

Chapter 1

The changing pensions landscape: The growing importance of pension arrangements in which assets back pension benefits

The pensions landscape has changed in recent decades. All OECD countries have to varying degrees a combination of different pension arrangements to provide retirement income. This chapter first suggests a means for understanding and differentiating between the characteristics of different pension arrangements. Then, focusing on those pension arrangements in which assets back pension benefits, the chapter documents their growing importance over the last 15 years. The growth of pension arrangements in which pension benefits are linked to the amount of assets accumulated is also highlighted. Given these trends, the chapter discusses the advantages and disadvantages of defined benefit and defined contribution pension arrangements and ends with the main OECD policy messages.

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

The landscape of pension arrangements across OECD countries has changed substantially in recent decades. On the one hand, fiscal sustainability problems in public pension arrangements have led to a series of reforms that have reduced the benefits they provide.¹ On the other hand, pension arrangements in which contributions are used to build assets to finance future pension benefits have grown in importance. Simultaneously, there has been an increase in the importance of pension arrangements in which individuals bear most of the risks linked to saving for retirement (e.g. longevity, investment) as opposed to pension arrangements in which the employer or the State bear the risks associated with pension promises.

The purpose of this chapter is to assess this changing landscape and present the OECD's main pension policy messages. This first requires understanding the different types of pension arrangements and their distinguishing characteristics. Secondly, given the increased importance of pension arrangements in which assets back pension benefits, the chapter then focuses on those arrangements and documents its evolution over time.

The chapter first discusses several characteristics of the different types of pension arrangements that can be used to distinguish among them and understand them. It highlights that all countries have to varying degrees a combination of different arrangements to provide retirement income. The chapter then presents empirical evidence of the growing importance of pension arrangements in which assets back pension benefits over the last 15 years for OECD countries, including the split between defined benefit and defined contribution pension arrangements. It then discusses the advantages and disadvantages of DB and DC pension arrangements. The chapter ends with the main OECD pension policy messages.

1.1. Pension arrangements across OECD countries

This section discusses the characteristics that distinguish the different types of pension arrangements and that can be used to understand them. It also provides evidence on the growing importance of pension arrangements in which assets back pension benefits across OECD countries.

Characteristics to distinguish different types of pension arrangements

Different types of pension arrangements have different characteristics.² These characteristics allow one to understand and distinguish among them. Pension arrangements differ according to:

1. Whether they are mandatory or voluntary
2. How pension benefits are financed
3. Who manages the pension arrangement
4. The role of the employer in those pension arrangements
5. The link between pension contributions and pension benefits.
6. Who bears the risks

Whether the pension arrangement is mandatory or voluntary

Pension arrangements can be mandatory or voluntary for different parties: the provider, the employer and/or for members. They can be mandatory or voluntary with respect to participation, contributions, and setting up the plan. Pension arrangements provided by the State (e.g. public pensions, social security) are generally mandatory for workers. Pension plans in which employers automatically enrol their employees are generally mandatory for the employer but voluntary for employees (e.g. New Zealand, the United Kingdom). Arrangements based on individual accounts can also be mandatory for individuals (e.g. Chile, Sweden) or voluntary (e.g. Riester in Germany, KiwiSaver in New Zealand). Contributions can be voluntary for the individual but mandatory for the employer (e.g. Australia). Pension arrangements that people can contract out with insurance companies or banks are generally voluntary.

How pension benefits are financed

Pension arrangements also differ on whether pension benefits are financed using current contributions or assets accumulated. The former are referred to as pay-as-you-go (PAYG) pension arrangements, and the later as funded pension arrangements.

Who manages the pension arrangement

The public sector or the private sector can manage different types of pension arrangements. Those managed by the public sector (public pensions or social security) are generally PAYG and mandatory. Pension arrangements managed by the private sector are generally funded, and they may be either mandatory or voluntary. Pension arrangements for public sector employees sometimes have assets backing pension payments (e.g. the United Kingdom and the United States) or they are PAYG (e.g. most European countries).³

It is also important to consider the institutional framework. Private pension arrangements can be structured to leave more choice and decision-making to individuals or can be structured around large scale multi-employer platforms or schemes that may allow them to take advantage of economies of scale. Institutional frameworks structured around more individual choice can also rely on collective platforms.

The role of the employer

The role of the employer in setting up pension arrangements is a distinguishing feature, especially for pension arrangements managed by the private sector. Traditionally, pension arrangements are split between occupational and personal. Occupational pension arrangements are those in which the access point is through the employer, who sets up the pension plan and has an influence on its design. Occupational pension arrangements include employer-sponsored plans and plans where employers are responsible for making up any shortfall in the plan's ability to pay benefits. Personal plans are all other types of pension arrangements.⁴

Personal plans include pension arrangements which are linked to an employment or professional activity but the employer only plays an administrative role (e.g. record keeping, collection of contributions). Such arrangements can be the main source individuals have to finance retirement, and can be either mandatory (e.g. in Chile and Mexico) or voluntary (e.g. KiwiSaver in New Zealand). Personal pension arrangements also include all those arrangements in which the employer plays no role.

The link between pension contributions and pension benefits

Pension arrangements can also differ on how pension benefits are determined. Pension benefits can be determined according to a formula such as defined benefit (DB) pension arrangements in which benefits are calculated with respect to the number of contributing years and salary. Alternatively, there are pension arrangements in which there is a close link between pension contributions and pension benefits such as in defined contribution (DC) pension arrangements in which benefits depend on the level of assets accumulated.

The “hard” pension benefit guarantees involved in traditional final-salary DB pension arrangements have been changing into soft guarantees (e.g. defined ambition) in which risks (e.g. longevity, investment, benefit shortfalls) are shared between different stakeholders – members, employers, providers.

Who bears the risks

Finally, pension arrangements also differ on who bears the risks involved in saving for retirement – e.g. longevity, investment – and who has to make up for any pension benefit shortfall. The employer (the State when it is the employer) bears the risks in employer-sponsored DB plans. Pension providers bear the risks in pension arrangements in which benefits depend on assets accumulated and include guarantees. Individuals bear the risks in pure DC pension arrangements. Finally, the tax-payer bears those risks that affect financing retirement in PAYG public pensions or Social Security.

Pension arrangements across OECD countries

All OECD countries exhibit a combination of the different types of pension arrangements. They all have voluntary and mandatory pension arrangements; PAYG and funded pensions; public and private management; occupational and personal plans; DB and DC promises. What changes is the weight of each component in overall total retirement income.

All countries have non-contributory public pension arrangements as part of the old-age safety net – social assistance or universal pensions. These can be means-tested, universal, or targeted to certain groups. Contributions to public pension arrangements are sometimes used to finance non-contributory pensions. The OECD recommendation since the 1990s has been to finance non-contributory pensions fully out of general taxation (OECD, 1998).

Most countries have a contributory component PAYG-financed public pension, in which current pensions are financed with the current workers’ contributions. In exchange people contributing today accumulate future pension rights. Some countries (e.g. France, Spain and the United States) have been accumulating surpluses in contributory pensions (current contributions are greater than current pension benefit disbursements) in an earmarked fund (e.g. Social Security or public pension reserve funds) in order to finance future needs when contributions will be lower than pension payments.

All OECD countries have funded pensions in which assets back pension benefits. They can be mandatory or voluntary, occupational or personal, DB or DC, and the employer may or may not guarantee, fully or partially, any shortfalls between promises and the value of assets backing those promises. Occupational defined benefit plans are either mandatory (e.g. Korea, the Netherlands) or voluntary (e.g. Canada, Germany, Japan, the United Kingdom and the United States). Occupational defined contribution plans are either mandatory (e.g. Australia;

Hong Kong, China; Korea, Singapore; Sweden and Turkey), voluntary (e.g. Canada, France, Germany, Japan, Poland, the Slovak Republic and the United States), or auto-enrolment (e.g. Italy, New Zealand, the United Kingdom and the United States). Personal plans can be mandatory (e.g. Chile, Mexico) or voluntary (e.g. Czech Republic, KiwiSaver in New Zealand and IRAs in the United States). All countries have voluntary funded personal pension plans.

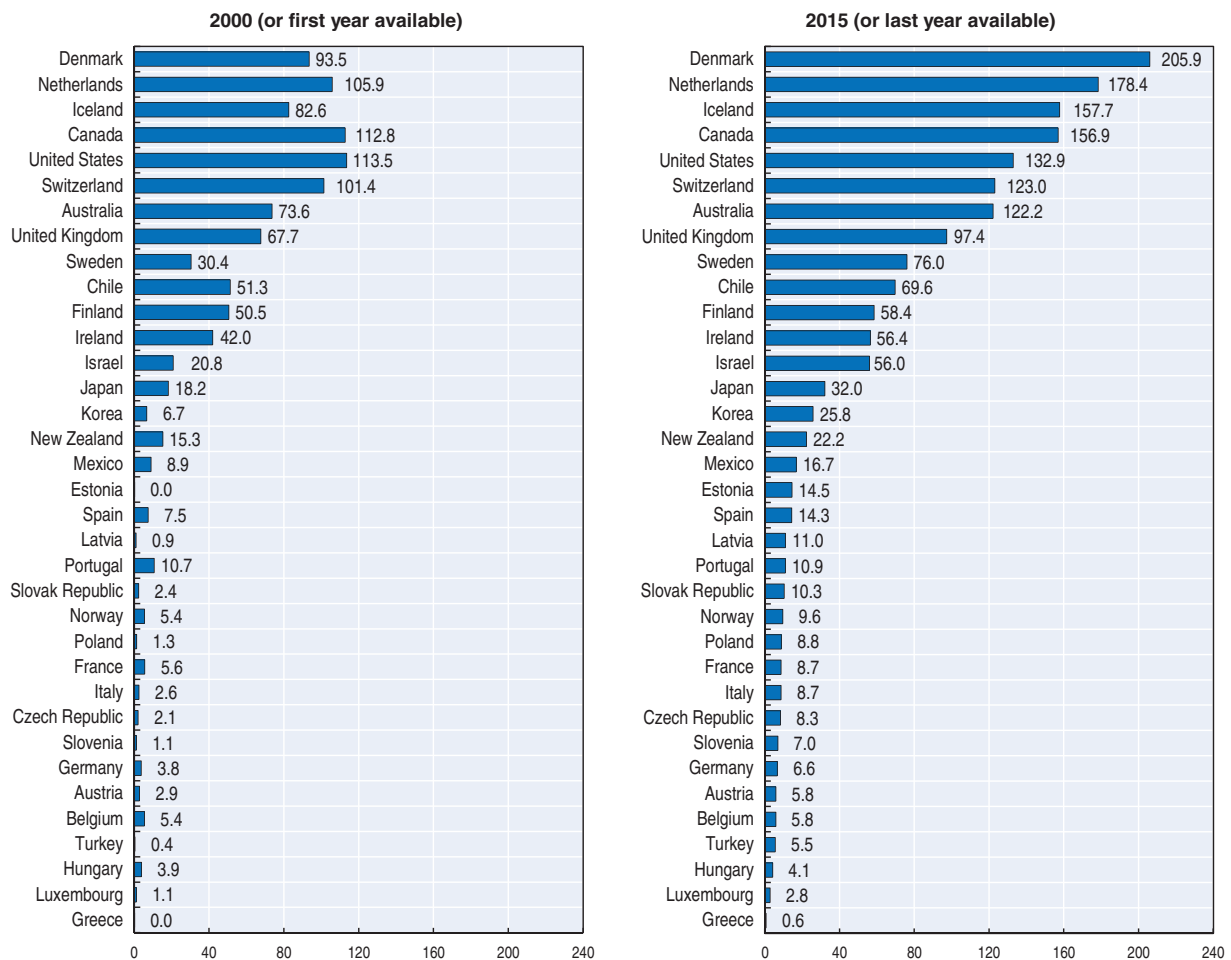
While all countries have asset backed pension arrangements in one or another form, their coverage and their importance vary substantially from one jurisdiction to another.

Trends in funded pension arrangements

The role of funded private pension arrangements in which assets back pension benefits is quite significant in several OECD countries and has been growing over time. Figure 1.1 shows the importance of funded pension arrangements by looking at the ratio of total assets accumulated in private funded pension arrangements relative to the size of their respective economy.

Figure 1.1. **The growing importance of funded pension arrangements**

(Total assets as a % of GDP in OECD Countries, 2000-15)



Notes: The data appendix in Annex 1.A2 provides specifics details on the data for each country. Please refer also to the OECD Pension Markets in Focus 2016.

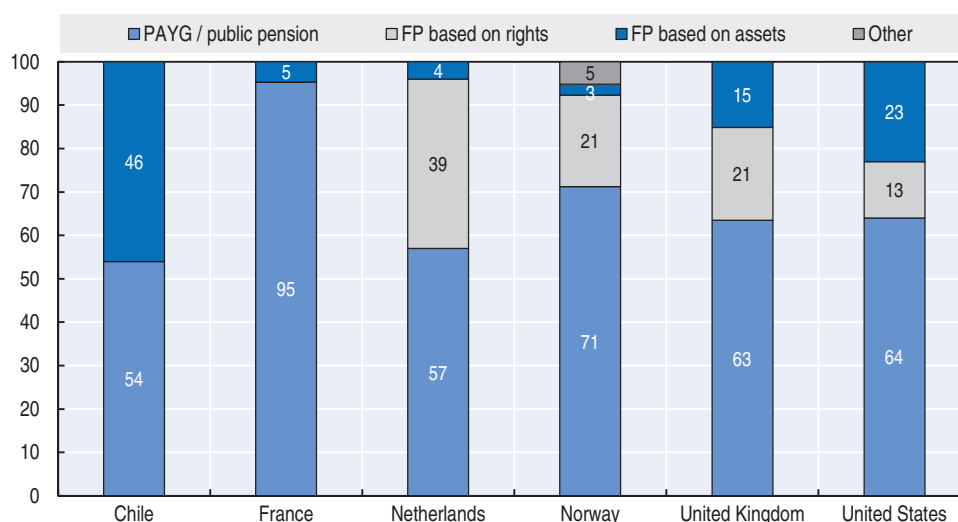
Source: OECD Global Pensions Statistics.

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The ratio of assets to GDP in funded private pensions has increased in all OECD countries in the period from 2000 to 2015. Assets in funded pension arrangements were more than 50% of GDP in 10 OECD countries in the early 2000s and in 13 countries at the end of 2015. The number of countries where assets in funded private pension arrangements represent more than 100% of GDP has increased from 4 to 7 OECD countries over the last 15 years.

However, this is not a full picture of the potential role of funded pension arrangements. The current situation as regards accumulated pension savings is a function of past policies and it does not capture the long term effects of recent reforms and current policies. Some countries will experience further increases in pension savings over coming decades due to the maturation of relatively recent savings programs, increased coverage and/or increased contribution rates. Figure 1.2 supplements the information in Figure 1.1 by providing an assessment of the future retirement income mix in the first year of retirement for current workers aged 35 to 64 in 6 OECD countries. By doing so, the figure illustrates the potential role of funded private pensions in the retirement readiness of working-age individuals in these selected OECD countries (OECD, 2014a).

Figure 1.2. **Average composition of potential pension income at retirement**
As a % of total pension income



Notes: FP stands for funded pensions.

Source: OECD Pensions Outlook 2014, Chapter 3.

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The importance of funded private pensions in the overall retirement income will also vary across different countries. In countries such as Chile, the Netherlands, the United Kingdom and the United States, funded private pension arrangements will be an important complementary component in the retirement income of individuals.

1.2. Defined benefit and defined contribution pension arrangements

The increasing importance of funded private pension arrangements across OECD countries has been accompanied by the growth of DC pension arrangements. This section looks at the evolution of DB and DC pension arrangements and discusses the potential advantages and disadvantages of each.

Evolution of DB and DC pension arrangements

Changes in the amount of assets and members in DB and DC pension arrangements provide evidence of their evolution and shifting relative importance. The analysis herein considers all types of pension plans (mandatory or voluntary, occupational or personal) irrespective of the pension plan provider (pension funds, insurance companies, employers or other providers). The analysis also covers plans for both public sector and private sector workers as long as they are funded. It uses the data contained in the OECD Global Pension Statistics to assess the evolution of DB and DC plans.⁵ The definitions of occupational and personal, DB and DC plans used are those of the official OECD taxonomy (see the data appendix).⁶ Finally, the analysis extends the coverage of previous studies on the subject to include more OECD countries and it uses data from 2000 to 2015.⁷

Data on assets and members in DB and DC plans from 2000 to 2015 confirm the increasing prominence of DC plans in many OECD countries. To the extent new schemes have been introduced in recent decades, they have almost entirely been DC schemes and in some countries the contribution rates applied in existing DC schemes (e.g. Australia and Denmark) have increased. In some countries where DB plans have been running for several decades (e.g. the Netherlands and the United States), the total value of assets in DB plans continues to grow but at a slower pace than assets in DC plans. This increasing importance of DC oriented pension arrangements follows different paths depending on the country. For instance, DB pension arrangements can sometimes be closed to all members and assets in DB plans can stop accruing; or they can just be closed to new members. Legislative reforms replacing DB with DC arrangements for new members have encouraged a rapid transformation of the pension system in some countries.

DB plans in 2015

Occupational DB arrangements still represented a significant part of the pensions landscape in the OECD in 2015, especially in terms of assets. Table 1.1 provides an overview of the aggregated values of assets and members in 2015 in occupational DB, occupational DC and personal plans.

DB plans were present in most OECD countries in 2015. In 2015, 26 OECD countries had assets and members in DB funded pension arrangements. Nine countries mostly from Eastern and Central Europe had no DB funded pension arrangements – Chile, the Czech Republic, Estonia, Greece, Hungary, Latvia, Poland, the Slovak Republic and Slovenia. Most of these countries introduced funded pension arrangements recently and DC only. In some other countries the coverage and overall importance of DB funded pension arrangements is limited (e.g. Denmark, France, Italy, New Zealand).


Assets in occupational DB plans still exceeded those of occupational DC plans in 2015 in most countries with DB plans. The split of assets in occupational pension plans between DB and DC plans was available for 22 of the 26 countries with DB plans in 2015 (Table 1). Assets in DB plans in these countries amounted to USD 13.1 trillion, while assets in occupational DC plans were worth USD 7.9 trillion. The difference is largely accounted for by the United States and the United Kingdom. Private pension funds, state and local government employee retirement funds and federal government retirement funds in the United States held more assets in DB plans than in DC plans which include the 401(k) plans. Occupational registered pension plans in Canada also recorded a bigger amount of DB assets than DC assets in 2015.

Table 1.1. **Private pension assets and members by type of pension plan in the OECD, in 2015**

	Assets (in USD m.)			Members (in thousands)		
	Occupational DB plans	Occupational DC plans	Personal plans	Occupational DB plans	Occupational DC plans	Personal plans
Australia	142 946	452 893	887 106	..	..	14 809
Austria	..	..	..	..	..	..
Belgium	23 554	4 735	..	568	909	..
Canada	1 338 469	105 092	804 983	5 160	1 097	5 974
Chile	x	..	154 711	x	..	10 811
Czech Republic	x	x	15 028	x	x	4 803
Denmark	8 759	523 632	66 184	15	4 783	812
Estonia	x	x	3 226	x	x	677
Finland	118 783	786	13 336	..	..	..
France	39 008	164 339	23 025	884	10 689	2 614
Germany	218 473	x	..	9 318	x	..
Greece	x	1 236	..	x	112	..
Hungary	x	..	4 819	x	..	1 209
Iceland	6 049	16 750	3 851	189	880	239
Ireland	78 169	47 903	5 674	126	282	..
Israel	108 906	x	56 322	790	x	4 475
Italy	10 236	101 606	43 145	160	3 448	4 090
Japan	..	..	..	..	..	..
Korea	74 703	34 170	234 443	3 735	2 467	17 355
Latvia	x	67	2 849	x	13	1 497
Luxembourg	1 275	215	..	11	4	..
Mexico	26 587	1 678	147 675	1 131	263	47 784
Netherlands	..	..	..	5 110	355	..
New Zealand	6 984	10 141	22 663	99	165	2 422
Norway	34 210	..	..	5 209	..	1 155
Poland	x	2 736	37 734	x	393	17 988
Portugal	16 295	2 984	2 009	187	149	297
Slovak Republic	x	x	8 750	x	x	2 079
Slovenia	x	..	..	x	..	..
Spain	69 923	9 795	88 327	8 440	1 662	9 249
Sweden	56 633	157 369	116 446	..	..	7 619
Switzerland	793 201	x	..	4 923	x	..
Turkey	19 431	1 880	15 886	1 081	550	5 568
United Kingdom	1 923 951	49 850	..	10 973	6 931	..
United States	7 985 785	6 263 961	9 604 933	72 577	95 379	52 392

Note: "x" means not applicable; ".." means not available. The table shows the aggregate amount of assets (in USD millions) and members (in thousands) of occupational DB, occupational DC and personal plans in 2015 (or the latest year available). In some countries, individuals may be members of several pension plans (e.g. in Australia, Canada, Iceland, Italy, Korea, or Norway). The aggregated number of members may therefore include the same individuals several times, and cannot be used to calculate a coverage ratio. For specific detail on the data for each country, please refer to the appendix in Annex 1.A2.

Source: OECD Global Pension Statistics and national sources.

StatLink  <http://dx.doi.org/10.1787/888933430319>

However, assets in occupational DC plans together with those in personal plans exceeded assets in DB plans in most reporting countries. In the United States, assets in personal plans (mainly IRAs) were higher than those in DB plans. Only in Canada, Finland, Ireland, Israel, Portugal and Turkey DB plans represented more than 50% of the total reported assets of the funded pension system in 2015.

Occupational DB plans also have more members than occupational DC plans in several reporting countries. The number of members by type of plan is not available for as

many countries as the breakdown of assets. However, available data show that there were more members in occupational DB plans than in occupational DC plans in at least nine OECD countries, namely Canada, Korea, Luxembourg, Mexico, the Netherlands, Portugal, Spain, Turkey and the United Kingdom.

The decline in the importance of DB plans, 2000-15

The amount of assets in DC pension arrangements and the number of people with DC accounts have grown by more than the amount of assets and the number of members in DB pensions in several OECD countries. Indeed, Figure 1.3 shows that assets and/or members in DC plans have grown in the period from 2000 to 2015 in 10 out of 16 OECD countries with assets representing more than 15% of GDP, for which the OECD GPS data are available.

The amount of assets in DB pension arrangements and the number of people in DB plans have evolved differently in different countries. Assets in DB plans either experienced a decline (Israel), remained broadly constant while assets increased in DC plans (Australia, Iceland, Mexico and Sweden); or increased but at a slower pace than assets in DC plans (e.g. the Netherlands, New Zealand and the United States).⁸ Canada and Switzerland have both experienced an increase in assets in DB and in the case of Canada an increase that outpaced that of occupational DC pension arrangements.

The number of people with DB pension arrangements has decreased as well and this trend is more prevalent than the decrease in assets. Only Switzerland experienced a sizeable increase in members in DB pension arrangements over the period 2000-15, members in DB arrangements in Canada and the United States also increased but at a slower pace. All countries in Figure 1.3 but Canada experienced a larger increase in members of DC pension arrangements.

Potential reasons behind the different evolution of DB pension arrangements in OECD countries

The growing importance of DC pension arrangements and the relative decline in some countries of DB arrangements can be attributed to various factors. These include the challenges that DB plan sponsors face in partially or fully covering any shortfall between pension liabilities and pension assets, and the impact of legislative reforms in speeding up the closure of DB arrangements and encouraging savings in DC arrangements. Flexibility in adjusting sponsors' requirements regarding DB arrangements may explain why certain countries have not experienced a similar relative decline in DB arrangements (e.g. Canada, the Netherlands and Switzerland).

Challenges for DB plan sponsors that may lead to the closing of DB plans

Employers that sponsor DB plans are responsible for ensuring their funding. Therefore, employers are exposed to all the risks that can lead to either a reduction in the assets of the plan or an increase in its liabilities. These risks include investment risk, risks related to falling interest rates, and longevity risk.

Employers bear the investment or market risk in DB plans. If investments by DB plans perform poorly, as was the case of equities during the financial crisis, investment income may be lower than expected. A financial market downturn can therefore reduce the amount of assets held in DB plans. The 2008 financial crisis led to a decrease in the total amount of assets held in pension plans and deteriorated the funding of DB pension plans (OECD, 2015a).

Figure 1.3. Evolution of DB and DC pension arrangements in OECD countries according to assets (millions national currency) and members (thousands)

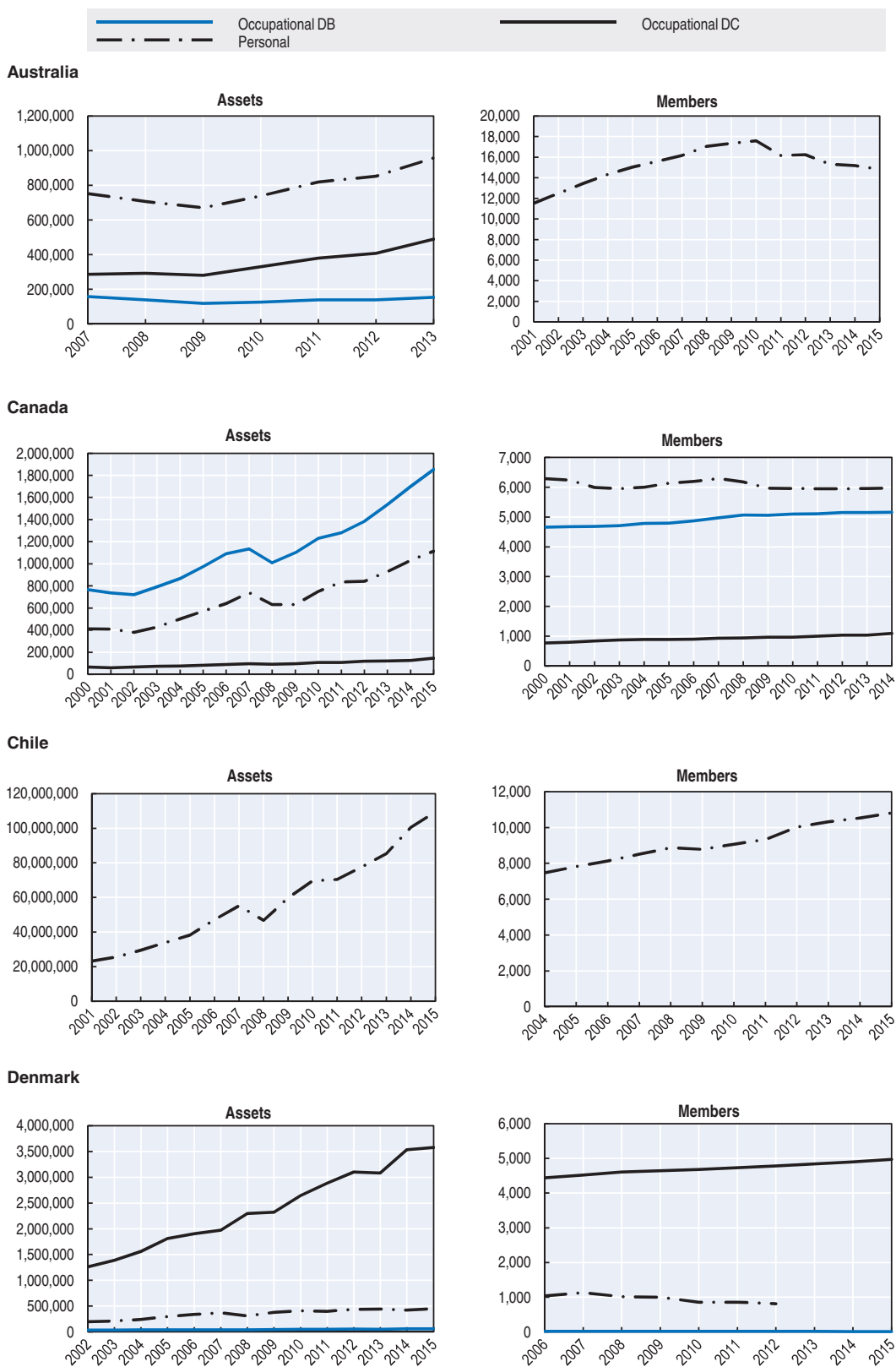


Figure 1.3. Evolution of DB and DC pension arrangements in OECD countries according to assets (millions national currency) and members (thousands) (cont.)

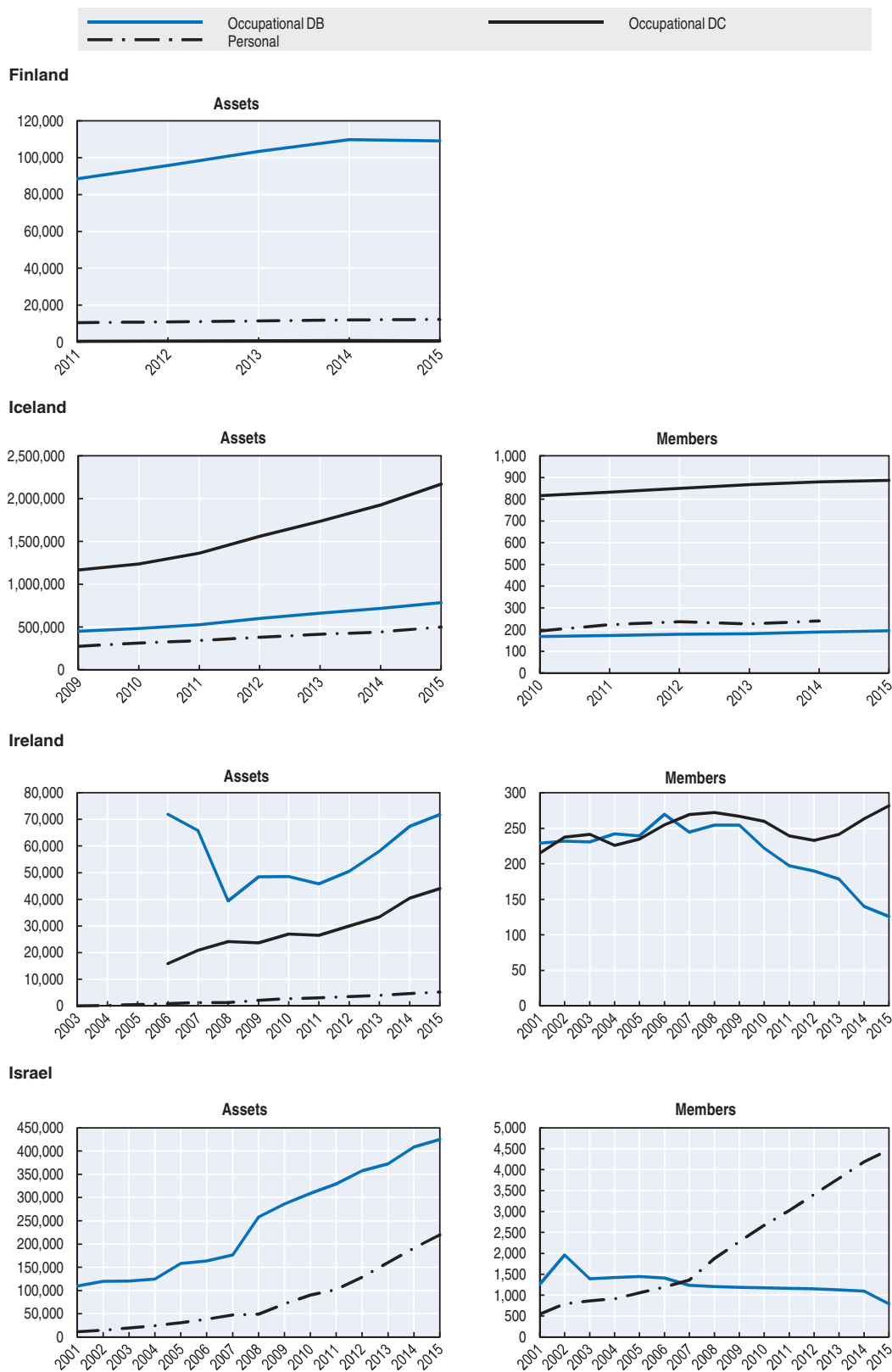


Figure 1.3. Evolution of DB and DC pension arrangements in OECD countries according to assets (millions national currency) and members (thousands) (cont.)

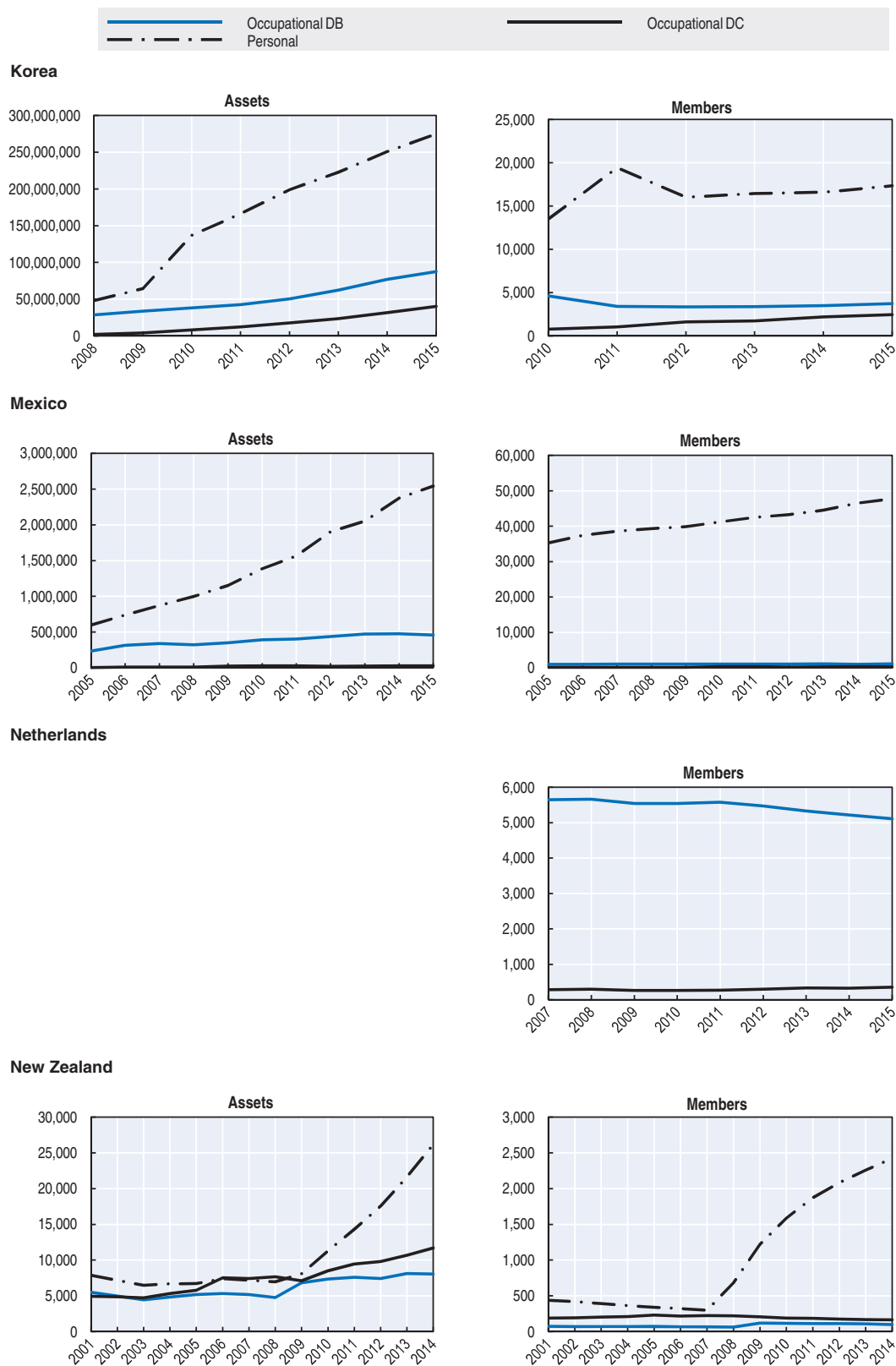
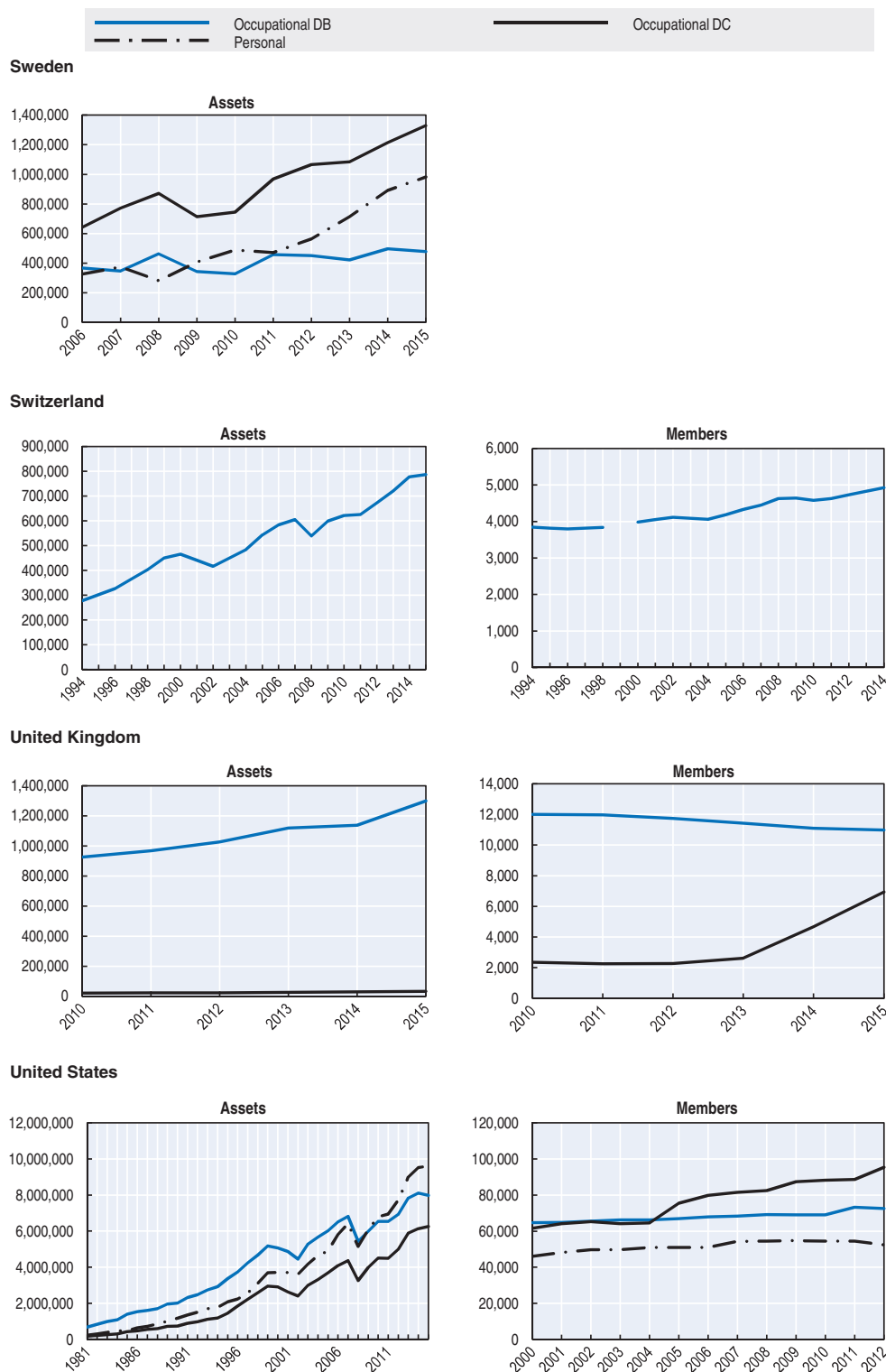



Figure 1.3. **Evolution of DB and DC pension arrangements in OECD countries according to assets (millions national currency) and members (thousands)** (cont.)



Note: This figure only covers countries with total pension assets above 15% of GDP in 2015. For specific detail on the data for each country, please refer to the data appendix in Annex 1.A2.

Source: OECD Global Pension Statistics and other national sources.

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The low and falling level of interest rates is another risk for pension funds and DB plan sponsors. This risk can impact both the assets and the liabilities of pension plans. Interest rates have fallen over the recent years in several countries, such as the Netherlands, the United Kingdom and the United States (OECD, 2015a). Low and falling interest rates mean that the long-term yields of bonds are low and decreasing. This may lead in the long-run to a decrease in the returns of investments of pension funds holding newly issued government bonds. The problem is compounded by the fact that declining interest rates increase the actuarial valuation of the liabilities of DB pension plans (Antolin et al., 2011).

Sponsors of DB plans are also exposed to longevity risk that can result in an increase of the plan's liabilities. Populations in the OECD are ageing and living longer (OECD, 2014a). If the age at which members can benefit from these plans is not postponed accordingly, DB plan assets will have to cover benefit payments for longer than initially accounted and planned for. Furthermore, if the increase in the life expectancy of plan members is underestimated, DB pension plans will experience an unexpected increase of their liabilities that may not be covered by the plans' assets. Pension funds may not use mortality tables which provision for a future increase in life expectancy or may underestimate this increase (OECD, 2014b). Pension funds are exposed to the longevity risk to the extent that the increase of life expectancy of current and future retirees is underestimated in these mortality tables.⁹

Minimum funding requirements in place and the rules prescribing the method for calculating funding levels are important for the protection of pension rights accrued to members. They determine the amount of additional contributions that employers will have to make in the event of a shortfall. In the United States, minimum funding requirements are in place for U.S. employer-sponsored plans. Qualified defined benefit pension plans are subject to funding rules under the Employee Retirement Income Security Act of 1974 (ERISA) and the Pension Protection Act of 2006 (PPA). Single-employer DB pension plans must be fully funded, meaning the assets must cover liabilities. The liabilities for funding purposes are called the funding target. It is calculated as the present value of all benefit liabilities accrued to date using certain assumptions prescribed by regulation. If a plan is underfunded, then the employer can amortize the shortfall over seven years (Yermo and Severinson, 2010). In Ireland, the current funding standard requires DB plans to provide a recovery plan if they are in deficit (OECD, 2014c).

In order to deal with the solvency problems of DB plans, employers have been moving to offering DC plans instead. This move can follow different paths. The transition from DB to DC plans can be done by a hard freeze, a soft freeze or a partial freeze of existing DB plans (Broadbent et al., 2006). In the case of a hard freeze, DB plans are closed to new workers and existing members are no longer allowed to accrue additional benefits. A soft freeze consists of closing DB plans to new workers only, with existing members continuing to accumulate rights. A partial freeze is implemented when the plan is closed to new entrants, and the formula for calculating future benefits for a subset of active members is modified in order to limit future benefit accruals. All these types of freezes have been observed in the United States. According to a survey carried out by the US Government Accountability Office in 2008 based on a sample of 471 single-employer plan sponsors (GAO, 2008), 23% of DB plans froze the benefits accruals of existing members and were closed to new entrants (hard freeze) while an additional 12% and 6% reported a soft and partial plan freeze respectively. In Ireland, the financial and economic crisis led some employers to freeze and wind up DB

schemes. The Pensions Board recorded that 164 DB plans were frozen and 58 in wind-up at the end of 2014 in Ireland (The Pensions Board, 2015). The Norwegian Financial Supervisory Authority also reports that employers tend to close down group DB occupational plans and convert them into DC.

Legislative reforms speed up the closure of DB pension arrangements and encourage savings in DC pension arrangements

The fastest decline in the share of DB pension arrangements has come from legislative reforms. At the same time that DB pension funds have been closed to new members, alternative DC pension arrangements have been created.¹⁰

Legislation has led to the closure of DB plans to new members in some OECD countries. Israel, Italy and Sweden have closed access to certain DB pension plans to new members. New members cannot join pre-existing pension funds in Israel since 1995, the pre-existing autonomous pension funds earmarked for specific sectors (e.g. the banking sector) in Italy since 1993, and the fund for white-collar workers (ITP) in Sweden since 2007. Old members of these DB plans continue to accumulate rights in Israel, Italy and Sweden.

Countries that have closed existing DB plans have generally created DC plans for new members. Israel, Italy and Sweden created new funds for new entrants at the same time as they prevented them from joining pre-existing DB funds. The whole population in Israel has been able to access DC plans in new pension funds since 1995. In Italy only some sectors offered DB pension arrangements before 1993. A legislative decree in 1993 introduced supplementary DC pension arrangements for all workers and closed existing DB plans to new members. Sweden split the ITP scheme for white-collar workers in 2007 into two schemes: a new scheme called ITP 1 (of DC type) and the old scheme called ITP 2 (of DB type). New entrants born before 1979 could not enter the DB fund for white-collar (ITP 2) after 2007, but they could join the new scheme ITP 1 of DC type.

Mandatory participation or automatic enrolment in DC plans can cause the number of members and the amount of assets increase faster in DC plans than in DB plans. Australia, Israel and Mexico chose to make participation in DC plans mandatory. Almost all the employees in Australia have had to be enrolled in a superannuation plan or a retirement savings account since 1992. All employers have to contribute on behalf of their employees older than 17 and earning more than AUD 450 a month. In Israel, in 2008, the pension reform made it mandatory to cover all workers that are not covered by collectively bargained pensions. In Mexico, the 1997 reform introduced a mandatory, funded individual account DC system for private sector workers in order to respond to demographic challenges and ensure the sustainability of pensions. In Italy and New Zealand, contribution to a pension plan is not mandatory but workers are automatically enrolled in a DC plan, with an opt-out option. Contributions of private sector workers to severance pay schemes (TFR) are automatically diverted to pension funds unless individuals opt out within a period of six months in the case of Italy (OECD, 2014a). The success of this reform was however limited. New Zealand also introduced automatic enrolment into a KiwiSaver scheme in July 2007. Employers must enrol new employees who then have 8 weeks to opt out. This may explain the increase in the significance of DC plans in New Zealand.

The decrease in the proportion of DB assets and members in the overall funded pension system can also be linked to the introduction of voluntary personal pension plans. Several countries created personal plans to increase private pension coverage or improve

the replacement rate: Riester plans in Germany (2002), Personal Retirement Savings Accounts (PRSA) in Ireland (2002-03), individual pension insurance account (IKZE) in Poland (2012), Individual Pension System (IPS) in Turkey (2003).

In some countries, opening DB pension arrangements has been made harder or less attractive. In France, since November 2010, an employer can open a DB pension insurance “Article 39” for some employees only if other DC plans (such as PERCO or article 83) are offered to all the other employees.

Flexibility in DB pension arrangements in countries with a high or non-decreasing share of DB arrangements

Countries like the Netherlands and Switzerland introduced flexibility within their DB arrangements to address the risks faced by employers. As a result and despite the trend in most countries towards DC plans, occupational pension plans in these two countries were still mostly DB in 2015. In Iceland, occupational DB plans covering only public sector workers also remained strong.

Employers in the Netherlands and Switzerland no longer bear alone the investment market risk and the inflation risk. In the Netherlands, the pension rights that individuals accrue are revalued every year to take into account inflation and wage growth. When a pension plan is underfunded, employers, employees and pensioners contribute to the recovery of the pension plan. The contribution amount and the indexation depend on the funding ratio of the plan. In Switzerland, if a DB plan is underfunded plan sponsors may have to provide additional contributions, but the responsibility for guaranteeing the solvency of the plan is within the pension fund itself.

Some countries have reformed DB pension arrangements to limit the risk of insolvency. One of these reforms is to change the formula used to calculate the benefits, like in Iceland. In Iceland where DB plans covering public sector employees are not declining, a reformed pension system was established from 1997 for state employees and 1999 for those employed by the municipal authorities. The old DB funds based on final pay were closed to new entrants. The new system which was introduced is still a DB system but the calculations of benefits are based on average salary, indexed with the CPI, instead of the final wage, but old members’ benefits are still calculated using final salary. This reform has led to an increase in funding rates for civil servant DB schemes; however, the funding ratio remains at only 58% in 2015.

In the Netherlands, there was a similar shift from final-pay DB pension arrangements to average-wage DB arrangements. DB pension arrangements were renegotiated, and many switched final-pay plans to average-wage plans (Bikker and Vlaar, 2006).

The Netherlands introduced a new financial assessment framework in 2015. Pension funds with a funding deficit must provide the pension supervisor with a ten-year recovery plan. However a transitional regime gives pension funds more time to reach a funding ratio that is at least equal to the required level in 2015 (12 years) and 2016 (11 years).¹¹

Advantages and disadvantages of DB and DC pension arrangements

DB pension arrangements also have advantages. The previous section has presented one of the main disadvantages of DB arrangements: the responsibility placed on plan sponsors, generally employers, to partially or fully cover any shortfall between the value of assets backing pension promises and the cost of fulfilling those promises.

The disadvantage of DB pension arrangements from the perspective of the plan sponsor is a major advantage from the point of view of the pension member. They know with some degree of certainty the amount of pension benefits they will receive at retirement and they may not need to worry about the solvency of the plan, as the employer is responsible for making the promise full.¹² The main advantage and the main disadvantage of DB arrangements are the two sides of the same coin.

Other important advantages of DB pension arrangements put forward include that employers also contribute to asset accumulation, assets in DB pension arrangements are better managed because of asset pooling and economies of scale, and DB pension funds are professionally run by pension and long-term investment experts. Although these arguments are important, they are not inherent advantages of DB arrangements but more the result of pension design (e.g. employers make contributions), and adequate regulation and governance. There is no impediment to DC pension arrangements including employers' contributions, pooling assets to take advantage of economies of scale, or being run by professional experts. Finally, it is also argued that DB pension arrangements allow for risk sharing among members. Risk sharing is more difficult in DC pension arrangements, but not impossible.

The actuarial parameters used to determine the promise in DB arrangements may not always materialise. As a result, the resources (e.g. assets) behind the pension promise may fall short. In this sense, those original pension promises have become generous and affect the solvency of the plan sponsor. For example, if life expectancy was assumed to increase at age 65 by half a year per decade but it instead increased by one year per decade in the last four decades, the promised pension benefits will have to be paid for 2 more years, even though contributions and assets were not accumulated to cover for those 2 extra years. Similarly, if returns turn out to be 50 basis points lower than assumed, assets accumulated over a 40-year period will be around 10-11% lower than planned. Generous pensions – whereby pensions benefit promises based on forecasted parameters are higher than those that would result from using actual realisations of those parameters – may then bankrupt the plan sponsor or employer.

DC pension arrangements have an important advantage in this respect as they provide a transparent and straightforward link between pension benefits and contributions. They therefore avoid the problem of generous pension benefits that derives from the difference between actual and projected actuarial parameters. In DC pension arrangements assets accumulated at the end of one's working life directly determine the amount of retirement income. Those assets at retirement are used to generate a stream of income (e.g. buying a life annuity). An additional advantage of DC pension arrangements is that they make labour mobility easier than DB arrangements because it is more straightforward to determine the amounts accumulated in DC pension accounts than it is in DB arrangements. Finally, members of DC pension arrangements can have a say on how their assets are invested.

The main disadvantage of DC pension plans is that all the risks of saving for retirement (e.g. financial risk, employment and wage risks) as well as the risks in retirement (e.g. longevity risk) are borne by the individual. Most individuals may not be able or prepared to assume those risks. In addition, individuals, whether they are prepared or not, have to make many important decisions such as how much to save, where to invest, when to retire, how to allocate the assets accumulated when retiring, without having the necessary tools or knowledge.¹³

There are other concerns associated with DC pension arrangements, for example adequacy, that may put them in a negative light. For example, most DC pension arrangements may not be able to deliver the level of retirement income that people may have come to expect to finance their retirement. This is not an inherent negative feature of DC pension arrangements, but stems from the fact that DC contributions tend to be low by design. Contributions in DB pension arrangements tend to be higher than in DC plans. Indeed, whether PAYG financed DB public pension arrangements or funded DB private arrangements, contribution rates are above 20% of wages (e.g. Denmark 13.5%, France 21.3%, Italy 33%, and the Netherlands 20.9%).¹⁴ Mandatory or default contribution rates in DC pension arrangements are much lower (e.g. 10% in Australia and Chile, 8.8% for private sector workers in Mexico, 6% in New Zealand). Nothing prevents DC pension arrangements from having higher contributions to increase the chances that they will deliver higher and more adequate pension benefits.¹⁵

The OECD, instead of prescribing specific pension arrangements, highlights the advantages and disadvantages of different pension arrangements to make sure that when policy makers make choices they are aware of the trade-offs they are incurring. The OECD has nevertheless a number of main pension policy messages.

1.3. Main OECD policy messages

The changes that have occurred in the pensions landscape are in line with the main pension policy messages that the OECD has put forward. The OECD has been working on pensions for more than two decades examining the different aspects of public and private, funded and PAYG financed pensions, as well as replacement rates, issues of coverage and pension policy in general (OECD 1998, OECD 2005b, OECD Pensions at a Glance, OECD Pensions Outlook). From this work, three main pension policy messages are:

1. Diversify the sources to finance retirement
2. Funded private pension arrangements are complementary to public pensions
3. Improve the design of DC pension plans

Diversify the sources to finance retirement

The OECD recommends combining PAYG financed pensions and pension arrangements in which assets back pension benefits, i.e. funded pensions. The analysis has shown that in the past decades there has been an increase in such pension arrangements. This increase has led to a greater diversification of the sources to finance retirement.

Diversification is important because the mechanisms through which shocks work into different pension arrangements vary. For example, population ageing has a different impact on PAYG and funded pension arrangements, or DB and DC pension arrangements. Population ageing may create fiscal sustainability problems for PAYG DB pension arrangements, solvency problems for funded DB arrangements, and adequacy problems for funded DC pension arrangements. Similarly, the environment of low interest rates and low economic growth affects funded private and PAYG public pension arrangements through different channels. Low interest rates increase the weight of pension liabilities in funded DB plans, it may lead to lower long-term accumulated assets in DC plans, and lower economic growth may affect the fiscal sustainability of public PAYG pension arrangements, especially if lower economic growth stems from lower employment.

The OECD also recommends separating the sources of financing for non-contributory and contributory public pensions. Countries should not use contributions to finance the safety net, social assistance, universal pensions or resident based basic pensions (i.e. non-contributory pensions). These should be fully financed through the budget, through taxes, while contributory public pensions should be financed with current contributions.

Regarding funded DB pension arrangements, the OECD has argued that in plans where the employer is fully or partially responsible for any gap between assets and pension promises, employers should cover this gap by for example increasing contributions, but some flexibility in applying funding and recovery plans should also exist to avoid bankrupting the employer (Antolin and Stewart, 2009).

Funded private pensions are complementary to public pensions

Funded private pension arrangements are complementary to public pensions and not a substitute. The growing importance of funded pension arrangements has been in general to complement PAYG-finance arrangements, becoming a component of overall retirement income.

They need to be designed taking into account the overall structure of the pension system in each jurisdiction. For example, retirement income and associated replacement rates in DC pensions should be higher in countries where they are the main source to finance retirement. In countries where PAYG-financed public pensions and DB funded pensions already provide high pension benefits, DC pension plans will only need to target a low replacement rate to achieve overall retirement income adequacy. Additionally, some degree of annuitization to provide protection from longevity risk should be in place in countries where DC pension arrangements are a main source to finance retirement.

Improve the design of DC pension plans

The growing importance of DC pension arrangements has led the OECD to assess their potential drawbacks and to incorporate these arrangements into the regulatory framework in order to protect members. As a result, the OECD has recently approved the new Core Principles of Private Pension Regulation, which extends the original Core Principles to all types of funded pension arrangements.¹⁶

In addition, the OECD Roadmap for the Good Design of DC Pension Plans, which has been endorsed and approved by pension regulators from OECD countries, in seeking to assist countries to strengthen retirement income adequacy in an environment of DC pension arrangements, makes the following recommendations:¹⁷

1. Ensure the design of DC pension plans is internally coherent between the accumulation and pay-out phases and with the overall pension system.
2. Encourage people to enrol, to contribute and contribute for long periods.
3. Improve the design of incentives to save for retirement, particularly where participation and contributions to DC pension plans are voluntary.
4. Promote low-cost retirement savings instruments.
5. Establish appropriate default investment strategies, while also providing choice between investment options with different risk profile and investment horizon.
6. Consider establishing default life-cycle investment strategies as a default option to protect people close to retirement against extreme negative outcomes.

7. For the pay-out phase, encourage annuitisation as a protection against longevity risk.
8. Promote the supply of annuities and cost-efficient competition in the annuity market.
9. Develop appropriate information and risk-hedging instruments to facilitate dealing with longevity risk.
10. Ensure effective communication and address financial illiteracy and lack of awareness.

This edition of the Pensions Outlook partially addresses some of the above recommendations. Chapter 2 examines the tax advantage provided by the tax treatment of retirement saving products relative to other saving vehicles. Chapter 3 focuses on financial advice and proposes several policy measures to address conflict of interest, minimise costs of providing financial advice in retirement and make sure that individuals receive quality financial advice for retirement that is appropriate for their needs (e.g. consumer protection). Chapter 4 examines the different types of annuity products that exist across OECD countries, and discusses their potential to play an important role in helping individuals to mitigate the investment and longevity risks they face in financing their retirement. Chapter 5 focuses on financial education and how to design it effectively for different types of pension arrangements. The final chapter of this volume will discuss the different pension arrangements that exist in some OECD countries between public sector and private sector workers.

Notes

1. Chapter 2 of the *OECD Pensions Outlook 2014* and various chapters in several editions of the *OECD Pensions at a Glance* publication document this.
2. This chapter uses the term “pension arrangements” to refer to both pension plans and pension schemes.
3. Chapter 6 of this volume discusses the differences in pension arrangements covering public and private sector employees across OECD countries.
4. Please see OECD (2005a). The OECD and its Working Party on Private Pensions where pension regulators from OECD and non-OECD countries sit, are currently discussing potential revisions to the OECD Classification of Private Pensions in recognition of the changing pensions landscape.
5. The OECD Global Pension Statistics collects harmonised data on funded private pensions in OECD, IOPS and non-OECD, non-IOPS World Bank countries. See www.oecd.org/finance/financial-markets/globalpensionstatistics.htm and www.oecd.org/daf/pensions/gps.
6. www.oecd.org/finance/private-pensions/38356329.pdf.
7. Annex 1.A1 provides a review of some of those studies.
8. Data on funded pensions are provided by the Central Bank of the Netherlands. They do not provide a split between DB and DC pension arrangements. However, Willis Towers Watson in its *Global Pension Assets Study 2016* provides a split between DB and DC plans in terms of assets. The weight of DB assets in the total has declined from 99% in 2000 to 95% in 2015.
9. See OECD (2014b) for an extensive analysis of the mortality assumptions used by pension funds and insurance companies in selected OECD countries.
10. The development of DC plans may also come from incentives created to encourage people to save more for retirement in personal plans.
11. See DNB Bulletin of 1 September 2015: “More Room for recovery in new supervisory framework for pension funds”.
12. In some countries there is also a Pension Protection Fund (e.g. the United Kingdom and the United States) that will partially fulfil the pension promise in case of bankruptcy of the plan sponsor.
13. Chapter 5 in this volume discusses some of these issues.
14. See tables 9.1 and 9.2 in OECD (2015b).

15. The OECD Roadmap for the Good Design of Defined Contribution Pension Plans recommends contributing more and for longer to address the adequacy problems that may arise in DC pension arrangements.
16. See www.oecd.org/finance/principles-private-pension-regulation.htm.
17. See www.oecd.org/pensions/designingfundedpensionplans.htm.

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ANNEX 1.A1

Research papers on the evolution of DB and DC plans

The research on the evolution of DB and DC plans concludes that DC plans have been expanding at the expense of DB plans in several large countries with long-dated DB plans such as the United Kingdom or the United States.

The conclusion draws on a selection of analytical work from various stakeholders. These stakeholders comprise central banks, academic research centres, and investment and consulting companies. Table 1.A1.1 lists the selected studies, the geographical coverage and scope of their analysis, the time period and the main results.

The four selected studies looked at similar indicators to analyse the evolution of DB and DC plans in some of the largest pension markets in terms of assets. Researchers have assessed this evolution in Australia, Canada, Ireland, Japan, the Netherlands, the United Kingdom and the United States. Depending on the data availability, they usually examined the evolution of assets, members or number of plans over a time period or at different points in time.

The type of plans considered in the different studies varies. Broadbent et al. (2006) only considered private sector pension plans covering private sector employees, excluding occupational funded DB plans covering public sector workers and personal plans. By contrast, Willis Towers Watson (2016) covered occupational pensions and individual savings, including Individual Retirement Accounts (IRAs) for the United States in their analysis.

Despite differences in scope, the studies reviewed found that the countries in their sample were experiencing a shift from DB to DC plans. All the studies examined the developments of the pension system in the United States and the United Kingdom. They all conclude that DC plan assets, members or schemes in the United States have been growing faster than those of DB plans since the 1980s. Three studies – Broadbent et al. (2006), Nakada and Arimori (2008), and Turner and Hughes (2008) – looked at the evolution of members in the United Kingdom and noticed a decrease in the number or in the proportion of members in occupational DB schemes. Willis Towers Watson (2016) showed the share of assets in DB plans in the funded pension system fell in Australia and the United Kingdom between 2010 and 2015 and in Canada, Japan, the Netherlands and the United States between 2005 and 2015.

Broadbent et al. (2006) compared the speed of the transition from DB to DC plans of Canada and the other countries. The authors considered that the shift towards DC plans in Canada was not as rapid in the United States. They concluded that a large transfer from DB to DC plans in Canada had not occurred yet at the time of their analysis in 2006.

Table 1.A1.1. Selection of studies analysing the shift from DB to DC plans

Study	Country	Scope	Indicators	Time period	Results
Broadbent et al. (2006)	Australia	Private sector plans	Assets	Mid-2005	The analysis provides the share of assets by type of plan as of mid-2005: 50% in DC, 4% in DB and 47% in combined DB/DC). The authors did not show the shift away from DB plans using numbers, but provided the factors accounting for the increasing prominence of DC plans
			Members	Mid-2005	The analysis provides the share of members by type of plan as of mid-2005: 66% in DC, 2% in DB and 32% in combined DB/DC). The authors did not show the shift away from DB plans using numbers, but provided the factors accounting for the increasing prominence of DC plans
	Canada	Private sector trustee pension plans, excluding occupational plans organised as insurance contracts	Members	1992, 2004	The share of DC plan members declined from 92.5% in 1992 to 77.1% in 2004, while the share of members of combined DB/DC plans increased from < 1% to 12% and the share of DC plan members from 6.8% to 7.6%.
			Companies providing a DB plan to new members	2000, 2003, 2006	Among 174 of Canadian companies sponsoring a DB plan, 49% provided a DB plan to new employees in 2000, 47% in 2003 and an expected 39% for 2006.
	United Kingdom	Private sector plans	Members	1995, 2005	Membership in private sector DB plans declined from 5.16 million in 1995 to 3.66 million in 2005, while numbers of DC plan members fell from 1.06 to 1.02 million in the same period of time.
United States ¹	Private sector plans	Assets	1985-2005	The share of assets of DB plans decreased from 65% in 1985 to 40% in 2005.	
Nakada and Arimori (2008)	Japan	Corporate pension plans	Number of plans	2006, 2007	The number of DC plans was 2 000 in September 2006, and reached 2 472 in September 2007.
		Corporate pension plans	Participants	2006, 2007	The number of DC members was more than 2 million in December 2006, and was about 2.5 million in September 2007.
	United Kingdom	Corporate pension plans	Members	1997-2005	The share of members of DB plans decreased from 46% in 1997 to 35% in 2005.
	United States	Corporate pension plans	Assets	1975-2004	The number of DC participants (excluding 401(k) plans) had been growing since 1975 and outstripped the number of DB participants in 1997.
		Corporate pension plans	Number of participants	1975-2004	The number of DC participants (excluding 401(k) plans) had been growing since 1975 and outstripped the number of DB participants in 1984.
Turner and Hughes (2008)	Canada	Private sector pension plans	Participants	1974-2004 (bi-annual data)	The percentage of private sector participants in DB plans in Canada decreased from 90.6% in 1974 to 74.2% in 2004.
			Coverage	1992-2006	The percentage of those at work covered by DB plans declined from 33.1% in 1992 to 26.9% in 2006, while the percentage of those at work covered by DC plans increased from 4.5% to 12.6%.
	Ireland	Occupational pension schemes	Number of schemes	1992, 2006	The number of DB schemes decreased from 2 560 in 1992 to 1 232 in 2006, while the number of DC schemes increased from 28 125 in 1992 to 92 075 in 2006.
			Number of members	1992, 2006	The number of DB members increased from 207 545 in 1992 to 269 529 in 2006, while the number of DC members increased from 52 786 in 1992 to 255 008 in 2006.

Table 1.A1.1. **Selection of studies analysing the shift from DB to DC plans (cont.)**

Study	Country	Scope	Indicators	Time period	Results
	United Kingdom	Occupational pension schemes	Active members	1987, 1991, 1995, 2000, 2005 and 2006	The number of DB active members amounted to 10.5 million in 1987, and 8.4 million in 2006. The number of DC active members amounted to 0.2 million in 1987, and 1.2 million in 2006.
		Occupational private sector schemes	Number of schemes	1991, 1995, 2005	The total number of DB private sector schemes was 37 285 in 1991, 37 980 in 1995 and 12 027 in 2005. The total number of DC private sector schemes was 90 715 in 1991, 113 020 in 1995 and 53 465 in 2005.
	United States	Occupational private pension plans	Number of plans	1975, 1980, 1985, 1990, 1995, 2000 and 2005	The number of DB plans reached a peak in 1985 (170 172 plans) and continuously declined down to 47 614 plans in 2005. The number of DC plans increased from 207 748 in 1975 to 631 481 in 2005.
		Occupational private pension plans	Participants	1975, 1980, 1985, 1990, 1995, 2000 and 2005	The number of DB plans members peaked at 30 100 thousand in 1980 and declined down to 20 310 thousand in 2005. The number of DC plan members increased from 11 217 thousand in 1975 to 62 355 thousand in 2005.
Willis Towers Watson (2016)	Australia	Occupational pension and individual savings	Assets	2000, 2005, 2015	The share of assets in DB plans was: 12% in 2005, 20% in 2010 and 13% in 2015.
	Canada	Occupational pension and individual savings	Assets	2000, 2005, 2015	The share of assets in DB plans was: 97% in 2005, 96% in 2010 and 95% in 2015.
	Japan	Occupational pension and individual savings	Assets	2000, 2005, 2015	The share of assets in DB plans was: 99% in 2005, 98% in 2010 and 96% in 2015.
	Netherlands	Occupational pension and individual savings	Assets	2000, 2005, 2015	The share of assets in DB plans was: 99% in 2005, 93% in 2010 and 95% in 2015.
	United Kingdom	Occupational pension and individual savings	Assets	2000, 2005, 2015	The share of assets in DB plans was: 67% in 2005, 74% in 2010 and 68% in 2015.
	United States	Occupational pension and individual savings	Assets	2000, 2005, 2015	The share of assets in DB plans was: 47% in 2005, 44% in 2010 and 40% in 2015.

1. The publication provides the amount of assets in individual retirement accounts (personal plans) in 1985 and 2004.

Source: OECD staff's selection of studies.

ANNEX 1.A2

Data appendix

Definitions

The OECD Classification and Glossary on Private Pensions (www.oecd.org/finance/private-pensions/38356329.pdf) first splits pension plans between occupational and personal, and then distinguishes between DB and DC plans within occupational plans.

The OECD taxonomy sets two criteria to consider a pension plan as occupational: access to the plan is linked to an employment relationship, and the employer is the one establishing the plan, in other words, the employer is the plan sponsor. Pension plans that individuals can join without any involvement of employers are considered personal.

Among occupational plans, DC plans are those in which the employer has no obligation to pay further contributions to an ongoing plan in the case of unfavourable plan experience. By contrast, in occupational DB plans, the employer has to pay further contributions if needed to ensure plan members will receive the promised benefits.

The OECD taxonomy identifies three types of DB plan. First, in traditional DB plans, benefits are linked through a formula to the members' wages or salaries, length of employment, or other factors. Secondly, hybrid plans are plans where benefits depend on a rate of return credited to contributions, where this rate of return is either specified in the plan rules, independently of the actual return on any supporting assets, or is calculated with reference to the actual return of any supporting assets and a minimum return guarantee specified in the plan rules. Finally, mixed DB plans are plans that have two separate DB and DC components but which are treated as part of the same plan.

The OECD taxonomy also breaks down occupational DC plans and personal plans into protected and unprotected. An unprotected DC plan is a plan where the pension plan/fund itself or the pension provider does not offer any investment return or benefit guarantees or promises covering the whole plan/fund. A protected pension plan is a plan other than an unprotected one.

Data

Data for personal plans in **Australia** do not include Retirement Savings Accounts. Data for assets refer to June 2001 instead of 2000, and to June 2013 instead of 2015.

Data on assets in 2000 for **Austria** refer to 2001 instead of 2000.

Data on assets in 2000 for **Belgium** refer to 2001 instead of 2000. The breakdown of assets and members between DB and DC plans comes from the website of the FSMA, and

refer to institutions for occupational retirement provision only. The numbers for assets and members by type of plans refer to 2014 instead of 2015.

Data on members for **Canada** come from Statistics Canada's website, and refer to active members.

Data on assets in 2000 for **Chile** refer to 2001 instead of 2000. Assets held in Collective Voluntary Pension Savings managed by the AFPs are classified together with personal plans, although these schemes are occupational.

Data on assets in 2000 for the **Czech Republic** refer to 2001 instead of 2000. The number of members refers to 2014 instead of 2015.

Data on assets in 2000 for **Denmark** refer to 2001 instead of 2000. Members of occupational DC plans in Denmark only refer to ATP members. The numbers of members refer to 2012 instead of 2015.

Data on assets in 2000 for **Estonia** refer to 2001 instead of 2000. Data on members refer to the mandatory funded pension system only.

Data on assets in 2000 for **Finland** refer to 2011 instead of 2000. The amount of pension-related assets in employers' book reserves is not available and consequently not reported under "Occupational DB plans".

Data on assets in 2000 for **France** refer to 2005 instead of 2000. Data on assets and members refer to 2014 instead of 2015.

Data for **Germany** refer only to Pensionskassen and Pensionsfonds.

Data on assets in 2000 for **Greece** refer to 2007 instead of 2000.

Data for **Hungary** refer to voluntary privately-managed pension funds and voluntary private pension funds only. Data on assets in 2000 refer to 2001 instead of 2000.

Data on assets in 2000 for **Iceland** refer to 2001 instead of 2000. The numbers of members refer to 2014 instead of 2015.

Data on assets in 2000 for **Ireland** refer to 2001 instead of 2000. Assets reported for personal pension plans do not include assets held in Retirement Annuity Contracts. Data on members only refer to active members.

Data for **Israel** refer to old, new and general pension funds only.

Data on assets in 2000 for **Italy** refer to 2001 instead of 2000.

Data on assets in 2000 for **Korea** refer to 2002 instead of 2000. Data do not include personal pension funds with no guaranteed yield.

Data on assets in 2000 for **Latvia** refer to 2004 instead of 2000.

Data on assets in 2000 for **Luxembourg** refer to 2005 instead of 2000. The breakdown of assets and members between DB and DC plans refers to pension plans under the supervision of Luxembourg Financial Supervisory Authority (CSSF) only.

Data on assets in 2000 for **Mexico** refer to 2005 instead of 2000.

Data on members for the **Netherlands** come from DNB and refer to actively contributing members in pension funds only.

Data on assets in 2000 for **New Zealand** refer to 2001 instead of 2000. Data on assets and members refer to 2014 instead of 2015.

Data on assets in 2000 for **Norway** refer to 2001 instead of 2000. Data on assets only refer to municipal and private pension funds. Data on members of occupational DB plans

refer to members of municipal pension funds, private pension funds and members having DB pension contracts held in life insurance companies.

Data for **Portugal** do not include collective and individual pension insurance contracts.

Data on assets in 2000 for the **Slovak Republic** refer to 2006 instead of 2000.

Data on assets in 2000 for **Slovenia** refer to 2003 instead of 2000.

Data on assets in 2000 for **Spain** refer to 2001 instead of 2000.

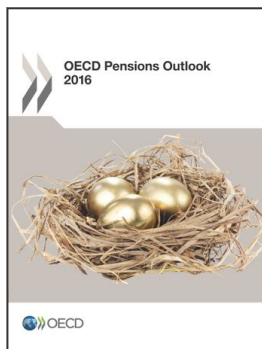
Data on assets in 2000 for **Sweden** refer to 2001 instead of 2000. The breakdown of assets and members between DB and DC plans does not include benevolent societies and pension foundations. Data for members refer to active members only and refer to 2014 instead of 2015.

The amount of assets for **Switzerland** is a preliminary estimate based on first trend calculations for the year 2015. Data for members refer to 2014 instead of 2015.

Data on assets in 2000 for **Turkey** refer to 2004 instead of 2000.

Data on assets in 2000 for the **United Kingdom** refer to 2001 instead of 2000. Data for occupational DB plans refer to PPF-eligible DB schemes and do not include funded public sector schemes, while data for occupational DC plans come from the Pensions Regulator and only refer to DC schemes with 12 or more members.

The number of members for the **United States** refers to 2012 instead of 2015.



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