

# PENSION CHALLENGES AND PENSION REFORMS IN OECD COUNTRIES

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*The 30 OECD member countries have very diverse pension systems. Current old-age public pension spending varies between less than 1 and more than 10 per cent of gross domestic product (GDP). Public spending on pensions per person aged 65 or over varies from less than 15 to more than 40 per cent of economy-wide GDP per head. For workers entering the labour market today, the target pension from all mandatory sources for an average earner varies between 30 and 100 per cent of individual earnings. Recent pension reforms have a number of common themes. First, pension eligibility conditions have been tightened. Second, the indexation of pensions in payment has become less generous. Third, some pension schemes link benefit levels to changes in life expectancy. Finally, a number of countries have introduced defined-contribution pensions: privately managed schemes where the pension benefit depends on contributions and investment returns.*

## I. INTRODUCTION

The challenges posed by demographic changes to OECD countries are well recognized. All 30 OECD countries are experiencing significant population aging owing to falling fertility rates and increasing life expectancy. The share of the population aged 65 years and over is projected nearly to double between 2000 and 2050 in OECD countries on average. The increase will be somewhat slower in

societies that already have large populations of older people (Sweden, the United Kingdom, Belgium, France, and Germany). It will be most marked in what are now some of the ‘younger’ countries in the OECD, such as Ireland and, particularly, Korea.

The sharpest effects will generally be felt over the next two to three decades, as the baby-boom generation reaches retirement age. But this will be preceded by a growing share of older people in the

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population of working age. Moreover, unless fertility rates rise, future gains in longevity will continue to increase the old-age dependency ratio: the number of people of retirement age relative to the number of working age.

These developments have major implications for public policy, particularly for social-protection systems. OECD projections—taking account of pension reforms that are still being phased in—show that old-age pension spending could rise on average by 3–4 per cent of gross domestic product (GDP) in the period up to 2050, from a base of around 7.5 per cent of GDP in 2000. Aging could add up to 3.5 per cent of GDP to health-care expenditure and increase spending on long-term care by 1 per cent of GDP. While spending on education and family benefits is projected to fall by around 1 per cent of GDP, these declines might not materialize if there are demands for longer periods of education, increased spending on training, or more support for publicly subsidized child care (OECD, 2005a).

Given this context, either the costs of social programmes will increase, and with them the contributions and taxes required to finance benefits, or benefit levels will have to be reduced, or deficits will increase, or there will be some combination of these. Many OECD countries have already undertaken a wide range of pension reforms, including changes in benefit formulas, changing the indexation of pensions in payment, linking pensions to higher life expectancy, increasing the role of private provision, as well as reforms designed to increase incentives for later retirement.

This paper surveys relevant developments in OECD countries over the past 25 years. Section II reviews trends in spending on public pensions and some measures of the outcomes of pension spending, before turning to the demographic and labour-force context facing OECD countries currently and over the next 40 to 50 years. Section III outlines the design of pension systems in OECD countries and section IV discusses the reforms already introduced. The paper concludes with a discussion of the lessons that can be learned from experience to date.

## II. PUBLIC PENSIONS IN CONTEXT

Table 1 provides details of public pension spending in OECD countries between 1980 and 2001. For the OECD as a whole, public pension spending averaged around 7.4 per cent of GDP in 2001, ranging from less than 1 per cent of GDP in Mexico to more than 10 per cent of GDP in Austria, France, Germany, Greece, Italy, and Switzerland. (In addition, spending on disability payments averaged just over 2 per cent of GDP in 2001, but was close to 4 per cent of GDP in the Netherlands, Norway, and Sweden, and over 5 per cent of GDP in Poland.) Old-age pension spending per person over 65 years (a measure of benefit replacement rates relative to overall average incomes) is similarly wide-ranging—from between 10 and 15 per cent of GDP per head in Ireland and Korea to more than 40 per cent of GDP per head in Austria, France, Germany, Greece, Italy, Poland, the Slovak Republic, Switzerland, and Turkey. In broad terms, pension spending is highest in Southern Europe (Greece and Italy, in particular), followed by some Continental European countries (Austria, France, Germany, and Switzerland), and tends to be lowest outside Europe.

Over recent decades, older people in OECD countries have enjoyed steady gains in their incomes relative to the population, with the result that poverty rates have fallen both in absolute terms and relative to younger age groups; income inequality among the population of pension age also tends to be lower than among younger age groups (OECD, 2005a). On average in OECD countries, the incomes of people aged 66–74 are over 80 per cent of the population average, adjusting for differences in household sizes (Förster and Mira d’Ercole, 2005). This ratio ranges from a low of 77 per cent in Ireland and the United Kingdom to 95 per cent in Canada and the United States.

Currently, net (that is, after-tax) public social benefits per person are strongly age-related. For example, benefits for people aged 65 and over are two to three times the population average in Finland, France, Germany, Italy, Norway, Sweden, and the United Kingdom; they are over four times as high in

**Table 1**  
**Finances and Demographics of Pension Systems in OECD Countries, 1980–2001**

	Old-age spending % of GDP			Disability spending % of GDP			Population 65+ % of population			Spending per person % of GDP per capita		
	1980	1990	2001	1980	1990	2001	1980	1990	2001	1980	1990	2001
Australia	3.2	2.9	4.1	0.9	1.8	2.2	14.7	16.7	18.4	0.22	0.17	0.22
Austria	8.5	9.5	10.3	1.9	2.0	2.3	24.0	22.1	23.1	0.35	0.43	0.44
Belgium	6.1	7.5	8.6	3.7	3.1	2.2	21.9	22.3	26.1	0.28	0.34	0.33
Canada	3.1	4.2	4.8	0.8	1.1	0.8	13.9	16.6	18.6	0.22	0.25	0.26
Czech Republic	—	5.6	6.7	—	2.5	3.0	21.2	18.9	19.8	—	0.29	0.34
Denmark	5.8	6.3	6.5	3.9	2.6	2.7	22.2	23.2	22.6	0.26	0.27	0.29
Finland	4.7	6.4	7.1	3.1	3.9	3.1	17.7	19.9	22.6	0.27	0.32	0.31
France	7.6	9.2	10.4	2.3	2.0	1.7	21.9	21.3	24.6	0.35	0.43	0.43
Germany	9.8	9.3	10.8	1.9	1.5	1.6	23.7	21.7	24.7	0.41	0.43	0.44
Greece	5.1	10.8	12.6	1.1	2.1	1.6	20.5	20.4	26.5	0.25	0.53	0.48
Hungary	—	—	7.4	—	—	2.5	20.8	20.1	21.4	—	—	0.35
Iceland	—	3.2	4.1	—	1.1	1.8	16.1	16.5	17.9	—	0.19	0.23
Ireland	4.0	3.8	2.4	2.4	1.9	1.3	18.3	18.5	16.8	0.22	0.20	0.14
Italy	7.4	9.5	11.2	1.8	2.6	2.0	20.4	22.3	27.2	0.36	0.43	0.41
Japan	2.9	4.0	6.4	0.5	0.5	0.6	13.4	17.2	26.1	0.22	0.23	0.24
Korea	—	0.6	1.1	—	0.3	0.3	6.1	7.2	10.4	—	0.09	0.11
Luxembourg	6.6	6.0	7.5	4.5	3.4	2.7	19.9	17.4	20.5	0.33	0.34	0.36
Mexico	—	0.3	0.7	—	0.1	0.1	7.4	6.9	7.9	—	0.04	0.09
Netherlands	6.5	7.3	5.7	7.1	6.9	4.0	17.4	18.6	20.2	0.38	0.39	0.28
New Zealand	6.9	7.3	4.7	1.3	2.9	2.8	15.7	17.0	18.1	0.44	0.43	0.26
Norway	4.0	5.3	4.6	3.3	4.0	3.9	23.4	25.2	23.5	0.17	0.21	0.19
Poland	—	4.3	8.5	—	3.3	5.4	15.4	15.5	17.8	—	0.28	0.48
Portugal	3.4	4.3	7.6	2.1	2.5	2.4	16.4	20.5	23.3	0.20	0.21	0.33
Slovak Republic	—	—	6.5	—	—	2.1	16.4	16.0	16.4	—	—	0.40
Spain	4.6	7.2	8.1	2.4	2.3	2.3	17.0	20.7	24.6	0.27	0.35	0.33
Sweden	6.6	7.2	6.8	4.4	5.2	3.8	25.4	27.7	27.1	0.26	0.26	0.25
Switzerland	5.6	7.9	11.6	2.2	1.9	3.0	20.8	20.9	24.1	0.27	0.38	0.48
Turkey	1.3	2.2	5.1	0.2	0.2	0.3	8.3	7.1	8.8	0.15	0.31	0.58
United Kingdom	5.1	6.9	7.7	0.9	1.9	2.2	23.5	24.5	24.3	0.22	0.28	0.32
United States	5.1	5.2	5.2	1.1	1.0	1.1	16.9	18.5	18.6	0.30	0.28	0.28
OECD 23	5.4	6.5	7.4	2.3	2.4	2.2	19.0	20.0	22.2	0.28	0.33	0.33
EU 15	6.1	7.4	8.2	2.9	2.9	2.4	20.7	21.4	23.6	0.30	0.35	0.35
EU 19	—	—	8.0	—	—	2.6	19.4	20.6	22.6	—	—	0.35

*Notes:* — indicates data missing or not available.

*Source:* OECD Social Expenditure database and Society at a Glance database.

Luxembourg and the United States (OECD, 2005a). As noted above, population aging is projected to increase public pension spending in most OECD countries; however, the size of the increase varies widely, with increases ranging from around 5 per cent of GDP or more in Germany, Finland, the Czech Republic, Canada, and the Netherlands, to close to 8 per cent of GDP in Spain, Norway, and Korea. (Public pension spending is forecast to fall in Italy and Poland following pension reforms in the 1990s, but from exceptionally high levels.)

Apart from the rising number of older people, the other salient aspect of population aging is the projected decline in the relative size of the population aged 20–64, where participation in the labour market is concentrated. In many OECD countries the population aged 20–64 is not only projected to decline relative to the total population, but also in absolute terms over the next two decades. Indeed, this is already occurring in Germany, Japan, and Italy, and is likely to occur within the next 10 years in many other European countries (OECD, 2006). These developments are likely to lead to a sharp drop in labour-force growth in most countries. Thus, not only will pressure on public finances and taxes on the working population increase as a result of a shrinking number of working people in relation to the non-working population, but slower rates of economic growth are also likely, unless slower labour-force growth is offset by increases in labour productivity, or increases in labour-force participation and employment.

An obvious counter to demographic aging would be to increase the proportion of the population in work. This would increase the tax/contribution base, meaning that increases in rates of taxes or contributions would not need to be as great. Moreover, increasing employment at older ages (and so the effective age of retirement) would have a ‘double impact’: both increasing the number of contributors to finance social protection and reducing the number of pensioners to be supported. Policies to help older workers are, therefore, the subject of intense scrutiny at both the national and international levels. The OECD, for example, has reviewed aging and employment policies in 21 countries (OECD, various years), and the EU summit in Stockholm in 2001 set a target of 50 per cent employment of people aged 55–64 by the year 2010.

There are currently considerable differences between countries in the proportion of older people (aged 50–64) in work, shown in the top panel of Figure 1. Labour-force participation is two out of three or more in the Nordic countries (Iceland, Sweden, Norway, Denmark, and Finland), in Switzerland, Japan, and a series of English-speaking countries (New Zealand, the United States, Canada, and the United Kingdom). The lowest rates are found in continental Europe, with fewer than one in two 50–64 year olds participating in the labour market in Austria, Belgium, Italy, Luxembourg, and Poland, for example.

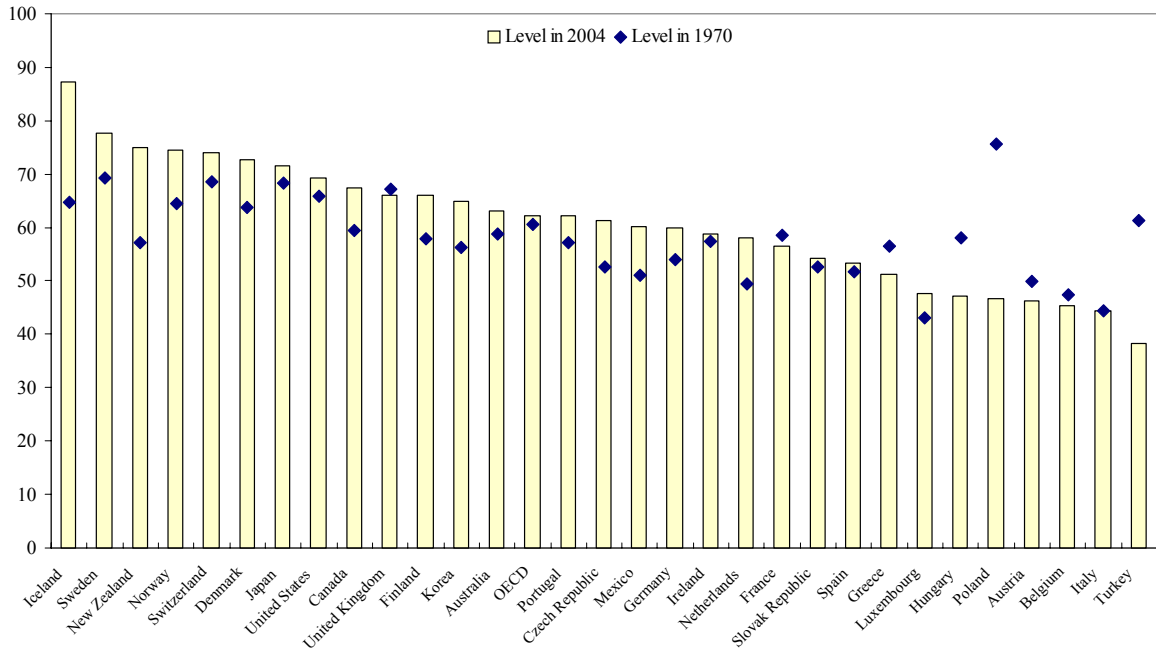
The trends in participation rates for people aged 50–64 differ significantly between the sexes (Figure 1, lower panel). Participation rates for older men have fallen substantially since 1970 in nearly all OECD countries, but at very different rates. While rates were fairly similar across countries in 1970, the differences are now much larger. There were especially steep falls in Belgium, Hungary, Poland, and Turkey, meaning that they are now at the bottom of the list of OECD countries in terms of participation rates for older men. While there has been some increase in participation rates for older men over the period 1994–2004, most notably in the Netherlands, New Zealand, and the Slovak Republic, this has only partially reversed the massive trend towards early retirement over the past three decades. Thus, for the OECD area as a whole, whereas fewer than one in six older men were not in the labour-force in 1970, this had risen to more than one in four in 2004.

However, the increase in participation rates for older women has offset the fact that fewer older men are working in most countries, reflecting the fact that more women of all ages are in paid work than in 1970. However, this increase has been much bigger in some countries than in others. Consequently, there is a large gap between countries where the participation rate of women aged 50–64 is 35 per cent or less (Belgium, Greece, Italy, Luxembourg, Spain, Turkey) and those at the top of the scale, where it is 65 per cent or higher (Denmark, Finland, Iceland, Sweden, United States).

Most OECD countries have a normal pension eligibility age of 65. Participation rates at different ages, however, imply very different *effective*

**Figure 1**  
**Labour-force Participation of 50–64-year-olds, 1970 and 2004**

Men and women



Men

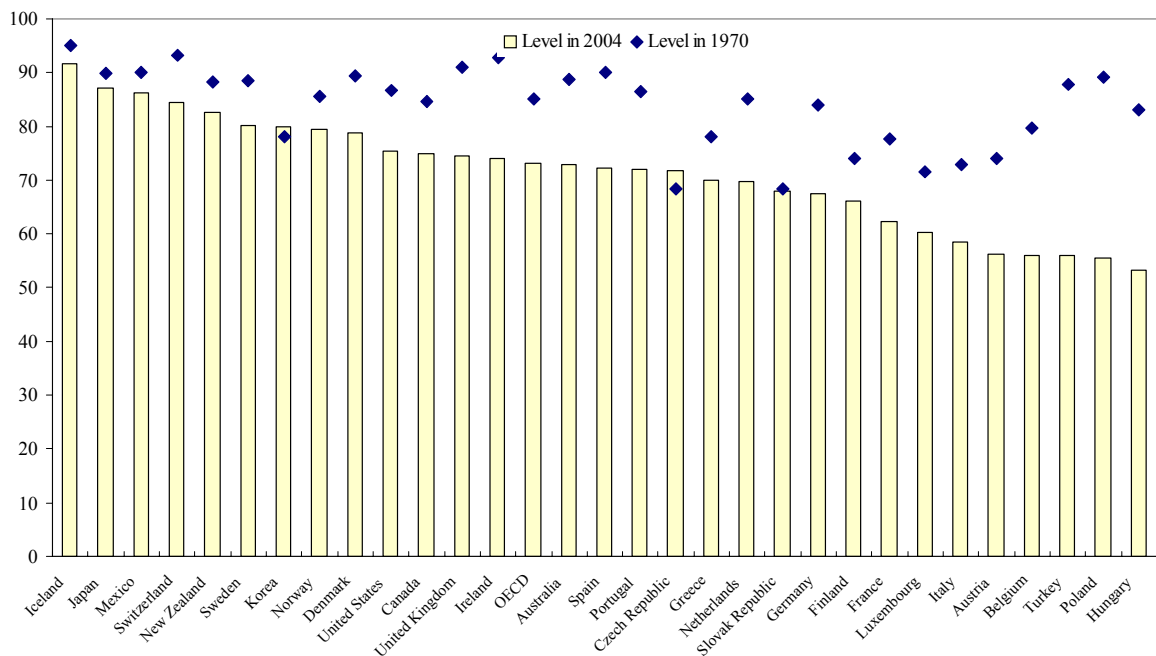
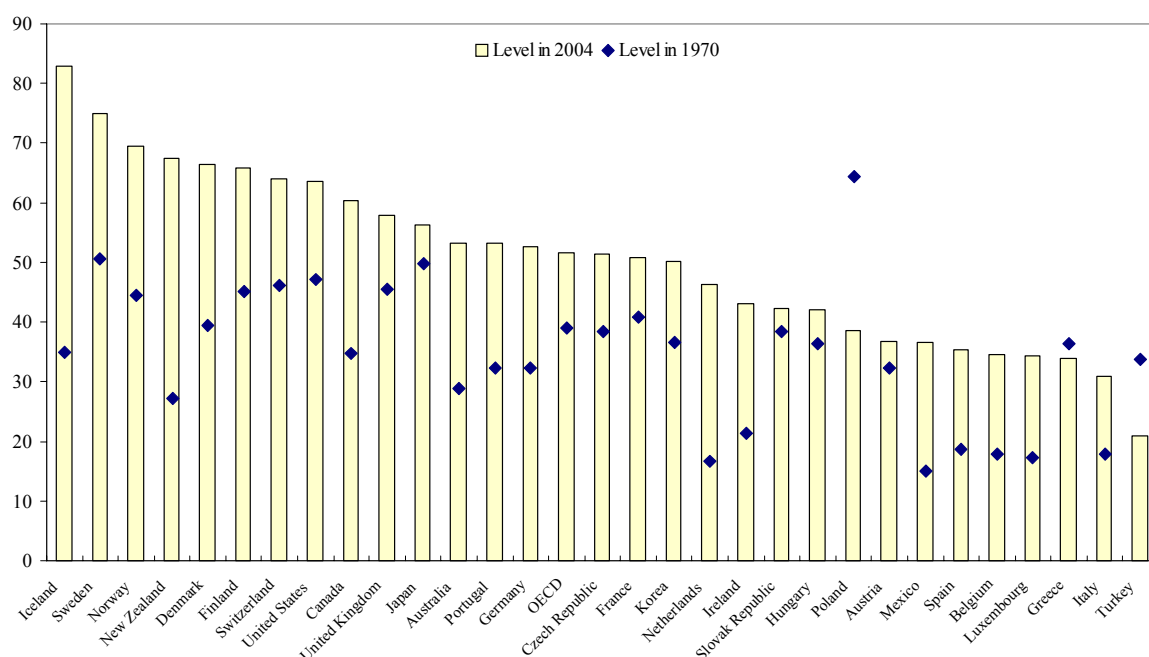


Figure 1 (continued)

## Women



*Notes:* The data for 1970 refer to: 1975 for Iceland; Czechoslovakia for both the Czech and Slovak Republics; and Western Germany only for Germany.

*Source:* OECD (2006). OECD estimates based on the European Union Labour Force Survey, other national labour-force surveys and census data for 1970 for some countries.

retirement ages in OECD countries. For example, in 21 out of 30 OECD countries, the average effective retirement age for men is below the normal pension age, and most men have left work by their 60th birthday in Austria, Belgium, France, Hungary, Luxembourg, and the Slovak Republic (OECD, 2006). In seven countries, the effective retirement age is older than 65, including Iceland, Japan, and Switzerland. The effective retirement age for men has been declining, which, coupled with increases in life expectancy, has led to a considerable increase in the number of years spent in retirement. For instance, whereas men could expect to spend around 10 years in retirement on average in OECD countries in 1970, this had risen to around 20 years in 2004.

The potential impact of policies to increase employment on the burden of aging can be compared by looking at 'mobilizable labour resources', which are defined as the sum of excess inactivity and excess unemployment, both relative to international benchmarks. Excess inactivity is defined as any excess in the country's inactivity rate compared with the

inactivity rate of the third-best-performing OECD country, and excess unemployment is defined as any excess in the country's unemployment rate above 5 per cent of the labour-force. Estimates of the size of the mobilizable labour-force range between zero in Iceland (and very low in Norway, Sweden, Switzerland, and Denmark), to close to 20 per cent of the labour-force in the Slovak Republic, Mexico, and Italy, and 35 per cent in Turkey. Among mobilizable labour resources, people aged 50–64 account for a quarter of potential workers in the OECD, ranging from 16 per cent in Mexico to more than 50 per cent in much of Europe and also in Canada.

Overall, this suggests that there is significant scope to raise employment rates for older people in those countries where these rates are currently low. Gruber and Wise (2002) estimate that, averaged across 12 OECD countries, a reform that delays benefit eligibility by 3 years would be likely to reduce the proportion of men aged 56–65 out of the work-force by between 23 and 36 per cent, with the higher



estimate being closer in the long run. It is clear, therefore, that policies that successfully increased employment at older ages, and thereby increased the effective age of retirement, could assist in alleviating the fiscal burden of aging populations. For example, sensitivity estimates by the OECD Secretariat indicate that, if the labour-force participation of older workers increased by 10 percentage points between 2000 and 2050, relative to a base-case scenario, total old-age pension spending (as a percentage of GDP) could be reduced on average by 0.6 percentage points (Dang *et al.*, 2001)—that is, average pension spending would still be higher than it is currently, but by closer to 3 per cent than 4 per cent of GDP.

Improvements in the labour-market prospects of older workers are also important from the perspective of the living standards of these age groups, and also when they finally enter retirement. In most OECD countries, people aged 50–64 are already the age group receiving the highest shares of public transfer expenditure, apart from those aged 65 and over. In the year 2000, people aged 51–65 had the second highest level of relative disposable income of any age group (111.9 per cent of the population average). Those aged 41–50 were only slightly better off, with average income of 112.8 per cent of the population average (Förster and Mira d’Ercole, 2005). However, the incidence of disability and rates of receipt of disability benefits tend to rise significantly after the age of 50, and this age group is also more likely to experience long-term unemployment than other groups (OECD, 2003). This suggests considerable disparities in living standards, between those at the peak of their work careers and those excluded from or with difficulties in the labour market. Increases in the employment of the excluded and disadvantaged groups could improve their standard of living—particularly for lower income people—and, potentially, improve their living standards in retirement.

### III. PENSION SYSTEMS IN OECD COUNTRIES

The pension systems of OECD countries vary hugely: in the way benefits are calculated, whether they are publicly or privately managed, and the target level of benefits. Table 2 divides pension

systems of OECD countries into two tiers, based on the role and objective of each part of the retirement-income regime.

The first tier includes redistributive components that are designed to ensure that pensioners achieve some absolute, minimum standard of living compared with the population as a whole. Second-tier programmes are defined as those with an insurance or savings role: these are designed to maintain a certain standard of living during retirement relative to the individual’s earnings when in work. The table shows only the principal parts of the pension system; more detail is provided in OECD (2005b).

All OECD countries have safety nets to prevent old-age poverty, here called *first-tier* schemes. There are four generic types: social assistance; separate, targeted retirement-income programmes; basic pensions; and minimum pensions within earnings related plans. All are mandatory and publicly provided.

The benefits of *basic* schemes are flat rate, with the same amount paid to each retiree, depending only on the number of years of work (but not on earnings). Entitlement does not vary with the level of other pension income. Ten OECD countries have a basic pension scheme that plays an important role in providing retirement incomes.

*Targeted* plans, in contrast, pay a higher benefit to poorer pensioners and reduced or zero benefits to better-off retirees. There are three ways of targeting. First, benefits can be pension-income tested (where the value depends only on the level of pension income a retiree receives). Sweden’s guarantee pension is an example. Second, benefits can be broader-income tested (reducing payments if, for example, a retiree has income from savings) or third, broader means-tested (reducing the pension to take account of both income and assets). Australia’s age pension is an example of a means-tested scheme. There are 13 OECD countries where targeted retirement-income programmes are significant.

*Minimum* pensions—like pension-income-tested, targeted plans—aim to prevent pensions from falling below a minimum level. But the institutional set-up and eligibility conditions are different. Minimum pensions are defined here as those which form part of the rules of second-tier, earnings-related pension

**Table 2**  
**Pension Systems in OECD Countries**

	Pension scheme types		Eligibility age			
	First tier	Second tier	Normal		Early	
			M	F	M	F
Australia	Targeted	Private DC	65		55	
Austria	Targeted	Public DB	65	60		
Belgium	Minimum credit	Public DB	65		60	
Canada	Basic+targeted	Public DB	65		60	
Czech Republic	Basic	Public DB	63		60	
Denmark	Basic+targeted	Public+private DC	65			
Finland	Targeted	Public DB	65		60	
France	Targeted+minimum	Public DB+points	60			
Germany	Social assistance	Public points	65		63	
Greece	Minimum	Public DB	65		57	
Hungary	—	Public DB + private DC	62			
Iceland	Targeted	Private DB	67			
Ireland	Basic	—	66		65	
Italy	Social assistance	Public notional accounts	65		60	
Japan	Basic	Public DB	65		60	
Korea	Basic	Public DB	60		55	
Luxembourg	Basic+minimum	Public DB	65		57	
Mexico	Targeted	Private DC	65	60		
Netherlands	Basic	Private DB	65		60	
New Zealand	Basic	—	65			
Norway	Basic+targeted	Public points	67			
Poland	Targeted	Public notional accounts + private DC	65	60		
Portugal	Minimum	Public DB	65		55	
Slovak Republic	Minimum	Public points	62			
Spain	Minimum	Public DB	65		60	
Sweden	Targeted	Public notional accounts + private DB+DC	65		61	
Switzerland	Targeted	Public DB + private defined credits	65	64	63	62
Turkey	Minimum	Public DB	60	58		
United Kingdom	Basic+targeted	Public DB	65			
United States	Targeted	Public DB	67		62	

*Notes:* Pension eligibility ages show the long-term position, including increases that have been legislated but are currently being phased in. Eligibility ages are only shown for women when they differ from those of men. Pension eligibility ages for women in the Czech Republic vary with the number of children for women: 59–63 for the normal eligibility age and 56–60 for the early age.

*Source:* OECD (2005b).



provision. Usually, retirees must have paid contributions for a minimum number of years in order to receive this benefit. Minimum credits in earnings-related schemes, such as those in Belgium and the United Kingdom, also belong to the first tier: pension entitlements for workers with low earnings are calculated as if the worker's earnings had been higher.

Finally, Germany does not have a specific, targeted programme for older people. So, general *social assistance* benefits protect poor older people.

Most countries rely on one primary instrument to prevent old-age poverty, but there are cases where there is a combination of several schemes.

The average safety-net retirement benefit from all the relevant first-tier schemes is a little under 29 per cent of national average earnings (across all 30 OECD countries). The minimum pension in the Czech Republic is exceptionally low, at just 12 per cent of average earnings. (However, the earnings-related pension has a strongly redistributive formula, paying a 100 per cent replacement rate for low earners, which also acts as a safety net.) The basic pension in Japan, minimum pension in Mexico, and the targeted scheme in the United States are also on the low side (relative to national living standards), providing benefits worth one-fifth or less of average earnings. At the other end of the spectrum, Luxembourg and Portugal have minimum pensions worth well above 40 per cent of average earnings. Greece and Portugal's minimum pensions, Austria's targeted scheme, and Belgium's minimum credits are also high compared with other OECD countries.

The *second tier* plays an insurance or savings role. It aims to ensure that retirees have an adequate replacement rate (retirement income relative to earnings before retirement), not just a poverty-preventing, absolute standard of living. Like the first tier, it is mandatory. However, there is a mix of public and private provision of these benefits. Among the 30 OECD countries, only Ireland and New Zealand do not have second-tier schemes, relying wholly on basic pensions for mandatory retirement-income provision.

Some 17 OECD countries have public, *defined-benefit* (DB) plans, making them the most wide-

spread type of second-tier pension. In DB schemes, the amount a pensioner will receive depends on the number of years of contributions made throughout the working life and on some measure of individual earnings from work.

*Defined-contribution* (DC) plans are the second most common kind of second-tier pension. In these schemes, workers have individual accounts in which contributions are invested. The accumulated capital from contributions and investment returns is then usually converted into an income stream at retirement. These plans are typically managed privately, by financial-services companies, or employer-run or industry-wide pension funds. Australia and Mexico have only DC schemes in the second tier. In other countries with DC pensions—such as Hungary, Poland, and Sweden—the DC schemes are a complement to public, earnings-related pension schemes.

Finally, some countries have earnings-related schemes that do not follow the 'traditional' DB model. First, there are *points* systems: French occupational plans and the German, Norwegian, and Slovak public schemes. Workers earn pension points based on their individual earnings for each year of contributions. At retirement, accumulated pension points are multiplied by a pension-point value to convert them into a regular payment.

Italy, Poland, and Sweden have *notional-accounts* schemes, a third variant of an earnings-related plan. Contributions are recorded and they earn a notional interest rate, linked to a macroeconomic variable. At retirement, the accumulated notional capital in each account is converted to a stream of pension payments using a formula based on life expectancy at the time of retirement.

Mandatory contributions to Swiss occupational plans look at first like a DC scheme, since individuals and their employers must pay a contribution rate that varies with age. But the government sets the minimum rate of return that the scheme must pay and a mandatory annuity rate at which the accumulation is converted into a flow of pension payments. This makes the scheme closer to a DB plan than DC.

The majority of OECD countries have a standard *pension eligibility* age of 65 for men (Table 2).

**Table 3**  
**Gross Replacement Rates by Earnings Level, Mandatory Pension Programmes, Men**  
**(% of individual pre-retirement earnings)**

	0.5	1	2
Australia	65.1	40.0	26.2
Austria	78.3	78.3	64.3
Belgium	61.6	40.7	26.2
Canada	72.4	42.5	21.3
Czech Republic	70.5	44.4	25.4
Denmark	82.4	43.3	23.8
Finland	80.0	71.5	71.5
France	84.2	52.9	47.4
Germany	47.3	45.8	37.6
Greece	84.0	84.0	84.0
Hungary	75.4	75.4	75.4
Iceland	85.5	52.8	41.3
Ireland	61.3	30.6	15.3
Italy	78.8	78.8	78.8
Japan	69.2	50.3	36.9
Korea	60.9	40.6	29.3
Luxembourg	115.5	101.9	95.2
Mexico	39.1	36.0	34.4
Netherlands	68.7	68.3	68.3
New Zealand	75.1	37.6	18.8
Norway	65.3	52.6	38.4
Poland	56.9	56.9	56.9
Portugal	103.1	66.7	65.5
Slovak Republic	48.6	48.6	48.6
Spain	81.2	81.2	76.7
Sweden	87.8	64.8	66.2
Switzerland	62.8	58.2	33.1
Turkey	96.2	87.2	71.9
United Kingdom	67.4	37.1	22.5
United States	49.6	38.6	28.1
OECD average	72.5	56.9	47.6

*Source:* OECD (2005b).

Pension eligibility ages for women are currently sometimes lower, but they will generally be equalized gradually with those of men (in Belgium, Hungary, and the United Kingdom, for example). Iceland, Norway, and the United States stand out as having a standard pension age of 67. At the other extreme, France and Turkey are the only countries that have a normal retirement age of 60. Two-thirds of OECD countries also have special provisions for early retirement.

In addition to the differences in the way pension benefits are calculated and whether the schemes are managed publicly or privately, there are differences between OECD countries in the target level of pension benefits that is set by the government either implicitly or explicitly. Table 3 shows the prospective replacement rate—total pension relative to individual earnings—for people entering the labour market in 2002. This indicator shows the extent to which the regime preserves individual

living standards as today's new workers eventually move from work into retirement.

The calculations are for a single person with a full career, working from age 20 to the normal pension age in the country, and they are based on 2002 values of parameters of the pension system, assuming that all legislated changes in the rules of the system are fully in place. They use common macro-economic and financial assumptions and include all mandatory pension benefits, as set out in Table 2.

For each country, Table 3 shows replacement rates for people at different earnings levels: half, average, and double average earnings. The gross replacement rate at average earnings is perhaps the most familiar indicator in pension analysis. At this earnings level, the OECD average gross replacement rate is 57 per cent, with substantial variation between countries. Luxembourg is an outlier: the replacement rate for a full-career worker exceeds 100 per cent (meaning that the pension is higher than earnings before retirement). Austria, Greece, Hungary, Italy, Spain, and Turkey also promise sizeable pensions to full-career workers on average earnings: their replacement rates exceed 75 per cent. Towards the centre of the range, the replacement rate for average earners is around 50 per cent in France, Iceland, Japan, Norway, and the Slovak Republic. Not surprisingly, Ireland—which has only basic and targeted pensions and no earnings-related scheme—has the lowest replacement rate. In the United Kingdom, the earnings-related public scheme does not result in a high pension: it has a low accrual rate and does not cover the first slice of earnings (up to around one-fifth of the average).

At low earnings, defined as half the average, the pension entitlements of full-career workers vary less than they do at average earnings. Again, Luxembourg has the highest pensions, offering a replacement rate above 115 per cent. But apart from Luxembourg and Turkey, a different set of countries can be categorized as having a relatively high pension promise to these low-income workers. Portugal pays a higher accrual rate to low-income workers in its public scheme and has a high safety-net income for pensioners. Sweden has a relatively high income-tested pension. Korea's redistributive public scheme—paying a pension based half on

individual earnings and half on the economy-wide average—is also favourable for low-income workers.

The countries with the lowest replacement rates for low earners are those with the lowest first-tier pensions. German social assistance, Mexican and Polish minimum pensions, the minimum credit in the Slovak Republic, and the means-tested scheme in the United States all pay around one-fifth of average economy-wide earnings. Countries with redistributive retirement-income systems, such as Ireland and the United Kingdom, pay little to workers on average earnings but they move more towards the middle of the scale when it comes to benefits for low earners. Dutch pensions appear to be relatively low for low earners, despite the fact that the basic pension, worth more than a third of average earnings, is at a relatively high level. This is because of the 'franchise', a calculation mechanism applied in the Netherlands, which cuts occupational pension entitlements by the value of the basic pension received. At half-average earnings, the occupational benefit is zero owing to this rule.

Finally, at high earnings (double the average), Luxembourg is yet again an outlier, although the replacement rate at this earnings level is a little short of 100 per cent. It is followed by Greece and Italy, owing to the very high ceilings on pensionable earnings in both countries. The other top slots are taken by the same countries that paid the highest pensions to average earners.

The countries with pure flat-rate systems—Ireland and New Zealand—are naturally the least generous to high earners, even with New Zealand's exceptionally high basic pension of nearly 40 per cent of average earnings. Canada and the United Kingdom—although they have earnings-related schemes—also provide benefits that are broadly flat-rate.

#### IV. PENSION REFORMS

Most OECD countries have substantially changed their retirement-income systems in the last 25 years. In some cases, there has been a single, 'big-bang' pension reform, but in others, changes have been

regular and incremental. The main, although not sole, motivation for reform has been to strengthen the financial sustainability of public pension systems. Cuts in future public pension benefits are one of the main ways that governments have improved affordability of pension systems. For obvious political reasons, these changes have often exploited the complexity of pensions to reduce future benefits in less-than-transparent ways. For example, only Austria and Japan have directly cut the accrual rate in the public, DB plan.

Governments have also often recognized that across-the-board benefits cuts might increase the risk of inadequate income in retirement and a resurgence of old-age poverty. As a result, reforms have often aimed to target public pension spending on low-income older people and to encourage middle and high earners to take out voluntary, private pensions.

Table 4 shows the elements of major reforms to retirement income systems in OECD countries that have occurred since 1990. Some of the most significant types of change include the following.

- (i) *Changes in the number of years used in benefit calculation.* Earnings-related schemes in many OECD countries used to calculate benefits with respect to only a few years of final or best earnings. Seven OECD countries have extended the period over which earnings are measured (Austria, Finland, France, Poland, Portugal, the Slovak Republic, and Sweden). This will tend to cut pension benefits because best or final earnings are usually higher than lifetime averages. Moreover, the benefit cuts under this change are focused on people with steeply rising profiles of earnings with age. These people tend to be higher paid: low-skilled workers typically have flat age-earnings profiles. Today, most OECD countries have moved towards the use of lifetime earnings.
- (ii) *Changing the valorization of past earnings.* In all earnings-related public pension systems of OECD countries, past earnings are re-valued to take account of changes in living standards between the time pension rights accrued and the time they are claimed. (This process is

sometimes also called pre-retirement indexation.) The majority of OECD countries with earnings-related schemes valorize past earnings in line with economy-wide wage growth. However, several OECD countries have moved from earnings to price valorization. For example, France moved to prices valorization in the public scheme in the 1980s and in the occupational schemes in 1996. Valorization is a highly technical policy issue, but it has a large effect on the value of pension benefits. Assuming real wage growth of 2 per cent and price inflation of 2.5 per cent, prices valorization for a full career (20–65) results in a pension that would be 40 per cent lower than a policy of full adjustment of earlier years' pay in line with economy-wide average earnings. This is due to the 'compound-interest' effect.

- (iii) *Changing the indexation of pensions in payment.* In recent years, many OECD countries have moved away from indexation of pension benefits to earnings towards full or partial indexation to prices. This preserves the purchasing power of pensions, but means that pensioners do not share in general growth in living standards. This improves the financial sustainability of pension systems, but may pose challenges for long-term political sustainability, as noted by the United Kingdom's Pensions Commission Report (Turner, 2005). Austria and Italy now increase higher pensions by less than price inflation, while small and medium pensions are indexed to prices.
- (iv) *Linking pensions to higher life expectancy.* Several OECD countries will in the future reduce pension benefits to reflect increases in life expectancy. In notional-accounts and DC schemes, this occurs automatically in the annuity calculation: the way in which pension accumulations are converted into an income stream. Austria, Germany, and Japan aim to reduce pensions as life expectancy increases in DB or points systems. These three countries (and Sweden, in its notional-accounts scheme) also aim to adjust benefits to reflect the financial sustainability of the system and not just the effect of life-expectancy increases. In Germany, for example, this adjustment is linked to the ratio

**Table 4**  
**Reforms to National Retirement Income Systems since 1990, Selected OECD Countries**

Country	Reforms by type
Australia	<ol style="list-style-type: none"> <li>1. Pension age for women rising from 60 to 65. Increase from 55 to 60 in age to access private pensions.</li> <li>2. New lump-sum bonus for deferring public pension.</li> <li>4. Through annuity calculation in DC scheme.</li> <li>5. Mandatory DC scheme introduced in addition to public pension.</li> <li>6. Lower withdrawal rate for income test in the public pension.</li> </ol>
Austria	<ol style="list-style-type: none"> <li>1. Early retirement age increased by 1.5 years. Pension ages for women aligned with those of men.</li> <li>2. Benefit reduction for early retirement introduced and set to increase. Tighter access to early retirement.</li> <li>3. Best 15–40 years.</li> <li>4. Introduction of sustainability factor under discussion.</li> <li>6. Reduction in accrual rate. Less generous indexation for higher pensions.</li> </ol>
Belgium	<ol style="list-style-type: none"> <li>1. Pension age for women aligned with that for men.</li> <li>3. Contribution condition for early retirement at 60 tightened.</li> </ol>
Czech Republic	<ol style="list-style-type: none"> <li>1. Phased increase in normal pension ages to 63.</li> </ol>
Finland	<ol style="list-style-type: none"> <li>2. Increased accrual rate for people working age 63–67.</li> <li>3. 10 last years to lifetime average.</li> <li>4. Life expectancy multiplier (from 2010).</li> <li>6. Basic part of national pension income-tested. Less generous valorization of past earnings and indexation of pensions in payment.</li> </ol>
France	<ol style="list-style-type: none"> <li>2. Changes in adjustment to benefits for early/late retirement in public and occupational pensions.</li> <li>3. Minimum contribution period increased. Earnings measure in public scheme from best 10 to best 25 years.</li> <li>4. Minimum contribution period to increase further with changes in life expectancy.</li> <li>6. Targeted minimum income of 85 per cent of minimum wage. Valorization now effectively to prices in both plans.</li> </ol>
Germany	<ol style="list-style-type: none"> <li>2. Reduction in benefits for retirement before 65.</li> <li>4. Valorization and indexation cut back as system dependency ratio worsens.</li> <li>5. Voluntary DC pensions with tax privileges.</li> <li>6. Phased abolition of favourable tax treatment of pension income.</li> </ol>
Greece	<ol style="list-style-type: none"> <li>1. Pension age rising from 58 to 65.</li> </ol>
Hungary	<ol style="list-style-type: none"> <li>1. Gradual increase in pension age (55 for women and 60 for men) to 62 for both.</li> <li>2. Accrual rates linear rather than higher for earlier years.</li> <li>4. Through annuity calculation in DC scheme.</li> <li>5. DC scheme: mandatory for new entrants, voluntary for existing workers.</li> <li>6. Minimum pension to be abolished. Less generous indexation of pensions in payment.</li> </ol>



**Table 4 (continued)**

Country	Reforms by type
Italy	<ol style="list-style-type: none"> <li>1. Normal pension age for men from 60 to 65 and women from 55 to 60. Early pension age for men with 35 years' coverage increases from 60 to 62.</li> <li>2. Adjustment to early-retirement benefits through notional annuity calculation.</li> <li>3. Qualification years for long-service pension increased from 37 to 40 years.</li> <li>4. Through notional annuity calculation.</li> <li>6. From DB to notional accounts. Less generous indexation of higher pensions.</li> </ol>
Japan	<ol style="list-style-type: none"> <li>1. Pension age increasing from 60 to 65.</li> <li>4. Benefits adjusted to reflect expected change in dependency ratio.</li> <li>6. Accrual rate reduced.</li> </ol>
Korea	<ol style="list-style-type: none"> <li>1. Pension age rising from 60 to 65.</li> </ol>
Mexico	<ol style="list-style-type: none"> <li>5. Mandatory private DC scheme replaces public, DB plan.</li> </ol>
New Zealand	<ol style="list-style-type: none"> <li>1. Pension age increased from 60 to 65.</li> <li>5. Voluntary DC pensions with auto-enrolment and incentives.</li> </ol>
Poland	<ol style="list-style-type: none"> <li>1. Withdrawal of early retirement for certain groups of workers.</li> <li>3. From best consecutive 10 in final 20 to lifetime average.</li> <li>4. Through notional annuity calculation in public scheme and annuity calculation in DC.</li> <li>5. DC scheme mandatory for new entrants and workers under 30.</li> <li>6. Abolition of basic pension. From DB to notional accounts.</li> </ol>
Portugal	<ol style="list-style-type: none"> <li>1. Pensionable age for women aligned with that for men at 65.</li> <li>2. Introduction of increments for late retirement and reductions for early retirement.</li> <li>3. From best 10 out of last 15 years to lifetime average earnings</li> </ol>
Slovak Republic	<ol style="list-style-type: none"> <li>1. Increase in pension ages to 62 for men and women.</li> <li>3. From best 5 in final 10 to lifetime average earnings.</li> <li>5. DC scheme mandatory for new entrants and voluntary for existing workers.</li> <li>6. From DB to points system.</li> </ol>
Sweden	<ol style="list-style-type: none"> <li>3. Best 15 years to lifetime average (public, earnings-related scheme).</li> <li>4. Through calculation of notional annuity and annuity in DC schemes. Additional sustainability adjustment in notional accounts.</li> <li>5. DC scheme mandatory for nearly all workers.</li> <li>6. From DB to notional accounts.</li> </ol>
Switzerland	<ol style="list-style-type: none"> <li>1. Pension age for women increased from 62 to 64.</li> </ol>
United Kingdom	<ol style="list-style-type: none"> <li>1. Women's pension age and eligibility for guarantee credit rising from 60 to 65.</li> <li>2. Increment for deferring pension claim increased. Lump-sum option added.</li> <li>5. Employers required to provide access to DC ('stakeholder') pension.</li> </ol>
United States	<ol style="list-style-type: none"> <li>1. Increase in full pension age from 65 to 67.</li> <li>2. Changes in adjustment for early/late retirement.</li> </ol>

*Notes:* Types of reforms: 1. Change to pension eligibility age. 2. Adjusted retirement incentives. 3. Change of years in benefit formula or qualifying conditions. 4. Link to life expectancy and/or financial sustainability. 5. Defined contribution (DC) scheme. 6. Other.

*Source:* OECD.



between the number of contributors to the pension system and the number of pensioners. However, no country directly links the pension eligibility age to changes in life expectancy.

- (v) *Increasing pension eligibility age.* In most cases, increases in pension age affect only or mainly women, as reforms equalize pension age between the sexes. Increases in pension age that affect both men and women are being implemented in the Czech Republic, Greece, Hungary, Italy, Japan, Korea, New Zealand, and the United States.
- (vi) *Increasing the reward for continuing in work.* Many OECD countries have introduced or increased penalties for early retirement or increased the number of years of contributions required to receive a full pension. Similarly, other countries have introduced or increased the increments or bonuses paid to people retiring after the normal pension age (see, also, Queisser and Whitehouse, 2006).
- (vii) *Introducing mandatory DC plans.* Hungary, Poland, the Slovak Republic, and Sweden have all introduced DC plans as a substitute for part of the public, earnings-related pension scheme. Usually, some or all workers had a choice over whether to stay with the public, earnings-related pension or switch to mixed public/private DC provision. Australia's DC plan was added to the existing means-tested public pension. In Mexico, the old public pension was entirely replaced by DC plans. However, the government guarantees both a minimum pension income and that pensions will not be less than those provided under the old scheme. (See Mattil and Whitehouse (2006) for further discussion of these reforms.)

## V. CONCLUSIONS AND DISCUSSION

OECD countries are currently facing significant policy challenges as a result of population aging. Successful responses to these challenges will need to be multi-dimensional, in some cases scaling back pension promises, but also encompassing policies to increase employment among older workers. Con-

sideration of appropriate immigration and settlement policies and policies to increase employment among people with disabilities, women, particularly mothers, and also the unemployed and other benefit recipients of working age will also be important. Moreover, achieving this objective will not simply be a matter of reforming pension systems—attention needs to be given to strengthening the skills and training of individuals, combating discrimination against older workers and people with disabilities, and changing employer behaviours that inhibit employment of older workers (and people with family and caring responsibilities).

In assessing reforms and future proposals, it is necessary to keep in mind the fundamental objectives of social protection, including how to provide an income adequate to prevent poverty in old age and to provide security once people have retired. But pension systems also need to be sustainable, if they are successfully to alleviate poverty and provide retirement income security.

Is there an optimum approach to reform? As noted by Barr (2004), the range of choice about pension design is wide and a given set of objectives can be achieved in different ways. Any reform proposal must, of course, start with the pension system that already exists, and it must also be appropriate to the social and economic context of the specific country seeking reform. As the previous discussion has shown, OECD pension systems are very diverse in their target replacement rates, in the strength of the link between earnings and pensions (that is, the weights attached to the 'adequacy' and 'insurance' role of pensions), and in the mix of public and private provision. In this sense, there is no ideal system: all have their strengths and weaknesses.

The discussion has also shown that OECD pension reforms have a number of common features. Changes in earnings measures, less generous procedures for valorization and indexation, direct cuts in accrual rates, and links with increases in life expectancy or system solvency are all aimed at cutting benefits in the future. Indeed, all countries shown in Table 4 have taken at least one measure that will cut future expenditures. Measures to improve incentives to stay in work, if they are successful, will also improve system finances on both the

revenue and expenditure side. Policy has diverged on the relationship between earnings and pensions, with some countries, such as France, Sweden, and the United Kingdom, targeting public pensions more on low earners, while, in contrast, Italy, Poland, and the Slovak Republic have moved to strengthen the link between pensions and past earnings.

Many of these reforms imply a significant rebalancing of responsibility for pension provision between the public and private sectors, which amounts to implicit or explicit ‘privatization’ of pensions. For example, cuts in mandatory, public benefits are likely to result in a greater role for voluntary, private provision by individuals and/or their employers. In cases where pension benefits have become more targeted, it is middle and high earners who will most need to provide for their own retirement in the future. In some countries, the substitution of private DC plans for public, earnings-related provision has been explicit: in Hungary, Mexico, Poland, the Slovak Republic, and Sweden, for example.

Reforms also imply a rebalancing of risks. Life expectancy and/or sustainability adjustments in DB and points schemes and annuity calculations shift

longevity risk on to individuals as retirees. The shift to DC plans—in both mandatory and voluntary provision—means that individuals bear more capital-market risk. This shifting of risks raises difficult questions for the future. Will pensions still be adequate or do we risk a resurgence of pensioner poverty? Left to their own devices, will people save enough for retirement? How far can pensions be cut and still perform an insurance role? In turn, these questions mean that ongoing monitoring of pension policies is required.

A final comment is that all types of pension provision involve some kind of risk. From the individual’s perspective, the most secure way to provide for resources in retirement is in as diversified a way as possible: across both providers and types of benefits. But within a diversified framework, a solid base is required. A financially sustainable, affordable pension system is most likely to deliver on its promises. OECD countries’ pension reforms—which nearly all improve long-term financial sustainability and diversify pension provision—are therefore moves in the right direction, although in many cases further reforms may be required.

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