The Future of Pensions and Retirement Income

Two Decades of Pension Reform: What has been Achieved and What Remains to be Done?

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The past two decades have seen a wave of reforms to retirement income systems around the world. This paper describes the reform packages that have taken place in 38 industrialised economies, some of them involving incremental changes to existing provision, others, an overhaul of the entire retirement income system. The changes had many objectives. First, improved coverage of the pension system, especially of voluntary private pensions, was a common goal. Second, some reforms aimed to improve the adequacy of retirement benefits to combat old age poverty. Third, the pressure of population ageing and the maturing of pension schemes meant that fiscal sustainability of public pensions – primarily through reductions in future benefits – were very common. Often, the improvement to long-term finances will be achieved through encouraging people to work longer, through increases in pension eligibility ages and adjustments to pension incentives to retire. Finally, some reforms aimed at streamlining the administration of retirement income provisions and to improve the security of benefits in the face of different risks and uncertainties.

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The Oxford English Dictionary defines the verb “to reform” as “to make a procedure or institution better by removal or abandonment of imperfections, faults or errors”. For those resistant to change – especially the reduction in benefits and increases in pension age necessary to ensure the long-term financial sustainability of pension systems – “reform” has an altogether more negative meaning than the dictionary definition. Despite the short-term political pressure, the *status quo* has rarely won out – there has been a wave of pension reforms around the world. Much has been done to make pensions fit for the future, often more than governments are given credit for.

Problems with the public finances and the looming threat of ageing populations have proved effective catalysts for change. Public spending on pensions and other retirement benefits in Organisation for Economic Co-operation and Development (OECD) countries grew on average 17.5 per cent faster than national income between

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1990 and 2005, from 6.5 per cent of gross domestic product (GDP) to 7.7 per cent. However, the period 1990–2010 is a fairly benign one in demographic terms. The dependency ratio – the number of older people (age 65 +) relative to the working-age population (16–64) – will increase from 21 to 25 per cent on average in OECD countries. After 2010, ageing will be much more rapid, with the dependency ratio projected to double to 50 per cent by 2050.¹

This paper summarises changes to pension systems in the 38 countries that are members of the OECD, the European Union (EU) or both bodies. The first section briefly sets out a framework for the analysis, consisting of six different objectives for pension systems and reforms. The second section uses the framework to illustrate the changes made to retirement income systems between 1990 and May 2009. In some cases, reforms have been revolutionary in that they altered the fundamental structure of pension provision. In others, reform has been more evolutionary in nature, involving a series of small changes over time. The third section explores the impact of these reforms on future pension entitlements of today's workers, showing a clear trend to a lower pension promise than for past generations. The fourth section shows the impact of reform on the long-term finances of pension systems. The last section summarises the action that countries have taken and discusses the unfinished pension policy agenda.

Objectives of pension systems and principles of pension reform

There is a set of clear objectives and principles that all well-designed pension systems share. These have been set out in numerous OECD reports.² The analysis of recent pension reforms in this paper is built around a framework of six objectives of retirement income provisions.

1. *Coverage* of the pension system, by both mandatory and voluntary schemes.
2. *Adequacy* of retirement benefits.
3. *Financial sustainability* and *affordability* of pensions to taxpayers and contributors.
4. *Economic efficiency*: minimising the distortions of the retirement income system on individuals' economic behaviour, such as labour supply and savings outside of pension plans.
5. *Administrative efficiency*: keeping the cost of collecting contributions, paying benefits and (where necessary) managing investments as low as possible; and
6. *Security* of benefits in the face of different risks and uncertainties.

This framework illustrates the trade-offs inherent to the design of pension systems and reforms. For example, higher pensions would improve the adequacy of retirement benefits but would also worsen financial sustainability. In other cases, there are synergies between different objectives. Encouraging later retirement improves both

¹ See the indicators of "Pension expenditure" and "Old age dependency ratios" in OECD (2009) for a detailed presentation and discussion of the results.

² OECD (1998, 2001, 2009), for example. The World Bank has also set out a similar list of aims (see Holzmann and Hinz (2005)).

economic efficiency and financial stability. Similarly, extending coverage of pensions should also improve adequacy of retirement benefits for today's workers.

Key features of pension reforms

Changes in pension systems for 38 countries are summarised in Table 1. They are categorised into the six objectives for pension systems and discussed in turn.

Coverage

Most OECD and EU countries have broad coverage of their pension systems. On average, in the 34 out of 38 countries for which data are available, 87 per cent of the labour force is covered by the pension system. This is equivalent to around two-thirds of the working age population.³ Coverage rates are lower in the lower-income countries, such as Mexico (35 per cent of workforce and 23 per cent of working age population) and Turkey (55 and 30 per cent, respectively). Coverage also tends to be lower than average in the countries of Central and Eastern Europe and in Greece and Korea. It is around six percentage points lower than in high-income countries when measured relative to the labour force and 11 points lower relative to the working age population.

Only a few countries have introduced changes designed to expand coverage of the mandatory pension system. Greece hopes to achieve this with new institutional arrangements. Switzerland has reduced the earnings floor so that more part-time, workers with low wages are covered. The United Kingdom has relaxed qualifying conditions for the basic pension and strengthened credits for carers. One expected result is that 90 per cent of women will qualify for a full basic pension in 2050, compared with just 30 per cent now. Other countries have tended to pursue a policy of coverage expansion through ensuring compliance with existing regulations rather than making legislative changes.

Most of the changes that aim to increase pension coverage have mainly been aimed at private pensions. Australia in 1992 and Norway in 2006 mandated employer contributions to individual pension accounts. Coverage of occupational pensions was a little under 50 per cent of employees in Australia and around 60 per cent in Norway before the mandate was introduced, extending coverage to the other 40–50 per cent of the workforce (other countries that introduced compulsory private pensions did so as a substitute for part of public pensions; see below).

France, Germany, Ireland and Portugal have introduced new private pension plans, usually with tax privileges, as have most of the countries in Central and Eastern Europe – the three Baltic States, Bulgaria, the Czech and Slovak Republics, Hungary, Poland and Slovenia. Germany recently extended the tax incentive for private pensions beyond its original expiry date in 2008. Australia has encouraged voluntary retirement savings with changes to the means test for the public pension.

³ *Source:* World Bank pensions database. “Working age” is by convention defined as ages 15–64 years.

Table 1 Pension reform measures 1990–2009 by objective

[illegible]

The impact of these policies is mixed. Coverage of voluntary private pensions is only around 1 per cent of the workforce in Poland and 4 per cent in Portugal. They have had much more of an impact on the Czech Republic, Germany and Hungary, with coverage of 45, 64 and 31 per cent of employees, respectively.⁴

Italy and Korea have continued an already lengthy reform process of converting severance pay schemes into occupational pension plans. These new plans are earmarked for retirement, rather than liquidated when people change jobs or become unemployed. However, in neither country have the occupational plans been as popular as governments had hoped.

New Zealand introduced its KiwiSaver scheme in 2008, which requires individuals to opt out of rather than opt in to private pensions. This has been a success so far. Before KiwiSaver, 13.0 per cent of employees had an occupational pension and 5.5 per cent had a personal plan. Now, 43.3 per cent of employees have a KiwiSaver scheme. The United Kingdom has legislated for a similar scheme, to be known as personal accounts, which will begin operating in 2012.⁵

Adequacy

Many countries have moved to strengthen retirement income safety nets to improve pension adequacy. Ireland and the United Kingdom have increased the level of their basic pensions. Korea introduced a basic pension in 2008 and recently announced that its value would double. Australia recently announced a target level for the public pension 10.8 per cent higher than the current one. Belgium, Finland, France and Spain will all increase minimum pensions. In Finland, the new guarantee pension will be 23 per cent higher than the current benefit and the increase in Spain will be 6.4 per cent the adjustment under normal indexation rules. Improvements in living standards in retirement have been delivered through the tax system in Finland and Sweden. Slovenia will move to a more progressive benefit structure by reducing the ratio between the lowest and the highest pensions.

Financial sustainability

Although many countries have adopted measures to reduce pension expenditures, particularly in the long term, *direct cuts* in benefits have been comparatively rare. Only Austria, Hungary, Japan, Korea and Turkey have reduced the rate at which pension entitlements accrue for each year of contributions. In Switzerland, the interest rate that must be paid by mandatory occupational plans has fallen from 4 to 2 per cent (although it has moved around with prevailing economic and financial conditions). The annuity rate used to calculate benefits at retirement has also been cut.

Indirect cuts in future benefits have been more common. Many countries have changed the *earnings measure* used to calculate pensions. France is moving from the best 10 years' earnings to the best 25 years' in the public scheme. Austria, Finland,

⁴ See *Coverage of private pensions* in OECD (2009).

⁵ See the "The pension gap and voluntary retirement savings" in Queisser *et al.* (2007), Antolin and Whitehouse (2009) and OECD (2009) for more details on these policies.

Italy, The Netherlands (occupational plans), Poland, Portugal, the Slovak Republic and Sweden will all move from basing pensions on a limited number of best or final years' earnings to the lifetime average. Once these reforms are in place, only Greece, Norway and Spain of the OECD countries will base pensions on earnings measured over a period significantly less than the lifetime average.

This is a welcome improvement. Basing pensions on a limited number of best or final years tends to be regressive, because the people with final or best years substantially above their lifetime average earnings tend to be those that earn the most. Moreover, in countries with a large informal sector, such as Greece, they give a large incentive to underreport earnings in earlier years and in others, such as Austria, they reinforce distorted systems of seniority-based pay.⁶

Closely linked to the question of the earnings measure is that of *valorisation*. All countries revalue earnings from earlier years to the time of retirement when calculating benefits. This mechanism adjusts for changes in costs and standards of living between the time when pension rights were earned and when they are claimed. This valorisation procedure (sometimes called pre-retirement indexation) may seem abstruse, but its impact on retirement incomes is large as a result of the compound interest effect. The OECD baseline assumption when modelling pension entitlements is 2 per cent annual growth in real earnings. Over a 45-year career, from age 20 to 65, valorisation with price inflation results in a pension 40 per cent lower than under a policy of earnings valorisation.

In France, valorisation for the public schemes is now to prices and the policy in the main second pension for private sector workers of increasing the cost of a pension point in line with earnings and the value of a point in line with prices has the same effect on benefits as price valorisation.⁷ Finland and Portugal will valorise pensions to a mix of price inflation and earnings growth.

Changes in the *indexation* of pensions during retirement have featured in many reform packages. Most of these involve a move to a less generous procedure to reduce costs. For example, Hungary used to index pensions to earnings' growth, but moved to a 50:50 split of earnings and price indexation in the reform of the late 1990s. To plug the government's growing deficit resulting from the crisis, it will now move to price indexation.

However, governments frequently override indexation rules, typically in a pro-cyclical way – pension increases are larger than the rules require when the public finances are healthy, while increases are postponed or reduced in times of fiscal constraint. Figure 1 shows the history of pension adjustments in the seven major economies, going back to 1960 where data are available.⁸ For ease of comparison across time, changes in pension values have been converted to an index fixed at 100 in 2006. It is important to note that this chart does not show the average pension received by retirees in a particular year. The aim is to isolate the effect of indexation policies and practices on pensions from financial and economic conditions, pension reforms and so on.

⁶ Of the 20 countries analysed in OECD (2006), Figure 3d, Austria has much the most steeply rising age-earnings profile.

⁷ Queisser and Whitehouse (2006) Box 4.

⁸ See Whitehouse (2009a) for data on 18 countries.

Figure 1. Impact of indexation practice on real value of pensions in payment (Index: 2006=100). *Source:* Whitehouse (2009a).

Real pensions increased in the early part of the period in most countries, but then the growth came to an end. In France and Germany, for example, real benefits more than doubled between 1960 and 1978, with annual real increases in pensions of around 5 per cent. But, since 1978, real pensions have been broadly flat in both countries. The growth of real pensions came to halt later in other countries: in 1984 in Italy, in 1986 in Canada and in 1994 in Japan. In the United States, the growth of real pensions was concentrated in a five-year period with no real increases since price indexation of benefits was introduced in 1973. The picture in the United Kingdom is rather different. Although it shares the rapid real growth in pensions with other countries in the 1960s and 1970s, a period of level pension values came to an end in the mid-1990s.

Figure 1 shows that adjustments of pensions in payment in practice are often at variance with policies of automatic indexation. Pension uprating is a classic example of *ad hoc* policy-making that introduces a substantial degree of political risk in the purchasing power of retirement incomes.

The final change to pension systems designed to ensure financial sustainability is to link pensions to changes in *life expectancy*. Countries have done this in four different ways:

- Some 12 of the 38 countries have introduced mandatory defined contribution plans, comprising Australia, Mexico, Norway, Sweden and 8 of the 10 countries in Central and Eastern Europe (see below). When people retire from a defined

contribution scheme, the accumulated contributions and investment returns is turned into a pension or annuity. As life expectancy increases, a given amount of pension capital will buy a smaller annuity.

- Four countries – Italy, Latvia, Poland and Sweden – have introduced notional accounts schemes. These are public pensions, primarily Pay-As-You-Go financed. However, they mimic some features of defined contribution schemes in that an annuity calculation is made at the time of retirement. Pensions at a given retirement age will fall automatically as life expectancy increases.
- Three countries have introduced a link between the value of public pension benefits and life expectancy: Finland, Germany and Portugal.
- Finally, Denmark will automatically link pension eligibility age to life expectancy. Such a change was also agreed in France. However, the current proposal is to increase the number of contribution years required for a full public pension to reflect changes in life expectancy, but with no automatic link.

These changes mean that the financial costs of longer lives will be shared between generations subject to a rule, rather than spreading the burden through potentially divisive political battles. Traditionally, pension entitlements were “defined” by some sort of formula. In theory, at least, this meant that the annual value of the pension was the same whatever happened to life expectancy. However, this “defined benefit” that dominated both public and private pension provisions in the second half of the 20th century has been diluted. Of the 38 countries, nearly half (17) now have an automatic link to life expectancy in their retirement income systems.⁹

Economic efficiency

Many of the potential improvements to financial sustainability of pension systems come from measures to improve retirement incentives. These changes here come under the heading of “economic efficiency” because they are designed to reduce the distortions to the labour market caused by incentives to retire early. Effective retirement ages are currently below the normal statutory pension age in more than two-thirds of OECD countries. Indeed, men retire before 60 years of age, on average, in eight OECD countries: Austria, Belgium, Finland, France, Hungary, Italy, Luxembourg and the Slovak Republic.¹⁰

More than half of the countries analysed – 22 out of 38 – have increased normal pension ages, although in two of them (Portugal and Switzerland), only women’s pension age has risen. As a result, only two of the 30 OECD countries will retain a pension age less than 65 for men in the long term, compared with six currently. Seven countries will have a pension age above 65 years compared with only three now – including Denmark, which will link pension age to life expectancy. Figure 2 shows how the average pension age of OECD countries has developed since 1949 and the future changes that have been legislated up to 2050. In the 50 years, from 1950

⁹ Whitehouse, 2007.

¹⁰ OECD (2006).

Figure 2. Average pension eligibility age in OECD countries by sex, 1949–2050. *Source:* Turner (2007), OECD (2009), national officials.

to 2000, pension ages for men fell on average from 64.7 to 61.9 years and for women from 63.2 to 60.5 years. By 2050, these will increase to 65.3 and 64.8 years, respectively. Only Italy, Poland and Switzerland of the OECD countries plan to have a lower pension age for women in the long term.

Some 16 of the 38 countries in Table 1 have taken other measures to encourage people to work longer. Firstly, a range of countries – Austria, Belgium, Denmark, France, Greece, Hungary and Italy – have tightened the qualifying conditions for early retirement: the number of contribution years required or the eligibility age or both. The Netherlands has removed tax incentives for private, occupational early retirement schemes. Austria, Germany, Italy and Portugal either introduced or raised the level of reductions in benefits for early retirees. Increments to benefits for late retirement were introduced or enhanced in Australia, Belgium, Spain and the United Kingdom. Four countries – the Czech Republic, Finland, France and the United States – adjusted incentives for both early and late retirement.

Administrative efficiency

A major problem in Japan's pension administration, revealed in the summer of 2007, is that 50 million records of individuals' different jobs were not attached to individual workers and pensioners. To solve the problem, the government removed the statute of limitations on pension claims and will privatise many of the functions of the Social Insurance Agency. Greece has streamlined its pension provision, by merging 133 pension schemes into 13. A centralised database and unique identification

numbers should reduce administrative costs, improve compliance and reduce the problems of unmatched records that caused difficulties in Japan. Sweden will merge the bodies responsible for mandatory defined contribution plans (the Premium Pension Authority) and the public pension (consisting of notional accounts and a minimum pension).

Other measures have aimed to reduce administrative costs and charges for private pensions. Mexico has encouraged people to switch to lower cost providers. Poland will bring forward a reduction in the ceilings on charges from 2014 to the next year. The Slovak Republic has proposed lower fees and a stronger link between charges and performance. The United Kingdom has a long-term target for administrative charges of 0.3 per cent of assets per year (and 0.5 per cent at the time of the introduction) for the new national pension savings scheme, much lower than the 1 per cent ceiling on existing stakeholder plans. To keep costs low, there will be a central clearing house for contributions, along the lines of the structure in Sweden.

Security

Pensions are inherently risky because they are long-term contracts; on average, people will spend around 60 years from their first contribution to the receipt of their last benefit. The recent financial crisis has highlighted the importance of investment risk. However, all types of pension schemes are subject to a variety of risks. In the long term, therefore, the best way to deal with risk is to diversify.

Most of the reforms that have increased diversity in pension provision have involved the introduction of a mandatory-defined contribution scheme. In Australia and Norway, the mandate extended private pensions to workers who were not previously covered (see above). In Hungary, Mexico, Poland, the Slovak Republic and Sweden, these schemes were introduced as a substitute to part of public pension systems. The effect of these reforms is to diversify retirement income provision, both between the public and the private sector, and between Pay-As-You-Go and funding as financing mechanisms.

A second route to diversifying pension financing has been through the introduction of public pension reserves. These are designed to build up funds now, when demographic conditions are relatively favourable, which can later be drawn down to support pensions and other ageing costs. Australia, Canada, Ireland and New Zealand have all recently (1997–2006) set up reserve funds. All these countries are demographically relatively young. Ireland has the fourth lowest old age dependency ratio (ratio of number of pensioners to workers) in the OECD – 18 per cent in Ireland, compared with an average of 24 per cent. The other three countries have dependency ratios of around 21 per cent. Substantial funds have already built up despite the recent provenance of these reserves: 5 per cent of GDP in Australia, 8 per cent in Canada and New Zealand and 12 per cent in Ireland.¹¹ Longer-established reserves in

¹¹ These data relate to the end of 2007; that is, before the crisis, which is likely to have had a large direct effect on the value of these reserves. Moreover, Ireland plans to use much of the reserve to recapitalise its banks. See the indicator of 'Assets in private pensions and public reserves', and the special chapter on *Pension systems during the financial and economic crisis* in OECD (2009).

Japan (26 per cent of GDP), Korea (24 per cent) and Sweden (32 per cent) have built up more assets. But, Japan is the demographically oldest OECD country and Sweden the fifth oldest, while Korea faces the most rapid ageing in the OECD, going from the third youngest to the second oldest by 2050.

Diversification is important in the investment of private pension plans and public reserves. A mix of assets is the key to limiting risk without undue sacrifice of returns. In Belgium, Canada, Germany and Mexico, for example, pension funds are now freer to invest in a wider range of assets than before. Australians now have greater choice over both the manager of their pension fund and the way it is invested. A way of further mitigating investment risk is to encourage workers to shift their pensions into less risky assets as they near retirement. A number of countries have made other changes to the regulation and supervision of private pensions.¹²

How will pension reforms affect future entitlements?

The changes in pension systems over the past two decades mean that pension entitlements for workers entering the labour market now will be very different from those of their parents and grandparents. We use the OECD pension models to illustrate the magnitude of the change in the value of pensions as a result of reform. The results are compared between two stylised scenarios. The first, called “pre-reform” for short, shows the pension entitlements of a worker entering the labour market in 2006 with benefits calculated under the rules that applied before reforms took place. All of the value parameters of the pension system have been recalculated to give their level in 2006. The second, “post-reform” scenario, is based on parameters and rules applying in 2006.¹³ In some cases, changes in rules have been legislated, but are being phased in gradually; increases in pension age are a common example. It is assumed that these are fully in place for a worker entering the labour market in 2006. It is also, of course, necessary to assume that these rules remain unchanged thereafter.

The calculations show the pension entitlements of full career workers, defined as uninterrupted work from age 20 until the standard pension eligibility age. Although this is clearly unrepresentative of actual labour market experience, it is the only assumption that generates comparable results.¹⁴ Entitlements are calculated for a single person.¹⁵

The results include all mandatory pension schemes for private sector workers, regardless of whether plans are publicly or privately provided. Plans with near-universal coverage – more than 80 per cent of employees – are treated as

¹² See Whitehouse (2009b).

¹³ See OECD (2005, 2007, 2009) for a more detailed description of the models and a full set of results.

¹⁴ Ongoing OECD work is looking at the impact of career interruptions due to unemployment, early retirement and caring for children. In many countries, there are complex rules for crediting periods of unemployment and childcare in the pension system. Unfortunately, space precludes us from reporting on this research here.

¹⁵ Again, the OECD is carrying out calculations of pension entitlements of couples, but the rules can be very complicated and the results depend on assumptions over both partners’ career histories.

Table 2 Impact of pension reforms on individual entitlements by earnings

<i>Individual earnings</i>	<i>Gross replacement rate</i>						<i>Net replacement rate</i>					
	<i>Pre-reform</i>			<i>Post-reform</i>			<i>Pre-reform</i>			<i>Post-reform</i>		
	<i>0.5</i>	<i>1</i>	<i>1.5</i>	<i>0.5</i>	<i>1</i>	<i>1.5</i>	<i>0.5</i>	<i>1</i>	<i>1.5</i>	<i>0.5</i>	<i>1</i>	<i>1.5</i>
Australia	46.2	23.1	15.4	67.0	41.6	33.1	55.3	30.4	21.8	80.2	53.1	41.8
Austria	90.0	90.0	85.9	80.1	80.1	76.4	98.4	99.2	95.1	90.5	90.3	86.3
Belgium	54.8	40.4	31.4	58.1	42.0	32.5	74.2	62.1	50.6	78.7	63.7	51.7
Czech Republic	72.1	45.0	32.9	79.2	49.7	36.4	86.7	58.1	44.6	95.3	64.1	49.4
Finland	69.9	66.2	65.2	66.5	56.2	56.2	75.9	71.4	72.4	73.2	62.4	63.8
France	64.7	64.7	58.4	61.7	53.3	48.5	79.7	78.2	70.8	76.2	65.7	60.2
Germany	47.9	47.9	46.5	43.0	43.0	42.6	56.4	66.6	66.4	59.2	61.3	60.3
Hungary	69.9	57.7	53.6	76.9	76.9	76.9	85.9	83.2	79.1	94.3	105.5	99.2
Italy	90.0	90.0	90.0	67.9	67.9	67.9	99.1	99.1	99.2	74.8	74.8	77.1
Japan	56.5	40.6	35.3	47.1	33.9	29.4	55.8	41.0	37.0	51.4	38.7	33.9
Korea	100.0	69.3	56.0	64.1	42.1	33.6	105.9	74.9	61.6	68.8	46.6	38.7
Mexico	72.5	72.5	72.5	55.3	36.1	34.5	73.4	76.5	83.2	56.0	38.0	39.6
New Zealand	77.5	38.7	25.8	77.5	38.7	25.8	79.3	41.1	29.0	79.3	41.1	29.0
Norway	62.5	51.9	41.9	66.2	59.3	49.8	80.4	62.0	52.3	76.7	69.3	60.6
Poland	81.2	62.9	56.8	61.2	61.2	61.2	97.1	76.9	69.7	74.4	74.9	75.0
Portugal	91.3	89.9	88.5	54.8	53.9	53.1	106.1	112.0	110.8	63.7	69.6	72.0
Slovak Republic	65.0	58.9	39.3	56.4	56.4	56.4	76.4	75.9	52.2	66.3	72.7	74.9
Sweden	82.5	78.6	76.5	76.6	61.5	75.6	84.5	80.3	81.9	79.3	64.1	81.2
Turkey	107.6	107.6	107.6	86.9	86.9	86.9	150.0	154.4	157.9	121.2	124.7	127.1
The United Kingdom	41.1	29.7	20.6	51.0	30.8	21.3	51.9	39.8	28.3	63.8	40.9	29.2
OECD-30				71.9	59.0	54.3				82.1	70.3	65.5

Gross and net replacement rates from mandatory schemes under pre- and post-reform rules, per cent.

Source: OECD pension models. See OECD (2007, 2009).

“quasi-mandatory” and so are included in the baseline results. Resource-tested benefits for which retirees may be eligible are also included. It is assumed that all who are entitled take up these benefits and that the whole of retirement income comes from the mandatory pensions. Benefits from defined contribution plans (for reasons of comparability) are assumed to take the form of a price-indexed annuity.

The computations use a single set of economic assumptions for all countries to facilitate cross-national comparisons that isolate differences in pension systems and policies. The assumptions are:

Growth in average real earnings	2 per cent per year
Individual earnings	In line with economy-wide average
Price inflation	2.5 per cent per year
Discount rate	2 per cent a year
Mortality rates	Country-specific projections for 2040

Table 2 presents the results for replacement rates – the ratio of pension during retirement to earnings when working. It shows these in gross and net terms (after

Table 3 Impact of pension reforms on individual lifetime pension benefits by earnings

<i>Individual earnings</i>	<i>Gross pension wealth</i>						<i>Net pension wealth</i>					
	<i>Pre-reform</i>			<i>Post-reform</i>			<i>Pre-reform</i>			<i>Post-reform</i>		
	<i>0.5</i>	<i>1</i>	<i>1.5</i>	<i>0.5</i>	<i>1</i>	<i>1.5</i>	<i>0.5</i>	<i>1</i>	<i>1.5</i>	<i>0.5</i>	<i>1</i>	<i>1.5</i>
Australia	10.6	5.3	3.5	11.7	6.9	5.3	10.6	5.3	3.5	11.7	6.7	4.8
Austria	13.7	13.7	13.1	12.2	11.6	10.5	11.8	10.1	9.0	10.9	8.8	7.4
Belgium	8.4	6.2	4.8	8.9	6.4	5.0	8.4	5.5	4.1	8.9	5.7	4.1
Czech Republic	13.1	8.2	6.0	12.1	7.6	5.6	13.1	8.2	6.0	12.1	7.6	5.6
Finland	11.5	11.0	10.8	10.4	8.8	8.8	9.9	8.0	7.4	9.0	6.6	6.2
France	11.6	11.6	10.5	10.8	9.3	8.5	10.9	10.0	8.7	10.2	8.2	7.1
Germany	8.7	8.7	8.5	7.2	7.2	7.1	6.8	6.8	6.4	6.6	5.8	5.3
Hungary	13.5	11.2	10.4	12.4	12.4	12.4	13.5	10.4	9.0	12.4	11.0	9.5
Italy	13.3	13.3	13.3	10.0	10.0	9.9	10.1	10.1	9.8	7.6	7.6	7.5
Japan	9.4	6.7	5.8	7.8	5.6	4.9	7.7	5.5	4.8	7.1	5.2	4.4
Korea	16.5	11.4	9.2	8.9	5.9	4.7	16.1	11.0	8.6	8.9	5.8	4.6
Mexico	14.2	14.2	14.2	7.3	4.8	4.6	14.2	14.2	14.2	7.3	4.8	4.6
New Zealand	17.4	8.7	5.8	14.3	7.2	4.8	14.4	7.2	4.8	11.8	5.9	3.9
Norway	11.0	9.1	7.4	11.4	10.2	8.5	11.0	7.7	6.0	10.3	8.4	6.8
Poland	11.1	8.6	7.8	8.5	8.5	8.5	9.4	7.1	6.4	7.3	7.1	7.0
Portugal	13.3	13.1	12.9	8.0	8.1	8.0	13.3	12.7	11.7	8.0	8.1	7.8
Slovak Republic	12.8	11.6	7.7	8.8	8.8	8.8	12.8	11.6	7.7	8.8	8.8	8.8
Sweden	12.9	12.3	12.0	12.2	9.9	12.0	9.7	8.7	8.0	9.3	7.1	8.0
Turkey	16.4	16.0	10.7	11.0	11.0	11.0	16.4	16.0	10.7	11.0	11.0	11.0
The United Kingdom	6.1	4.4	3.1	6.8	4.1	2.9	6.1	4.3	3.0	6.8	4.0	2.8
OECD-30				11.4	9.3	8.5				10.4	7.9	6.9

Gross and net pension wealth from mandatory schemes under pre- and post-reform rules, multiple of annual earnings.

Source: OECD pension models. See OECD (2007, 2009).

taxes and contributions).¹⁶ Results are provided for three earnings levels: 50, 100 and 150 per cent of the economy wide average.

Replacement rates are a familiar metric, but they do not capture the impact of many changes to pension systems. A more comprehensive measure is “pension wealth”, which is presented in Table 3. Pension wealth – a measure of the “stock” of the future “flow” of pension benefits – shows the lifetime value of benefits at the time of retirement. It, therefore, takes into account the differences in pension age and indexation procedure. Changes to these policies, as noted previously, have made up an important part of many countries’ pension reform packages. Furthermore, pension wealth also takes into account the differences in life expectancy between countries. Pension wealth is shown as a multiple of individual earnings. It can be thought of

¹⁶ See Keenay and Whitehouse (2003a, b) for a detailed discussion of the role of the personal tax system in old age income support.

Figure 3. Impact of pension reforms on individual entitlements by earnings. Gross replacement rate from mandatory schemes under pre- and post-reform rules, per cent. *Source:* OECD pension models. See OECD (2007, 2009).

as the lump sum needed to buy an annuity giving the same flow of pension payments as that promised by mandatory retirement income schemes.

The calculations for replacement rates and pension wealth are shown for 20 countries that have had major pension reforms, and where details of the pre-reform pension system are available. For reasons of space, the results are shown for men. Where the impact of reforms on the sexes differs, these are discussed in the text. In the following discussion, the 20 countries are divided into four groups depending on their impact on pension entitlements. Figure 3 shows results for the gross replacement rate across the earnings range for one country from each of the four groups.

First, one of the key motives for pension reforms has been to improve the long-term financial sustainability of pension systems. Seven countries have tried to achieve this through *across the board cuts* in benefits, which apply equally (or almost equally) to low, middle and high earners. This group comprises Austria, Germany, Italy, Japan, Korea, Portugal and Turkey. Gross pension entitlements for people under the reformed rules will be an average of 23 per cent lower for full career workers than

under the pre-reform rules in these countries. The largest cuts, of around 40 per cent, will be in Korea and Portugal, with more modest changes of 10–25 per cent in the rest of this group. The cut in pension wealth averaged 28 per cent for men and 29 per cent for women in these countries. It is greater than the change in replacement rates because of increases in pension eligibility ages and moves to less generous indexation.

Of this first group, the results are very different for men and women in Austria and Turkey. In both cases, pension ages for men and women will be equalised. The higher pension age for women in Austria means that pension entitlements for women at retirement are unchanged; the lower accrual rate, which cuts men's benefits by 11 per cent, is offset by the increase in the number of years in which women contribute and earn benefits. However, the cut in women's duration of retirement means that the fall in pension wealth of 18 per cent for an average earner is larger than for men (13 per cent).

Austria also illustrates the impact of a policy of progressive indexation, under which higher pensions are increased more slowly in retirement than lower pensions. Although the cuts in replacement rates were indeed across the board, this policy means that higher earners lose more in lifetime pension benefits.¹⁷

In New Zealand, the level of benefits was unchanged (apart from standard indexation adjustments). However, the pension age was increased, meaning that pension wealth fell by 17 per cent.

A second group of countries has also cut benefits. But, these reforms have *protected low earners* from all or most of the reduction in benefits. This group comprises Finland, France, Mexico and Sweden. The reform in Mexico, for example, will cut pensions by 50 per cent for average earners compared with less than 25 per cent for low earners (with half of the average earnings). Benefits for average earners in Finland, France and Sweden are 15–20 per cent lower under post-reform rules than before reform, but the declines are only 5–7 per cent for low earners. In Mexico, the new defined contribution plans will pay annuities based on sex-specific rates. This means that replacement rates at the time of retirement tend to be lower for women than for men (other things being equal) because of the sex differential in life expectancy. However, pension wealth will be the same for men and women with the same earnings level and contribution history.

The third set of countries has moved towards a *stronger pension earnings link*, the opposite direction of the second group. In Hungary, Poland and the Slovak Republic, the redistributive features of the new pension system are much smaller than the previous one. Pensions for low earners will be cut by 25 per cent in Poland and 13 per cent in the Slovak Republic. The cuts for average earners in these two countries will be small: – less than 5 per cent. High earners (at 150 per cent of average earnings) will receive higher pensions under the new rules than they would have done under the old. The increase is small in Poland, but very large in the Slovak Republic: over 40 per cent. In Hungary, the third member of this group, replacement rates are higher after reform at all earnings levels. But, the pension increase is much smaller for low earners (10 per cent) than for average (33 per cent) and high. In all three countries,

¹⁷ See Whitehouse (2009a).

replacement rates will be the same for all workers in the earnings' range considered – between 50 and 100 per cent of the mean (a range that covers 60–75 per cent of earners' distribution in these countries).

Within this group, replacement rates for women will be increased by longer contribution histories as a result of equalisation of pension ages in Hungary and the Slovak Republic. Poland, in contrast, is one of the few countries that plans to have a much lower pension age for women (60 years) than men (65 years) in the long term. The tighter link between contributions and benefits mean that most women's replacement rates after the reform will be 17 percentage points lower than for men (although the difference in pension wealth is much smaller).

Finally, countries with *higher pensions* after reform make up a fourth group. In Australia and Norway, this is because private pensions have been made mandatory. In the Czech Republic and the United Kingdom, pension ages will be increased, but this will allow people to build up larger pension entitlements. In addition, the United Kingdom's public earnings-related pension scheme will gradually move to a flat-rate benefit. Low earners will see a large increase in benefits – nearly 25 per cent – while the gains for low and middle earners will only be around 4 per cent. In Belgium, the higher replacement rate arises under the standard assumption of retirement at the normal pension age (of 65) due to an increased pension bonus paid to people who work between 62 and 65.

The impact of these reforms will be to reduce cross-country differences in replacement rates. For example, the first group of eight countries that had across the board cuts had an average gross replacement rate of 75 per cent for an average earner in the pre-reform scenario. After the reform, this falls to 58 per cent, a little below the average for the 30 OECD countries of 59 per cent. Convergence also occurs in the countries that moved to higher pensions. The replacement rate for the average earner in this group of six countries averaged 38 per cent before reform and 45 per cent after, an increase, although the replacement rate is still well below the figure for the OECD-30.

Are pension systems financially sustainable?

One of the principal motives for reform has been to improve the long-term finances of pension systems, faced with pressures of population ageing and the maturing of retirement income provision. Figure 4 shows public pension spending in 2007 (the grey bars) and projections for 2060 (the arrows) carried out by the European Commission. The calculations cover the 27 member states of the EU plus Norway. On average, public pension spending is projected to grow 45 per cent faster than national income over the next half century, increasing from 8.9 to 12.9 per cent of GDP. A decline is forecast for four countries – Estonia, Latvia, Italy and Poland – with spending stable relative to national income in Denmark and Sweden. The largest increases are likely to happen in Greece and Luxembourg, taking pension spending to 24 per cent of GDP in 2060. Pension spending is also expected to exceed 15 per cent of GDP in another four countries: Cyprus, Romania, Spain and Slovenia at that point, above the highest level of 14 per cent observed today in Italy.

Figure 4. Public pension spending in 2007 and projected level in 2060 for 28 countries (per cent of GDP).
Source: European Commission (2009).

It is also possible to decompose the evolution of pension spending into different factors, as illustrated in Figure 5. The grey bars show the starting point in 2007 of average pension spending of 8.9 per cent of GDP, rising to 12.9 per cent of GDP in 2060. The Figure divides the change into pension spending between five determinants, two of which are not of great importance.¹⁸

The first and by far the most significant factor is demographic change. Holding everything else constant, the increase in the ratio of the number of people aged 65 and above to the number of people of working age, pension spending would more than double over the forecast period to 18.0 per cent of GDP. The lines and dashes on each bar show the range of the changes in different countries. The largest demographic effect is in Slovenia, which alone would increase pension spending by 13.2 per cent of GDP. The other pension systems that face the greatest demographic challenge, with an effect on spending of 10 per cent of GDP or more are all in central and eastern Europe (Hungary, Poland, Romania and the Slovak Republic) or southern Europe (Cyprus, Greece, Italy, Malta and Spain). The smallest demographic pressure on pensions is in the United Kingdom, at 4.2 per cent of GDP and other countries in northern Europe (Denmark, Estonia, Ireland, Latvia and Sweden).

¹⁸ The employment rate effect shows the impact on the proportion of national income spent on pensions of increases in labour force participation rates of people of working age. This is small because most of the impact of greater participation is reflected in the GDP. The residual change in projected spending, which is mainly due to the interaction of the different factors, is also small. These are not discussed in detail here.

Figure 5. Public pension spending in 2007 and projected level in 2060 for 28 European countries (per cent of GDP). *Source:* European Commission (2009).

The coverage ratio effect is the second factor in the breakdown. The coverage ratio is the number of people receiving a pension relative to the number of people aged 65 and above in the population. Currently, there is about 1.5 times as many pensioners as there are above 65 on average in the 28 countries. The highest figures are mainly in central and Eastern Europe: between 1.8 and 2 times in the Czech and Slovak Republics, Hungary and Poland, for example. In the period up to 2060, the coverage ratio is expected to fall in 26 out of 28 countries to an average of 1.25 pensioners per person aged above 65 years. The major reason for this projected decline is pension reform – increases in early and normal pension ages and tighter conditions for early retirement. The reduction in pension spending due to a smaller number of pensioners relative to the older population will have the largest effect in Poland as shown in the chart. Spending is expected to be around 5 per cent of GDP lower due to the coverage ratio effect (holding other things constant) in Denmark, Hungary and Romania.

The other significant determinant of the change in pension spending is most closely linked to reform – the ratio of the average public pension benefit to GDP per hour of work (designed to proxy economy wide earnings). On average, changes in the benefit ratio are expected to reduce pension spending by 1.8 per cent of GDP in 2060. Of the eight countries where the change in the benefit ratio is predicted to have the largest impact, it is unsurprising that four of them – Estonia, Latvia, Poland and Sweden – have introduced individual pension accounts as a substitute for part of public pensions. The benefit ratio will fall by 40–50 per cent by 2060 in these four countries as people's retirement incomes increasingly come from private pensions. The result is to reduce public pension spending by an average of 4.6 per cent of GDP, holding other

things constant. Similar falls are also predicted as a result of parametric reforms in Austria, France, Italy and Portugal, as would be expected from the analysis of replacement rates and pension wealth in the previous section. The projections for just five countries show an increase in the benefit ratio: Cyprus, Greece, Ireland, Romania and the United Kingdom.

Conclusions

Pension policy is often challenging because it involves long-term decisions in the face of numerous short-term political pressures. Pension reform is also highly controversial, sometimes prompting demonstrations or even riots. There is, therefore, a natural tendency to postpone necessary reforms or leave problems for the next government to tackle. However, there has been a wave of change in pension systems around the world. This paper summarised the changes in 38 industrialised countries – members of the OECD, the EU or both.

The reforms, like pension systems themselves, have had many diverse and complex features. Some of them have involved highly visible changes; more than half of countries have or plan to increase normal pension age to 65 years or beyond. Others are more technical, such as changes in the way that benefits are calculated, that may be less visible but still can have a profound impact on pension entitlements. Many countries have changed indexation of pensions in payment, so that increases in benefits are smaller than in the past. Some reforms have involved systemic change; most notably, 12 countries have introduced mandatory defined contribution plans as a top-up to or a substitute for public pension provision. In other cases, reform was parametric, involving changes to rather than of the retirement income system.

Nevertheless, the trend to a smaller pension promise for workers entering the labour market is clear. Lifetime pension benefits will be lower in 18 out of 20 countries for which entitlements were modelled. The average reduction in benefits is 22 per cent for men and 23 per cent for women. Such changes were necessary to improve the long-term financial position of pension systems as schemes mature and populations are ageing. Pension reforms will cut projected spending in 2060 by 4.4 per cent of GDP, according to the European Commission.¹⁹ This is around half the forecast increase in pension spending due to demographic pressures, which averages 9.1 per cent of GDP.

Despite the scale of changes, the pension reform agenda is not finished.

- First, the pension systems of some countries, such as Greece, Luxembourg, Slovenia and Spain, still appear in need of a fundamental overhaul.
- Second, in other cases – such as Austria, Ireland, Norway and the United States – the reform process has stalled. In Italy, increases in the pension age and benefit reduction to reflect increased life expectancy have been postponed. In the Slovak Republic, reform has gone into reverse. Moreover, some pension reforms are being phased in too slowly, running the risk that drastic, *ad hoc* changes might

¹⁹ European Commission (2009).

be necessary that could perversely cause more hardship than faster change. This is the case in Austria, Italy, Mexico and Turkey, for example.

- Third, many cuts in public pensions have been predicated on people saving for their own retirement through voluntary retirement savings plans. However, many countries run the risk that many workers will save too little and for too short a period to ensure an adequate income in old age.
- Fourth, too many pension systems still encourage early retirement.
- Finally, there will be reduced pension entitlements for low earners in countries with across the board benefit cuts, such as Germany and Japan, and those that moved to a stronger pension earnings link, such as Poland and the Slovak Republic. These changes run the risk that low earners and people with broken work histories may fall into poverty in old age.

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