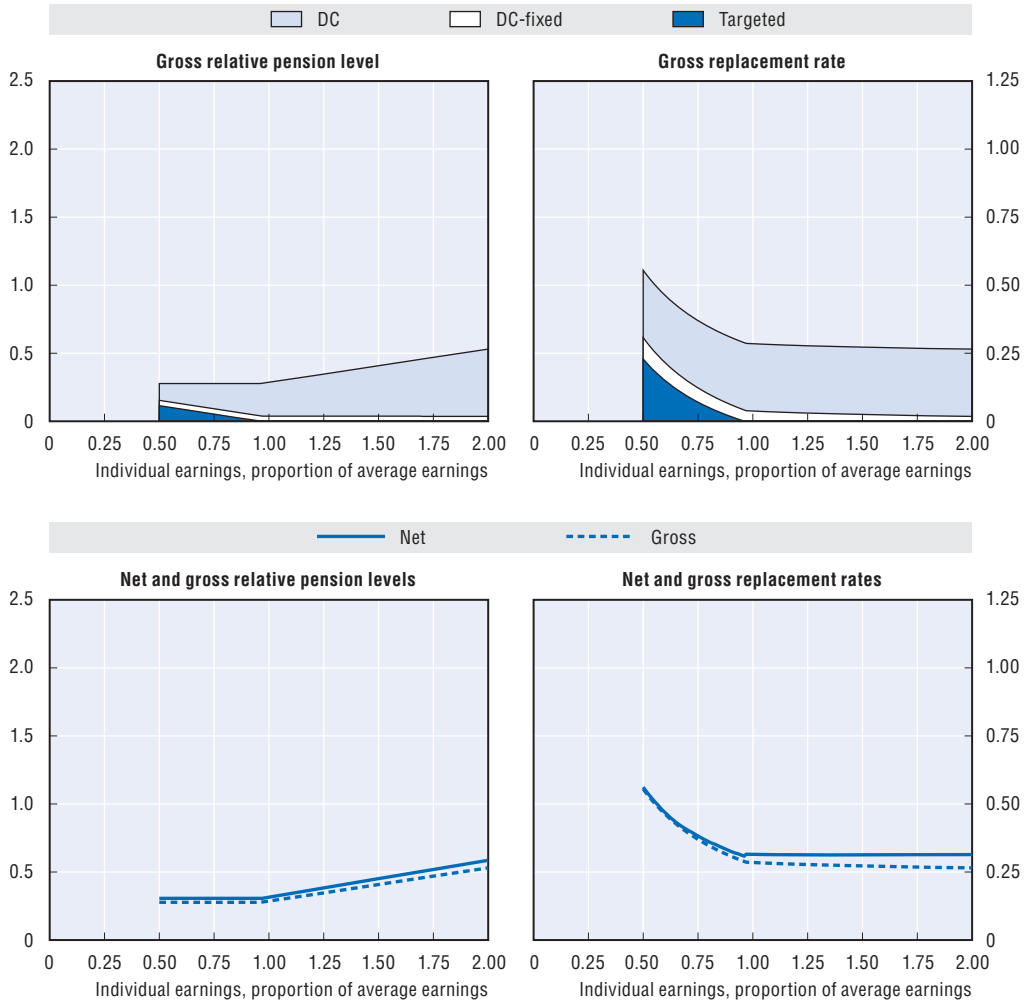
It is not mandatory to retire at 65. It is possible to defer the pension after age 65 for private sector workers.

### *Unemployment*

Private sector workers: When a worker is unemployed, he/she will have the right to withdraw some money from his/her old-age/retirement sub-account once every five years. Unemployed members whose individual account were opened at least five years in advance to the unemployment spell may withdraw the lower of the equivalent of 90 days of their average salary during the last 250 weeks in which he/she paid contributions or 11.5% of their account balance. The benefit may be distributed in a maximum of six monthly instalments. Unemployed members whose individual account were opened at least three years in advance to the unemployment spell and have paid at least two years of contributions may withdraw, in only one instalment, up to 30 days of their salary with a limit of ten minimum monthly wages.

One can claim the unemployment benefit amount from the forty-sixth natural day in which they were unemployed.

## Pension modelling results: Mexico




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 27.7 | 27.7 | 27.7 | 28.5 | 40.9 | 53.0 |
| *(% average gross earnings)* | | | | *27.7* | *37.7* | *48.9* |
| Net relative pension level | 30.7 | 30.7 | 30.7 | 31.5 | 45.2 | 58.6 |
| *(% net average earnings)* | | | | *30.7* | *41.6* | *54.0* |
| Gross replacement rate | 44.7 | 55.5 | 37.0 | 28.5 | 27.2 | 26.5 |
| *(% individual gross earnings)* | | | | *27.7* | *25.1* | *24.4* |
| Net replacement rate | 45.3 | 56.2 | 38.2 | 31.5 | 31.3 | 31.4 |
| *(% individual net earnings)* | | | | *30.7* | *28.9* | *28.9* |
| Gross pension wealth | 7.6 | 9.4 | 6.2 | 4.8 | 4.6 | 4.5 |
| *(multiple of individual gross earnings)* | *8.2* | *10.2* | *6.8* | *5.1* | *4.6* | *4.5* |
| Net pension wealth | 7.6 | 9.4 | 6.2 | 4.8 | 4.6 | 4.5 |
| *(multiple of individual gross earnings)* | *8.2* | *10.2* | *6.8* | *5.1* | *4.6* | *4.5* |

StatLink http://dx.doi.org/10.1787/888932909257

# Netherlands

### Netherlands: Pension system in 2012

The pension system has two main tiers, consisting of a flat-rate public scheme and earnings-related occupational plans. Although there is no statutory obligation for employers to offer a pension scheme to their employees, industrial-relations agreements mean that 91% of employees are covered. These schemes are therefore best thought of as quasi-mandatory.

### Key indicators

| | | Netherlands | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 46 400 | 32 400 |
| | USD | 61 200 | 42 700 |
| Public pension spending | % of GDP | 5.1 | 7.8 |
| Life expectancy | At birth | 80.9 | 79.9 |
| | At age 65 | 19.2 | 19.1 |
| Population over age 65 | % of working-age population | 27.3 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909276

## Qualifying conditions

The basic old-age pension is payable from age 65. All residents are eligible for this benefit. Normal retirement age is typically also 65 in occupational plans. With effect from 2013, the statutory pension age will gradually increase to 67 in 2023. Thereafter, this age will be adjusted to life expectancy. In 2013 a proposal is made to speed up the increase from 2015 on to the age of 67 in 2021.

## Benefit calculation

### *Basic*

For a single person, the gross pension benefit in 2012 was EUR 1 079.93 per month for the first half of the year and EUR 1 085.63 per month for the second half of the year. There was an additional holiday allowance of EUR 720.18 per year.

This gives an annual total of EUR 13 713.54, or 30% of average earnings. For a couple, the total yearly benefit was EUR 19 130.76. The benefit value is linked to the net minimum wage, which is uprated biannually.

The basic benefit accrues at 2% of the full value for each year a worker lives or works in the country. There is also a social-assistance scheme for older people. Its value is equal to the net basic pension.

### *Occupational schemes*

The Netherlands also has a private pension system with broad coverage. The system consists of 4 544 pension funds at the beginning of 2012 and 414 at the end of the year. 74 of these funds concern industry-wide schemes at the end of 2012. Under certain conditions, Dutch companies may opt out of these plans if they offer their own scheme with equivalent benefits. Furthermore there are 327 single-employer plans. Another 40 818 (end of 2011) mainly smaller employers offer schemes operated by insurance companies.

Approximately 93.5% of the employees in pension funds at the beginning of 2012 are covered by a defined-benefit scheme. The remaining employees in pension funds are covered by a defined-contribution scheme.

For almost 98% of these participants in defined-benefit schemes the earnings measure is based on lifetime average earnings, and for less than 1% on the final salary. For the remainder it is either a combination of the two (1%) or a fixed amount (less than 1%).

Most final-salary schemes give 1.75% of those earnings for each year of service, implying a replacement rate of 70% after a complete 40-year career. In most average salary schemes the accrual rate varies from 1.75% to 2.25% per year of service. From 2014 the maximum allowed accrual rates will be lowered from 2% to 1.9% for final-salary schemes and from 2.25% to 2.15% for average salary schemes. Together with these lower accrual rates the retirement age for building up new pension rights is increased from 65 to 67.

There are no legal requirements for valorisation of earlier years' pay and practice varies between schemes according to rules agreed upon by the social partners. For approximately 90% of the participants in average wage schemes, past earnings are valorised in line with growth of average earnings while for 10% the rate of inflation is used. The modelling assumes an average salary scheme with valorisation to average earnings.

Although there is no legal uprating requirement, most pensions in payment are raised on an annual basis as well. Nearly 55% of the pensions in payment are indexed to wage growth in the respective industry, while some 42% of the pensions are indexed to prices, 3% is a mixture of wage and price growth.

Pension rights are fully transferable when people change jobs. There is a legal requirement to index pension rights of people leaving a scheme before retirement in exactly the same way as pensions in payment are indexed. Vesting periods are very short.

There is no ceiling to pensionable earnings.

Occupational pensions are integrated with the public pension system. The current tax rules allow a maximum benefit of 100% of final pay at 65 from both public and private systems. Most schemes have a target total replacement rate of 70% of final pay, so private benefits are reduced by a franchise amount.

## Variant careers

### *Early retirement*

The basic pension is not payable before age 65.

In 2005, the tax-favoured status of separate early retirement programmes (called VUT) and which led to pre-pension benefits between ages 60 and 65 was abolished to stimulate labour-market participation of older workers.

### *Late retirement*

It is not possible to defer the basic old-age pension scheme after 65 (gradually increasing to 67 in 2023). It is possible to combine the basic pension receipt with work.

The rules on pension deferral vary between occupational plans. It is possible to combine the occupational pension scheme with work. Indeed, some schemes allow a member to draw a pension and continue to work with the same employer. There is no legislation regarding this issue.

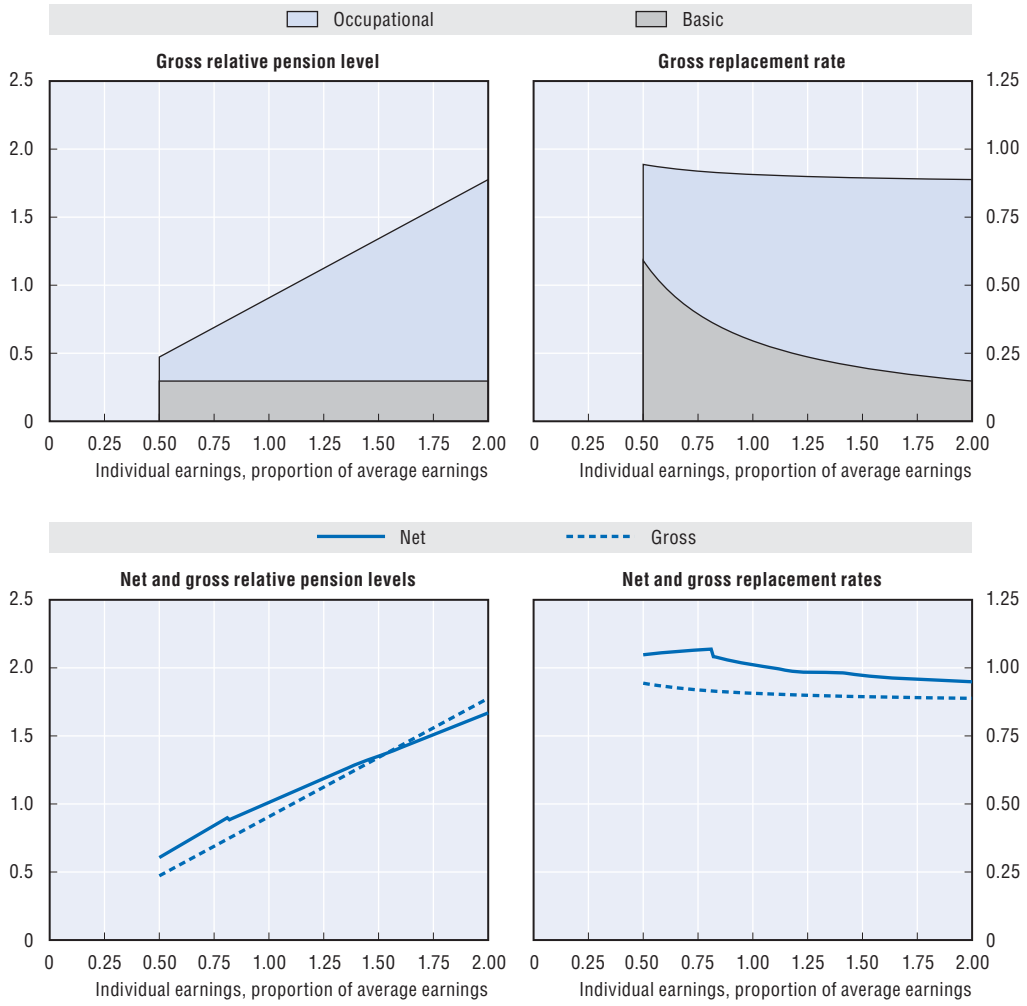
### *Childcare*

In the basic old-age pension scheme, periods out of paid work are automatically covered. In the occupational schemes, there are no credits for childcare periods during which people are out of paid work but the accrual of pension rights continues over remaining working years. However, many schemes allow voluntary contributions to cover the aforementioned periods of absence.

### *Unemployment*

There are no credits in the occupational plans for periods of unemployment. Again, the basic old-age scheme covers such periods automatically. In addition, the social partners administer a fund (FVP) which makes it possible for older workers to extend their pension accrual for a certain period during unemployment. The government has no formal relationship with this fund. The FVP fund is in liquidation now.

## Pension modelling results: Netherlands




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 76.8 | 47.2 | 68.9 | 90.7 | 134.1 | 177.6 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 89.9 | 60.6 | 84.2 | 101.1 | 135.1 | 166.9 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 91.4 | 94.4 | 91.9 | 90.7 | 89.4 | 88.8 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 103.8 | 104.8 | 106.6 | 101.1 | 97.2 | 94.9 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 17.8 | 18.4 | 17.9 | 17.6 | 17.4 | 17.3 |
| *(multiple of individual gross earnings)* | *20.4* | *21.1* | *20.5* | *20.3* | *20.0* | *19.8* |
| Net pension wealth | 12.9 | 14.6 | 13.5 | 12.1 | 10.8 | 10.0 |
| *(multiple of individual gross earnings)* | *14.8* | *16.7* | *15.5* | *14.0* | *12.4* | *11.5* |

StatLink http://dx.doi.org/10.1787/888932909295

# New Zealand

**New Zealand: Pension system in 2012**

The public pension is flat-rate based on a residency test. Coverage of occupational pension plans continues to diminish. Coverage of the KiwiSaver scheme continues to grow.

**Key indicators**

| | | New Zealand | OECD |
|---|---|---|---|
| Average worker earnings (AW) | NZD | 51 300 | 51 700 |
| | USD | 42 400 | 42 700 |
| Public pension spending | % of GDP | 4.7 | 7.8 |
| Life expectancy | At birth | 81.0 | 79.9 |
| | At age 65 | 19.9 | 19.1 |
| Population over age 65 | % of working-age population | 23.1 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909314

## Qualifying conditions

Ten years' residency since the age of 20 (including five years after age 50) entitles people to the public pension from 65 years of age.

## Benefit calculation

### *Basic*

The pension for a single person living alone was NZD 400.07 gross per week from 1 April 2012. For 2011/12, the rate was NZD 389.14. The increase is due in part to the normal annual adjustment process, outlined below and in part to a government commitment, also outlined below. This gives a total pension of NZD 20 804, equivalent to around 41% of average earnings.

State pension entitlements from other countries are taken into account in calculating the total payable.

The rate of public pension is adjusted annually by the movement in the Consumer Price Index or the average net-of-tax weekly wage. For a couple, the governing legislation requires that the net-of-tax rate at each 1 April must be not less than 65% and not more than 72.5% of a net-of-tax surveyed weekly earnings measure. The net-of-tax rates for single people are set at 65% (living alone) and 60% (sharing accommodation) of the net-of-tax couple rate. If movements in prices remain consistently below movements in the net-of-tax surveyed weekly earnings, effectively the latter becomes the index.

The government has made a commitment that the net-of-tax rate at each 1 April is to be a minimum of 66% rather than 65% of the net-of-tax earnings measure.

### *Voluntary private pensions*

Coverage of occupational pension plans has been falling for some time the ratio of those in total employer sponsored schemes as a percentage of the employed workforce fell from 13.89% in 2003 to 10.38% in 2011. These plans are not government-subsidised through the tax system or otherwise.

KiwiSaver is a government-subsidised voluntary retirement saving scheme introduced on 1 July 2007. At 30 June 2012 the number of people enrolled in KiwiSaver was equal to approximately 34% of the working-age population aged 15-64. The default contribution

rate for this scheme is 4% of earnings, divided equally between employees and employers. From 1 April 2013, the default minimum contribution rate for this scheme increased to 6% of earnings, divided equally between employees and employers. Employees are able to select a higher contribution rate of 4% or 8%. Government subsidies are available to eligible savers, to a maximum of NZD 520 per year KiwiSaver entitles members to a lump sum, not a pension, on withdrawal at age 65 or over.

## Variant careers

### *Early retirement*

There is no compulsory retirement age. However, it is not possible for persons to claim the pension, in their own right, before the normal eligibility age of 65. People aged 65 years and over can include a non-qualifying partner in their pension, subject to income-testing against the couple's income.

### *Late retirement*

Receipt of the public pension is not dependent on retirement. It is therefore possible to combine pension and employment.

While people are not obliged to claim the public pension on reaching the qualifying age, there is no advantage in deferring a claim and retrospective claims are not allowed.

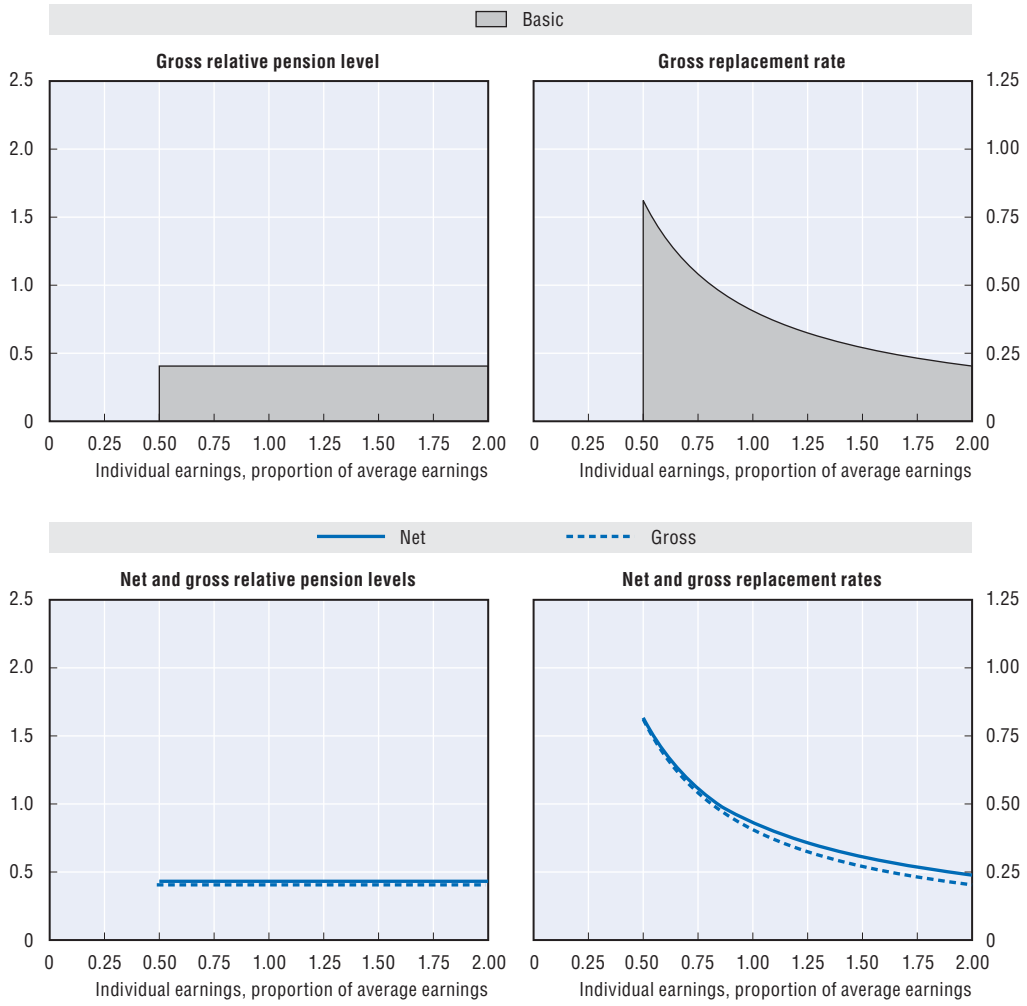
### *Childcare*

Eventual public pension entitlement is not affected by periods out of paid work for caring purposes.

### *Unemployment*

Eventual public pension entitlement is not affected by periods of unemployment.

## Pension modelling results: New Zealand




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 40.6 | 40.6 | 40.6 | 40.6 | 40.6 | 40.6 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 50.1 | 81.1 | 54.1 | 40.6 | 27.0 | 20.3 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 51.7 | 81.7 | 55.7 | 43.2 | 30.6 | 23.9 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 10.9 | 17.6 | 11.7 | 8.8 | 5.9 | 4.4 |
| *(multiple of individual gross earnings)* | *12.2* | *19.8* | *13.2* | *9.9* | *6.6* | *4.9* |
| Net pension wealth | 9.5 | 15.4 | 10.2 | 7.7 | 5.1 | 3.8 |
| *(multiple of individual gross earnings)* | *10.6* | *17.3* | *11.5* | *8.6* | *5.8* | *4.3* |

StatLink http://dx.doi.org/10.1787/888932909333

# Norway

**Norway: Pension system in 2012**

The new public pension system, beginning in 2011, consists of an income pension, and a guarantee pension for people with no or only a small income pension. The guarantee pension is income-tested against the income pension. In 2006, a mandatory occupational pension was introduced in the private sector as a supplement to the public pension.

**Key indicators**

| | | Norway | OECD |
|---|---|---|---|
| Average worker earnings (AW) | NOK | 510 700 | 237 600 |
| | USD | 91 800 | 42 700 |
| Public pension spending | % of GDP | 5.4 | 7.8 |
| Life expectancy | At birth | 81.4 | 79.9 |
| | At age 65 | 19.7 | 19.1 |
| Population over age 65 | % of working-age population | 26.1 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909352

## Qualifying conditions

Persons with a residence period in Norway of at least three years between the ages of 16 and 66 (inclusive) are entitled to the guarantee pension in the new system. A full guarantee pension is granted after a forty year long residence period, and it is reduced proportionally for shorter residence periods.

## Benefit calculation

### *Income pension*

In the new system pension entitlements are accumulated through income from work or through other types of pension earning, between the age of 13 and 75 years. The individual will each year increase their pension entitlements corresponding to 18.1% of their pensionable income, up to a ceiling. The pension entitlements are each year increased in line with wage growth.

Many benefits under the National Insurance Scheme are determined in relation to the basic amount (G) that was NOK 81 153 as an average for 2012. The ceiling in the new income pension is 7.1 basic amounts. The average wage for a full-time employee in Norway in 2012, based on OECD estimates, was about NOK 510 700 or 6.3 basic amounts. The ceiling on pension earnings is thus about 113% of the average wage.

From 2011 flexible retirement for the age group 62-75 years based on actuarial neutrality was introduced in the public pension scheme. It is possible to combine work and pension fully or partly from the age of 62 without an earnings test. From 2011 a life expectancy adjustment of the pension for new old-age pensioners was also introduced. The life expectancy divisors are determined for each cohort, based mainly on remaining life expectancy. They are determined when the cohorts are 61 years, and will not be adjusted later. Each cohort will receive a set of separate life expectancy divisors from the age of 62 until the age of 75. At the time of retirement the annual pension is calculated by dividing the accumulated pension entitlements by the life expectancy divisor.

The income pension will after retirement be indexed to wages, and then subtracted a fixed factor of 0.75% a year.

### *Guarantee pension*

A guarantee pension will replace the minimum pension in the current pension system and will be at the same level. The guarantee pension is income tested by 80% against the income pension.

The minimum pension for a single pensioner was NOK 160 956 as an average for 2012 equivalent to about 32% of average earnings.

The guarantee pension will be indexed in line with wages, but adjusted for the effect of the life expectancy factor at 67 years. In the long term projections of Statistics Norway life expectancy at 67 is assumed to increase by about 0.5% a year. According to the projections the guarantee pension will be adjusted to wages, and then subtracted a factor of about 0.5% a year due to the life expectancy adjustment.

### *Defined-contribution scheme*

From 2006, employers must make a minimum contribution of 2% of the earnings of their employees to a defined-contribution pension plan. If employers offer a defined-benefit scheme instead, then the benefits must be at least the same level as the expected benefits under the mandatory 2% contribution. Contributions are only required on earnings between the basic amount and 12 times the basic amount.

As part of the pension reform flexible retirement from the age of 62 was introduced also in the defined-contribution scheme from 2011. The benefits must be withdrawn as a lifetime annuity or at least until the age of 77. For comparison with the results for other countries, it is assumed that the benefit is taken as a price-indexed annuity calculated using unisex mortality tables.

### *Voluntary private pension*

People may save for a voluntary pension to top up the public pension and the work-related pension schemes.

## Variant careers

### *Early retirement*

About two-thirds of all employees have an employer participating in Contractual Early Retirement Schemes (AFP). These schemes, which were introduced in 1989, allow retirement from age 62.

In the public sector the AFP scheme for the age group 62-66 years has been prolonged also after introducing flexible retirement from 62 years in the public old-age pension scheme from 2011. It is not possible to combine work and pension without an earnings test. There are some qualifying conditions. The annual earnings must be at least one basic amount (G) at the time of retirement. The annual wage must also exceed one basic amount (G) during at least ten years after age 50. Earnings in the ten best years in the period from 1967 until the year prior to retirement must exceed at least twice the basic amount. The AFP pension is calculated in the same manner as the permanent disability pension (granting pension points for the remaining years until 67). In addition AFP pensioners receive a so-called AFP supplement.

From 2011 the AFP scheme in the private sector amounts to a lifetime supplement to the public old-age pension scheme. In the private sector it is possible to combine the public old-age pension, the AFP supplement and work without an earnings test. The supplement is equivalent to pension entitlements of about 4.2% of pensionable income, and can be accumulated up to the age of 62. The supplement is based on actuarial neutrality and life expectancy adjustment and can be withdrawn between the age of 62 and 70.

There are some qualifying conditions for the private sector AFP pension. First, the employee must at the age of 62 be covered by a private AFP scheme for three of the last five years. Second, by the age of withdrawal be employed by participating employer for the last three years. Third, the annual earnings must be at least 1 basic amount (G) at the time of retirement.

### *Late retirement*

People can defer their pension after age 67 and continue to work and people can combine working with receiving a pension.

### *Childcare*

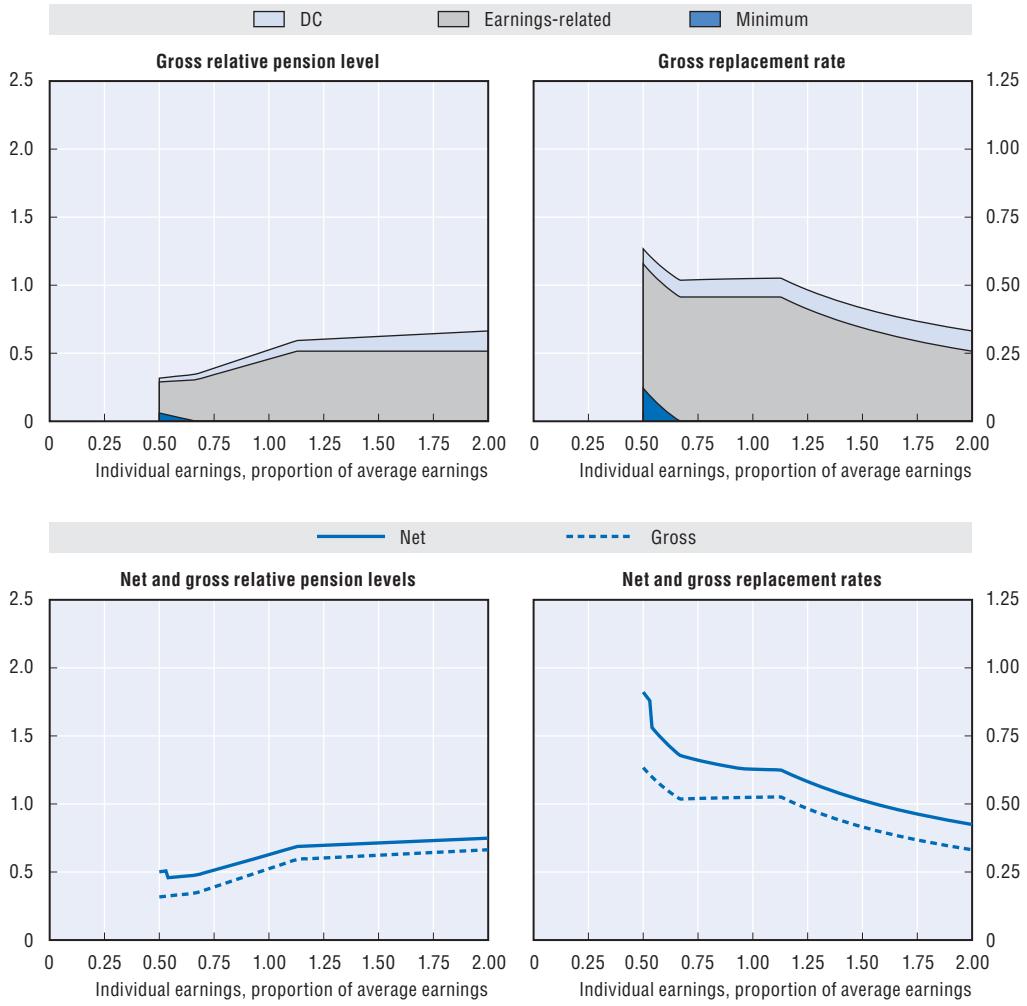
Caregivers are credited with pension earning equivalent to 4.5 basic amounts a year or about NOK 365 000 in the income pension. This corresponds to about 71% of an average full-time wage. Caregivers comprise parents caring for children below 6 years of age and individuals taking unpaid care of disabled, sick or elderly persons in the home.

Parents with lower annual earnings than 4.5 basic amounts have these earnings topped up. Parents with annual earnings exceeding 4.5 basic amounts do not get any top up. The family may apply for having the pension earnings granted to the father instead of the mother, but only one of the parents may receive this kind of pension earnings in any given year. For the other group, pension earnings are granted on the basis of individual applications.

### *Unemployment*

The unemployed will be credited pension earnings based on the income they had before becoming unemployed up to a ceiling of 7.1 basic amounts.

## Pension modelling results: Norway




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 46.5 | 31.7 | 39.0 | 52.5 | 62.3 | 66.4 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 57.7 | 50.2 | 51.4 | 62.8 | 71.4 | 74.9 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 52.3 | 63.4 | 52.0 | 52.5 | 41.6 | 33.2 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 63.8 | 91.1 | 66.1 | 62.8 | 51.3 | 42.5 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 10.0 | 12.2 | 9.9 | 10.0 | 7.9 | 6.2 |
| *(multiple of individual gross earnings)* | *11.5* | *14.1* | *11.5* | *11.6* | *9.1* | *7.2* |
| Net pension wealth | 8.7 | 13.6 | 9.2 | 8.5 | 6.4 | 4.9 |
| *(multiple of individual gross earnings)* | *10.1* | *15.8* | *10.7* | *9.8* | *7.3* | *5.7* |

StatLink http://dx.doi.org/10.1787/888932909371

# Poland

**Poland: Pension system in 2012**

The new scheme is based on a system of notional accounts. People under 30 (born in 1969 and after) at the time of the reform must also participate in the funded scheme; people aged 30-50 (born between 1949 and 1968) could choose the funded option. However, the choice had to be made in 1999 and it was irrevocable, with the exception of those who could retire early.

**Key indicators**

| | | Poland | OECD |
|---|---|---|---|
| Average worker earnings (AW) | PLN | 38 900 | 132 100 |
| | USD | 12 600 | 42 700 |
| Public pension spending | % of GDP | 11.8 | 7.8 |
| Life expectancy | At birth | 76.3 | 79.9 |
| | At age 65 | 17.1 | 19.1 |
| Population over age 65 | % of working-age population | 21.6 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909390

## Qualifying conditions

The minimum pension age has been 65 for men and 60 for women. From 1 January 2013 the retirement age will be increasing by a month in January, May and September each year until it reaches 67 for both sexes (women in 2040, men in 2020). For the minimum pension, 25 and 20 years' contributions are required from men and women, respectively.

## Benefit calculation

### *Earnings-related*

A contribution of 12.22% of earnings (or 19.52% for workers born between 1949 and 1968 who do not choose funded tier) will be credited to individuals' notional accounts. The notional interest rate has been defined as 100% of the growth of the covered wage bill, and no less than price inflation. This notional interest rate is applied retrospectively to accounts from the year 2000.

However we must take into account the creation of additional sub-accounts in the Social Security Fund (ZUS) (this change is described below in "Defined contribution"). The indexation of contributions to sub-accounts is different from contributions to already existing accounts in the Social Security Fund (ZUS). Moreover they will be subject to inheritance.

At retirement, accumulated notional capital is divided by the "g-value" to arrive at the pension benefit. The g-value is average life expectancy at retirement age: this process is equivalent to the process of annuitisation in funded pension systems. The g-value is calculated using life tables published by the Central Statistical Office. In the modeling, actuarial data from the UN population database is used.

The ceiling to contributions and pensionable earnings is set at 2.5 times average monthly earnings projected for a given year in the state budget law. In 2012 the ceiling was PLN 105 780 and PLN 111 390 in 2013.

Pension benefits are subject to periodic indexation to account for inflation. As from 2008, the pension indexation has been carried out annually (from 1 March), based on the fixed indexation rate. The pension amount after indexation is calculated by multiplying an individual amount of the benefit by the indexation rate. The indexation rate is understood as an average annual index of consumer goods and services in the preceding calendar year, increased by at least 20% of real growth of average monthly earnings in the preceding calendar year. The indexation rate increase is subject to annual negotiations within the framework of the Tripartite Commission for Socio-Economic Issues. If members of the Commission are not able to reach consensus, the indexation rate is fixed by means of an Ordinance of the Council of Ministers. As from 1 March 2010, amounts of minimum pensions (including the social pension) have also been increased as a result of indexation. The indexation covers pension benefits awarded before the day fixed as the indexation date, that is, before 1 March. Indexation is carried out ex officio and covers all payable benefits. In 2011, the indexation rate for pensions was equal to 103.1% (104.62% in 2010 and 106.1% in 2009). In 2012 there was an exception made to the indexation of pension benefits and on 1 March 2012 all the pensions were increased by PLN 71 instead. In 2013, the indexation rate for pensions was equal 104% (from 1 March 2013).

### *Minimum pension*

There is a minimum pension under the pay-as-you-go scheme, which is about 25% of average earnings. The minimum pension was PLN 799.18 from 1 March 2012 and PLN 728.18 from 1 March 2011. The minimum pension is PLN 831.15 from March 2013.

Indexation is the same as with pensions from the pay-as-you-go system. Additional lump-sum payments for those receiving low pensions were paid in those years where there was no regular indexation of benefits (2005 and 2007).

In the new pension scheme, the minimum retirement guarantee shall be financed by state budget and paid when total mandatory old-age pension is lower than the minimum.

### *Defined contribution*

Some 7.3% of the total contribution was diverted to the funded scheme for those compulsorily covered or choosing this option.

The law on annuities, adopted by the Parliament at the beginning of 2009 assumes that pension savings will be converted into the single annuity using unisex life tables at retirement age, but not before age of 65. Women, who retire before that year will receive payments (temporary capital pensions) based on programmed withdrawal from their individual accounts until they reach age of 65, which are managed by Open Pension Funds. Upon reaching age 65, the balance in their individual accounts is used to purchase life annuities. The temporary pension will be calculated and indexed such as pension from the earnings-related tier (used in the model calculation).

There is no regulation on institutions paying annuities.

From 1 May 2011 2.3% not 7.3% has been diverted to the funded scheme. The remaining 5% has been placed in a special individual sub-account. These amounts will be valorised by the average annual GDP growth rate (in current prices) of the last five years. The share of contributions allocated in the sub-accounts within the Social Security Fund (ZUS) and in the funded scheme will change until 2017, when it will reach 3.8% and 3.5% respectively. The accumulated capital can be inherited.

**Pension contributions to the national and funded scheme**

| Period | National scheme | | Funded scheme | |
|---|---|---|---|---|
| | % | Sub-account | OPF | Total |
| To 30 April 2011 | 12.22 | - | 7.3 | 19.52 |
| From 1 May 2011 to 31 December 2012 | 12.22 | 5.0 | 2.3 | 19.52 |
| From 1 January to 31 December 2013 | 12.22 | 4.5 | 2.8 | 19.52 |
| From 1 January to 31 December 2014 | 12.22 | 4.2 | 3.1 | 19.52 |
| From 1 January 2015 to 31 December 2016 | 12.22 | 4.0 | 3.3 | 19.52 |
| From 1 January 2017 | 12.22 | 3.8 | 3.5 | 19.52 |

## Variant careers

### *Early retirement*

There are no provisions for early retirement in the general pension system.

The old pension system (applicable to persons born before 1949) allowed various forms of early retirement for specific groups, such as miners, railway workers, teachers, people working in special conditions and women. Eligibility to early retirement has been postponed until the end of 2008. Additionally, from 2005 the miners had their early retirement pension system reinstated according to the pre-1999 rules.

The bridging pensions system that comes into force from 2009 covers people working in special conditions, based on the new list (medically verified) – c.a. 270 000. Workers will receive a bridging pension for up to five years (ten years for some occupations such as: pilot, steel workers, etc.) before retirement age. This benefit is financed from state budget (since 2010 also from contributions paid by employers). Bridging pension is, as with the pension formula in the earnings-related system, based on unisex life expectancy for age 60.

Moreover under the new law, workers who are not entitled to receive the bridging pension and have reached 15 years in special conditions or with special characteristics before 1 January 2009 are entitled to compensation. This compensation will be calculated at the moment of retirement (women – at least 60 years, men – at least 65 years) and added to the initial capital.

From July 2009 compensation benefits are also possible for teachers, from the age of 55 for women and 55 increasing to 57 by 2018 for men if the covered work period is longer than 30 years (can include 20 years of part-time work) and they terminate their employment.

### *Late retirement*

It is possible to defer both the notional and the funded, defined-contribution pension component without any age limits. People who defer claiming pension after normal pension age contribute and earn extra pension.

It is possible to combine work and pension receipt. However, an employment contract has to be ended before the withdrawal of a full pension is possible. The pensioner can thereafter continue to work on a basis of a new contract and receive the full pension. There are some restrictions that apply to the combination of earned income and pension income if a person is working and receiving a pension and below the statutory retirement age, or if a person is also a recipient of a disability pensions and has been recognised as partly incapable of work. Income (including pension benefits) is subject to taxation.

### *Childcare*

During periods of maternity leave, contributions to the pension system are paid from the state budget based on the maternity benefit, which is the average wage over the past 12 months, net of social security contributions. From 2009, the period of payment depends on the number of children and is 20 weeks for one child, 31 weeks for two children, 33 weeks for three children, 35 weeks for four children and 37 weeks for five or more children.

From 1 January 2010 the father or mother may take an additional parental leave period equal to a maximum of four weeks for one child (from 1 January 2012 to 31 December 2013) increasing to six weeks from 1 January 2014. In case of multiple births the parental leave is increased. Parents on additional maternity leave may work part time (but max 50%). In this case the maternity leave is reduced proportionally to the work time.

From 1 January 2010 father has the right to parental benefits for two weeks. Parental leave is possible for a period up to 36 months per child. During this time, pension contributions are paid for the schemes in which a person is a member and the amount of social welfare benefit was used as a base (PLN 420) for the pension, disability and health contributions. For 2009-11 the base for contribution payment is minimum wage (c.a. 40% of average wage) and from 2012 60% of average wage (however the base can not be higher than the average wage over the past 12 months). In both cases, the government pays the contributions on behalf of the parent on leave.

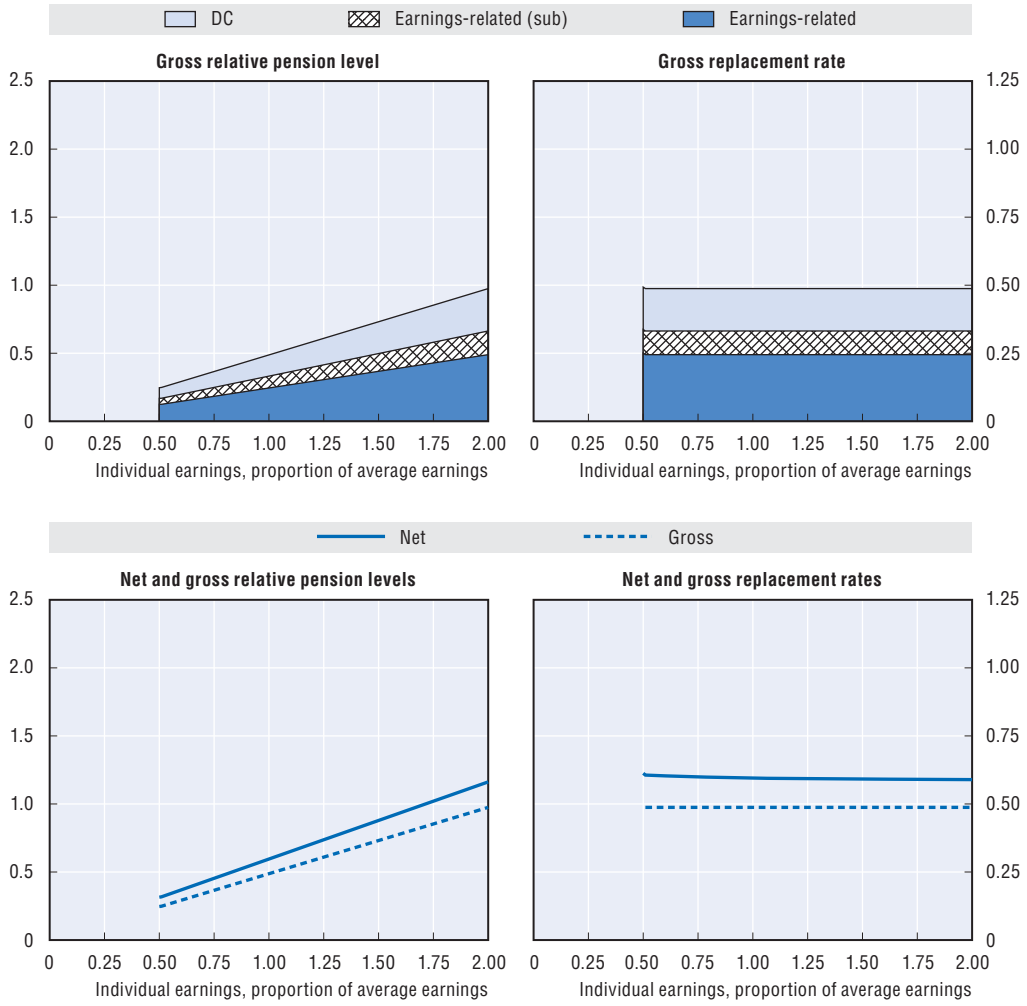
All periods for which contributions are paid qualify for the minimum pension guarantee.

### *Unemployment*

There is a scheme of pre-retirement allowances, available to unemployed people who were laid off (for example, due to liquidation, bankruptcy or restructuring). Pre-retirement allowances are paid from the state budget to women from 55 and men from 60 until reaching pension age. These rules are in force from May 2004. Earlier pre-retirement benefits were granted to women from 50 and men from 55. Pre-retirement benefits are not subject to contributions to the pension scheme.

During periods of unemployment benefit receipt, the government pays the contributions to the pension system based on the size of the unemployment benefit (12.22% of the benefit to notional account and 7.3% to defined-contribution scheme). From May 2011 5% will be paid to sub-account (as described above in the section "Defined contribution"). All the periods for which contributions are paid qualify for the minimum pension guarantee.

## Pension modelling results: Poland




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 39.0 | 24.6 | 36.6 | 48.8 | 73.1 | 97.5 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 48.2 | 31.5 | 45.4 | 59.5 | 87.9 | 116.2 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 48.8 | 49.3 | 48.8 | 48.8 | 48.8 | 48.8 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 59.8 | 61.3 | 59.9 | 59.5 | 59.1 | 58.9 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 7.0 | 7.1 | 7.0 | 7.0 | 7.0 | 7.0 |
| *(multiple of individual gross earnings)* | *8.3* | *8.4* | *8.3* | *8.3* | *8.3* | *8.3* |
| Net pension wealth | 6.2 | 6.5 | 6.3 | 6.2 | 6.1 | 6.0 |
| *(multiple of individual gross earnings)* | *7.4* | *7.7* | *7.4* | *7.3* | *7.2* | *7.1* |

StatLink http://dx.doi.org/10.1787/888932909409

# Portugal

**Portugal: Pension system in 2012**

Portugal has an earnings-related public pension scheme with a means-tested safety net.

**Key indicators**

| | | Portugal | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 15 700 | 32 400 |
| | USD | 20 700 | 42 700 |
| Public pension spending | % of GDP | 12.3 | 7.8 |
| Life expectancy | At birth | 79.8 | 79.9 |
| | At age 65 | 18.9 | 19.1 |
| Population over age 65 | % of working-age population | 30.1 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909428

## Qualifying conditions

The standard pension age is 65.

The social pension is payable from age 65. Typically, every year in July and December pensioners receive an additional amount equal to their monthly pension. However, under the Economic Adjustment Programme for Portugal (PAEF) a temporary suspension of the 13th and 14th months' pensions has been implemented in 2012 while protecting the lowest pensions. In addition, a progressive Extraordinary Solidarity Contribution (CES) was implemented of pension income over EUR 600 per month. The 13th and 14th months' pensions were reintroduced in 2013.

## Benefit calculation

### *Earnings-related*

The pension amounts are calculated according to the following formula:

Pension amount = reference earnings × accrual rate × sustainability factor

The annual earnings registered in the social security and taken into account to the reference earnings calculation (RE) are adjusted according to the consumer price index (CPI) without considering the housing prices.

For the purpose of calculating the pension according to the whole contributory career, the earnings amounts registered between 1 January 2002 and 31 December 2011 are adjusted by applying an index resulting from the weighting of 75% of the CPI, and of 25% of the average evolution of the earnings which underlie the contributions stated to the social security, whenever this evolution is higher than the CPI. The annual adjustment index cannot be higher than the CPI, plus 0.5%.

The adjustment is made by applying the coefficient, corresponding to each one of the years considered, to the annual earnings taken into account for the reference earnings calculation. The indexes for the calculation basis adjustment will be reassessed after 31 December 2011.

For the reference earnings calculation purpose, whenever the number of calendar years with earnings registration is higher than 40, it will take into account the best 40 annual earnings, after they have been adjusted.

The pension accrues at 2% of the earnings base for each year of contributions for 20 or fewer years' contributions, with a lower limit of 30%. For beneficiaries with 21 or more years of contributions, the accrual rate ranges between 2% and 2.3% depending on earnings. The schedule for the accrual rate depends on individual earnings relative to the value of the IAS (*Indexante dos Apoios Sociais* – Social Support Index; EUR 419.22 in 2012). Each tier of earnings accrues pension at a different rate. Pension accrues for a maximum of 40 years.

| Reference earnings/IAS | ≤ 1.1 | > 1.1-2.0 | > 2.0-4.0 | > 4.0-8.0 | > 8.0 |
|---|---|---|---|---|---|
| Accrual rate (%) | 2.3 | 2.25 | 2.2 | 2.1 | 2.0 |

The earnings measure was the best 10 of the final 15 years. Presently, this base is being extended, such that it will reach lifetime average earnings from 2017. Those already paying contributions by 31 December 2001 and who met the eligibility conditions for old-age pension at that date will have their pension calculated from the most favourable of 3 possible formulas: 1) applying the previous rules (2% accrual for each year of contributions and earnings being those of the best ten years of the final 15 years); 2) applying the new rules above described to the entire contributory career; 3) or *pro rata* application of both rules according to the contributory career. Those already paying contributions by 31 December 2001, but who have not met the eligibility conditions for old-age pension at that date, will have their pension calculated from the most favourable of the above 3 possible formulas, if they retire between 2002 and 2016; or by the most favourable of formulas No. 2) and 3), if they retire after 31 December 2016. People who joined the system after 2002 will be fully covered by the new rules. For people with more than 40 years' contributions, only the best 40 count in the benefit formula.

The sustainability factor is an adequacy factor of the pensions system to the demographic changes; this factor results from the relation between the average life expectancy at age 65 in 2006 and the one that will occur in the year before the pension claim. The sustainability factor considered is the one verified in the year of the old-age pension beginning or at the date of the invalidity pension conversion into an old-age pension; this factor applies to old-age pensions beginning from 1 January 2008 and to old-age pensions resulting from the conversion of invalidity pensions (it is applied at the date of conversion, when the pensioner completes 65 years of age).

This sustainability factor does not apply to the old-age pensions resulting from the conversion of invalidity pensions beginning up to 31 December 2007 or total invalidity pensions, if the insured person:

- At the date when he/she completes 65 years of age, had received this pension for more than 20 years.
- Was registered in the social security on 1 June 2007 and had received this pension for a longer period than half of the time that elapsed between that date and the one on which he/she completes 65 years of age.

The sustainability factor for 2012 was 3.92%.

For pensioners with a monthly pension amount between EUR 600 and EUR 1 100, the 13th and 14th month pension amount is given by the formula:

Pension amount (13th and 14th months) = EUR 1 320 – 3.2 × monthly pension amount

Although there is a general mechanism for accrual of pension amounts already in payment that is indexed to prices, with larger increases on smaller pensions, this mechanism was suspended for 2012.

In case of accumulation of earnings with an old-age pension the annual amount of pension is increased by 2% of the total earnings registered; this increase is effective from 1 January of each year and it refers to the earnings registered in the previous year.

An extraordinary solidarity contribution has been implemented on all sorts of pension income, independently of its origin (public or private pensions, private pre-funded bank products, etc.). The CES amount is calculated before taxes and equals 25% of pension income between 12 × IAS and 18 × IAS plus 50% of pension income above 18 × IAS.

### *Minimum*

There is a monthly minimum pension for the contributory scheme with values varying according to the length of contributory career, as shown in the table below. There are 14 monthly payments.

| Years of contribution | EUR |
|---|---|
| < 15 | 254.00 |
| 15 to 20 | 274.79 |
| 21 to 30 | 303.23 |
| 31 and over | 379.04 |

When the pension amount calculated according to the general rules is lower than the guaranteed minimum amount, it will be increased by the so-called social supplement whose value is equal to the difference between the guaranteed minimum amount and the statutory or legal pension amount.

The social supplement granting is not subject to assets or residence test.

### *Targeted*

For people aged 65 or more who do not qualify for the earnings-related scheme, the monthly social pension was EUR 195.40 in 2012.

This is only paid if total income for a single person does not exceed 40% of the IAS or 60% of the IAS in case of couples. Again, there are 14 monthly payments.

Pensioners of the social pension are entitled to receive the solidarity extra supplement on top of their pension. The monthly amount of this benefit is EUR 17.54 for those under 70 years old and EUR 35.06 for those with at least 70 years of age.

The Solidarity Supplement for the Elderly (SSE), the main targeted benefit aimed at fighting poverty among the elderly, came into full effect in 2008 by extending eligibility to people aged 65 or older. Additional eligibility conditions for this benefit are: receiving old-age or survivors' pension (national citizens not entitled to the social pension because they do not fulfil its means test may also be eligible); and fulfilling the SSE means test.

The SSE resembles the Social Insertion Income as it is a supplement equal to the difference between the beneficiary's income and a given threshold, which is at the same time the means test condition. The SSE is therefore equal to the difference between the beneficiary's income and the following Reference Amounts (RA):

- EUR 5 022.00 per year for singles.
- EUR 8 788.50 per year for couples.

The beneficiary's income is composed of: his/her own income; the spouse's income; part of the income of their sons' households, denominated "family solidarity". The "family solidarity" component is added to the beneficiary's income to determine entitlement and the amount of the SSE.

To calculate the "family solidarity", for each son/daughter the total yearly income of his/her household is taken and divided by the number of adult equivalents in that household (scale of equivalence: 1 to the first adult; 0.7 for each subsequent adult and 0.5 for each minor) and then, according to the table below, the family solidarity is determined as a percentage of the equivalent income of the household. Those whose sons or daughters households' equivalent income is placed in the fourth tier are not eligible for the SSE.

| Tier | Equivalent income of the household | Family solidarity (% of the equivalent income) |
|---|---|---|
| 1st | 2.5 × RA | 0 |
| 2nd | > 2.5 × RA and ≤ 3.5 × RA | 5 |
| 3rd | > 3.5 × RA and ≤ 5 × RA | 10 |
| 4th | > 5 × RA | Exclusion from SSE |

## Variant careers

### *Early retirement*

Early retirement has been suspended until 2014. Early retirement was previously possible if the insured person has at least 55 years of age and 30 calendar years with earnings registration.

When the insured person claims the pension before 65 years of age under the scheme for rendering pensionable age flexible, it is applied a reduction rate of 0.5% for each month of anticipation until that age. Nevertheless, the number of anticipation months will be reduced by 12 months for each period of three years that exceeds those 30 calendar years

The number of anticipation months is determined between the date of anticipated pension claim and the date when the insured person completes 65 years of age. The insured persons that receive a reduced anticipated pension and have ceased their activity may continue to pay contributions voluntarily in order to increase the pension amount.

If the insured person meets the conditions required to claim anticipated old-age pension without being applied any reduction factor and if he/she does not claim it, the pension will be increased by applying a rate of 0.65% to the number of months completed between the month when those requirements were met and the date when he/she reaches 65 years of age, or the date of pension beginning if this occurs before that age.

### *Late retirement*

If the insured person claims the old-age pension when he/she is older than 65 years and has at least 15 calendar years with earnings registration relevant to the pension calculation, the pension amount will be increased by applying the respective monthly rate multiplied by the number of months completed between the month of pension beginning and the month when he/she has reached 65 years of age. The working age limit is 70.

The monthly increase rate varies according to the number of calendar years with earnings registration completed by the insured person until the date of pension beginning, as follows:

| Age | Contributory career (years) | Monthly increase rates |
|---|---|---|
| More than 65 years old | 15 to 24 | 0.33 |
| | 25 to 34 | 0.50 |
| | 35 to 39 | 0.65 |
| | More than 40 | 1.00 |

When calculating the global increase rate, it will be taken into account the months with earnings registration due to effective work. The increased pension amount cannot be higher than 92% of the best reference earnings out of the reference earnings on which the statutory pension calculation was based.

### *Childcare*

Maternity periods (both full leave and part-time work) count in calculating the pension entitlement. These are credited towards the qualifying conditions. Pensionable earnings for these periods are based on pay in the six months before the second month of the start of the leave.

From 2002, periods of up to three years caring for children under 12 working part time can be treated as if these periods of full-time work.

### *Unemployment*

Periods on unemployment benefits count in calculating pension benefits. Pensionable earnings for these periods are based on pay in the six months before the second month of the start of the unemployment period. This applies both to unemployment and to social unemployment benefits.

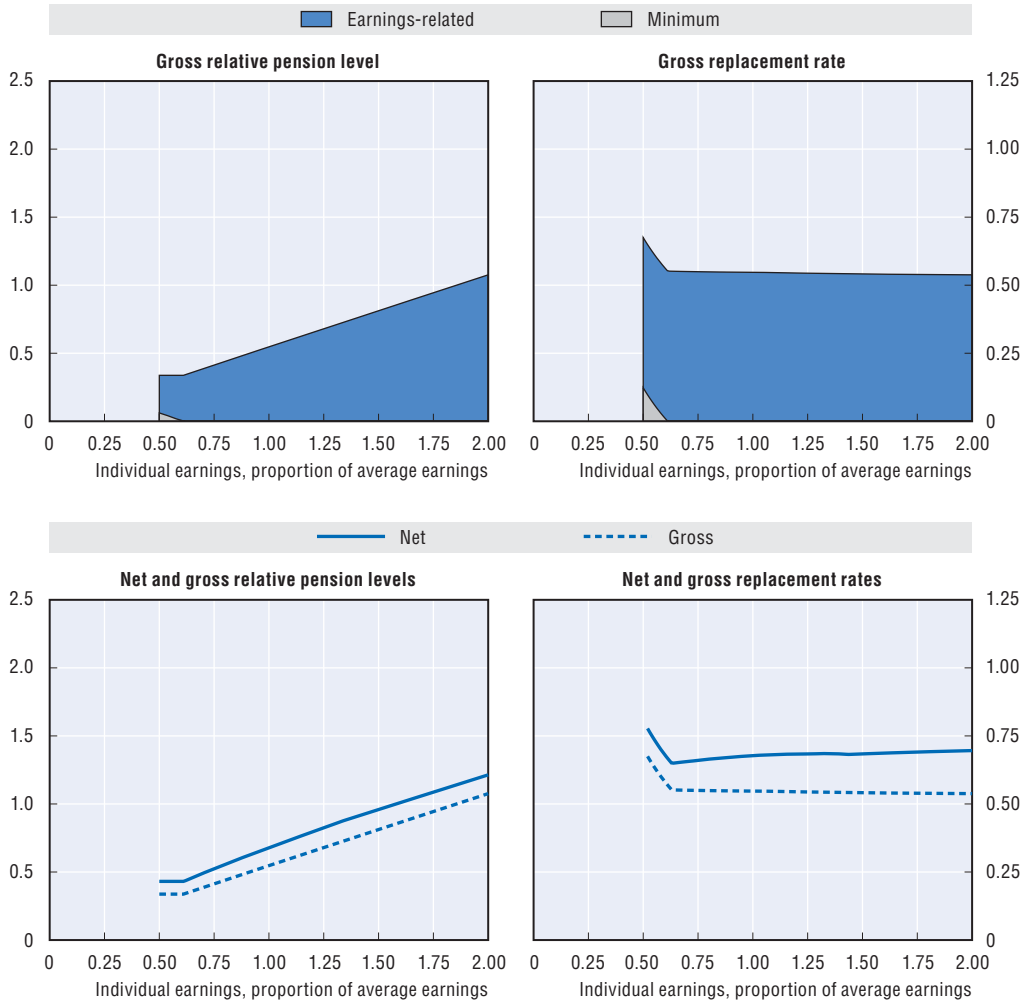
There are special rules applying to people in long-term unemployment. People aged 57 or over who are long-term unemployed can retire at age 62 with full pension without decrement. It is required that the minimum contribution conditions are met and unemployment-benefit entitlement is exhausted.

Early retirement is also possible from age 57 with 22 years' contributions for individuals who become unemployed at age 52 or more. In these cases, the pension is reduced with a 0.5% monthly decrement, with a maximum of five years' reduction applied.

Whenever unemployment is due to an agreed work contract cessation, the pension amount will be subject to an additional reduction rate which will last until the pensioner is 65 years old.

Means-tested unemployment assistance subsidy is provided if registered contribution is more than 180 days in the 12 months prior to unemployment and monthly earnings before unemployment is less than 80% of the minimum wage. This allowance can be extended until beneficiaries meet the conditions for early retirement provided that they are 50 years of age.

## Pension modelling results: Portugal




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 38.0 | 33.8 | 41.2 | 54.7 | 81.2 | 107.6 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 48.5 | 43.1 | 52.6 | 69.7 | 99.3 | 125.4 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 55.0 | 67.5 | 55.0 | 54.7 | 54.1 | 53.8 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 65.6 | 77.7 | 66.3 | 67.8 | 68.4 | 69.6 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 7.6 | 9.7 | 7.6 | 7.6 | 8.1 | 8.1 |
| *(multiple of individual gross earnings)* | *8.8* | *11.2* | *8.8* | *8.8* | *9.1* | *9.1* |
| Net pension wealth | 7.6 | 9.7 | 7.6 | 7.3 | 7.5 | 7.1 |
| *(multiple of individual gross earnings)* | *8.8* | *11.2* | *8.8* | *8.5* | *8.4* | *8.0* |

StatLink http://dx.doi.org/10.1787/888932909447

# Russian Federation

**Russian Federation: Pension system in 2012**

The mandatory old-age pension consists of two components an earnings-related part based on notional defined contributions and a defined contribution part. There are also statutory social pensions and voluntary pension savings at non-state (private) pension funds.

**Key indicators**

| | | Russian Federation | OECD |
|---|---|---|---|
| Average worker earnings (AW) | RUB | 321 900 | 1 303 500 |
| | USD | 10 500 | 42 700 |
| Public pension spending | % of GDP | 9.2 | 7.8 |
| Life expectancy | At birth | 68.0 | 79.9 |
| | At age 65 | 13.9 | 19.1 |
| Population over age 65 | % of working-age population | 19.6 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909466

## Qualifying conditions

Normal pensionable age for the old-age labour pension is 60 for men and 55 for women and they must have at least five years of insurance coverage. In addition to work, the insurance qualifying period includes periods of military service and other similar type of service (Home Office, State Fire Service, etc.) including family members, periods of receipt of public social insurance during temporary disability, period of care by one of the parents for each child until the age of 18 months, but not more than three years in total, period of receipt of unemployment benefit, period of participation in paid public works and period of travel if assigned by the state employment service to another locality for the purpose of employment, period of imprisonment for persons who were later declared wrongfully made criminally liable, wrongfully repressed and subsequently rehabilitated, and period of serving a sentence by these persons in confinement and exile, period of care provided by able-bodied person to a I group invalid, disabled child or a person aged over 80. Accompanying persons in married couples where the breadwinner is serving in the military or civil service can also receive insurance periods, but not more than five years in total.

Old-age pension is also payable to persons suffering from diseases caused by radiation or other man-made accidents and who are above the age of 50 (men) or 45 (women) and who have at least five years of service.

The state social pension is payable to disabled persons or those meeting the age requirement of age 65 for men or age 60 for women.

Retirement is not necessary. There is no income test for a working pensioner.

## Benefit calculation

Pensions are financed out of the contributions to mandatory pension insurance scheme (notional defined contribution – NDC) in accordance with the Law on Mandatory Pension Insurance and also from transfers from the federal budget to the budget of the Pension Fund of the Russian Federation to statutory social pensions and benefits. In 2012, the contribution rate paid by the employers is 22% for salaries up to RUB 512 000 and 10% of salaries exceeding RUB 512 000. In 2013, the rate will be 22% for a salary up to RUB 568 000 and 10% for salaries exceeding RUB 568 000.

### *Old-age labour pension*

The old-age labour pension is calculated as the sum of two components:

- A NDC component – a benefit based on the notional account.
- A funded component – a benefit based on the value of the individual account (contributions of 6% plus interest) to be paid in general since 1 July 2012.

A basic part of NDC component (basic flat-rate "benefit") in 2012 was RUB 3 279 for a pensioner aged 80 and younger with no dependant and not being a disabled person.

In accordance with the Law on Labour Pensions in the Russian Federation the NDC component (without basic flat-rate "benefit") is calculated based on the amount of the so-called pension capital accumulated as of the date application for pension at a notional funded account subject to annual indexation as prescribed by the government. As of 1 January 2012, the annual coefficient for indexation of pension capital is 1.10. The contribution rate to the merged basic and NDC is 16% below RUB 512 000 and 10% above.

The amount of a monthly pension (NDC and funded components) is determined as quotient of the amount of pension capital on account divided by the expected period of pension payment in months. In 2013 it will be 228 months (19 years). The assigned NDC component is also subject to indexation in the order prescribed by the government. The amount of the funded component may be paid as a lump sum in some defined cases.

The old-age labour pension is payable to persons suffered from radiation and man-caused accidents. The amount is 250% of social pension.

There is no officially stated minimum or maximum monthly pension.

## Variant careers

### *Early retirement*

It is not possible to claim the pension before the normal eligibility. However, early retirement is possible for special group of insured persons working in unhealthy work environment (the required number of years of work in an unhealthy environment may vary according to conditions and profession). These early retirement benefits are paid for by the state on a pay-as-you-go basis. As of 1 January 2013, employers who have jobs with special conditions and employees eligible for the early pension provision, are obliged to pay extra insurance contributions to the system of mandatory pension insurance: 2013 – 2% and 4%; 2014 – 4% and 6%; 2015 – 6% and 9%.

### *Late retirement*

The old-age labour pension can be deferred. If so, for calculation of the NDC every full year of retirement deferral decreases the expected period of pension payment by one year (12 months). The minimum expected period of pension payment is 14 years (168 months). At the end of 2012, the government adopted a Long-term Pension System Strategy including some incentives for deferred pensions in order to increase retirement benefits.

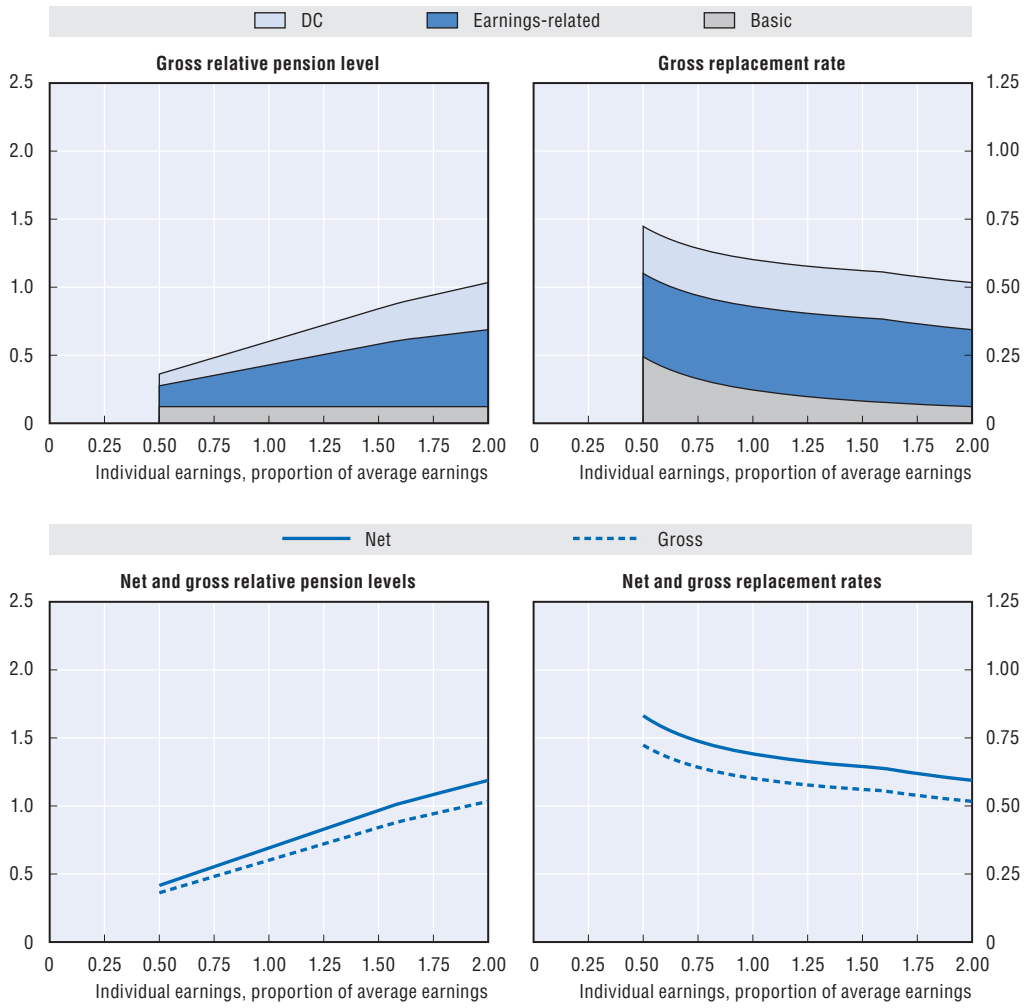
### *Childcare*

Periods of childcare (for one child aged up to 18 month, but not more than three years in total) are included in the insurance coverage (qualifying period).

### *Unemployment*

At the suggestion of the Employment Service and in the lack employment conditions pensions are payable to unemployed persons aged up to 60 years (men) and 55 years (women), but not earlier than two years before eligible age, with insurance period more than 25 and 20 years respectively and required length of service for early retirement in case of company or owner bankruptcy, reduction of the staff. The amount of a pension is determined by the Law on Labour Pensions in the Russian Federation as for insurance part of labour old-age pension.

## Pension modelling results: Russian Federation




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 51.0 | 36.2 | 48.2 | 60.2 | 84.1 | 103.4 |
| *(% average gross earnings)* | *45.7* | *32.9* | *43.2* | *53.6* | *74.2* | *90.8* |
| Net relative pension level | 58.7 | 41.6 | 55.4 | 69.1 | 96.7 | 118.8 |
| *(% net average earnings)* | *52.5* | *37.8* | *49.7* | *61.6* | *85.3* | *104.3* |
| Gross replacement rate | 63.0 | 72.4 | 64.2 | 60.2 | 56.1 | 51.7 |
| *(% individual gross earnings)* | *56.4* | *65.8* | *57.6* | *53.6* | *49.5* | *45.4* |
| Net replacement rate | 72.4 | 83.2 | 73.8 | 69.1 | 64.5 | 59.4 |
| *(% individual net earnings)* | *64.9* | *75.6* | *66.2* | *61.6* | *56.9* | *52.2* |
| Gross pension wealth | 8.2 | 9.5 | 8.4 | 7.9 | 7.3 | 6.8 |
| *(multiple of individual gross earnings)* | *11.4* | *13.3* | *11.7* | *10.8* | *10.0* | *9.2* |
| Net pension wealth | 8.2 | 9.5 | 8.4 | 7.9 | 7.3 | 6.8 |
| *(multiple of individual gross earnings)* | *11.4* | *13.3* | *11.7* | *10.8* | *10.0* | *9.2* |

StatLink http://dx.doi.org/10.1787/888932909485

# Saudi Arabia

**Saudi Arabia: Pension system in 2012**

Employees in the public and private sectors.

Voluntary coverage for persons who are self-employed, are working abroad, or no longer satisfy the conditions for compulsory coverage.

**Key indicators**

| | | Saudi Arabia | OECD |
|---|---|---|---|
| Average worker earnings (AW) | SAR | 172 500 | 160 200 |
| | USD | 46 000 | 42 700 |
| Public pension spending | % of GDP | | 7.8 |
| Life expectancy | At birth | 75.6 | 79.9 |
| | At age 65 | 15.6 | 19.1 |
| Population over age 65 | % of working-age population | 4.9 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909504

## Qualifying conditions

Age 60 (men) or age 55 (women) with at least 120 months of paid or credited contributions (credited contributions must not exceed 60 months).

## Benefit calculation

### *Old-age pension*

The pension is based on 2.5% of the insured's average monthly earnings during the last two years for each year of contributions, up to 100%.

The minimum monthly earnings for benefit calculation purposes are SAR 1 500. The maximum monthly earnings for benefit calculation purposes are SAR 45 000.

The average monthly earnings for benefit calculation purposes must not exceed 150% of the insured's monthly earnings at the beginning of the last five-year contribution period.

If the insured's monthly earnings decrease during the last two years before retirement, special provisions apply to adjust the average monthly earnings used for benefit calculation purposes.

The minimum pension is SAR 1 725 per month.

### *Old-age settlement*

A lump sum is paid equal to 10% of the insured's average monthly earnings during the last two years before retirement for each month of the first five years of contributions plus 12% for each additional month.

## Variant careers

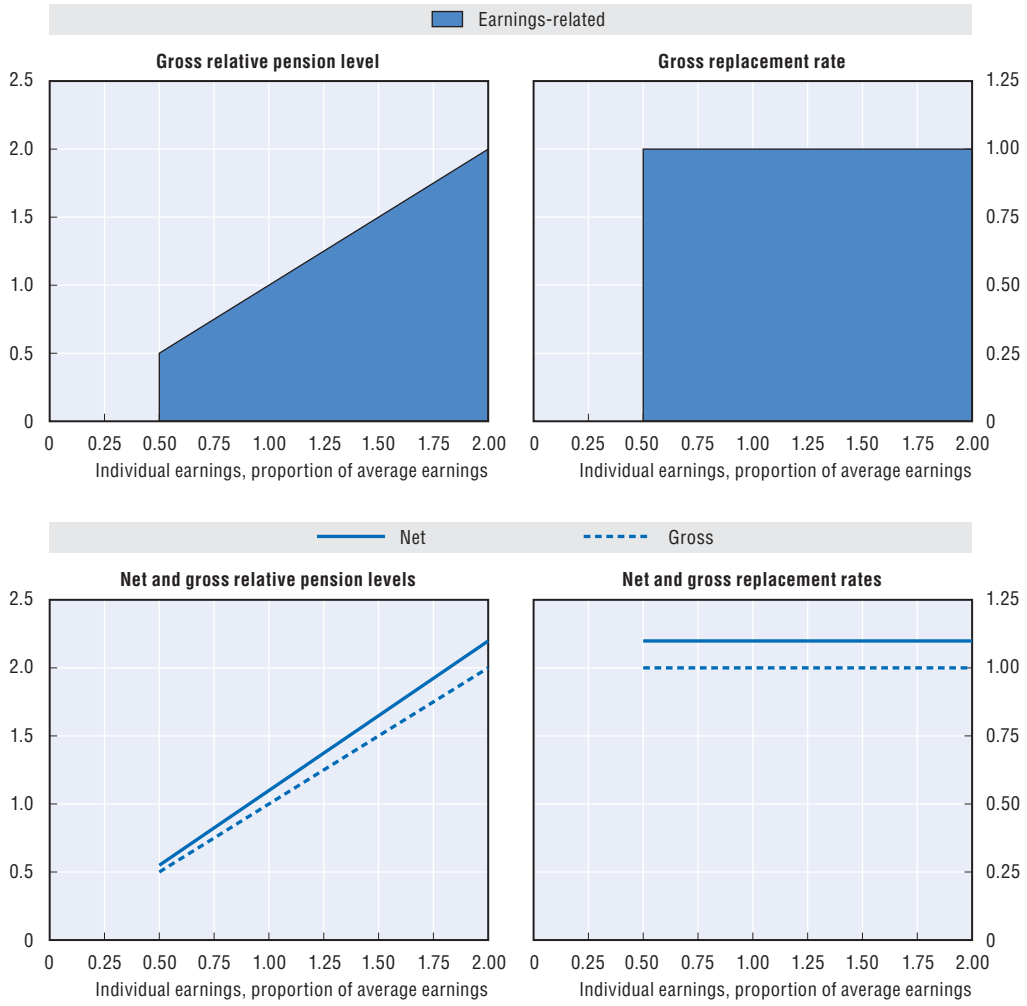
### *Early retirement*

At any age with at least 300 months of contributions and if no longer covered by the programme.

### *Late retirement*

It is not possible to defer the pension.

## Pension modelling results: Saudi Arabia




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 81.0 | 50.0 | 75.0 | 100.0 | 150.0 | 200.0 |
| *(% average gross earnings)* | *70.9* | *43.8* | *65.6* | *87.5* | *131.3* | *175.0* |
| Net relative pension level | 89.0 | 54.9 | 82.4 | 109.9 | 164.8 | 219.8 |
| *(% net average earnings)* | *77.9* | *48.1* | *72.1* | *96.2* | *144.2* | *192.3* |
| Gross replacement rate | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| *(% individual gross earnings)* | *87.5* | *87.5* | *87.5* | *87.5* | *87.5* | *87.5* |
| Net replacement rate | 109.9 | 109.9 | 109.9 | 109.9 | 109.9 | 109.9 |
| *(% individual net earnings)* | *96.2* | *96.2* | *96.2* | *96.2* | *96.2* | *96.2* |
| Gross pension wealth | 18.4 | 18.4 | 18.4 | 18.4 | 18.4 | 18.4 |
| *(multiple of individual gross earnings)* | *19.3* | *19.3* | *19.3* | *19.3* | *19.3* | *19.3* |
| Net pension wealth | 18.4 | 18.4 | 18.4 | 18.4 | 18.4 | 18.4 |
| *(multiple of individual gross earnings)* | *19.3* | *19.3* | *19.3* | *19.3* | *19.3* | *19.3* |

StatLink http://dx.doi.org/10.1787/888932909523

# Slovak Republic

### Slovak Republic: Pension system in 2012

The earnings-related, public scheme is similar to a points system, with benefits that depend on individual earnings relative to the average. Low-income workers are protected by a minimum amount of earnings on which pension is calculated. All pensioners are eligible for social assistance benefits. Defined-contribution plans were introduced at the beginning of 2005.

### Key indicators

| | | Slovak Republic | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 9 800 | 32 400 |
| | USD | 12 900 | 42 700 |
| Public pension spending | % of GDP | 7.0 | 7.8 |
| Life expectancy | At birth | 75.3 | 79.9 |
| | At age 65 | 15.9 | 19.1 |
| Population over age 65 | % of working-age population | 19.2 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909542

## Qualifying conditions

Since January 2008, 15 years of pension insurance are needed to be eligible for a benefit. Pension ages are being increased gradually, to be equalised between the sexes at age 62. For men, pension age of 62 was reached in 2008. For women, the increase in pension age is being spread over the period 2004-14. All women will reach the single pension age of 62 years in reality in 2024, 2015 is the date for legal rising of the pension age. For instance it means that women who will be 53 years old in 2014 and have reared five or more children will have their retirement age of 53 years increased by 99 months. From 2017 and onwards the statutory pensionable age will be indexed in line with increases in life expectancy at retirement age. The actual increase will be calculated as the change in average life expectancy in the first reference period compared with the change in the second reference period multiplied by 365. The result will be presented in days. The reference periods are calculated as average life expectancy during the first reference period (seven years prior to the reference year) compared to the second reference period (eight years prior to the reference year, 2009 to 2013 for the reference year 2017).

In the old-age saving scheme one needs at least ten years of savings period in addition to reaching the pension age. The modelling assumes a normal retirement age of 67 in 2056.

## Benefit calculation

### *Earnings-related*

Contributors to the pension scheme earn annual pension points. These are calculated as the ratio of individual earnings to economy-wide average earnings. Nevertheless, there is the "solidarity element" reducing average pension point higher than 1.25 (coefficient for reduction will be gradually decreasing from 84% to 60% in the period 2013-18) and increasing average pension point lower than one (coefficient for increasing will be gradually rising from 16% to 22% in the period 2013-18).

The pension entitlement is the sum of pension points over the career multiplied by the pension-point value. This is EUR 9.8182 for 2012. The pension-point value is indexed to average earnings (according to growth in the third quarter of calendar year). National average earnings in 2011 were EUR 786.00 per month. Dividing the point value by the earnings figure gives the equivalent to the accrual rate in a defined-benefit scheme, which is just 1.25%.

There is a ceiling to earnings for contributions, which is set at four times average earnings. From 1 January 2013 the ceiling will increase to five times average earnings. The earnings data are lagged. The lagging means that the ceiling for paying contributions is slightly less than five time average earnings. At the baseline assumptions for earnings growth and price inflation, the lagging means that the ceiling for paying contributions is slightly less than five times contemporaneous average earnings.

Pensions in payment are indexed to the arithmetic average of earnings growth and price inflation. During a transition period 2013 to 2017 the pension benefits will be increased by fixed amounts. The share of earnings growth and inflation in the valorisation will change from (40:60 for 2014; 30:70 for 2015; 20:80 for 2016 and 10:90 for 2017). From 2018 valorisation will solely be according to the development of consumer prices for pension households.

For workers joining defined-contribution plans, the benefits under the public, earnings-related scheme are aliquot part of those of workers who remain only in the public plan. These workers are supposed to get the second part of their pension from life insurance or combined from life insurance and an old-age pension company.

### *Minimum*

There is no minimum pension. However, there is a minimum assessment base for pension purposes that is equal to the minimum wage. From 1 January 2013 the minimum assessment base for self-employed persons is increased to 50% of the average wage two years before. The minimum wage was EUR 337.70 and minimum assessment base for self-employed persons was EUR 393.00 from the beginning of January 2013. The minimum wage is worth around 41% of average earnings.

### *Voluntary defined contribution*

The contribution rate for the defined-contribution scheme is 6% of earnings. From 1 September 2012 the contribution rate for DC scheme was lowered to 4%. However, from 1 January 2017 the contribution rate will increase on a yearly basis by 0.25% each year and reach the target level 6% in 2024 where it will remain thereafter. Participation was mandatory for workers entering the labour market for the first time from January 2005; all others had the possibility to choose to join the mixed system or to by June 2006 to remain solely under the public scheme. From 1 January 2008 to 31 March 2012 participation in the mixed system has been made voluntary for new entrants to the labour market. The previous changes have changed the system into a default auto enrolment entrance with possibility to opt out in two years horizon. Auto enrolment rules have come into effect since 1 April 2012. From 1 January 2013 voluntary entrance is possible for new entrants and voluntary entrance is possible before the age of 35. The defined-contribution pension can be taken as an annuity or as a combination of scheduled withdrawal and annuity. The modelling assumes withdrawal in the form of a price-indexed annuity using unisex annuity rates.

## Variant careers

### *Early retirement*

Early retirement is possible. Benefits are reduced by 0.5% for each 30 days, or part thereof, that the pension is claimed early (equivalent to 6.5% per year). Early retirement also requires that the resulting pension have to be higher than 1.2 times the adult subsistence income level. The subsistence income level was and still is EUR 194.58 from 1 July 2012 and was worth 24% of average earnings. This mean that the minimum pension required for early retirement has to be higher than EUR 233.49 which is 29% of average earnings. Average early retirement pension was EUR 374.50 in December 2012, which is 46% of average earnings.

Currently there are three conditions which are necessary to be met on early retirement: maximum two years before reaching retirement age, acquired at least the 15-year contribution and the requirement for the level of the benefit. From 1 January 2011, it is no longer possible to receive an early old-age pension and have mandatory pension insurance.

### *Late retirement*

It is possible to defer claiming the pension after the normal pension age. The benefit is increased by 0.5% for each 30 days of deferral (6% per year). For people who claim the pension and continue to work, the pension will be recalculated when the individual eventually retires adding one half of the points earned during that period.

### *Childcare*

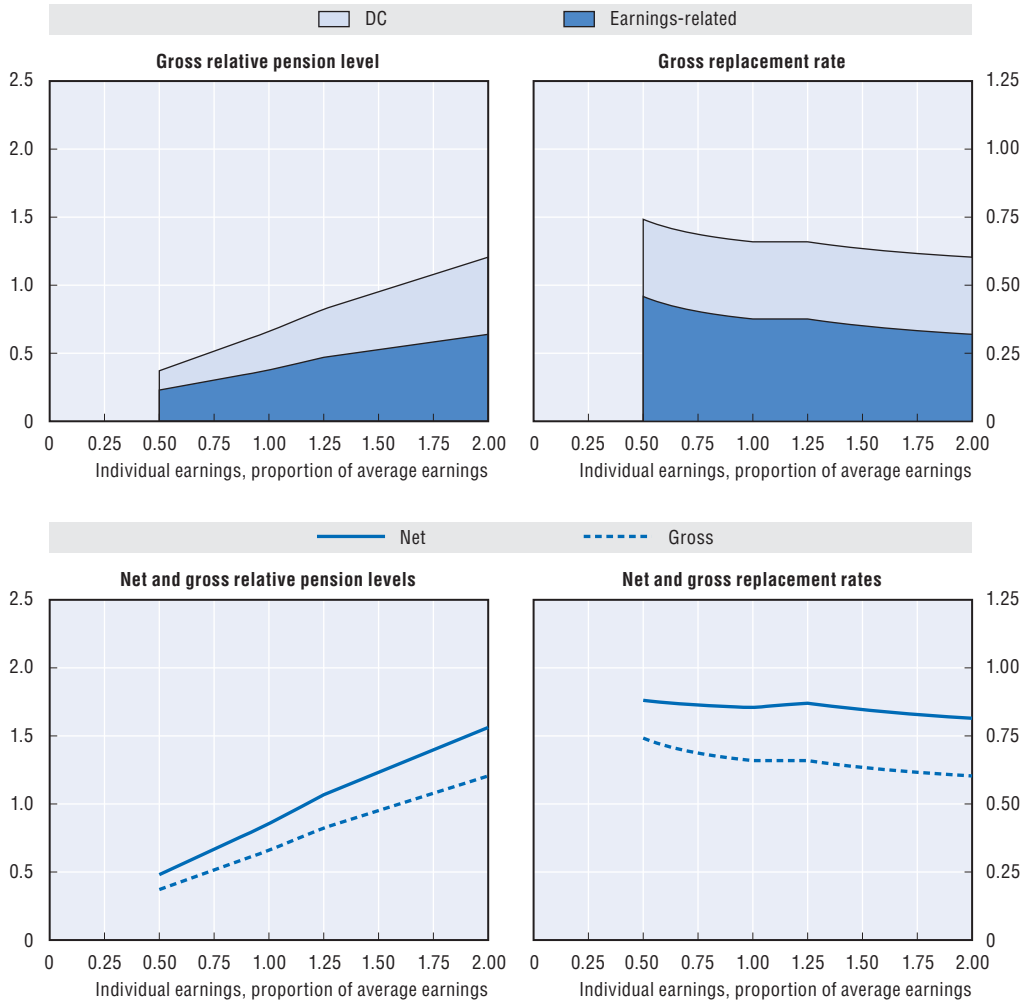
There are pension credits for people caring for children up to the age of 6 with the state paying the relevant contributions. The assessment base for pensions is 60% of average earnings prior to the period spent caring for children. Since 1 January 2011, the assessment base was adjusted to general ceiling rules, so is determined from the whole year level of average wage, which was valid two years before (2009) the absence year (2011). There is more generous provision for carers of disabled children (pension credits for people caring for disabled children up to the age of 18). The carer and also the child have to have permanent address in the Slovak Republic and the carer has to register for pension insurance by reason of this care.

These rules also apply for the defined-contribution scheme (old-age pension scheme).

### *Unemployment*

Unemployment spells are not credited in the pension system. However, the unemployed can make provisions for voluntary pension insurance. Also is possible to pay contributions for this period retroactively.

## Pension modelling results: Slovak Republic




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 55.0 | 37.1 | 51.5 | 65.9 | 95.1 | 120.6 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 71.2 | 48.1 | 66.7 | 85.4 | 123.3 | 156.2 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 67.9 | 74.2 | 68.7 | 65.9 | 63.4 | 60.3 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 86.1 | 88.1 | 86.4 | 85.4 | 84.7 | 81.5 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 9.1 | 9.9 | 9.2 | 8.8 | 8.5 | 8.1 |
| *(multiple of individual gross earnings)* | *10.7* | *11.7* | *10.8* | *10.4* | *10.0* | *9.5* |
| Net pension wealth | 9.1 | 9.9 | 9.2 | 8.8 | 8.5 | 8.1 |
| *(multiple of individual gross earnings)* | *10.7* | *11.7* | *10.8* | *10.4* | *10.0* | *9.5* |

StatLink http://dx.doi.org/10.1787/888932909561

# Slovenia

**Slovenia: Pension system in 2012**

The system combines an earnings-related public pension with minimum and targeted schemes.

**Key indicators**

| | | Slovenia | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 17 200 | 32 400 |
| | USD | 22 700 | 42 700 |
| Public pension spending | % of GDP | 10.9 | 7.8 |
| Life expectancy | At birth | 79.5 | 79.9 |
| | At age 65 | 18.7 | 19.1 |
| Population over age 65 | % of working-age population | 26.6 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909580

## Qualifying conditions

The main qualifying conditions are shown in the table. For women, the number of years' contributions needed to retire at the minimum age is increasing at three months per year to reach 38 years from 2013. At the same time, the minimum pension age for women is increasing by four months per year to reach 58 from 2014.

| | | | | |
|---|---|---|---|---|
| Men | Contribution years | 15 | 20 | 40 |
| | Pension age | 65 years | 63 years | 58 years |
| Women (2012) | Contribution years | 15 | 20 | 37 years and 9 months |
| | Pension age | 63 years | 61 years | 57 years and 4 months |
| Women (2014) | Contribution years | 15 | 20 | 38 |
| | Pension age | 63 years | 61 years | 58 years |

A full pension age was introduced in 1999, and is now 63 for men and will reach 61 for women from 2023. The long-term pension ages were further increased to 65 for both men and women following a reform in 2013. However this latest reform is not included in the modelling results.

## Benefit calculation

### *Earnings-related*

The earnings-related scheme pays 35% of the pension rating base for men and 38% for women once the minimum qualifying condition (15 years' contributions) has been met (the pension rating base is calculated using the best 18 year average of (net) wages, using valorisation coefficients which represents 73.2% of the growth of nominal (net) wages for retirement in 2012). Thereafter, the accrual rate is 1.5% per year after 2000; per year before 2000 the accrual rate is determined according Pension and Disability Act from 1992. This means that the net replacement rate with the full contribution condition (40 years for men, 38 for women) is 57.7% for men and 61.9% for women in 2012.

The earnings measure is based on a period of best consecutive years since 1970. The period of assessment has been extended since 2000 and reached 18 years from 2008. The pension is calculated on the basis of individual net earnings.

The adjustment of earlier years' earnings to reflect changes in costs and standards of living is currently very complex. First, earlier years' earnings are valorised in line with the growth in economy-wide average earnings. Then, to equalise the value of pensions between retirees in different years, benefits of new retirees are reduced by a factor relating to earnings growth in the last few years. For example, valorised earnings for an individual retiring in 2011 were cut to 73.2% of their full value. For an individual retiring in 2010, the reduction factor was 74.0%.

There is a minimum pension rating base that applies to pensionable earnings. The minimum base had remained on the same level as in 2011, due to failed adjustment of pensions in 2012. The minimum base during calendar 2012 averaged EUR 551.16 per month.

There is also a maximum to pensionable earnings, set at four times the minimum pension rating base. This averaged EUR 2 204.64 per month in 2012.

Pensions in payment are increased broadly in line with the growth in average gross earnings two times per year (February and November). The measure of pension increase is the growth of the minimum pension rating base, which as mentioned earlier, was not increased in 2012 due to special acts which prevented the adjustment of pensions as one of the austerity measures in 2012. Failure of adjustment of pensions in 2012 as well as cessation of payment and transfer of supplementary allowance for low income retirees into social welfare act from 1 January 2012, impacted on the average pension in comparison to year 2011.

The increase of average pension is lower according to the stated adjustment measures than to changes in the value of each qualifying year since 2000.

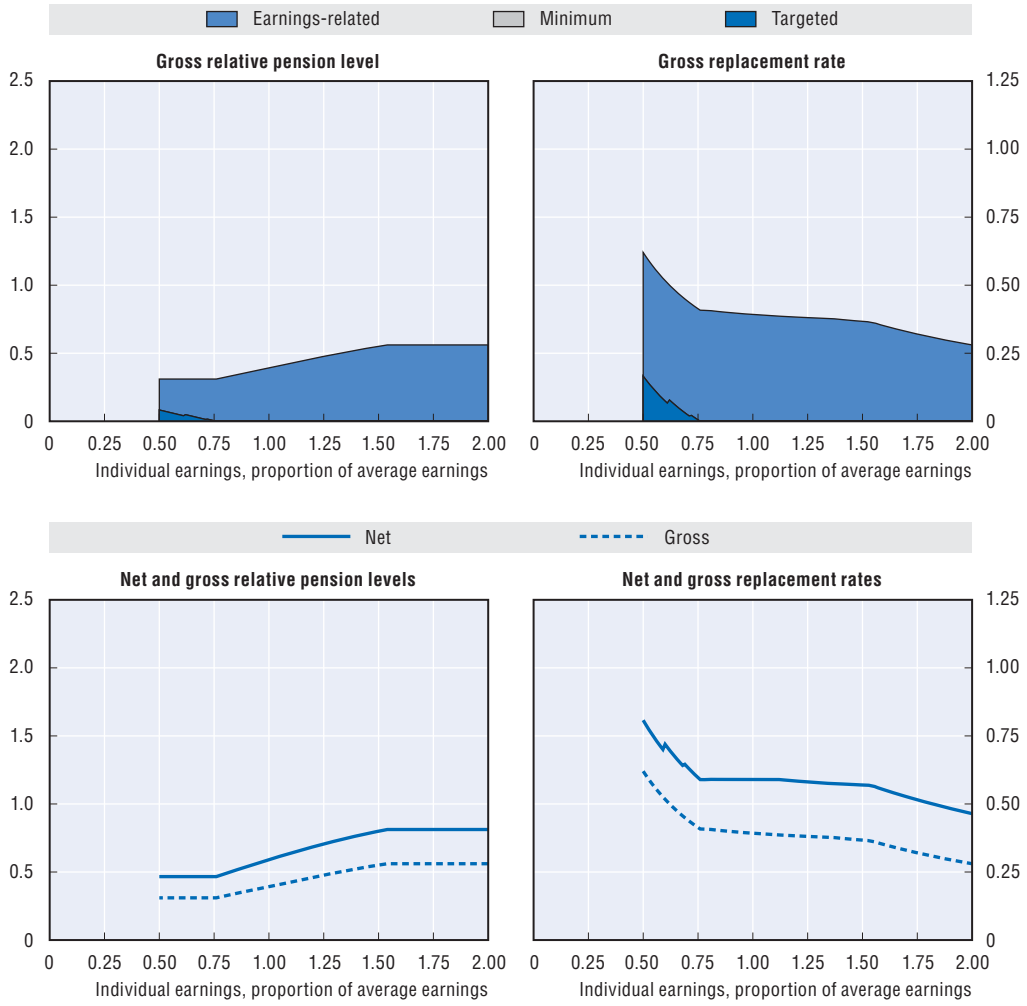
### *Minimum*

The minimum pension is defined as 35% of the minimum pension rating base.

### *Targeted*

There was (until 31 December 2011) a means-tested social-security allowance for low-income pensioners. From 1 January 2012 the means tested allowance was transferred into social protection legislation.

## Pension modelling results: Slovenia




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 32.9 | 31.0 | 31.0 | 39.2 | 55.1 | 56.1 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 49.4 | 46.6 | 46.6 | 59.0 | 80.0 | 81.2 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 40.6 | 62.0 | 41.4 | 39.2 | 36.7 | 28.0 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 59.0 | 80.8 | 59.7 | 59.0 | 57.0 | 46.5 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 8.8 | 13.5 | 9.0 | 8.5 | 8.0 | 6.1 |
| *(multiple of invidual gross earnings)* | *11.3* | *17.3* | *11.5* | *10.9* | *10.2* | *7.8* |
| Net pension wealth | 8.8 | 13.5 | 9.0 | 8.5 | 7.7 | 5.9 |
| *(multiple of individual gross earnings)* | *11.3* | *17.3* | *11.5* | *10.9* | *9.9* | *7.5* |

StatLink http://dx.doi.org/10.1787/888932909599

# South Africa

**South Africa: Pension system in 2012**

The public pension is flat rate based on a residency test. There is also a large number of occupational schemes, though coverage is not high at lower-income levels.

**Key indicators**

| | | South Africa | OECD |
|---|---|---|---|
| Average worker earnings (AW) | ZAR | 135 600 | 362 400 |
| | USD | 16 000 | 42 700 |
| Public pension spending | % of GDP | | 7.8 |
| Life expectancy | At birth | 57.0 | 79.9 |
| | At age 65 | 12.9 | 19.1 |
| Population over age 65 | % of working-age population | 9.8 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909618

## Qualifying conditions

The pension age was equalised at age 60 for men and women in 2010.

## Benefit calculation

### *Old-age pension (social assistance)*

The pension is means-tested with individuals having an income of under ZAR 31 296 for singles and ZAR 62 592 for couples and no more than ZAR 518 400 in assets for a single person and ZAR 1 036 800 for a couple. The benefit amount is up to ZAR 1 080 per month for singles and ZAR 2 160 for couples. The average wage used for 2012 was ZAR 135 600.

### *Voluntary private pension*

The average contribution rate for occupational schemes is around 15% of earnings, divided between employers and employees.

## Variant careers

### *Early retirement*

It is not possible to claim the public pension before the normal eligibility age of 60.

### *Late retirement*

Receipt of the old-age pension is not dependent on retirement. It is therefore possible to combine pension and employment as long as the recipient's income does not exceed the means test threshold.

While people are not obliged to claim the public pension on reaching the qualifying age, there is no advantage in deferring a claim.

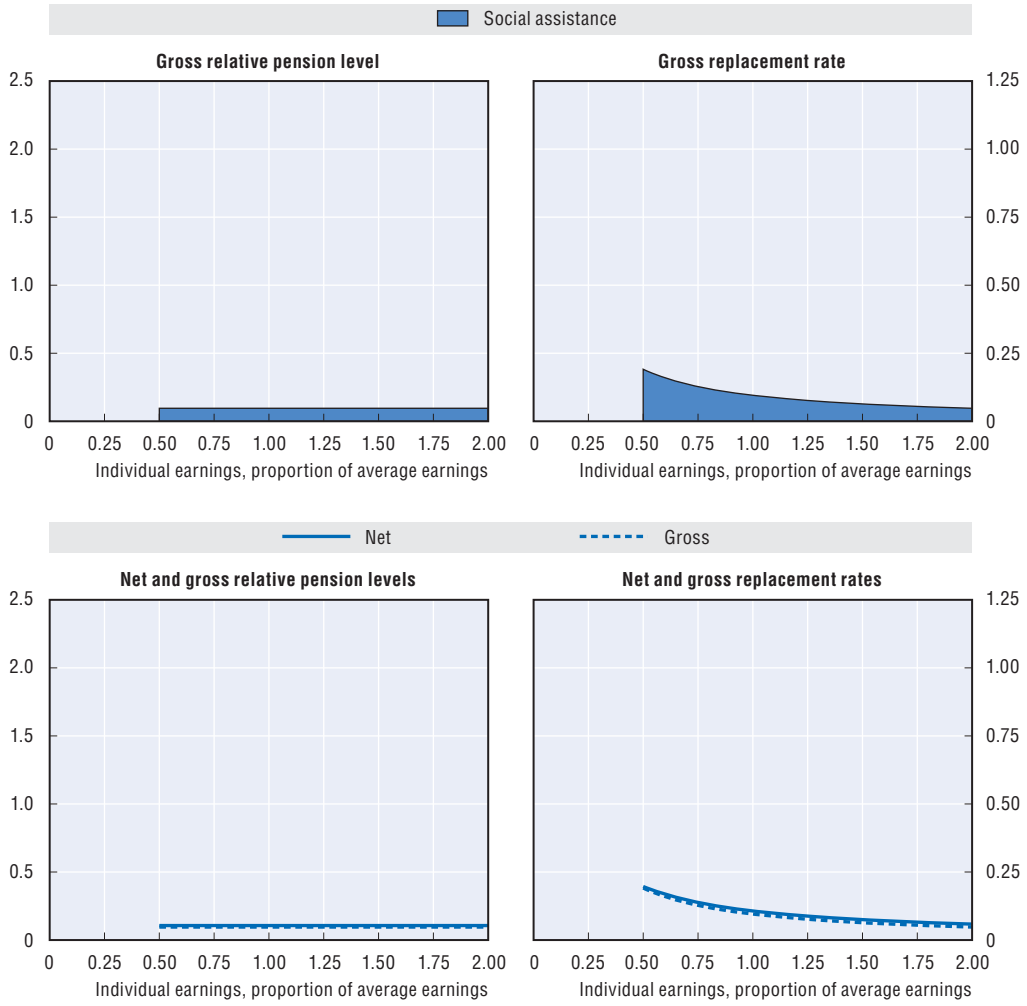
### *Childcare*

Eventual public pension entitlement is not affected by periods out of paid work for caring purposes.

### *Unemployment*

Eventual public pension entitlement is not affected by periods of unemployment.

## Pension modelling results: South Africa




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 11.8 | 19.1 | 12.7 | 9.6 | 6.4 | 4.8 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 12.9 | 19.7 | 13.8 | 10.7 | 7.5 | 5.9 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 1.6 | 2.6 | 1.7 | 1.3 | 0.9 | 0.7 |
| *(multiple of individual gross earnings)* | *2.0* | *3.3* | *2.2* | *1.6* | *1.1* | *0.8* |
| Net pension wealth | 1.6 | 2.6 | 1.7 | 1.3 | 0.9 | 0.7 |
| *(multiple of individual gross earnings)* | *2.0* | *3.3* | *2.2* | *1.6* | *1.1* | *0.8* |

StatLink http://dx.doi.org/10.1787/888932909637

# Spain

**Spain: Pension system in 2012**

The Spanish public pension system consists of a single, earnings-related benefit in the contribution level, with a means-tested minimum pension. There is also a non-contribution means-tested level, which replaces the previous special social assistance scheme.

**Key indicators**

| | | Spain | OECD |
|---|---|---|---|
| Average worker earnings (AW) | EUR | 25 600 | 32 400 |
| | USD | 33 700 | 42 700 |
| Public pension spending | % of GDP | 9.3 | 7.8 |
| Life expectancy | At birth | 82.0 | 79.9 |
| | At age 65 | 20.4 | 19.1 |
| Population over age 65 | % of working-age population | 27.9 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909656

## Qualifying conditions

Following the pension reform of 2011, the retirement age for a full benefit has just been increased from 65 years to 67 years for both men and women. 15 years of contributions are necessary to qualify for a pension benefit. It will still be possible to retire at 65 without penalty with 38.5 years of contributions. In the modeling, entry into the labour market occurs at 20 and a full contribution is assumed. These assumptions correspond to a pension age of 65.

## Benefit calculation

### *Earnings-related*

Previously, the benefit accrued according to the following schedule. After 15 years' contributions, it is 50% of the earnings base. Over the next ten years, an extra 3% is accrued per year, followed by 2% per year thereafter. The maximum accrual is 100%, reached after 35 years' contributions. Following the reform the accrual is still 50% after 15 years and thereafter it will reach 100% after 37 years increasing linearly.

The earnings base, after the reform, is past earnings over the last 25 years (compared with 15 years previously), up-rated in line with prices, apart from the last two years. This means that the replacement rate relative to final salary is less than 100%.

There is a ceiling to earnings for contributions and benefit purposes of EUR 39 150 corresponding to 153% of average earnings.

Benefits are price-indexed.

### *Minimum and maximum*

There is a minimum pension payable from age 65 amounting to EUR 618.9 per month, or 34% of average earnings, for pensioners without a dependent spouse, and EUR 763.6 per month, or 42% of average earnings, for pensioners with a dependent spouse. There are 14 payments per year. There is also a minimum pension payable to widows amounting EUR 715.6 per month for widows with children in charge and a minimum pension for orphans.

Minimum pensions have increased above the price index in the last years. From 2004 to 2012 price index has increased 22.87% and minimum pensions have increased between 55.6% and 40.5% depending on the type of pension.

The maximum pension is EUR 2 522.89 per month in 2012 with 14 payments per year.

## Variant careers

### *Early retirement*

Early retirement is possible from age 63 (involuntary unemployment) and 65 (voluntary unemployment) previously 61 (involuntary unemployment) and 63 (voluntary unemployment), provided they have 33 years or 35 years of contributions (previously 33 years required in both cases). The actuarial reduction on benefits varies from 2% to 1.5% each quarter depending on the length of the period of contributions.

The minimum pension for early retirees is EUR 578.9 or 32% of average earnings for pensioners without a dependent spouse, and EUR 715.6 per month, or 39% of average earnings for pensioners with a dependent spouse, and after 65 they move to the higher level.

Partial retirement is possible from age 63 (with a new employee) or from 65 (without substitution). Both the new and the partially retired employee will contribute fully to the pension system. Prior to the reform, partially retired only contributed proportionally of the working day effectively worked.

### *Late retirement*

It is possible to defer the pension after normal retirement age. For workers who have contributed between 15 and 25 years and continue working after the age of 67, the pension benefit will increase by 2% of the base of calculation per additional year. The increase is 2.75% with 25 to 37 years of contributions and 4% with 37 years of contributions.

From 67 there is also the possibility of combining partial pension and part-time job. In this case, there is no obligation to replace the remaining working hours.

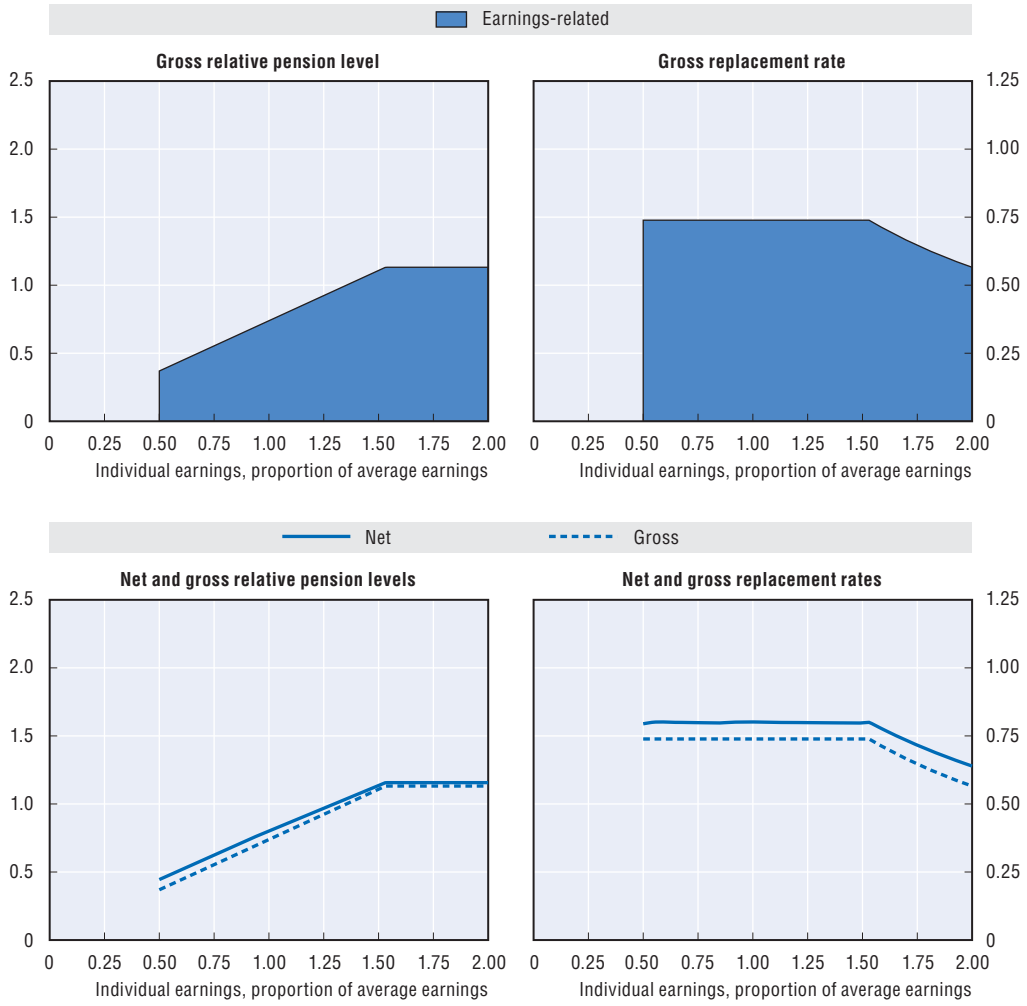
### *Childcare*

There is coverage for the maternity and paternity period. Two years out of the labour market looking after children count towards eligibility for a pension benefit.

### *Unemployment*

During periods of unemployment-benefit receipt, the government pays all of the employers' contribution and the employee's contribution is paid by the worker. The base salary for contributions is the average salary in the six months prior to unemployment. The duration of the benefits depends on the number of contribution days during the prior six years, varying between four months and two years. The unemployment assistance which is paid thereafter does not create any pension credits, except for people 55 or more. For these people, contributions for old-age pension are paid by the government up to retirement age. These contributions are levied on the 100% of the minimum base of EUR 748.2 per month.

## Pension modelling results: Spain




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 57.6 | 36.9 | 55.4 | 73.9 | 110.8 | 113.2 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 64.6 | 44.4 | 62.4 | 80.1 | 113.6 | 115.7 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 73.9 | 73.9 | 73.9 | 73.9 | 73.9 | 56.6 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 79.8 | 79.5 | 79.9 | 80.1 | 79.8 | 63.9 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 9.8 |
| *(multiple of individual gross earnings)* | *15.0* | *15.0* | *15.0* | *15.0* | *15.0* | *11.5* |
| Net pension wealth | 11.1 | 12.0 | 11.2 | 10.8 | 10.2 | 7.8 |
| *(multiple of individual gross earnings)* | *13.0* | *14.0* | *13.1* | *12.6* | *11.9* | *9.1* |

StatLink http://dx.doi.org/10.1787/888932909675

# Sweden

**Sweden: Pension system in 2012**

The earnings-related part is based on notional accounts and there is a small mandatory contribution to individual, defined-contribution funded pensions. There is also a pension-income-tested top-up. Occupational pension plans – with defined-benefit and defined-contribution elements – have broad coverage.

**Key indicators**

| | | Sweden | OECD |
|---|---|---|---|
| Average worker earnings (AW) | SEK | 387 300 | 278 000 |
| | USD | 59 500 | 42 700 |
| Public pension spending | % of GDP | 8.2 | 7.8 |
| Life expectancy | At birth | 81.7 | 79.9 |
| | At age 65 | 19.8 | 19.1 |
| Population over age 65 | % of working-age population | 32.5 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909694

## Qualifying conditions

The pension from the income and premium pension can be received from the age of 61. Eligibility for the guarantee pension will be earned with three years' residency. It is possible to get a guarantee pension from age 65. Maximum guarantee pension is earned with 40 years' residency and is reduced proportionally for shorter periods.

## Benefit calculation

Contributions of 18.5% of pensionable pay are credited and then uprated in line with a three-year moving average of economy-wide average earnings. Pensionable pay is defined as earnings less the employee contribution to the pension system (i.e. to both the notional accounts system and the premium pension system) of 7% of gross earnings, giving an effective contribution rate on gross earnings of 17.21%, 14.88% to the notional-accounts system and 2.33% to the defined-contribution funded pensions. Contributions are only levied when annual earnings exceed a small floor of SEK 18 612 in 2012, just under 5.0% of average earnings, although they are due on the whole of earnings for all people earning above the floor. There is a ceiling to benefits calculated in terms of pensionable earnings of SEK 409 500 in 2012, giving an effective ceiling relative to gross earnings of SEK 440 323 in 2012 (just under 114% of average earnings). Employer contributions are also paid only to the ceiling, but there is an additional tax on earnings above the ceiling. This tax has the same percentage as the pension contribution but goes directly to the central government budget. It does not accrue any pension rights.

### *Earnings-related*

The new earnings-related scheme uses notional accounts. The notional accounts are increased every year by the distribution of the pension balances of deceased persons of the same age as the survivors (inheritance gains). The inheritance gains from people who die before the earliest possible retirement age (61 years) are relevant. After this age the inheritance gains factor is estimated on the basis of the mortality observed for an earlier period (computed from five year unisex mortality tables).

At retirement, the accumulated notional capital will be converted into an annuity. This calculation will use a coefficient depending on individual retirement age and contemporaneous life expectancy (based on the previous five year unisex mortality tables). A real discount rate of 1.6% a year is also included in the calculation of the annuity. Illustrative values for the annuity coefficient at age 65 are 15.4 for 2000 rising to 16.8 by 2020 and 17.4 by 2040. For a person born in 1946 the actual annuity coefficient is currently 16.31 for retirement at age 65, 18.64 for retirement at 61 and 13.41 at age 70.

After retirement, pensions are uprated with the increase in nominal average earnings less the imputed interest rate in the annuity divisor of 1.6%.

There is also a "balance mechanism": if assets (the buffer fund plus the estimated value of assets in the form of contribution revenues) fall below liabilities (accrued notional pension capital and capital value of outgoing pensions), then indexation of pensions in payment and returns credited to notional accounts are reduced by the ratio of assets to liabilities. The balance ratio for year t is used to calculate the balance number or the need for activating the balancing mechanism in year t + 2. An activated balancing mechanism would mean lower replacement rates from the national system but will produce higher results when the pension system recovers and the balance figure increases (the balance index can exceed the income index during the recovery period). The balancing ratio for 2012 and the balance number for 2014 is 0.9837.

| | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 |
|---|---|---|---|---|---|---|
| Balancing ratio | 0.9837 | 1.0198 | 1.0024 | 0.9549 | 0.9826 | 1.0026 |

For modelling purposes, the annuity coefficients are calculated using the above rules and the relevant mortality data from the UN population database. It is assumed that the balance mechanism does not affect the uprating of benefits.

### *Minimum*

The "guarantee pension" is an income-tested top-up for people with low levels of benefit from notional accounts. For a single person, the full guaranteed benefit in 2012 was SEK 93 720 for a single pensioner born after 1938 or 24% of gross average earnings.

The guarantee pension is withdrawn at 100% against the first SEK 55 440 (2012) of income, for a single person, from the earnings-related pension, thereafter at 48%. This threshold is equivalent to 14% of average earnings. Only when earnings-related pension exceeds SEK 135 076 – nearly 35% of average earnings – is entitlement to the guarantee exhausted.

The guarantee level is price indexed under current legislation. However, the baseline assumption in the modelling for all countries is that the value of safety-net retirement benefits will tend, over time, to track average earnings rather than decline relative to general living standards.

There is also a housing benefit that covers 93% of housing costs up to a maximum of SEK 5 000 per month for a single pensioner. From 1 January 2012 an amount of SEK 170 per person was added to the housing allowance. The benefit is an important part of the minimum living standard for Swedish pensioners. This means-tested benefit is not included in the modelled calculations.

### *Defined contribution*

A further 2.5% of pensionable income (giving an effective contribution rate against gross earnings of 2.33%) will be paid into personal pension accounts: the premium pension. People have a broad choice of where these funds are invested.

At retirement, people have a choice over the way benefits are withdrawn. First, people can convert the pension into an annuity to avoid investment risk. Alternatively, people will be able to choose a variable annuity, where their funds continue to be invested by their chosen fund manager. These annuities do not have a guaranteed value. The principle of the pension calculation in this case is that the value of the account is divided by an annuity divisor (based on estimated average life expectancy) and the pension benefit is credited with an estimated future interest rate of 3% minus administrative costs. If returns exceed 3%, then either an additional payment is made or the balance of the account is higher and so, therefore, is the base for calculating the annual pension.

### *Quasi-mandatory occupational*

The occupational schemes together are estimated to cover almost 90% of employees. There are only four major occupational schemes. The modelling has used the ITP scheme for white-collar workers, which mixes defined-benefit and defined-contribution elements. This plan has now been renegotiated. The old plan is current for those born 1978 or earlier with some minor changes and the new plan covers those born 1979 or later.

### *ITP1*

From 1 January 2007, salaried employees born in or after 1979 began to accrue a retirement pension under the new ITP1 plan from the age of 25. It is a complete defined-contribution plan. The contribution is 4.5% of salary portions up to 7.5 income base amounts (SEK 409 500 for 2012). For salary portions in excess of 7.5 income base amounts (divided by 12 for one month) the contribution is 30%. The pensionable salary becomes the gross salary paid out in cash, excluding reimbursement of expenses. Premiums are paid from the first Swedish krona of salary.

The employee can choose the form of the savings and the fund manager. However, at least half the contribution is invested in traditional pension insurance. The employee can also choose repayment cover and family cover of 1, 2, 3 or 4 price base amounts per year over 5, 10, 15 or 20 years. The contributions of those who do not specify a choice are invested in traditional pension insurance with no repayment cover or family cover. This default choice is the one that is modelled.

Employees whose yearly salary exceeds ten income base amounts (SEK 546 000 in 2012) may choose to be covered under the new plan upon agreement with their employer. This applies regardless of whether the employee has a traditional ITP2 plan or has taken out an alternative ITP.

## Variant careers

### *Early retirement*

Retirement is possible from age 61 in the public pension scheme (both the income pension and the premium pension). There is no fixed retirement age. The notional-accounts and annuity calculations provide an automatic actuarial reduction depending on the age of retirement.

The income-tested guarantee pension cannot be claimed before 65. If the notional-accounts pension is withdrawn before or after age 65, the guarantee pension is still calculated as if the pension had been withdrawn at age 65.

In the new ITP1 plan, pensions are normally paid from the age of 65, but may be taken out from the age of 55. Pensions are life-long but can be paid in full or in part for a limited period of at least five years. The annuity is modelled as one that gives lifelong payments. The size of the pension is determined by the amount of premiums paid, the return, fees and taxes, and for how long the pension is to be disbursed.

### *Late retirement*

It is possible to defer the notional accounts and premium pension with no upper age limit, again with automatic actuarial adjustments. It is also possible to combine work and pension receipt. Finally, pensions can be withdrawn partially (at 25, 50 or 75% of the full pension). The guarantee pension is adjusted against other pensions from the Swedish old-age pension system and from comparable foreign national pensions, but is not reduced by wage income, capital income, occupational pension or private pension insurance. Thus, it is also possible to combine work with receipt of the guarantee pension.

It is possible to defer the ITP1 occupational pension after age 65. No additional pension rights can be accrued after age 65, unless you have reached a special agreement with your employer.

### *Childcare*

Years are credited under the public pension scheme for any period when you have and live with children aged 4 or under. In a household with two parents the credits go to the parent with the lowest income if an active choice is not made. Individuals receive the best of three different ways of calculating the credit. First, if income is zero or lower than previous earnings, then the credits are based on the earnings the year before the child was born. Secondly, for low-income workers or people who were not working before childcare responsibilities started, the credits are based on 75% of economy-wide average earnings. Thirdly, if income actually rises or does not decrease to a great extent as childcare responsibilities begin, then the credit is set at one income base amount. In all three cases, the government makes the total contributions to the pension system (covering both the income pension and the premium pension). This is, however, up to the earnings ceiling in the pension system defined under the section "Defined contribution".

Furthermore, parental benefits paid to people on parental leave from work are also considered pensionable income. The beneficiary pays the employee pension contribution of 7% on benefit income. The government makes all the "employer contributions" of 10.21% for incomes from social security including parental benefits.

The parental benefit is payable for a period of 480 days as follows:

- 390 days at 80% of the parent's annual income up to a ceiling of 10 price base amounts (equivalent to an annual salary of SEK 440 000 in 2012).
- 90 days at a universally applicable flat rate of SEK 180/day.

The parental benefit is computed daily. Parents on low income or no income at all receive a minimum guaranteed benefit of SEK 180/day. The 480 cash benefit days are divided equally between the parents (i.e. 240 days to each parent). A parent may also transfer up to 180 of her or his days to the other parent.

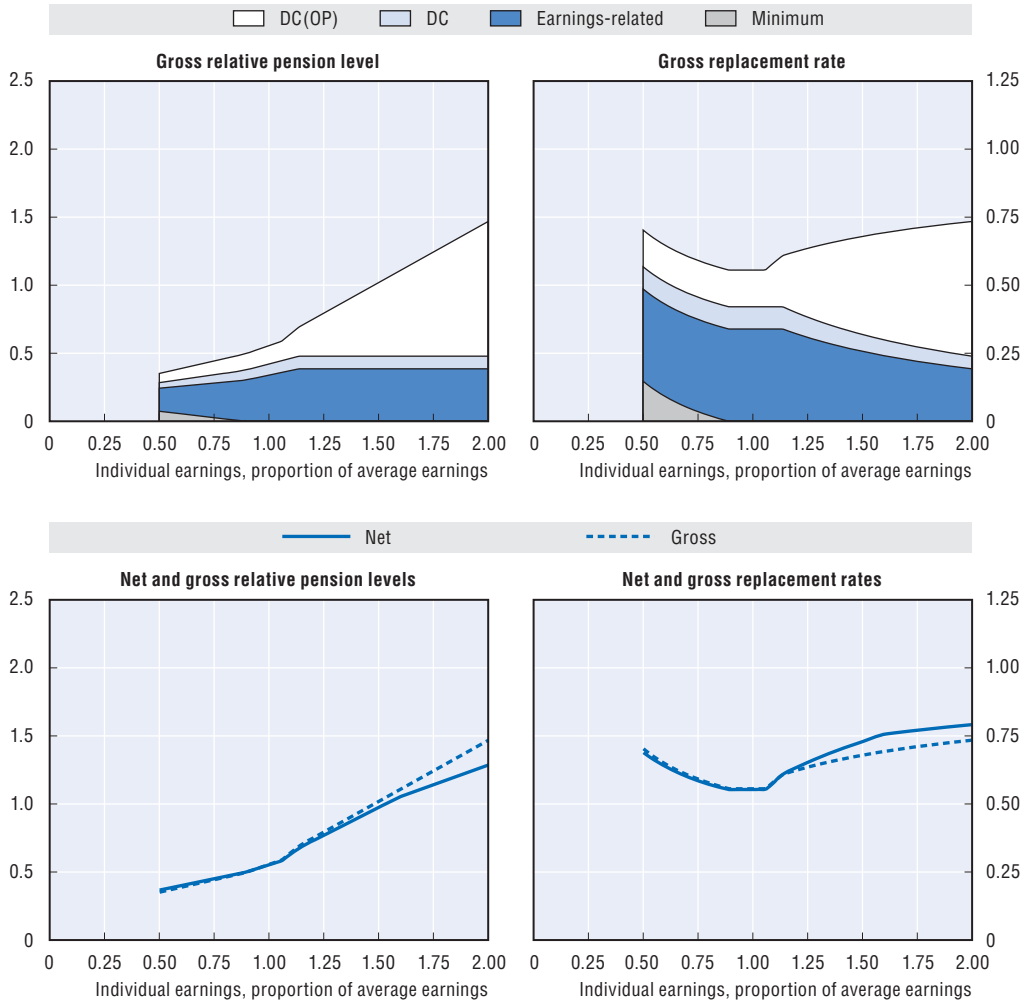
Under the ITP occupational plan, there is a recommendation that the employer contributes, through an insurance, to an employee's pension during periods of up to 13 months for parental leave (and most do so).

### *Unemployment*

Unemployment benefits and training allowances paid to unemployed people taking up labour-market programmes are pensionable income, with the government making the "employer" contribution. Income-related unemployment benefits are 80% of previous earnings for the first two hundred days. From day 201 up to day 300 the benefit is 70% of previous earnings. Thereafter the benefit period is ended unless one is the parent of a child below the age of 18 for whom the benefit remains at a level of 70% of previous earnings for an extended period of 150 days. The unemployment benefits are disbursed up to a ceiling of SEK 680 per day and subject to a minimum payment of SEK 320 per day (applies only if the unemployed person has worked full time during 12 months preceding unemployment).

After the receipt of days in unemployment the beneficiary is entitled to be enrolled within the job and development guarantee programme. A participant in the job and development guarantee programme is entitled to activity support or development benefits. If the jobseeker has had an unemployment benefit before enrolment in the jobs and development guarantee then this benefit will equal 65% of earnings from the time before unemployment (max SEK 680 per day). If the jobseeker has not previously been entitled to unemployment benefits he or she will receive the daily benefit of SEK 223 per day.

## Pension modelling results: Sweden




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 50.0 | 35.1 | 44.3 | 55.6 | 101.9 | 146.8 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 50.2 | 36.7 | 45.0 | 55.3 | 97.5 | 128.6 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 55.6 | 70.2 | 59.1 | 55.6 | 67.9 | 73.4 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 55.3 | 68.8 | 58.5 | 55.3 | 72.9 | 79.1 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 9.9 | 12.4 | 10.5 | 9.9 | 12.0 | 12.9 |
| *(multiple of individual gross earnings)* | *11.1* | *14.0* | *11.8* | *11.1* | *13.4* | *14.4* |
| Net pension wealth | 7.5 | 9.8 | 8.0 | 7.4 | 8.6 | 8.5 |
| *(multiple of individual gross earnings)* | *8.4* | *10.9* | *9.0* | *8.3* | *9.6* | *9.5* |

StatLink http://dx.doi.org/10.1787/888932909713

# Switzerland

### Switzerland: Pension system in 2012

The Swiss retirement pension system has three parts. The public scheme is earnings-related but has a progressive formula. There is also a system of mandatory occupational persons and an income-tested supplementary benefit. The occupational pension can be supplemented on a voluntary basis.

### Key indicators

| | | Switzerland | OECD |
|---|---|---|---|
| Average worker earnings (AW) | CHF | 86 900 | 39 100 |
| | USD | 94 900 | 42 700 |
| Public pension spending | % of GDP | 6.3 | 7.8 |
| Life expectancy | At birth | 82.5 | 79.9 |
| | At age 65 | 20.7 | 19.1 |
| Population aged over 65 | % of population of active age | 28.1 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909732

## Qualifying conditions

Pensionable age under the public scheme and mandatory occupational pensions is currently 65 for men and 64 for women. A full pension requires contributions for 44 years for men and 43 for women.

## Benefit calculation

### *Earnings-related*

The public pension is based on average lifetime earnings. Average lifetime earnings depend on the number of years during which contributions have been made and the person's average income between age 20 and retirement age. Benefits are subject to both upper and lower limits. Between these two thresholds, the "two-branch" benefit calculation formula favours average incomes. The benefit calculation tends to redistribute from high towards low incomes. With full contributions pension benefits will be between CHF 13 920 and CHF 27 840. These are equivalent 16% and 32% of average earnings. The maximum benefit is reached when average lifetime earnings are CHF 83 520 equivalent to 96% of economy-wide average earnings. The benefit paid to married couples may not exceed 150% of the maximum benefit.

Benefits are adjusted every two years. Pensions in payment are indexed 50% to prices and 50% to nominal earnings.

### *Mandatory occupational*

A mandatory occupational insurance regime was introduced in 1985. It is built around "defined credits" to an individual's pension account and applies to people earning an annual income of at least CHF 20 880 per annum. These vary by age:

| Age | 25-34 | 35-44 | 45-54 | 55-64/65 |
|---|---|---|---|---|
| Old-age credits (as % of co-ordinated salary) | 7 | 10 | 15 | 18 |

The value of accumulated credits at retirement depends on the required interest applied to earlier years' contributions. The interest rate is currently 1.5%. The old-age credits are calculated each year as a percentage of the co-ordinated salary. If the interest rate is broadly equivalent to the growth rate of earnings, then a full career in the system will give a man at age 65 accumulated credits of 500% of earnings. However, higher (or lower) outcomes are possible if the interest rate exceeds (is less than) growth in earnings. The modelling assumes that the interest rate applied to the credits will be equivalent to earnings over the long term.

The employer must pay at least half of these old-age credits, the employee the remainder.

The individual pension account is converted into an annual retirement benefit upon retirement, using a conversion factor rate of 6.90% for men, 6.85% for women. In addition, the retiree is entitled to receive at least a quarter of his/her retirement assets as a lump sum.

The mandatory system corresponds to a statutory minimum guaranteed by law. Registered provident institutions (pension funds) are free to provide benefits exceeding the law. Such pension benefits are referred to as "over-obligatory" benefits. Most retired employees enjoy "over-obligatory" benefits of this kind.

### *Targeted*

Means-tested supplementary benefits are paid when earnings-related benefits and other sources of income are insufficient to cover basic living costs. The amount of annual benefit paid corresponds to the difference between recognised expenditure and calculated income (benefits, earned income, return on assets, etc.). Recognised expenses for single people break down as follows:

| Factors in calculating supplementary benefits (PC) | Annual amount (single person living at home) |
|---|---|
| Coverage of essential needs | CHF 19 050 |
| Maximum gross rent | CHF 13 200 |
| Maximum amount for reimbursement of sickness and invalidity costs | CHF 25 000 |

The supplementary benefit is indexed in the same way as the public old-age pensions, i.e. to a mixed index of 50% prices and 50% wages. There are discretionary cantonal additions for low-income pensioners; these are disregarded in the model.

### *Voluntary*

Voluntary pensions saving are encouraged through tax exemptions of contributions. Contributions can be saved in a bank account or paid into a dedicated insurance policy, from which no withdrawals are permitted. In 2012 the maximum that could be invested amounted to CHF 6 682 for employees and CHF 33 408 for the self-employed. A maximum of five years of extra contributions can be made after the ordinary retirement age. Voluntary private pension cannot be withdrawn until at most five years before the pensionable age. The benefits are subject to income tax.

## Variant careers

### *Early retirement*

Early retirement in the public scheme is possible two years before the standard retirement age, i.e. from age 63 in the case of men, age 62 in the case of women. In case of early retirement, the full value is reduced by 6.8% for each year of early claiming. This is equivalent to an actuarial adjustment of 4.5% for the additional year in which benefits are taken and of 2.3%, for the missing qualifying year, under OECD modelling assumptions.

For women born between 1939 and 1947, the benefits are reduced by only 3.4% per year, to mitigate for the effect of the increase in the retirement age for women (to 63 in 2001 and to 64 in 2005).

Early retirement is permitted in occupational schemes and can be claim from age 58. Pension funds themselves define the terms of early retirement. As a general rule, the conversion rate applied to the employee's pension assets to obtain the annual pension benefit is reduced by between 0.15 and 0.20 of a percentage point for each year of early retirement. The 0.2 point reduction is equivalent to an actuarial adjustment, as conventionally measured, of 2.95% per year of early retirement (increasing with the extent of early retirement). Including also the loss of contributions and credits as a result of early retirement, the theoretical benefit is 7.1% (one year) – 6.35% (five years) lower per year of early retirement.

It is possible, to some extent, to withdraw pension benefits early without giving up gainful employment.

### *Late retirement*

Both public and occupational pensions can be deferred after normal pension age. The public pension can be deferred for up to five years. The public pension is increased according to the following schedule:

| Deferral | 1 year | 2 years | 3 years | 4 years | 5 years |
|---|---|---|---|---|---|
| Adjustment (%) | 5.2 | 10.8 | 17.1 | 24.0 | 31.5 |

Contributions are not levied on people working after age 65 for men and age 64 for women if earnings are below CHF 16 800 per year. For earnings above that level, contributions are levied when people defer the pension or claim the pension while continuing their work but no additional pension entitlement can be earned.

Occupational pension benefit can be deferred until age 70. The pension funds themselves define the terms. As a general rule, the conversion rate is raised by 0.2 of a percentage points for each year the retirement is deferred according a recommendation of the Federal Social Insurance Office (pension funds decide freely on the percentage points).

In principle, it is possible to combine receipt of the occupational pension with continuing to work. In practice, these are mainly cases of people with incomplete careers or people who have retired early rather than late. Therefore, the modelling assumes that people defer their occupational pension if they continue to work after the normal pension age. People do not continue to contribute after 65 under the public pension scheme.

### *Childcare*

Years of childcare (for children under age 16) are credited in the public scheme as if earnings had amounted to three times the minimum pension of the year in which the caring parent retires. For 2012, this was CHF 41 760, corresponding to 48% of economy-wide average earnings. If the caring parent is married during the caring period, the credits are split equally between the spouses or registered partnership.

Credits for childcare are not required in occupational schemes.

### *Caring for close relatives*

Care of helpless relatives (older or young) rare credited a bonus for care-taking. This credit is not possible to claim in combination with the credit for bringing up children. The bonus corresponds to three times the minimum annual old-age pension benefit. Bonuses acquired during the years of a civil marriage (or registered partnership) are shared half and half by the partners.

Credits for caring of close relative are not required in occupational pension schemes.

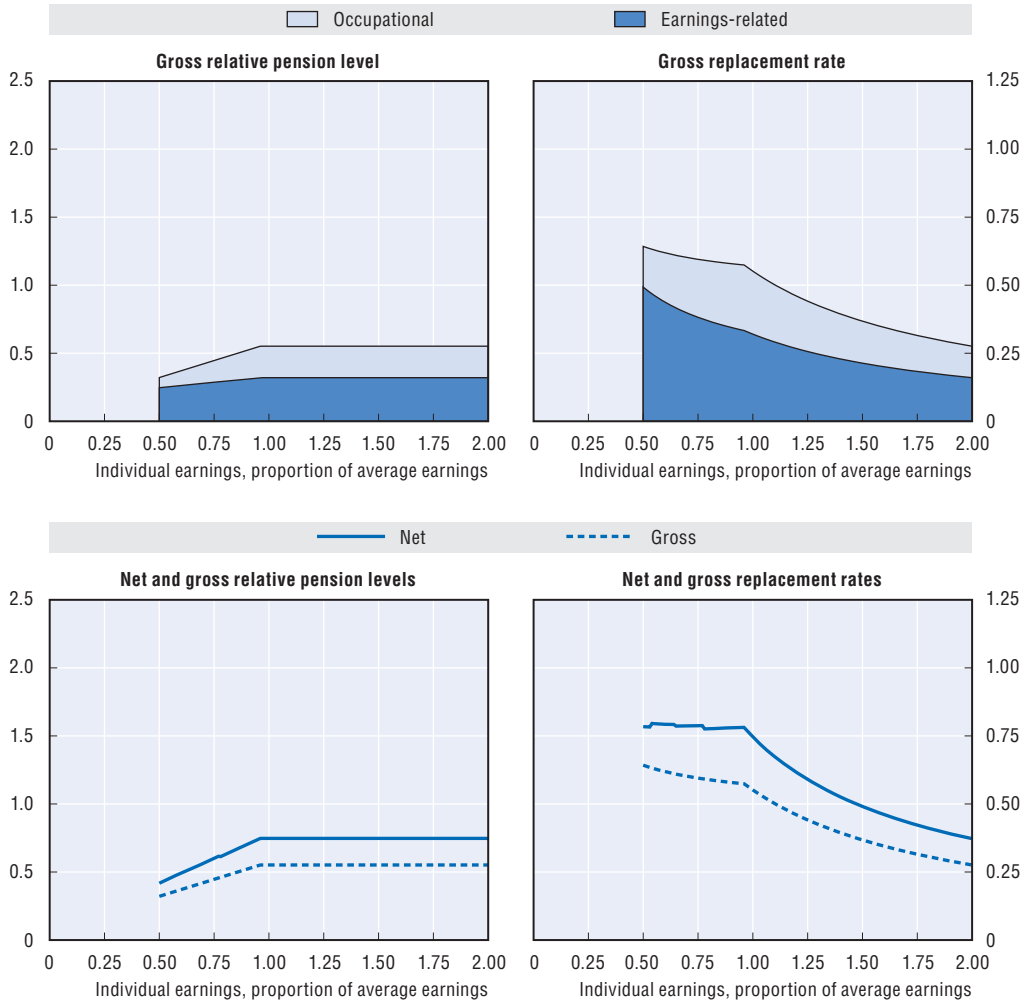
### *Unemployment*

Unemployment benefits are subject to social security contributions and so count towards the public pension just as if they were earnings. Unemployment insurance pays 80% of previous earnings. Persons with no child maintenance, who receive a full daily allowance of more than CHF 140 or who are not disabled receive 70% of the insured salary. The duration of unemployment insurance varies between 90 and 640 days. Once unemployment insurance is exhausted and a former worker is on social assistance, they do not pay contribution. If income is very low, then municipal authorities often pay the minimum contribution.

Unemployed persons who receive daily unemployment-insurance benefits remain insured on a mandatory basis against the risks of death and invalidity in occupational schemes. There is no obligation to pay contributions towards old-age pensions. The unemployed may if he or she wishes to do so pay their old-age pension contributions (both the employee's and the employer's shares).

Any daily allowances received in the event of sickness/accident are similarly subject to contributions.

## Pension modelling results: Switzerland




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 49.6 | 32.1 | 44.6 | 55.2 | 55.2 | 55.2 |
| *(% average gross earnings)* | *48.9* | *31.9* | *44.1* | *54.3* | *54.3* | *54.3* |
| Net relative pension level | 66.6 | 41.8 | 60.1 | 74.7 | 74.7 | 74.7 |
| *(% net average earnings)* | *65.5* | *41.4* | *59.2* | *73.5* | *73.5* | *73.5* |
| Gross replacement rate | 58.4 | 64.3 | 59.5 | 55.2 | 36.8 | 27.6 |
| *(% individual gross earnings)* | *57.6* | *63.7* | *58.7* | *54.3* | *36.2* | *27.2* |
| Net replacement rate | 77.8 | 78.4 | 78.8 | 74.7 | 49.1 | 37.3 |
| *(% individual net earnings)* | *76.6* | *77.7* | *77.6* | *73.5* | *48.3* | *36.7* |
| Gross pension wealth | 11.1 | 12.4 | 11.4 | 10.5 | 7.0 | 5.2 |
| *(multiple of individual gross earnings)* | *12.9* | *14.6* | *13.2* | *12.1* | *8.1* | *6.1* |
| Net pension wealth | 9.9 | 10.7 | 10.2 | 9.4 | 6.3 | 4.7 |
| *(multiple of individual gross earnings)* | *11.5* | *12.5* | *11.8* | *10.9* | *7.3* | *5.4* |

StatLink http://dx.doi.org/10.1787/888932909751

# Turkey

**Turkey: Pension system in 2012**

An earnings-related public scheme with an income-tested safety net and a flat-rate supplementary pension.

**Key indicators**

| | | Turkey | OECD |
|---|---|---|---|
| Average worker earnings (AW) | TRY | 27 500 | 76 200 |
| | USD | 15 400 | 42 700 |
| Public pension spending | % of GDP | 6.8 | 7.8 |
| Life expectancy | At birth | 75.1 | 79.9 |
| | At age 65 | 16.7 | 19.1 |
| Population over age 65 | % of working-age population | 12.5 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909770

## Qualifying conditions

Entrants into the system between September 1999-October 2008 can draw a pension from age 60 (men) or 58 (women) with 7 000 days of contributions. An alternative eligibility condition is 25 years of insurance coverage with 4 500 days of contributions. Entrants into the system after October 2008 can draw a pension from age 60-65 for men (retirement age will gradually increase) and 58-65 for women (retirement age will gradually increase) with 7 200 days of contributions. After October 2008 an alternative eligibility condition is 65 years of age with 5 400 days of contributions.

The means-tested pension is payable only to those with no other social security rights who are disabled or those aged 65 or over.

## Benefit calculation

### *Earnings-related*

#### *Between September 1999-October 2008*

The pension under the scheme is based on average lifetime earnings revalued in line with real GDP growth and the change of CPI [(1 + GDP) x (1 + CPI)]. The pension has a non-linear formula with years of coverage. The first ten years earn a pension of 35% of pay, with 2% per year extra for the next 15 years and 1.5% per year thereafter.

#### *After October 2008*

The pension under the new scheme is based on average lifetime earnings revalued in line with real GDP growth and the change of CPI [(1 + CPI + 30% GDP)]. The accrual rate is 2% for one year of coverage and it cannot exceed 90% of pension.

There is a floor above which contributions are required. This was TRY 886.5 for the first half of 2012 and TRY 940.5 for the second half of 2012.

There is a ceiling to pensionable earnings; its value was TRY 5 762.3 for the first half of 2012 and TRY 6 113.3 for the second half of 2012.

According to the law acted in 1999 pensions are indexed monthly and follow the consumer price index. But since 2003 indexation of pensions in payment is determined once or twice a year, either by Budget Laws/Other Laws or by Board of Cabinet. With the reform the pensions are indexed with CPI of the preceding six months and twice a year, in

January and July. For 2012 pensions are increased 6.79% in January. (This rule is not implemented for 2012.) For the second half of 2012, pensions are increased 1.95 for employed and self-employed and 4% for civil servants.

### *Minimum*

The minimum pension for workers was TRY 835.5 for first half of 2012 and TRY 851.8 for second half of 2012.

### *Targeted*

The means-tested pension is paid quarterly. For the first half of 2012 the pension was TRY 117.09 per month, for the second, pension is TRY 121.77 per month.

## Variant careers

### *Early retirement*

Workers in specific industries (e.g. mining) and people with disability can retire early but other workers cannot claim pensions before the eligibility ages.

### *Late retirement*

It is possible to defer the pension beyond the normal pension age. For civil servants the statutory retirement age is 65 with some exceptions for specific groups.

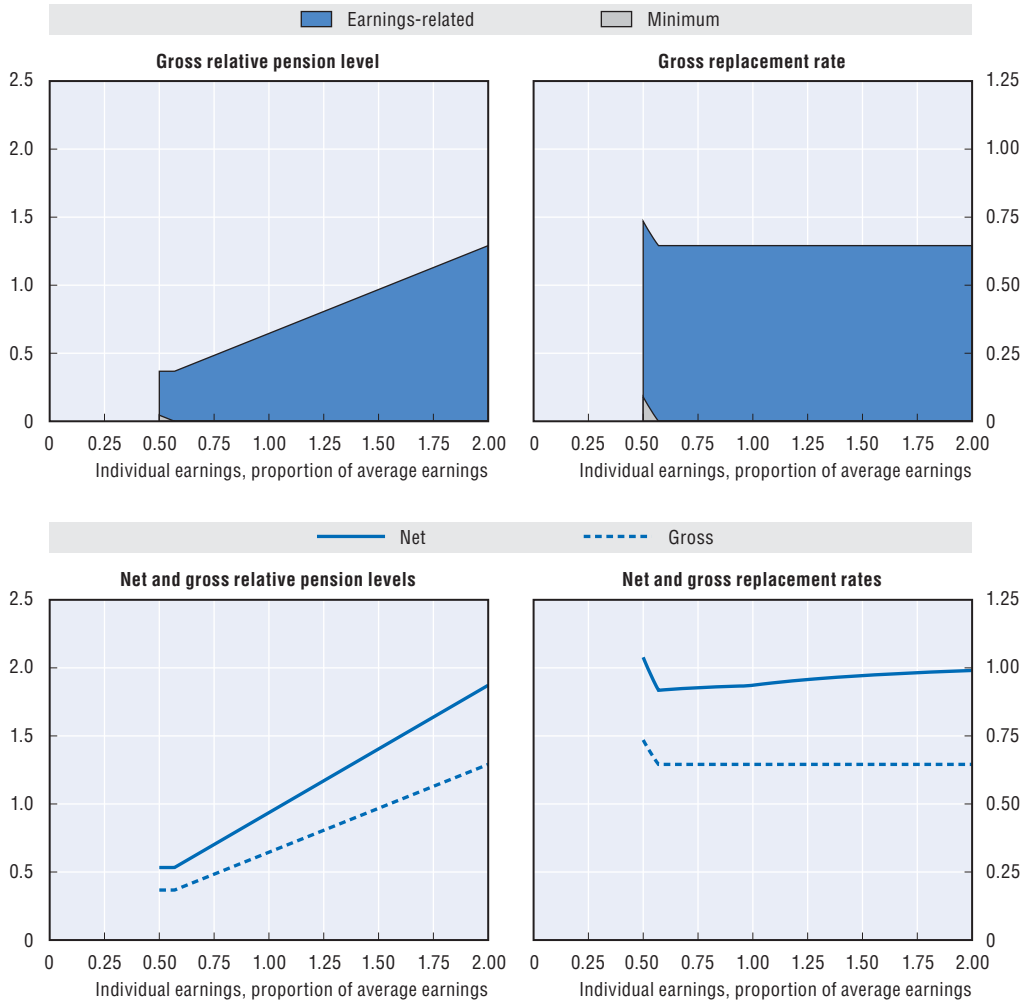
### *Childcare*

Childcare periods up to two years per child and for a maximum of two children are taken into account provided that the insured pays the contributions.

### *Unemployment*

There are no credits for periods of unemployment.

## Pension modelling results: Turkey




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 36.8 | 36.8 | 48.4 | 64.5 | 96.8 | 129.1 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 53.3 | 53.3 | 70.2 | 93.6 | 140.4 | 187.2 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 66.8 | 73.5 | 64.5 | 64.5 | 64.5 | 64.5 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 94.9 | 103.9 | 92.7 | 93.6 | 97.2 | 99.0 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 10.5 | 11.6 | 10.2 | 10.2 | 10.2 | 10.2 |
| *(multiple of individual gross earnings)* | *12.2* | *13.4* | *11.8* | *11.8* | *11.8* | *11.8* |
| Net pension wealth | 10.5 | 11.6 | 10.2 | 10.2 | 10.2 | 10.2 |
| *(multiple of individual gross earnings)* | *12.2* | *13.4* | *11.8* | *11.8* | *11.8* | *11.8* |

StatLink http://dx.doi.org/10.1787/888932909789

# United Kingdom

### United Kingdom: Pension system in 2012

The public scheme has two tiers (a flat-rate basic pension and an earnings-related additional pension), which are complemented by a large voluntary private pension sector. Most employee contributors "contract out" of the state second tier into private pensions of different sorts. An income-related benefit (pension credit) targets extra spending on the poorest pensioners.

### Key indicators

| | | United Kingdom | OECD |
|---|---|---|---|
| Average worker earnings (AW) | GBP | 35 900 | 26 300 |
| | USD | 58 300 | 42 700 |
| Public pension spending | % of GDP | 6.2 | 7.8 |
| Life expectancy | At birth | 80.4 | 79.9 |
| | At age 65 | 19.3 | 19.1 |
| Population over age 65 | % of working-age population | 28.9 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909808

## Qualifying conditions

State pension age is currently 65 for men and 60 for women born on or before 5 April 1950. From 6 April 2010, women's State Pension age began to increase from 60 to 65. The UK government have announced proposals that State Pension age for men and women will increase from 65 to 66 between 2018 and 2020. The qualifying age for Pension Credit will also increase in line with State Pension age.

Under current law, two further increases are due to take place to 67 between 2034 and 2036 and 68 between 2044 and 2046. However, the UK government is considering how the State Pension age should be changed in the future. This may mean the timetable for increases to 67 and 68 will be revised. Further changes to the State Pension age are likely to affect the age at which someone can get Pension Credit.

As a result of the Pension Act 2007, a person reaching state pension age from 6 April 2010 qualifies for a full basic state pension by: *i)* paying; *ii)* having been treated as having paid; or *iii)* being credited with, National Insurance contributions, for 30 qualifying years in their potential working lives. A proportionally reduced basic state pension is paid to people with fewer than 30 qualifying years, to a minimum of one qualifying year of contribution or credits.

For people reaching state pension age before 6 April 2010, a full basic state pension is paid those with qualifying years of National Insurance contributions and credits for around nine-tenths of their potential working lives (39 years for women with a state pension age of 60; 44 years for men and women with a state pension age of 65). A proportionally reduced state pension is paid to people who do not meet the full condition, but only to a minimum of 25% (i.e. 10 years for women with a state pension age of 60; 11 years for men and women with a state pension age of 65).

## Benefit calculation

### *Basic*

The full basic state pension for a single person is GBP 107.45 per week in 2012, estimated to be almost 16% of average earnings.

### *Earnings-related*

For earnings between the lower earnings limit (GBP 5 564 per year in 2012/13) and the low earnings threshold (GBP 14 700), the replacement rate is 40% of the difference. This also applies to people covered by credits. This is equivalent to treating people earning below the low earnings threshold as if they had earned at this level. Over the next range, the replacement rate is 10%, ending at the ceiling of GBP 40 040.

The benefit value is calculated on average lifetime salary, with earlier years' pay uprated in line with average economy-wide earnings. The benefit is then price-indexed after retirement.

### *Contracting out*

Occupational and personal pension arrangements have been able to choose to "contract-out" of the additional pension element of the state pension. In return for rebates of National Insurance, contracted out schemes had to provide a minimum level of pension. From April 2012, as part of a drive to simplify the pensions system, the government abolished contracting out for defined-contribution arrangements. The adoption of the single tier pension would lead to its abolition for defined-benefit schemes as well.

### *Workplace Private Pension Provision*

In October 2012, the government began rolling out automatic enrolment into workplace pension schemes. Once complete (February 2018), all employers will have a legal duty to enrol all qualifying workers aged between 22 and state pension age who earn over GBP 8 105 (2012/13 rates) into a qualifying workplace scheme. Minimum contributions will build to 8% of a statutory earnings band (GBP 5 564 to GBP 42 475 – 2012/13 rates) by October 2018.

To support automatic enrolment, the government established the National Employment Savings Trust (NEST), a trust-based occupational defined-contribution scheme. NEST has a public service obligation to admit any workers automatically enrolled by their employer, and id designed to provide low-cost, quality pension provision for low to moderate earners, transient workers and smaller employers that the market finds difficult to serve.

### *Targeted*

Pension Credit, is a tax free weekly benefit for people who are living on low incomes and guarantees all pensioners an income above a certain level. Pension Credit is an income-related benefit and is not based on National Insurance contributions. There are two elements to the Pension Credit, the guarantee credit and the savings credit. The guarantee credit ensures a minimum level of income by providing financial help for people who have reached the qualifying age (see below) and whose income is below the standard minimum guarantee amount. In 2011/12 this was GBP 137.35 for individuals and GBP 209.70 for couples (these amounts may be higher for people with severe disabilities, caring responsibilities or certain housing costs).

The savings credit is an extra amount for people aged 65 or over who have made modest provision for their retirement. It is designed to reduce the effective withdrawal rate of benefits from 100% under its predecessors to 40%. People, whose income (excluding any guarantee credit) is below their guarantee credit minimum guarantee and above the savings credit threshold, GBP 103.13 for individuals and GBP 164.55 for couples respectively in 2011/12, receive 60% of the difference between their income and the threshold up to a maximum of GBP 20.52 for individuals and GBP 27.09 for couples, respectively. For people with incomes above their guarantee credit minimum guarantee (that is they are not entitled to the guarantee credit), the maximum savings credit is reduced by 40% of their income over their guarantee level.

The qualifying age for Pension Credit is gradually increasing to 65 alongside the increase in women's State Pension age.

### *Voluntary private pension*

The government is introducing automatic enrolment into a qualifying workplace pension scheme, starting with the largest employers first. Qualifying defined-contribution schemes will require a minimum overall contribution rate of 8%.

## Variant careers

### *Early retirement*

A state pension will not be paid before state pension age.

### *Late retirement*

Deferral of the state pension has always been possible in order to earn extra state pension increments. This extra State Pension is paid on top of the normal State Pension when a person eventually claims for the first time or claims again.

Until 6 April 2005, deferral of the state pension earned approximately 7.5% for every each year (equivalent to 1% for every seven weeks). From 6 April 2005, the increment increased to about 10.4% for each year (or 1% for every five weeks).

The amount of extra money a person gets depends on how long they put off claiming their state pension. They may choose one of the following options:

- A higher weekly state pension for life (if the state pension is deferred for at least 5 weeks).
- A one-off taxable lump-sum payment (if the state pension is continuously deferred for at least one year). The lump-sum is made up of the state pension foregone during the deferral period plus interest which is guaranteed to be at least two percentage points above the (Bank of England base rate). The choice has to be made when the State Pension is eventually claimed.

### *Childcare*

Both tiers of the public pension scheme (basic state pension and state second pension) provide protection for periods of child care. This covers both people not in paid work and those working but earning below the lower earnings limit who therefore do not contribute to the system. Prior to 6 April 2010, for the basic state pension, protection was provided by Home Responsibilities Protection (HRP), and covered years where Child Benefit was awarded for at least one child under 16. HRP reduced the number of years required for a full

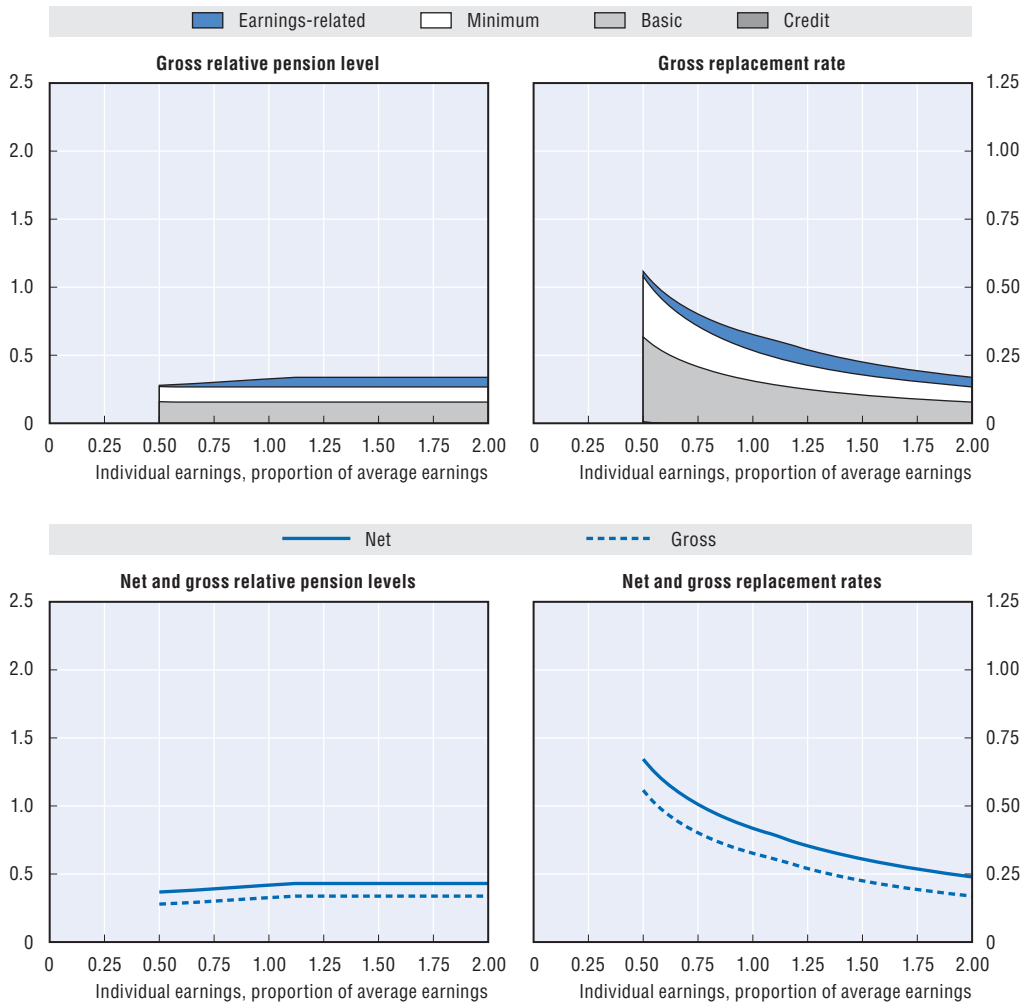
basic state pension so that, with sufficient HRP, only 20 years' work (including periods when National Insurance contributions may have been credited) was required. For the state second pension, years where Child Benefit was awarded for a child under age six were credited; caring parents were deemed to have earnings at the low earnings threshold.

HRP has been replaced by a system of weekly National Insurance credits for parents and carers. People attaining state pension age after 2010 may be awarded credits if they have Child Benefit for a child under age 12. These credits may count towards their basic State Pension and state second pension entitlement. Any years of HRP acquired before 2010 have been converted to qualifying years of National Insurance credits.

### *Unemployment*

Periods of unemployment on insurance or assistance benefits are credited to a person's National Insurance contributions record for the basic state pension. There are no National Insurance credits for periods on these benefits for the state second pension.

## Pension modelling results: United Kingdom




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 30.7 | 27.9 | 30.1 | 32.6 | 33.8 | 33.8 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 39.8 | 36.8 | 39.1 | 41.8 | 43.0 | 43.0 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 37.9 | 55.8 | 40.1 | 32.6 | 22.5 | 16.9 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 48.0 | 67.2 | 50.6 | 41.8 | 30.5 | 23.9 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 5.9 | 8.7 | 6.3 | 5.1 | 3.5 | 2.6 |
| *(multiple of individual gross earnings)* | *6.5* | *9.5* | *6.9* | *5.6* | *3.8* | *2.9* |
| Net pension wealth | 5.7 | 8.6 | 6.1 | 4.9 | 3.4 | 2.5 |
| *(multiple of individual gross earnings)* | *6.3* | *9.4* | *6.7* | *5.4* | *3.7* | *2.8* |

StatLink http://dx.doi.org/10.1787/888932909827

# United States

**United States: Pension system in 2012**

The publicly provided pension benefit, known as social security, has a progressive benefit formula. There is also a means-tested top-up payment available for low-income pensioners.

**Key indicators**

| | | United States | OECD |
|---|---|---|---|
| Average worker earnings (AW) | USD | 47 600 | 42 700 |
| | USD | 47 600 | 42 700 |
| Public pension spending | % of GDP | 6.8 | 7.8 |
| Life expectancy | At birth | 78.8 | 79.9 |
| | At age 65 | 19.2 | 19.1 |
| Population over age 65 | % of working-age population | 22.8 | 25.5 |

StatLink http://dx.doi.org/10.1787/888932909846

## Qualifying conditions

The pension age (called normal retirement age – NRA) is 66 in 2012, and will later be increasing to 67 by 2022. Eligibility for retirement benefits depends on the number of years in which contributions are made with a minimum requirement of ten years' contributions.

## Benefit calculation

### *Earnings-related*

The benefit formula is progressive. The first USD 767 a month of relevant earnings attracts a 90% replacement rate. The band of earnings between USD 767 and USD 4 624 a month is replaced at 32%. These thresholds are 22% and 133% of the national average wage index for 2010, respectively. A replacement rate of 15% applies between the latter threshold and the earnings ceiling. A 50% dependants' addition is available to married couples where secondary earners have built up a smaller entitlement and for a qualifying dependent child.

Earlier years' earnings are revalued up to the year in which the recipient reaches age 60 in line with growth in economy-wide average earnings. There is no adjustment of earnings for years after age 60. The basic benefit is computed for payment at age 62. Thereafter, the basic benefit is adjusted in line with price increases. The benefit is based on the career average earnings for the 35 highest years of earnings, after revaluing, including years with zero earnings if needed to total 35 years.

The earnings ceiling for both contributions and benefits is USD 110 100 a year, corresponding to 264% of the estimated national average wage index in 2010. This index is updated annually in line with growth in economy-wide wages.

Pensions in payment are adjusted in line with price increases.

### *Targeted*

The United States provide a means-tested benefit for the elderly, known as Supplemental Security Income. Individuals aged 65 or older without an eligible spouse can be eligible for up to USD 8 376 a year depending on assets and other income. The maximum benefit rate for cases where both members of a couple are eligible is USD 12 576 (50% higher than the rate for singles). These benefit rates are equivalent to around 18% and 26% of average earnings in 2012, respectively. The maximum benefit is indexed to price increases.

The asset tests are strict: individuals without an eligible spouse are limited to USD 2 000 worth of assets and eligible couples to USD 3 000, excluding personal belongings, a home, a car, funeral insurance and life insurance (the last two up to USD 1 500 in value). There is a small (USD 20 a month) "disregard" applied against most types of income in calculating the benefit. Another disregard is provided for earnings in the amount of USD 65 a month and one-half of the remaining earnings. After all appropriate disregards have been applied the benefit is then withdrawn at a 100% rate against total countable income above this level.

The analysis is complicated by the fact that states and the District of Columbia can supplement the federally determined minimum. While 6 states pay only the federal minimum, 30 administer their own system, eight offer supplements that are operated solely by the federal Social Security Administration (SSA), and seven offer supplements administered by both the state and SSA. The average supplemental payment administered by SSA in these 15 states is 19% of the maximum federal benefit for pensioners without an eligible spouse and 30% for couples where both members are eligible. Note that the modelling does not include these additional payments.

### *Voluntary private pension*

There is an additional voluntary pension which is assumed to be defined contribution. The contribution rate is assumed to be 9%.

## Variant careers

### *Early retirement*

Early retirement is possible from 62, subject to an actuarial reduction. For each year of retirement before the normal age, the benefit is reduced by 6.67%. However, after three years, the reduction falls to 5%. This applies to retirees with a NRA of over 65.

### *Late retirement*

Initial receipt of the pension may be deferred until after NRA, and credit is given for deferment up to age 70. The actuarial increment for those attaining age 62 in 2012 and later is 8% for each year deferred.

It is also possible to combine work and pension receipt subject to an earnings test. For beneficiaries who are receiving benefits in a year before the year they reach their NRA, the pension is reduced by 50% of earnings in excess of USD 14 640. For workers who have reached their NRA, there is no benefit reduction based on earnings.

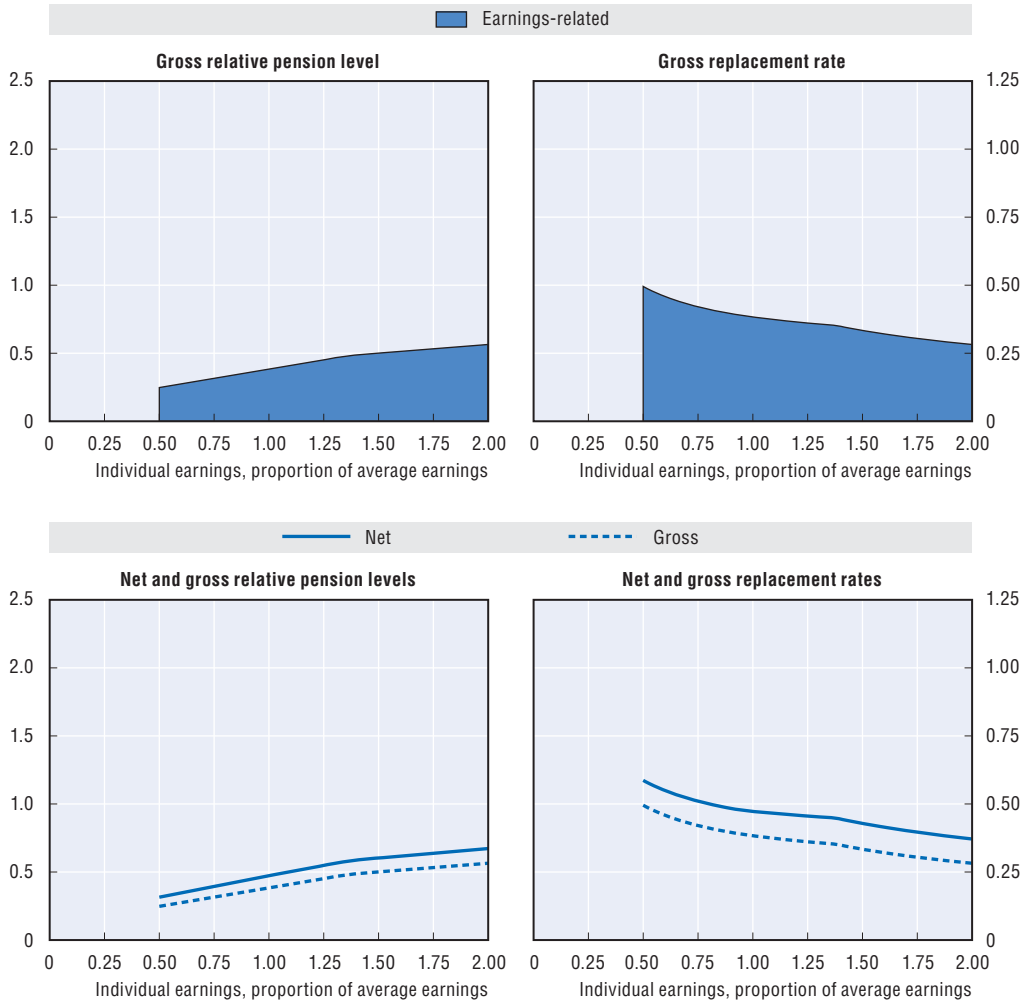
### *Childcare*

There are no provisions for credits during periods of childcare (except for workers who become disabled at younger ages, who may drop years of child care from their benefit computation).

### *Unemployment*

There are no provisions for credits during periods of unemployment. However periods of unemployment may be omitted from the calculation of earnings for benefit purposes in many cases as only the highest 35 years of earnings are considered. Periods of disability are omitted from the 35 years of earnings considered.

## Pension modelling results: United States




| Men<br>*Women (where different)* | Median earner | Individual earnings, multiple of average | | | | |
|---|---|---|---|---|---|---|
| | | 0.5 | 0.75 | 1 | 1.5 | 2 |
| Gross relative pension level | 33.2 | 24.8 | 31.6 | 38.3 | 50.1 | 56.4 |
| *(% average gross earnings)* | | | | | | |
| Net relative pension level | 41.3 | 31.5 | 39.4 | 47.3 | 60.2 | 67.2 |
| *(% net average earnings)* | | | | | | |
| Gross replacement rate | 41.0 | 49.5 | 42.1 | 38.3 | 33.4 | 28.2 |
| *(% individual gross earnings)* | | | | | | |
| Net replacement rate | 49.9 | 58.7 | 51.0 | 47.3 | 42.9 | 37.1 |
| *(% individual net earnings)* | | | | | | |
| Gross pension wealth | 6.3 | 7.6 | 6.5 | 5.9 | 5.1 | 4.4 |
| *(multiple of individual gross earnings)* | *7.0* | *8.5* | *7.2* | *6.6* | *5.7* | *4.9* |
| Net pension wealth | 6.1 | 7.5 | 6.3 | 5.6 | 4.8 | 4.0 |
| *(multiple of individual gross earnings)* | *6.8* | *8.4* | *7.0* | *6.3* | *5.3* | *4.5* |

StatLink http://dx.doi.org/10.1787/888932909865

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# Pensions at a Glance 2013

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Consult this publication on line at ***http://dx.doi.org/10.1787/pension_glance-2013-en.***

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