

PENSION MARKETS IN FOCUS 2022

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Foreword

Pension Markets in Focus provides detailed and comparable statistics on retirement savings around the world. This annual statistical report contributes to the effort of making data on retirement savings available, as the [OECD Core Principles of Private Pension Regulation](#) advocates for, to enable regulators and stakeholders to evaluate the design and operation of pension systems relative to their goals. These statistics can support policy discussions through international comparisons and peer learning, and are the basis of policy recommendations in the OECD series of Pension Reviews. These statistics can also be helpful to private sector representatives, journalists, academics and anyone interested in funded pension systems.

This edition of the annual report provides an overview of retirement savings in around 90 jurisdictions and outlines the developments in the pension sector worldwide. The report exhibits an extensive range of indicators relevant to retirement savings, up to 2021, harmonised and standardised across jurisdictions. It monitors the key financial aspects, such as the amount of assets accumulated, the way these assets are invested and their investment performance, both over the past year and over the longer term, based on 20 years of data. The report also examines the proportion of the population covered by pension plans, the amount of contributions paid into these plans and the benefits that members receive at retirement. It shows the prominence and some specificities of the different pension plans that exist, in particular defined benefit and defined contribution pension plans.

The special feature in this year's edition looks into the potential impact of the war following Russia's invasion of Ukraine on the portfolios of pension providers in the OECD.

The data used to prepare this report have been collected from national authorities within the framework of the OECD's Global Pension Statistics project, initiated in 2002 by the OECD Working Party on Private Pensions. The OECD's partnership with the International Organisation of Pension Supervisors (IOPS) and the World Bank in more recent years has broadened the geographical coverage of this report well beyond the 38 OECD countries.

The OECD is grateful to the IOPS and the World Bank who helped in the data collection, and to national authorities for providing data and comments.

This report was prepared by Romain Despalins under the supervision of Pablo Antolin and Stéphanie Payet from the Private Pension Unit of the OECD Directorate for Financial and Enterprise Affairs. Eva Abbott and Liv Gudmundson provided editorial assistance.

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Main findings

Assets at end-2021

Over USD 60 trillion pension assets worldwide

Over USD 38 trillion are managed by pension funds

Pension assets amounted to **105% of total GDP** in the OECD area.

Drivers of the trends

More people have a pension plan than before in most jurisdictions

Contributions to pension plans increased in 2021, and on average over the last two decades

Benefits paid to retirees still limited in a number of countries that set funded pension plans recently

Average real investment rate of return in 2021:

3% in the OECD

-0.9% in 37 other jurisdictions

Average annual real **investment rate of return over the last 20 years: positive** in 16 out of 18 reporting jurisdictions

A shift away from bonds towards equities and other instruments over the past decades

Types of pension plans

Assets in defined contribution and personal plans are increasing faster than in Defined Benefit plans in most reporting countries

The funding of defined benefit plans improved in 2021, supported by financial gains and a decline in the net present value of pension obligations

Most countries cap some of the fees that pension providers can charge to members of Defined Contribution schemes

War in Ukraine

Less than 1% of total pension assets in the OECD were invested in **Russia** before the war

A larger impact on the financial performance of pension providers was through non-Russian assets, partly related to **declines in stock markets**

Indirect impacts through:

- ▶ Inflation
- ▶ Rising interest rates
- ▶ Lower GDP growth prospects

1 Overview of retirement savings at end-2021

The OECD, in co-operation with the International Organisation of Pension Supervisors (IOPS) and the World Bank, collects detailed statistics on retirement savings every year to monitor the latest developments in the funded and private components of pension systems. Monitoring pension systems closely is key to assessing their strengths and identifying the challenges they face in a timely manner. This monitoring requires detailed and up-to-date statistics. All jurisdictions track and follow the developments in their pension systems through regular data collection exercises. The OECD, the IOPS and the World Bank contribute to this monitoring endeavour by gathering and publishing up-to-date national statistics on funded and private pension plans, in a harmonised and comparable fashion, to the extent possible. The compilation of national statistics that follows aims at providing tools for cross-country comparisons.

This report covers all funded pension plans where assets accumulate to finance future benefit payments. These assets can accumulate in pension funds, through pension insurance contracts or in other vehicles. These plans can be administered by a public or private entity and can cover public or private-sector workers, the unemployed and even children in some jurisdictions. Employers' book reserves, which are private (unfunded) plans, are also included in this report. By contrast, reserves that some jurisdictions set aside to support the payments from public pay-as-you-go or unfunded schemes (such as Japan's Government Pension Investment Fund and Korea's National Pension Fund) are outside the scope of this report. Annex A describes the features of funded and private plans that are analysed hereafter in greater detail. This annex also specifies which types of plans exist in each reporting jurisdiction and whether data in this report cover these plans.

This section first describes the size and the evolution of retirement savings, focusing on the amount of assets in pension plans, the proportion of individuals covered by these plans, contributions that these plans receive and the benefits they pay to retirees. Secondly, it shows the investment performance of pension assets and the way these assets were invested in 2021 and over the last two decades. The last part of this section presents the size of DB and DC plans (in terms of assets) and the evolution of the pension landscape through the end of 2021, before looking further into some specificities of these plans (i.e. funding ratios for DB plans and fees charged to members for DC plans).

1.1. Size and evolution of retirement savings

1.1.1. Assets

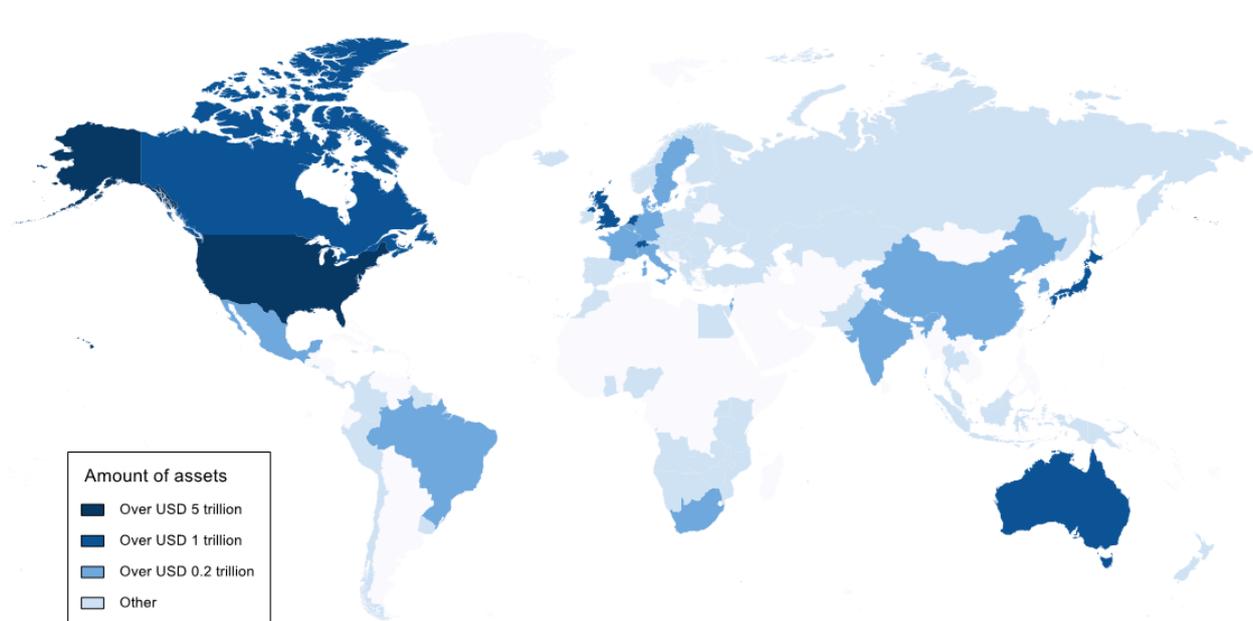
Funded and private pension plans have accumulated substantial assets to finance future pension benefits around the world. Pension assets amounted to USD 58.9 trillion in the OECD at the end of 2021 and USD 60.6 trillion when taking into account non-OECD reporting jurisdictions. This is an increase of more than 7% compared to end-2020 when pension assets amounted to USD 54.3 trillion in the OECD and USD 56.3

trillion in the OECD area and beyond.¹ Assets were mainly accumulated in pension funds, representing USD 37.7 trillion or 64% of assets in the OECD and USD 38.5 trillion in the OECD and beyond at the end of 2021.² Some jurisdictions also use other vehicles to save for retirement. Examples include: provisions in employers' books (e.g. Germany, Sweden), pension insurance contracts sold by insurance companies (e.g. Denmark and France) or products offered and managed by banks and investment companies (e.g. IRAs in the United States).

The amount of assets in funded and private pension plans varies across countries. In absolute terms, the largest amounts were recorded in North America (Canada and the United States), Western Europe (the Netherlands, Switzerland and the United Kingdom), Australia and Japan, exceeding USD 1 trillion in these seven countries (Figure 1.1, Panel A). Lower amounts of assets were accumulated in the rest of the world, below USD 0.2 trillion in 69 out of the 90 reporting jurisdictions overall.³

Figure 1.1. Assets in funded and private pension plans around the world, 2021 or latest year available

A. In USD trillion

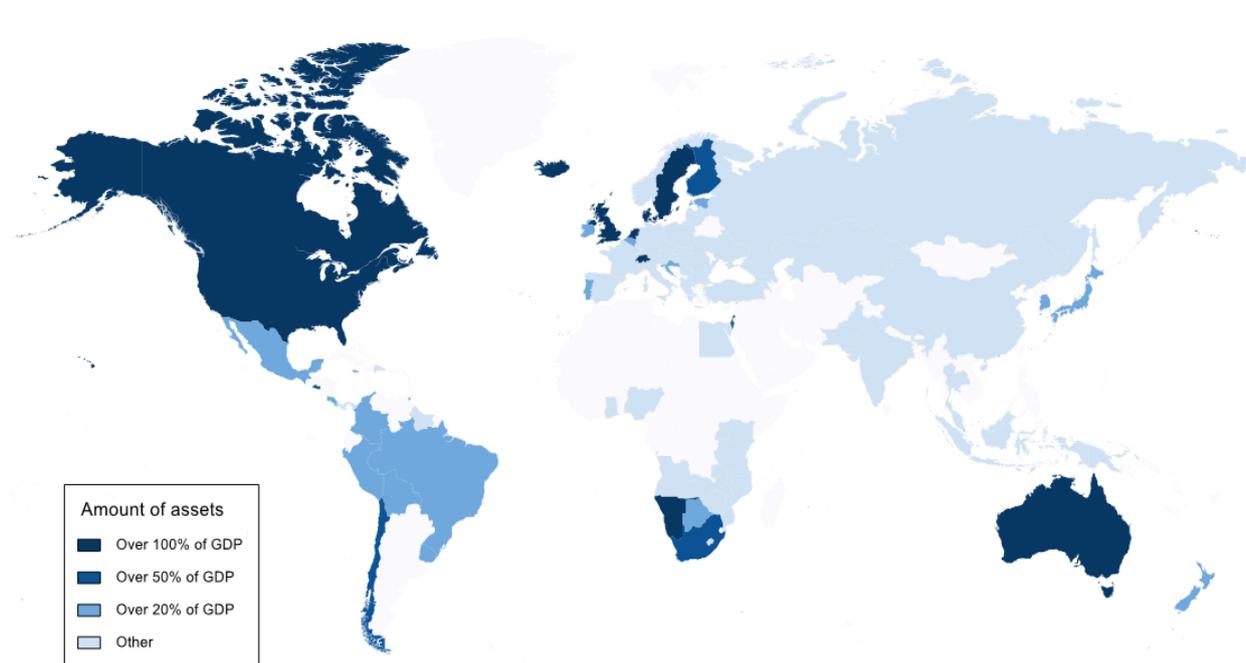


¹ The amounts of assets are estimates based on the total amounts of investments relating to funded and private pension plans. While in general, the difference between assets and investments would be minimal, this difference may be more significant in some cases, such as in the United States, where claims of pension funds on the plan sponsors are considered as assets of (defined benefit) plans but not as investments.

² See [OECD Pension Markets in Focus – Preliminary 2021 Data on Pension Funds](#).

³ The total amount of assets in funded and private pension plans is available in millions of national currency in Table A.B.1, in USD million in Table A.B.2 and as a percentage of GDP in Table A.B.3 in the statistical annex of this report, accessible online at: <https://www.oecd.org/pensions/private-pensions/pensionmarketsinfocus.htm>

B. As a percentage of GDP



Note: Please see the methodological notes at the end of the report.
Source: OECD Global Pension Statistics.

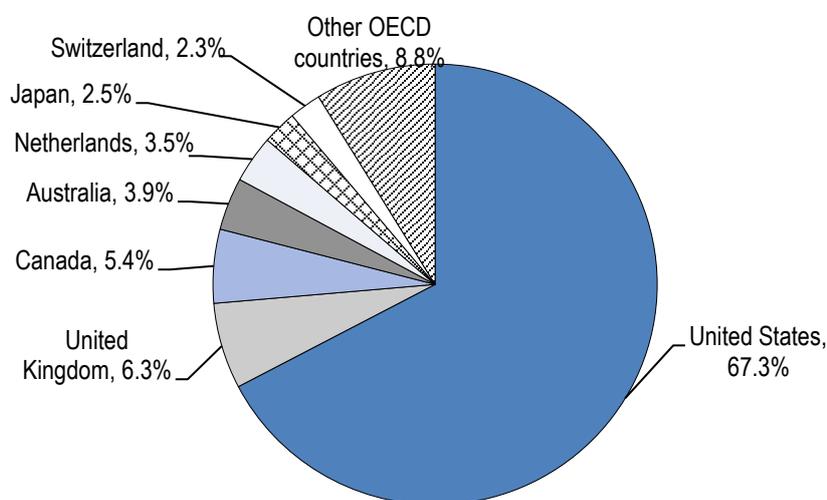
In relative terms, differences also exist across jurisdictions. Comparing the amount of pension assets to the size of the economy, measured by GDP, gives a better picture of the relative importance of funded and private pension plans domestically. Within the OECD area, nine out of 38 countries had assets exceeding their GDP at the end of 2021 (Figure 1.1, Panel B). In some countries such as Iceland, assets accumulated may appear relatively small (USD 54 billion) compared to other jurisdictions, but are high with respect to the size of their economy (219% of GDP). However, the amount of assets remained relatively low even when compared to GDP in a number of reporting jurisdictions, below 20% of GDP in 52 of them including some large and fast developing countries, such as the People's Republic of China (hereafter 'China') and India.⁴

Seven countries held more than 90% of the total OECD pension assets. The United States has the largest pension market within the OECD, with assets worth USD 40 trillion, representing 67.3% of the OECD area total (Figure 1.2). The United Kingdom recorded the second largest amount (USD 3.8 trillion, i.e. 6.3% of OECD pension assets), followed by Canada (USD 3.2 trillion, 5.4% of OECD pension assets), Australia (USD 2.3 trillion, 3.9% of OECD pension assets), the Netherlands (USD 2.1 trillion, 3.5% of OECD pension assets), Japan (USD 1.5 trillion, 2.5% of OECD pension assets) and Switzerland (USD 1.4 trillion, 2.3% of OECD pension assets). The 31 other OECD countries jointly hold the remaining 8.8% of pension assets in the OECD area.

⁴ Statistics in some jurisdictions only cover a part of their retirement savings plans. Please see the methodological notes and Annex A for more information about the data coverage.

Figure 1.2. Geographical distribution of pension assets in the OECD area, 2021

As a percentage of total pension assets



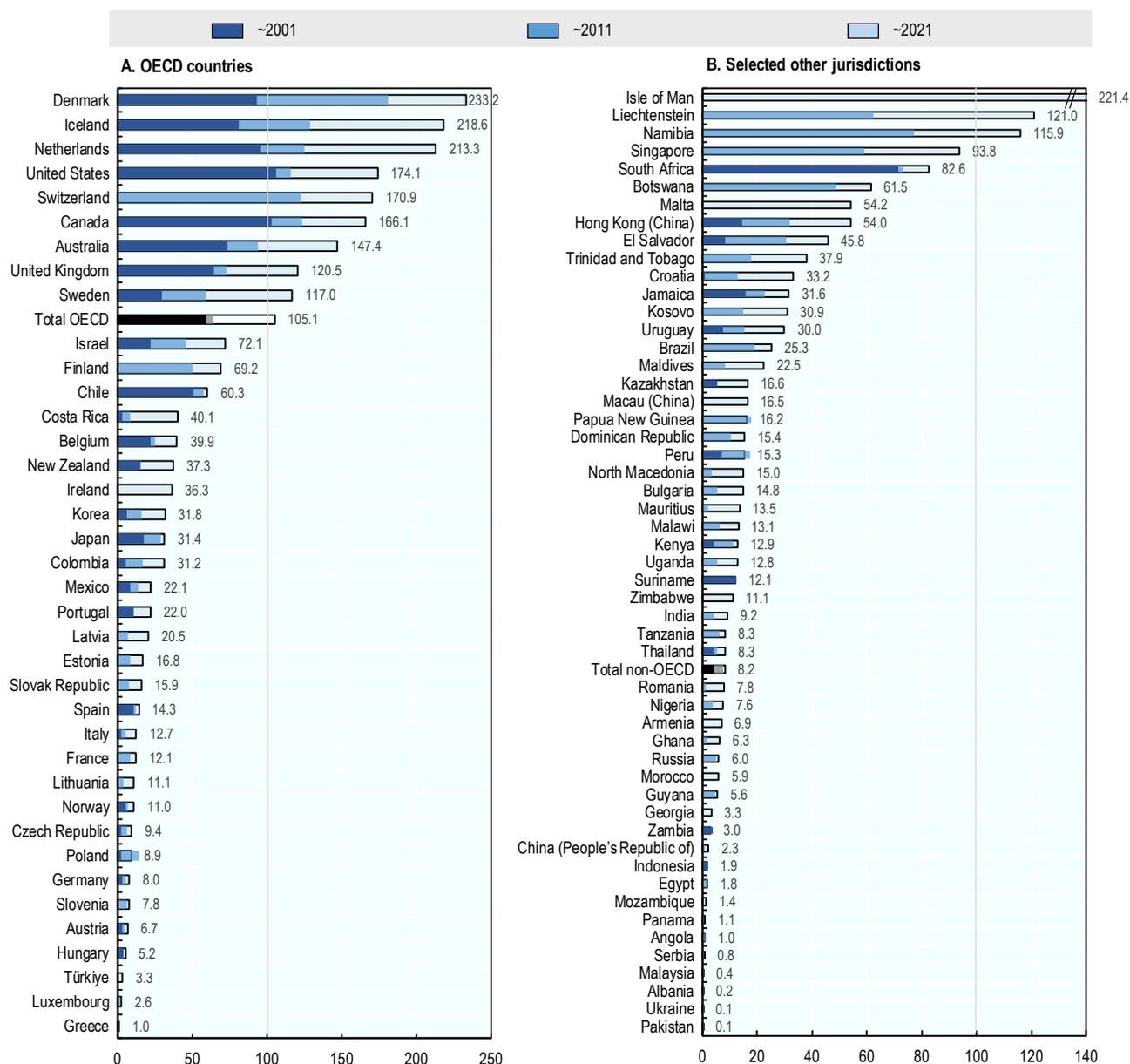
Note: Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

Pension assets have increased faster than GDP over the last two decades, highlighting the growing importance of retirement savings worldwide. Figure 1.3 shows that the ratio between total OECD pension assets and total OECD GDP rose from 59% at end-2001 to 64% at end-2011 and 105% at end-2021. Pension assets in the OECD area therefore exceeded the sum of the GDPs of all OECD countries at end-2021. Nine OECD countries had pension assets exceeding their GDP at end-2021, compared to six at end-2011 and two at end-2001. While the United States was topping the ranking at end-2001, Denmark is now the OECD country with the largest amount of pension assets relative to GDP (233% at end-2021), followed by Iceland (219%) and the Netherlands (213%). Pension assets have also grown strongly in some non-OECD jurisdictions, exceeding GDP in some cases such as in Liechtenstein (121%) and Namibia (116%). By contrast and despite some increases, pension assets still accounted for 1% of GDP or less at the end of 2021 in some jurisdictions such as Albania, Greece and Serbia.

Figure 1.3. Total assets in funded and private pension plans, in 2001, 2011 and 2021 (or nearest year available)

As a percentage of GDP



Note: “~” means around. Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

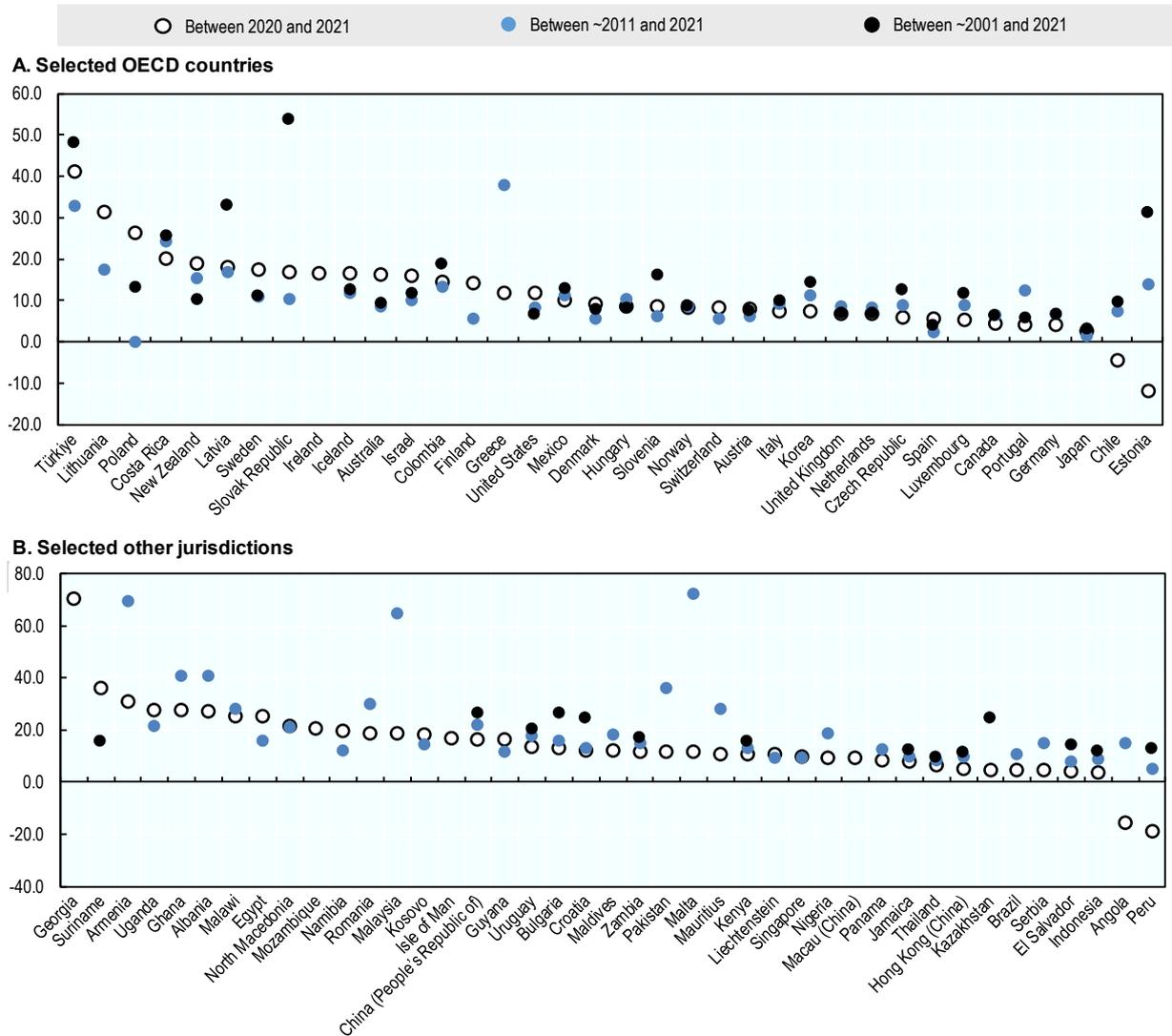
In nominal terms, pension assets grew in all reporting jurisdictions over the last two decades (Figure 1.4). This growth has been especially fast in countries with young funded pension systems such as Estonia (31% on average per year over the last two decades), Latvia (33%), the Slovak Republic (54%), Türkiye (48%).⁵ This asset growth slowed down over the last decade in Estonia (14% on average per year), Latvia

⁵ Estonia, Latvia and the Slovak Republic introduced their second pension pillar in 2002, 2001 and 2005 respectively. Türkiye introduced its private pension system in 2003.

(17%), the Slovak Republic (10%). It also slowed down in Türkiye but remained over 30% as the government introduced matching contributions (in 2013) and automatic enrolment (in 2017) to increase pension assets (Peksevim and Akgiray, 2019_[1]).

Figure 1.4. Annual nominal growth rates of pension assets over the last year, 10 and 20 years in selected OECD and other jurisdictions

In %



Note: “~” means around. Please see the methodological notes at the end of the report.
 Source: OECD Global Pension Statistics.

Pension assets also grew in all reporting jurisdictions in nominal terms over the last decade. Figure 1.4 shows the annual nominal growth from 2011 to 2021 as well (in blue). Greece was the OECD country with the fastest asset growth (38% per year on average) following the transformation of four funds operating on a pay-as-you-go basis into funded occupational schemes in 2013. The asset growth was also strong in several non-OECD jurisdictions, such as Armenia that phased in mandatory participation in pension plans in 2014. These plans are in an accrual phase as they gain contributing members while none or few have

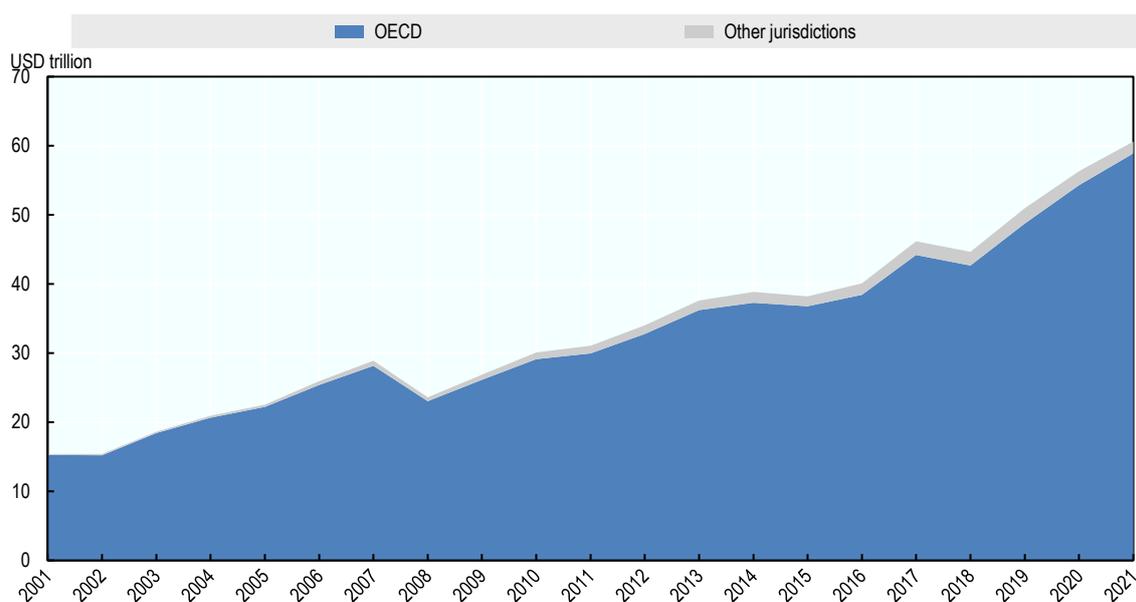
yet to receive benefits. By contrast, the amount of pension assets in 2021 was just above its level in 2011 in Poland, following rises and falls over the last decade.⁶

Pension assets continued to rise in most jurisdictions in 2021, a second year into the pandemic. Figure 1.4 also shows the annual nominal growth rate of pension assets in 2021. The asset growth was the strongest in Türkiye (41%), Lithuania (31%) and Poland (27%) among OECD countries; and Zimbabwe (over 100%), Georgia (70%) and Suriname (36%) among other jurisdictions. Assets grew in all the largest pension markets in 2021: by 16% in Australia, 5% in Canada, 3% in Japan, 7% in the Netherlands, 8% in Switzerland, 7% in the United Kingdom and 12% in the United States.⁷ Yet, four out of 78 reporting jurisdictions recorded a decline in pension assets in 2021, such as Chile (-4%) and Peru (-19%) where early withdrawals from individual accounts were allowed in 2021 to support people during COVID-19; and Estonia (-12%) following a reform of the (formerly mandatory) second pension pillar.

Overall, assets in funded and private pension plans pursued their long-term upward trend, reaching USD 60.6 trillion at end-2021. Pension assets were nearly twice as large at end-2021 as at end-2011 (USD 31.1 trillion) and four times as large as at end-2001 (USD 15.4 trillion), despite several shocks in financial markets over the last two decades (Figure 1.5).

Figure 1.5. Evolution of the amount of assets in funded and private pension plans in the OECD and in other jurisdictions over the last two decades

In USD trillion



Note: Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

⁶ In Poland, a pension reform led to a significant fall in pension assets in 2014 as domestic sovereign bonds that were held by open pension funds were transferred to the social security system, and contributions to open pension funds (previously mandatory) became voluntary.

⁷ For Canada, the method used to estimate the assets of trustee pension funds changed in 2021 following the redesign of a quarterly survey used for data collection. This methodological change leads to a break in series that may affect the calculation of the growth rate of pension assets between 2020 and 2021.

Multiple factors usually account for trends in pension assets, such as the evolution in the number of people having a pension plan, their contributions, the benefits that these plans pay to retirees and the financial performance of pension assets. The subsequent subsections of this report examine these factors in detail.

1.1.2. Coverage

Participation in a funded or private pension plan may be mandatory, voluntary or encouraged through automatic enrolment. Employers may be obliged by law to set up a pension plan for their employees who then have to join the plan (e.g. Finland, Norway, Switzerland). In Denmark, the Netherlands and Sweden, the legislation does not require employers to set up a plan for their employees. However, participation in a plan in these countries is quasi-mandatory as the decision is made at the industry or branch level through collective bargaining agreements. Some Latin American and European countries do not require employers to set up a plan for their employees but require employees to join a private pension fund of their choice (e.g. Chile, Colombia and Mexico) or a state funded pension plan (e.g. Denmark). By contrast, in a number of other countries (e.g. Austria, the Czech Republic and France), there is no compulsion for employers to set up an occupational plan nor for employees to open an individual pension account. In-between, some countries use soft compulsion to encourage employees to participate in a plan through automatic enrolment (Estonia, Lithuania, New Zealand, Poland, Türkiye and the United Kingdom).⁸ In these countries, employers are usually responsible for enrolling their employees in a pension plan under certain conditions. Employees, however, have the option to opt out of the plan within a certain timeframe.

Individuals may participate in several different types of plans simultaneously. They may have to participate in a mandatory plan accessed through their work and may also contribute voluntarily to a pension plan that they open on their own. In some countries, they could be members of several voluntary plans, contributing to the occupational plan of their current employer while retaining rights in the plans of their former employers.

The proportion of the working-age population having a funded or private pension plan is usually relatively high when participation is mandatory. Mandatory pension plans cover more than 75% of the working-age population in 15 out of the 30 OECD and non-OECD reporting jurisdictions where such plans exist (Figure 1.6). In several Northern European countries (namely Denmark, Finland, Iceland, Latvia and Sweden), nearly all the working-age population participates in a mandatory funded pension plan. The coverage of mandatory individual accounts is also nearly universal in Chile (84.3%) and Costa Rica (84.2%) but this is not the case in some other Latin American countries such as Colombia (54.5%) and Peru (37.3%) where people can choose to participate either in the public pay-as-you-go or private funded pension system. The high level of informality in these countries (ILO, 2018^[2]) may also account for the relatively lower coverage rate of mandatory plans covering formal workers.⁹ Likewise, informality is also probably partially responsible for the low coverage rates in Nigeria (8.4%) and Malawi (3.4%). Participation in mandatory or quasi-mandatory plans is also relatively limited in countries where this obligation applies to certain employees only (e.g. employees born in 1974 or later in Armenia).¹⁰

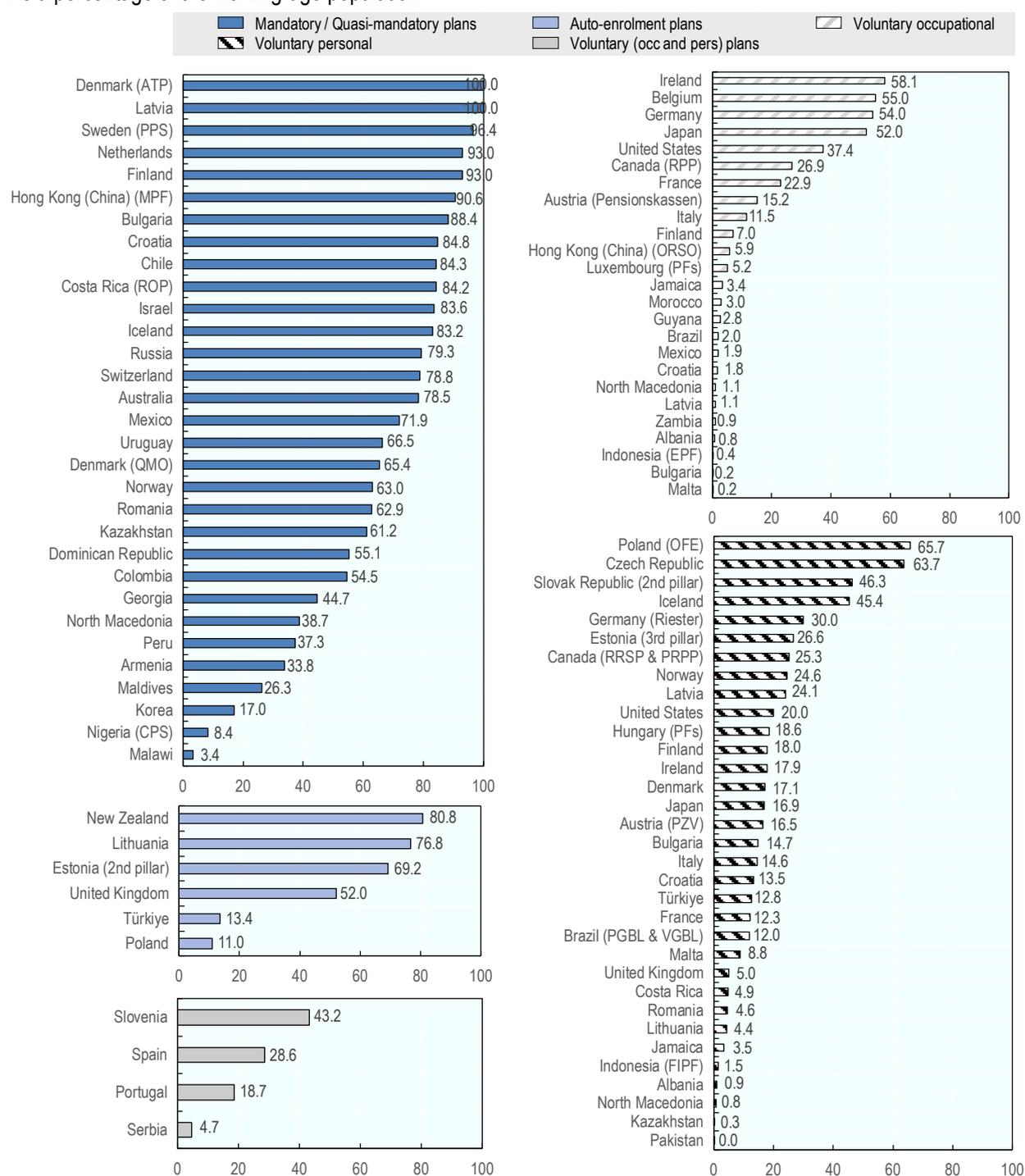
⁸ Estonia and Lithuania changed the enrolment method in their existing second pension pillar recently. In Estonia it was mandatory to join the second pillar before, but since 2021, people are allowed to opt out of contributing. In Lithuania, participation was voluntary until 2019 and employees could choose to opt in (but could not leave once in). Since 2019, the State Social Insurance Fund Board enrolls both employees and the self-employed aged under 40 into a plan while giving them an opt out option (OECD, 2019).

⁹ In general, self-employed workers are not required to participate.

¹⁰ In Armenia, the legislation requires employees born in or after 1974 to participate in the second pension pillar, with the objective of having all the future generations of employees entering the workforce covered.

Figure 1.6. Coverage of funded and private pension plans, by type of plan, 2021 or latest year available

As a percentage of the working-age population



Note: Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics; ABS Household Income and Wealth 2019-20 (Australia); FSMA Annual Report 2021 (Belgium); Statistics Canada; ATP Annual Report 2021 and Danish Insurance Association (Denmark); DREES (France); Survey on Pension Provision 2019 of the Federal Ministry of Labour and Social Affairs (Germany); Central Statistical Office (Ireland); Ministry of Health, Labour and Welfare (Japan); Statistics Netherlands; Finance Norway; Polish Financial Supervision Authority (Poland); 2020 edition of the survey "Inquérito à Situação Financeira das Famílias (ISFF)" (Portugal); Spanish Survey of Household Finances (EFF) 2020 of the Bank of Spain; Swedish Pension Agency (Sweden); DWP's Family Resources Survey 2020/21 (United Kingdom); Current Population Survey (United States).

The coverage rates of pension plans are uneven across countries that are automatically enrolling workers while giving them the option to opt out. New Zealand has reached a coverage rate close to countries with a mandatory system, with 80.8% of the working-age population having a KiwiSaver plan in 2021, 14 years after starting enrolling newly hired employees automatically into this programme. The proportion of the working-age population with an employment-related pension plan is lower but above 50% in the United Kingdom where employers are required since 2012 to enrol automatically all eligible workers (i.e. workers with no employment-related plan, aged between 22 and the state pension age and earning more than GBP 10 000 a year).¹¹ By contrast, the coverage rates of automatic enrolment plans are lower in Poland (11%) and Türkiye (13.4%), potentially suffering from people's lack of trust in the plans.¹²

Participation in voluntary plans also varies across countries. More than half of employees in Germany and Ireland, and more than half of the working-age population in Belgium, the Czech Republic, Japan and Poland are covered by a voluntary plan. None of these countries (except Poland before 2014) has mandatory plans where all the working-age population has to contribute.¹³ Saving for retirement is therefore only possible through voluntary participation in these countries. The participation in voluntary plans is much lower in some other countries, especially in Albania, Pakistan and Kazakhstan (below 1% of the working-age population). In Kazakhstan, however, many individuals are already participating in mandatory funded plans, covering 61.2% of the working-age population. The low take-up of voluntary plans in Albania and Pakistan might be due to a lack of awareness of these plans or a lack of interest of a large part of population (especially the young) in private pensions.¹⁴

More people tend to hold a funded pension plan in 2021 than 10 and 20 years ago, independently of whether participation in a plan has been mandatory, voluntary or encouraged through soft compulsion (Table 1.1). The membership base has increased the fastest in jurisdictions that introduced auto-enrolment and mandatory plans recently, such as in Armenia (where participation in a plan increased by 3.8 percentage points per year on average since 2014), Croatia (3.5 percentage points per year since 2014), Estonia (3.5 percentage points per year since 2001), Israel (3.5 percentage points per year since 2001), and New Zealand (3 percentage points per year since 2011).¹⁵ The increase in the proportion of people having a pension plan was more limited in countries where most of the working-age population already had one in the early 2000s or 2010s (e.g. second pension pillar in Switzerland covering 67.4% of the working-age population in 2001 and 71.2% in 2011), but also at the other extreme in some countries where the coverage rate was relatively low (e.g. Italy, Nigeria) for different specific reasons. In the case of Italy, automatic enrolment has not been successful in increasing significantly coverage rates as it has been competing with a previously existing severance system.¹⁶ In Nigeria, informality has probably slowed down the enrolment of people in a mandatory employment-related plan.

¹¹ Self-employed are not required by law to enrol themselves in a plan in the United Kingdom.

¹² [PPK pokutują za cudze grzechy – wywiad z Robertem Zapotocznym w „Pulsie Biznesu” — oficjalny portal Pracowniczych Planów Kapitałowych PPK \(mojeppk.pl\)](#) (for Poland) and [Anadolu Üniversitesi İktisat Fakültesi Dergisi » Makale » Analysis of the Factors Affecting Opt-Out Preferences of Employees Automatically Enrolled in Private Pension System in Turkey \(dergipark.org.tr\)](#) (for Türkiye).

¹³ Participation in open pension funds used to be mandatory in Poland before 2014. The proportion of people still having a plan in open pension funds was still high in 2021.

¹⁴ <https://www.tiranatimes.com/?p=142723>

¹⁵ Armenia mandated the enrolment of eligible people in a pension plan in 2014, Croatia in 2002, Israel in 2008 and New Zealand in 2007 (with an opt-out option). Estonia established its mandatory second pillar in 2002, but introduced an opt-out option in 2021, explaining the decline in participation in the most recent year.

¹⁶ In Italy, employees value their severance system and often opt out from auto-enrolment, preferring to keep the new accruals of severance pay in the system and not to divert them into a pension plan. The overwhelming majority of new

Table 1.1. Average annual variation of private pension coverage over the last year, 10 and 20 years, by type of plan, in percentage points

Mandatory / Quasi-mandatory plans	Average annual variation between:			Voluntary occupational plans	Average annual variation between:		
	2020 and 2021	~2011 and ~2021	~2001 and ~2021		2020 and 2021	~2011 and ~2021	~2001 and ~2021
Armenia	3.1	3.8	..	Albania	-0.1	0.1	..
Australia	..	0.3	0.6	Austria	0.2	0.2	0.5
Bulgaria	1.4	2.5	..	Brazil	..	0.0	..
Chile	1.3	0.6	0.9	Bulgaria	0.0	0.0	..
Colombia	2.0	2.0	1.8	Canada (RPP)	..	0.1	0.0
Costa Rica (ROP)	1.3	..	..	Croatia	0.1	0.1	..
Croatia	5.6	3.5	..	Finland	..	-0.4	..
Denmark (QMO)	..	0.4	0.6	France	..	1.1	..
Finland	..	1.8	..	Germany	..	-0.3	..
Georgia	5.7	..	..	Guyana	-0.1	..	..
Hong Kong (China) (MPF)	2.8	..	..	Hong Kong (China) (ORSO)	-0.7	-0.2	..
Israel	2.1	2.1	3.5	Indonesia (EPF)	0.0	0.0	..
Korea	..	0.6	0.0	Ireland	1.4	..	..
Latvia	0.0	1.6	..	Italy	0.7	0.4	0.4
Malawi	-1.1	0.2	..	Jamaica	0.1	0.0	..
Maldives	..	1.7	..	Japan	-0.5	..	..
Mexico	1.5	1.5	..	Latvia	0.0	0.0	..
Nigeria (CPS)	..	0.3	..	Luxembourg (PFs)	0.0	0.0	..
North Macedonia	1.7	1.8	..	Malta	0.1	..	..
Norway	1.8	0.9	..	Mexico	..	0.0	..
Peru	1.8	1.1	1.0	North Macedonia	0.1	0.0	..
Romania	2.1	..	..		
Russia	..	0.2	..				
Sweden (PPS)	0.6	0.8	..				
Switzerland	0.9	0.8	0.6	Voluntary personal plans	Average annual variation between:		
Uruguay	1.0	..	..		2020 and 2021	~2011 and ~2021	~2001 and ~2021
				Albania	0.2	0.1	..
				Austria (PZV)	-1.4	-1.2	..
				Brazil (PGBL & VGBL)	..	0.5	..
				Bulgaria	0.1	0.3	..
				Canada (RRSP & PRPP)	..	0.0	-0.2
				Costa Rica	0.1	..	..
				Croatia	1.1	..	..
				Czech Republic	0.1	..	..
				Denmark	..	-0.8	-0.7
				Estonia (3rd pillar)	6.8	1.3	..
				Finland	..	-0.6	..
				France	..	0.2	..
				Germany (Riester)	..	-0.7	..
				Hungary (PFs)	0.2	-0.2	..
				Indonesia (FIPF)	-0.1	0.1	..
				Ireland	-1.7	..	..
				Italy	0.8	0.8	0.7
				Jamaica	0.2	0.3	..
				Japan	0.1	..	..
				Kazakhstan	0.0	..	..
				Latvia	2.0	1.4	..
				Lithuania	0.2	..	..
				Malta	-1.6	..	..
				North Macedonia	0.1	0.1	..
				Norway	-0.1	-0.2	..
				Pakistan	0.0	0.0	..
				Poland (OFE)	-0.6	0.6	1.6
				Romania	0.4	..	..
				Slovak Republic (2nd pillar)	2.2	0.9	..
				Türkiye	0.2	..	..
				United Kingdom	0.0	..	..
				United States	..	-0.1	0.0

Auto-enrolment plans	Average annual variation between:		
	2020 and 2021	~2011 and ~2021	~2001 and ~2021
Estonia (2nd pillar)	-21.4	0.0	3.5
Lithuania	1.0	..	..
New Zealand	2.2	3.0	..
Poland	4.7	..	..
Türkiye	1.3	..	..
United Kingdom	3.0	..	..

Voluntary (occ and pers) plans	Average annual variation between:		
	2020 and 2021	~2011 and ~2021	~2001 and ~2021
Portugal	..	0.5	..
Serbia	0.2	0.1	..
Slovenia	1.7	0.5	..
Spain	..	0.3	0.3

Note: Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics and other sources.

Participation in voluntary pension plans only fell in some jurisdictions over the last 10 to 20 years, such as in occupational plans (ORSO plans) in Hong Kong (China) and PZV contracts in Austria.¹⁷ In Hong Kong

plan members made the explicit choice to join the plan and pay additional contributions, in order to get the matching contributions by the employer – therefore they did not join through the automatic enrolment mechanisms. This is also why, in this report, Italy is not classified together with auto-enrolment plans.

¹⁷ PZV contracts are personal pension insurance contracts.

(China), with the introduction of mandatory provident fund schemes in 2000, some employers chose to close or reduce the size of their voluntary ORSO schemes and to make voluntary contributions to mandatory provident fund schemes instead.¹⁸ In Austria, the number of PZV contracts was increasing until 2012 but has been declining afterwards, following a cut in government subsidies and a low return outlook in a context of low interest rates.

Governments have tried to increase the coverage of funded pension plans in different ways. Some introduced automatic enrolment programmes, giving people the option to opt out if they would like to, with specified timeframes and conditions (OECD, 2019^[3]). Some other countries have aimed to increase the coverage rate of certain groups of people in particular (such as Korea, Kenya and Nigeria). In July 2017, Korea extended the scope of people eligible to open an individual retirement pension plan (IRP) to the self-employed, workers with less than one year of service, part-time workers, government employees and members of the armed forces. Kenya has recently launched pension products targeting workers in the informal sector. Likewise, Nigeria launched a micro pension plan in 2019 to expand the coverage of workers in the informal sector. To encourage people to open and contribute to a pension plan, some countries are also using financial incentives (OECD, 2021^[4]).

The growth of the membership base has continued in most jurisdictions in 2021. Job retention schemes and other measures intending to mitigate the impact of COVID-19 on labour markets and people's finances may have played a role and supported the growth of members during the second year of the pandemic. The rising number of members was particularly strong in jurisdictions that rolled out mandatory or automatic plans recently, such as Armenia, Croatia, Georgia, Poland and the United Kingdom. By contrast, the proportion of the working-age population covered by a plan dropped the most for second pension pillar plans in Estonia (by over 20 percentage points) as a result of the reform in 2021 allowing members to stop contributing. The reform in Estonia has also allowed members of the second pillar to withdraw savings or transfer their assets to a pension investment account. This may explain why the proportion of working-age Estonians having a third pillar plan increased by nearly 7 percentage points in 2021.

1.1.3. Contributions

The total amount of contributions into funded and private pension plans depends on the proportion of people having access and joining a plan, the proportion among them actually contributing to these plans and the payments made on their behalf or they make directly.¹⁹ The payments may be made by members themselves, their employers or the state (e.g. matching contributions or other financial incentives).

The largest amounts of contributions into funded and private plans were recorded in 2021 in jurisdictions with mandatory pension plans. Relative to the size of their economy, contributions were the largest in Iceland (10.5% of GDP), Denmark (9%), the Dominican Republic (8.5%), Switzerland (8.3%) and Australia (6.9%) (Figure 1.7).²⁰ Participation in a pension plan is mandatory in all these countries, and the proportion of people having a plan is relatively high (between 55% and full coverage of the working-age population).

¹⁸ [New ORSO regulation may affect corporate retirement offerings | Asia Asset Management](#)

¹⁹ The proportion of individuals actively saving for retirement and making contributions to a plan may be lower than the proportion of individuals having a plan, as individuals with a plan may not necessarily contribute to it. They may simply hold rights in their former employers' plan or may have assets in their personal plan but may not contribute to it on a regular basis.

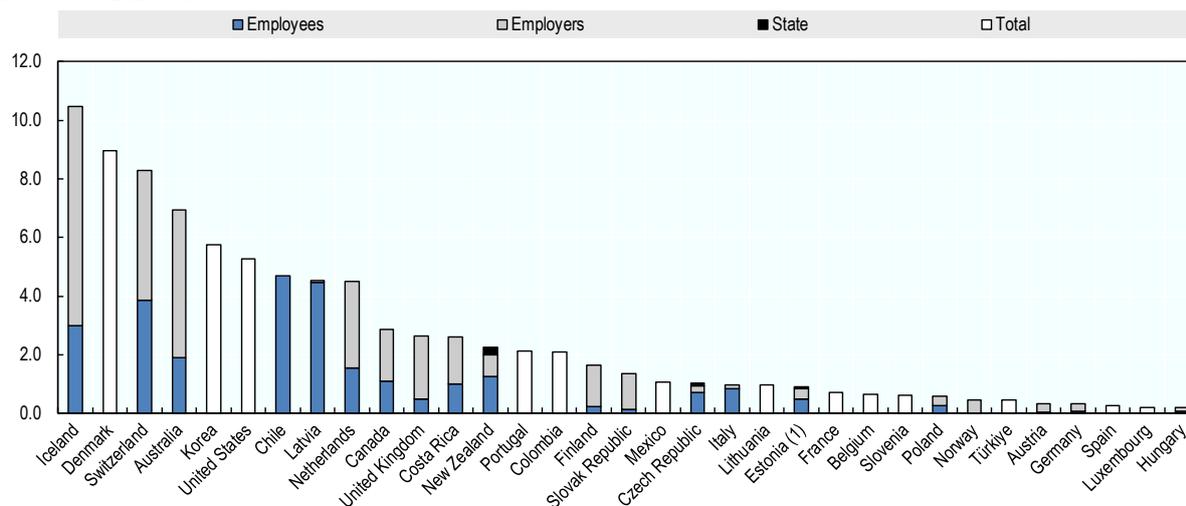
²⁰ Contributions into funded and private pension plans (as a percentage of GDP) are also available for each reporting jurisdiction and each year between 2001 and 2021 in Table A.B.4 in the statistical annex of this report, accessible online at: <https://www.oecd.org/pensions/private-pensions/pensionmarketsinfocus.htm>

Plans in these countries receive contributions from both employers and employees. By contrast, pension plans received the lowest amount of contributions in the voluntary pension systems in Albania and Pakistan. In these two countries, less than 2% of the working-age population holds a voluntary pension plan.

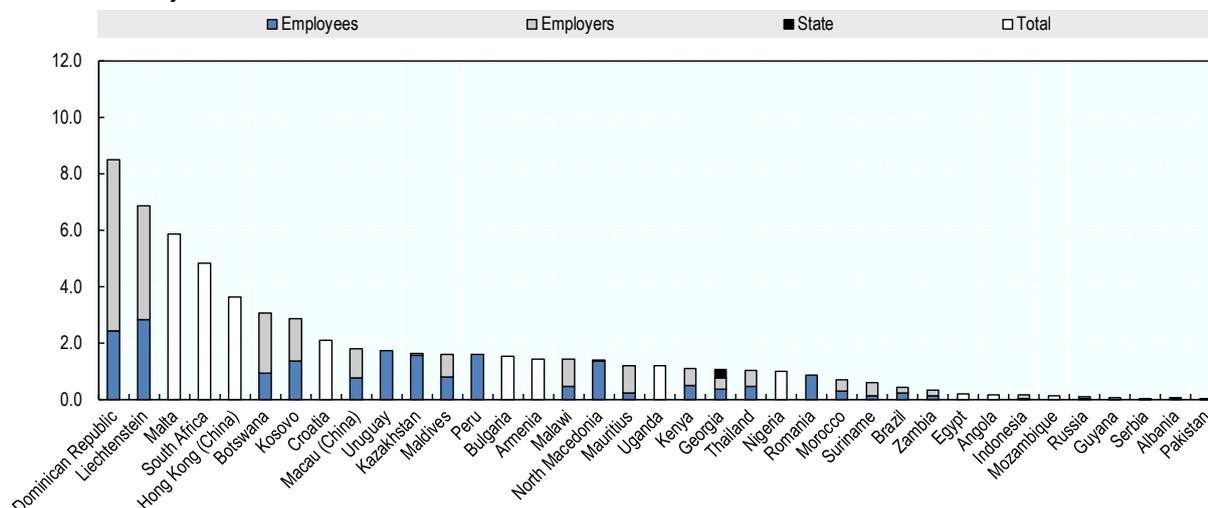
Figure 1.7. Employer, employee and state contributions paid into funded and private pension plans, in selected OECD and other jurisdictions, 2021 (or latest year available)

As a percentage of GDP

A. Selected OECD countries



B. Selected other jurisdictions



Note: Please see the methodological notes at the end of the report.
Source: OECD Global Pension Statistics.

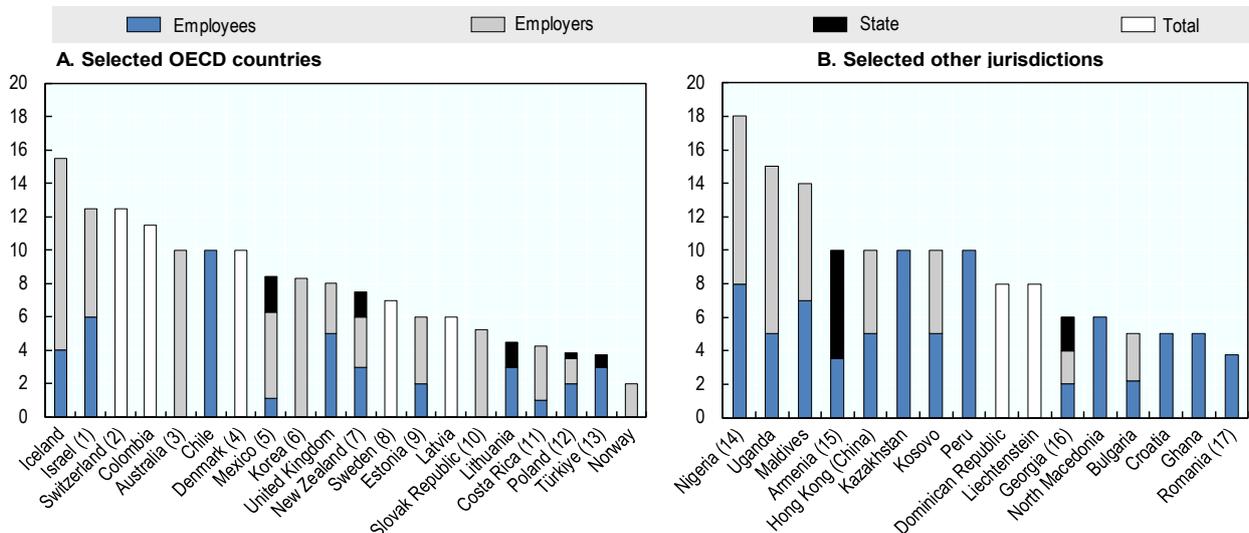
A contribution rate for mandatory and auto-enrolment plans is usually set in regulation. The responsibility to pay the contributions may fall on the employees (e.g. in Chile, Croatia, Ghana, Kazakhstan, North Macedonia, Peru, Romania), on the employers (e.g. in Australia, Korea, Norway, the Slovak Republic) or on both (e.g. in Iceland, Israel, Switzerland). This obligation may only apply to certain employees or under certain conditions (e.g. employer contributions mandatory only for employees earning at least AUD 450 a

month in Australia, until end-June 2022).^{21,22} Romania has recently exempted workers in the construction sector from contributing to mandatory pension plans for the period 2019-2028. Contributions may be complemented by state matching contributions (e.g. New Zealand, Türkiye) or subsidies (e.g. social quota in Mexico).

Contribution rates are fixed at different levels across jurisdictions. Iceland and Israel have the highest among OECD countries, respectively at 15.5% and 12.5% (Figure 1.8), which may account for the relatively high amount of contributions (relative to GDP) in these countries, together with the high coverage rates of these plans. Nigeria has an even higher mandatory contribution rate outside the OECD area – at 18% of salary for its contributory pension scheme (CPS), split between employers (10%) and employees (8%) – but a low proportion of the working-age population participates in this scheme (less than 10%), which is the reason why the overall amount of contributions is relatively low (at 1% of GDP). Mandatory contribution rates also represent over 10% of salary in four other countries: Colombia (11.5%), the Maldives (14%), Switzerland (12.5% on average over the working life), Uganda (15%).²³ By contrast, Norway has the lowest mandatory contribution rate among the reporting jurisdictions (2% paid by the employer). Employers and employees can, however, agree on whether employees have to contribute on top of employer contributions. These mandatory contribution rates sometimes vary by members' age (e.g. in Switzerland), income (e.g. in Sweden) or sector in which they work (e.g. public or private in Mexico). In Kazakhstan, employers have to pay an additional mandatory contribution of 5% of salary for workers in hazardous jobs.

Figure 1.8. Minimum or mandatory contribution rates (for an average earner) in mandatory and auto-enrolment plans (unless specified otherwise), 2021 (or latest year available)

As a percentage of earnings



Note: Please see the methodological notes at the end of the report.
Source: ISSA country profiles and other sources.

²¹ In Norway, employees in the public sector must pay a portion of the contributions.

²² The Australian government announced in May 2021 that it would remove the earning threshold to expand coverage regardless of the monthly salary of employees. This measure applies from 1 July 2022. Find out more at: ato.gov.au

²³ In Switzerland, the contribution rates vary by age group, from 7% between 25 and 34 years of age, up to 18% for those aged above 55. See the [IOPS country profile of Switzerland](#) and the [country profile of Switzerland in the OECD Pensions at a Glance 2021](#) for more information about these contribution rates.

A number of countries have adjusted their mandatory or minimum contribution rates over the years. Australia, New Zealand and the United Kingdom have increased them. In Australia, the superannuation guarantee rate rose from 9.5% to 10% on 1 July 2021, 10.5% on 1 July 2022, and is scheduled to increase progressively by 0.5% annually until it reaches 12% in July 2025.²⁴ In New Zealand, the minimum contribution rates to KiwiSaver plans rose from 2% to 3% of gross salary for both the employee and the employer in April 2013. For auto-enrolment plans, the United Kingdom increased the minimum contribution rates from 1% to 2% of qualifying earnings for employers and from 1% to 3% for employees in April 2018, and then to 3% for employers and 5% for employees in April 2019. Mexico also decided in 2020 to increase the employer contributions and adjust government contributions starting from 2023.²⁵ By contrast, the contribution rate declined in Romania from 5.1% in 2017 to 3.75% in 2018.²⁶ The contribution rate in the Slovak Republic also decreased between 2012 and 2016 (from 9% to 4% of the salary) but has been increasing since 2017 by 0.25 percentage point every year, reaching 5.25% in 2021 and 5.5% in 2022.²⁷ In Armenia, the overall contribution rate (10% of the salary) remains the same, but the share paid by the employee is increasing progressively (from 2.5% of salary in 2020 to 5% in 2023), while the share paid by the state is declining to the same extent. In the case of Lithuania, the source of financing of the second pension pillar has changed since 2019.²⁸ Before 2019, workers participating in the second pillar in Lithuania had 2% of their salary diverted from social contributions and could contribute an additional 2% of their salary to benefit from the state contribution of 2% of the average salary. Since 2019, social contributions are no longer diverted. Workers enrolled in a plan have to contribute at least 3% of their income, and receive an additional contribution from the state of 1.5% of the average salary.²⁹ Some countries, such as Finland and Colombia, provided flexibility with respect to mandatory contributions during COVID-19, allowing their temporary reductions, postponements or suspensions (OECD, 2020[5]).³⁰

Individuals or their employers may have the option of making additional voluntary contributions on top of the minimum or mandatory contributions. In New Zealand, the minimum contribution rate for KiwiSaver plans has been 3% for employees since 1 April 2013. Members can however select a higher personal contribution rate of 4%, 6%, 8% or 10% of salary. In Poland, where automatic enrolment into Employee Capital Plans (PPK) has been in place since 2019, the minimum contribution rate is 2% for employees and 1.5% for employers if employees do not opt out of the PPK. Employers and employees have the option of making additional contributions of up to 2.5% (for employers) and 2% (for employees). In the Slovak

²⁴ See [Compulsory Superannuation & Percentage Rate » Industry Super](#)

²⁵ See for more details: [International Update, February 2021: Recent Developments in Foreign Private & Public Pensions, Social Security & Retirement \(ssa.gov\)](#) and [PAG2021-country-profile-Mexico.pdf \(oecd.org\)](#)

²⁶ This measure was enacted simultaneously with changes in the Fiscal Code with respect to gross wages. All in all, nominal contributions to the second pension pillar in 2018 were higher than those of 2017.

²⁷ Following a legislative change at end-2022, the contribution rate will remain at 5.5% in 2023 and 2024, before increasing to 5.75% in 2025 and 2026, and to 6% from 2027 onwards.

²⁸ See [Lithuania – Employment, Social Affairs & Inclusion – European Commission \(europa.eu\)](#)

²⁹ The default contribution rate for new members and those already in the supplementary pension scheme before 2019 who were not making voluntary contributions is lower. This rate is gradually rising to 3% between 2019 and 2023, with a growing state contribution (from 0.3% to 1.5% of the average salary in the country).

³⁰ In Finland, employer contributions were lowered by 2.6 percentage points from 1 May 2020 and until the end of 2020. Employers and the self-employed could also agree with their pension provider to postpone the payment of pension contributions into earnings-related pension plans by three months and pay a 2% interest on these delayed contributions (but with no penalty on late contributions). In Colombia, mandatory contributions to the personal pension system were reduced from 16% to 3% for April and May 2020. However, the Constitutional Court of Colombia declared this policy unconstitutional. The Ministry of Labour issued a decree in April 2021 requiring missing contributions for April and May 2020 to be paid within 36 months from 1 June 2021.

Republic, individuals can voluntarily contribute into their second pillar pension plan or ask their employers to pay voluntary contributions into their plan on their behalf (provided that employers and employees have concluded an agreement on this). In Australia, employees have no obligation to contribute to a plan but can make voluntary contributions on top of their employer's contributions. This is the other way around in Chile. Employers are not required to contribute but can make voluntary contributions in the individual account of their employees in the form of deposits agreed with the employees.

Countries may encourage voluntary contributions to pension plans in several ways. They may use tax incentives (i.e. indirect subsidies provided through the tax code) or other financial incentives (e.g. matching contributions, fixed nominal subsidies) where the state makes direct payments to the pension plans of eligible individuals. Countries may also use non-financial means to increase voluntary savings, such as financial education and the use of technology (such as apps for smartphone such as AforeMóvil in Mexico) to facilitate the process of making voluntary pension contributions.

Contributions to pension plans have increased since the early 2000s in most reporting jurisdictions (Figure 1.9). Estonia, the Slovak Republic and Türkiye recorded the strongest growths over the last two decades, at a 20% annual rate or more on average, supported by an increase in the number of plan members. Malta recorded the strongest increase in contributions over the last decade (at a 38% annual rate), mostly made by non-residents. The amount of contributions into pension plans has only shrunk in Hungary (compared to 2001), Poland (compared to 2011) – following reforms in these countries abrogating the mandatory participation in pension plans in 2011 and 2014 respectively – and in Portugal (compared to 2002) and Spain (compared to both 2001 and 2011).

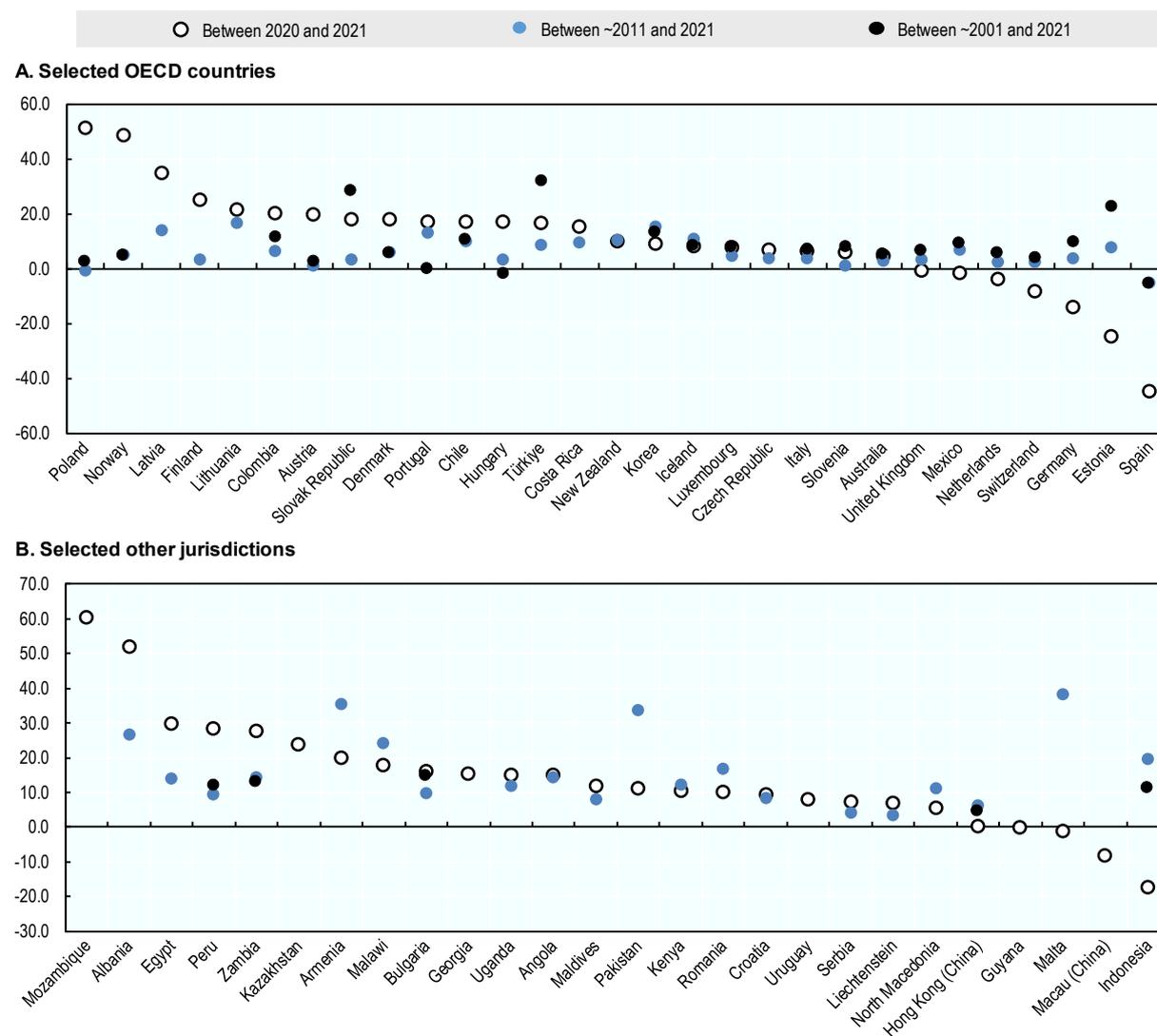
Contributions to pension plans also increased in 2021 in most jurisdictions. Poland recorded the strongest increase in contributions in 2021 among OECD countries (over 50%), driven by an increase in the number of members automatically enrolled in a pension plan. In some jurisdictions, contributions started to increase again in 2021 after being halted in 2020 by COVID-19 such as in Austria, where some employers had difficulties in paying their contributions. However, job retention schemes and other policy measures may have cushioned the impact of COVID-19 on contributions in 2020 such as in the Netherlands and the United Kingdom. The employment rates improved in 2021 and exceeded pre-pandemic levels in 23 OECD countries in Q4 2021, which probably supported the increase in contributions that most jurisdictions experienced in 2021 (such as Latvia).³¹ Yet, the pandemic may still have had prolonged effects on the income of employers and their ability to contribute in 2021 in some countries such as in Malawi, as reported by the Reserve Bank of Malawi. The largest declines in contributions in 2021, which occurred in Estonia (-24%) and in Spain (-45%), were probably due to the possibility to stop contributing to the second pension pillar in Estonia and a change in financial incentives in Spain in 2021.³²

³¹ For more information on employment rates, see: [Employment situation, OECD, fourth quarter 2021 – OECD](#)

³² While the limit for tax deductible contributions was EUR 8 000 in 2020 in Spain (combining both employer and employee contributions to occupational and personal plans), the limit was split between employer and employee contributions in 2021 and became EUR 2 000 for employee/individual contributions and EUR 8 000 for employer contributions into occupational plans. This change may account for the reduction in contributions to personal plans in Spain between 2020 and 2021.

Figure 1.9. Annual nominal growth rates of contributions over the last year, 10 and 20 years in selected OECD and other jurisdictions

In %



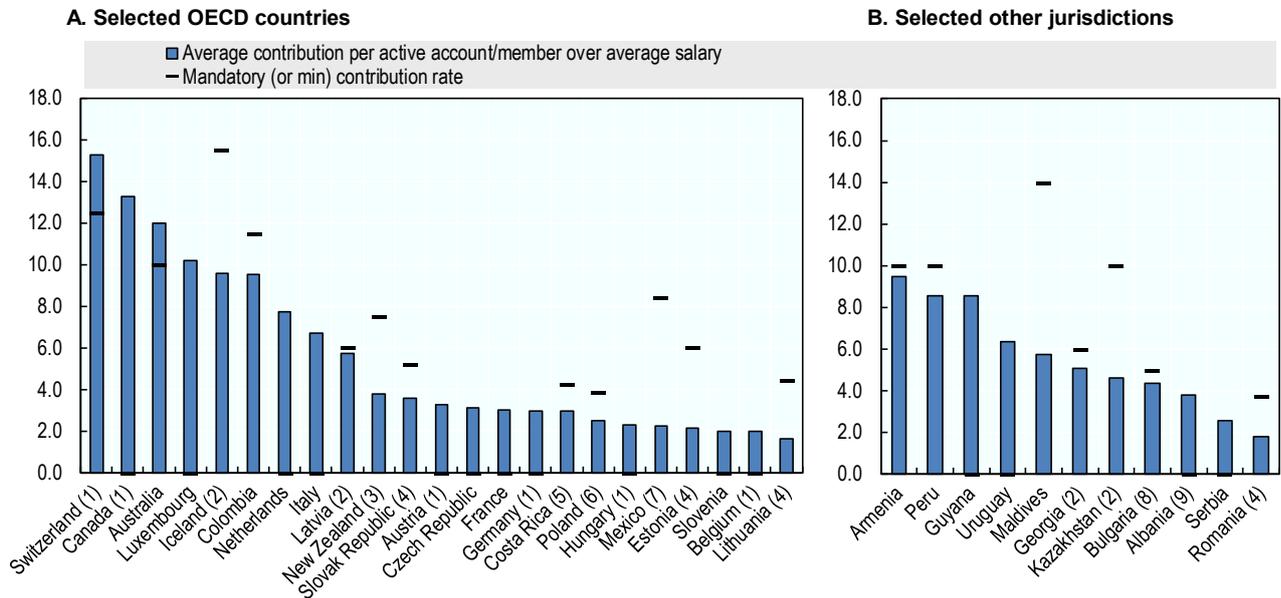
Note: “~” means around. Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

The amount of contributions paid per member taking into account all sources, voluntary or mandatory, varied a lot across jurisdictions in 2021. Figure 1.10 shows that the largest amount of contributions per member were paid in Australia, Canada and Switzerland (12% or more of the average wage per member), where both the coverage rate of pension plans and contribution rates are relatively high. Additional voluntary contributions from employees into superannuation schemes may also account for the high rate in Australia, above the mandatory 10% contribution rate (in the second half of 2021). Contributions per member (relative to the average wage) are lower in other countries, such as in some Latin American countries (e.g. Mexico), which may be due to some people not making contributions to a plan (even if they have one). For instance, contributions in Mexico are mandatory for formal employees, but voluntary for the unemployed, independent and informal workers. Employees may not be contributing to their pension account the whole time as they move from the formal to the informal sector.

Figure 1.10. Average annual contribution per active account or member in selected OECD and other jurisdictions, latest year available

As a percentage of average annual wages



Note: Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics and other sources.

1.1.4. Benefit payments

Benefit payments represent an outflow from pension plans, reducing the amount of assets in the plans. The amount of these payments at the aggregate level depends, to a large extent, on when these plans were introduced and the number of people eligible to these benefits.

Benefit payments at retirement can take several forms. They can be a lump sum payment, a regular stream of income in retirement (e.g. pensions or programmed withdrawals) or a combination of the two. Benefit payments can be paid as a full or partial lump sum under certain conditions in some countries. In Switzerland for instance, members can claim a payment of a quarter of their retirement assets (up to the full amount depending on the plan rules) as a lump sum benefit. Some countries allow full lump sum payments when the accumulated assets are lower than a given threshold (e.g. below EUR 13 200 for Pensionskassen in Austria since 1 January 2022), when the assets would provide an income below a certain amount (e.g. minimum national salary in Colombia), or when people contributed for a shorter period than the one set in the law (e.g. 750 weeks in Mexico in 2021, increasing gradually by 25 weeks per year until reaching 1 000 weeks in 2031). A part of the lump sum payments may however be reinvested in alternative savings vehicles after the lump sums are taken out.

Individuals may have the option of receiving a retirement income from the entity managing their assets or from another entity. They may for instance be able to purchase an annuity from a life insurance company (such as in Chile). In this case, assets are transferred from the entity in charge of the asset accumulation phase (i.e. AFPs in Chile) to the one in charge of paying benefits to retirees.

The entity in charge of the pay-out phase may be a public entity such as in Latvia, Lithuania (from July 2020) or Poland. Individuals in Latvia can choose to transfer their assets to the State Social Insurance Agency, which then combines these assets with the ones accumulated in their notional account from the

pay-as-you-go (PAYG) system in order to pay overall benefits. In Lithuania, since July 2020 assets of retiring individuals entitled to a life annuity are transferred from private pension funds in charge of the accumulation phase to a special unit of the State Social Insurance Fund Board (SoDra, i.e. the entity in charge of the payment of public PAYG pensions), which is in charge of making the annuity payments. In Poland, open pension funds have become accumulation-only vehicles since the pension reform in 2014. The accumulated assets of members with ten or fewer years to retirement are incrementally transferred to the Social Insurance Institution for benefit payments (which is the so-called “slider” mechanism).

Payments from pension providers to retirees or to entities in charge of the pay-out phase were the largest in Australia, Denmark, Iceland, Switzerland and the United States, which all have mature pension systems and large amounts of pension assets accumulated (over 100% of GDP in all of them).³³ Figure 1.11 shows that these payments amounted to 6.6% of GDP in Australia, 6.3% in Denmark, 7% in Iceland and 6.7% in Switzerland in 2021 and 8.3% in the United States in 2019 (latest year available). In some countries where funded and private plans were introduced recently, the size of pension payments remains relatively limited but is growing (e.g. Albania, North Macedonia).³⁴ The largest transfers of assets to a third party were observed in Chile (0.5% of GDP), Latvia (1.8%) and Switzerland (1.2%) in 2021 among OECD countries.

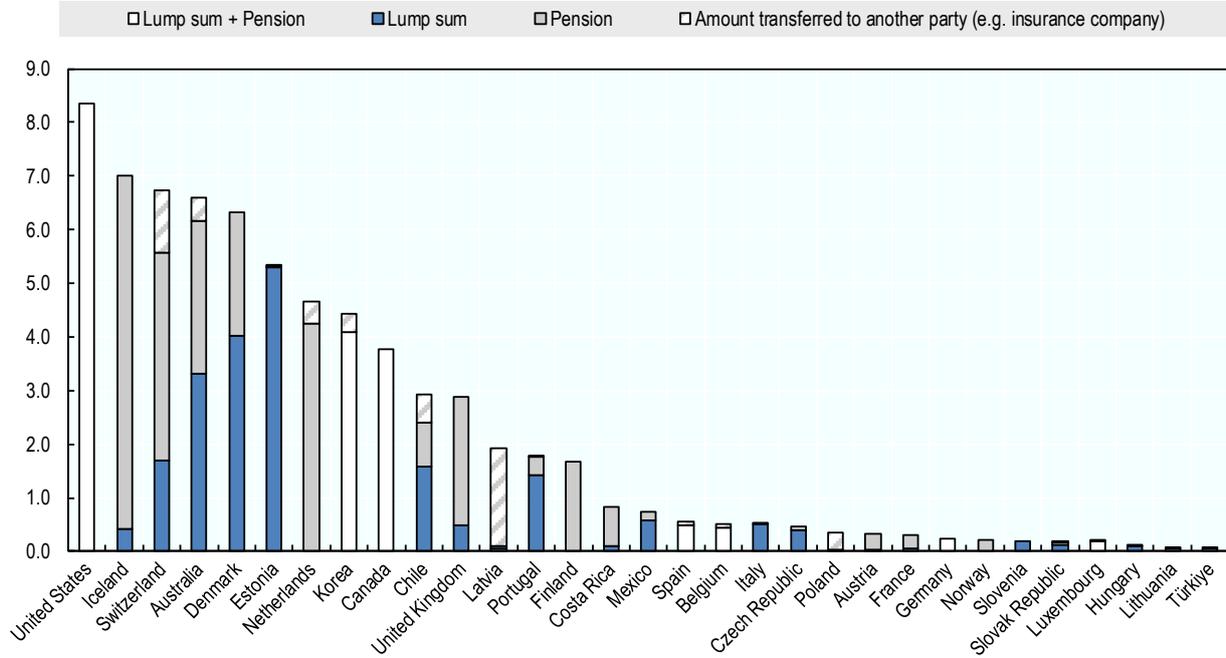
³³ Payments from pension providers to retirees and to entities in charge of the pay-out phase amounted to 8.3% of GDP in the United States in 2019 (latest year available).

³⁴ The amount of benefits paid from funded and private pension plans as a lump sum or a pension is available for each reporting country and each year between 2001 and 2021 as a percentage of GDP in Table A.B.5 in the statistical annex of this report, accessible online at: <https://www.oecd.org/pensions/private-pensions/pensionmarketsinfoocus.htm>

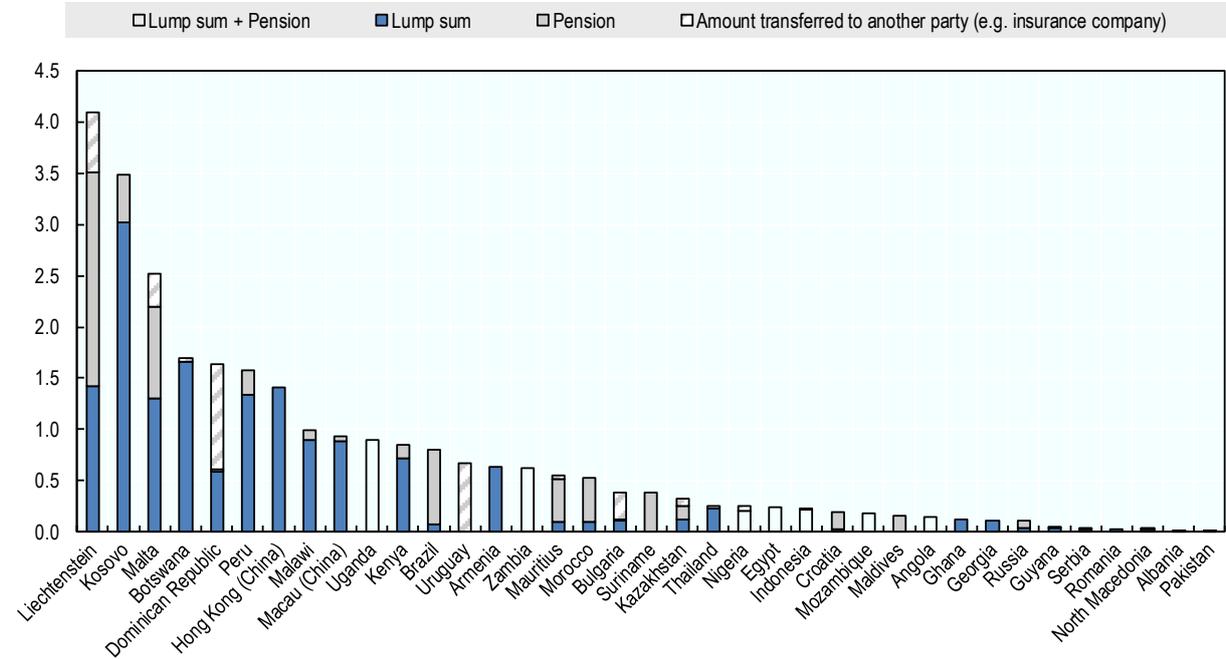
Figure 1.11. Total benefits paid from funded and private pensions plans and assets transferred to a third-party, 2021 or latest year available

As a percentage of GDP

A. Selected OECD countries



B. Selected other jurisdictions



Note: Please see the methodological notes at the end of the report.
 Source: OECD Global Pension Statistics.

COVID-19 had an impact on payments from pension plans in 2020, continuing in 2021, both at retirement (through changes in retirement planning and behaviours) and during the accumulation phase (through early access to retirement savings). Some evidence suggests that, in some countries, COVID-19 may have led some workers to delay retirement (29% of workers according to a survey from Fidelity International on 2 000 adults in the United Kingdom in August 2021) and some others to retire earlier (2.4 million excess retirements in the United States as of August 2021 according to Faria e Castro (2021^[6])).³⁵ COVID-19 and related policy measures in the area of funded pensions may also have influenced the amount of benefits paid.³⁶ For instance, Derby et al. (2022^[7]) found that withdrawals from individual retirement accounts in the United States declined (in 2020) for those older than 72, following the temporary suspension of required minimum distribution rules from March to December 2020. At the same time, this study found an increase in early withdrawals from occupational plans, likely due to the partial suspension of the early withdrawal penalty. Some other countries recorded larger withdrawals before retirement during COVID-19 due to early access to savings. In Chile and Peru, members withdrew respectively USD 47.4 billion and USD 16.5 billion in total over 2020 and 2021, accounting respectively for 25.6% and 37.7% of the amount of pension assets at end-2019, following the three rounds (in Chile) and five rounds (in Peru) of early access that were granted to support people in the first two years of the pandemic. Mexico also recorded an increase in early withdrawals (amounting to USD 2 billion in total over 2020 and 2021, i.e. 1.1% of assets in personal pension plans at end-2019) potentially because of spells of unemployment that COVID-19 may have induced.

1.2. Investment performance and allocation of pension assets

The performance of portfolio investments is a key driver in the evolution of assets in pension plans. From the perspective of plan members, positive investment returns enhance the security of benefit promises in defined benefit plans, and increase the amount of assets and retirement benefits they can expect from defined contribution plans.

1.2.1. Investment rates of return

The growth of pension assets in 2021 is partly attributable to the investment income that pension providers manage to achieve in financial markets in 2021.

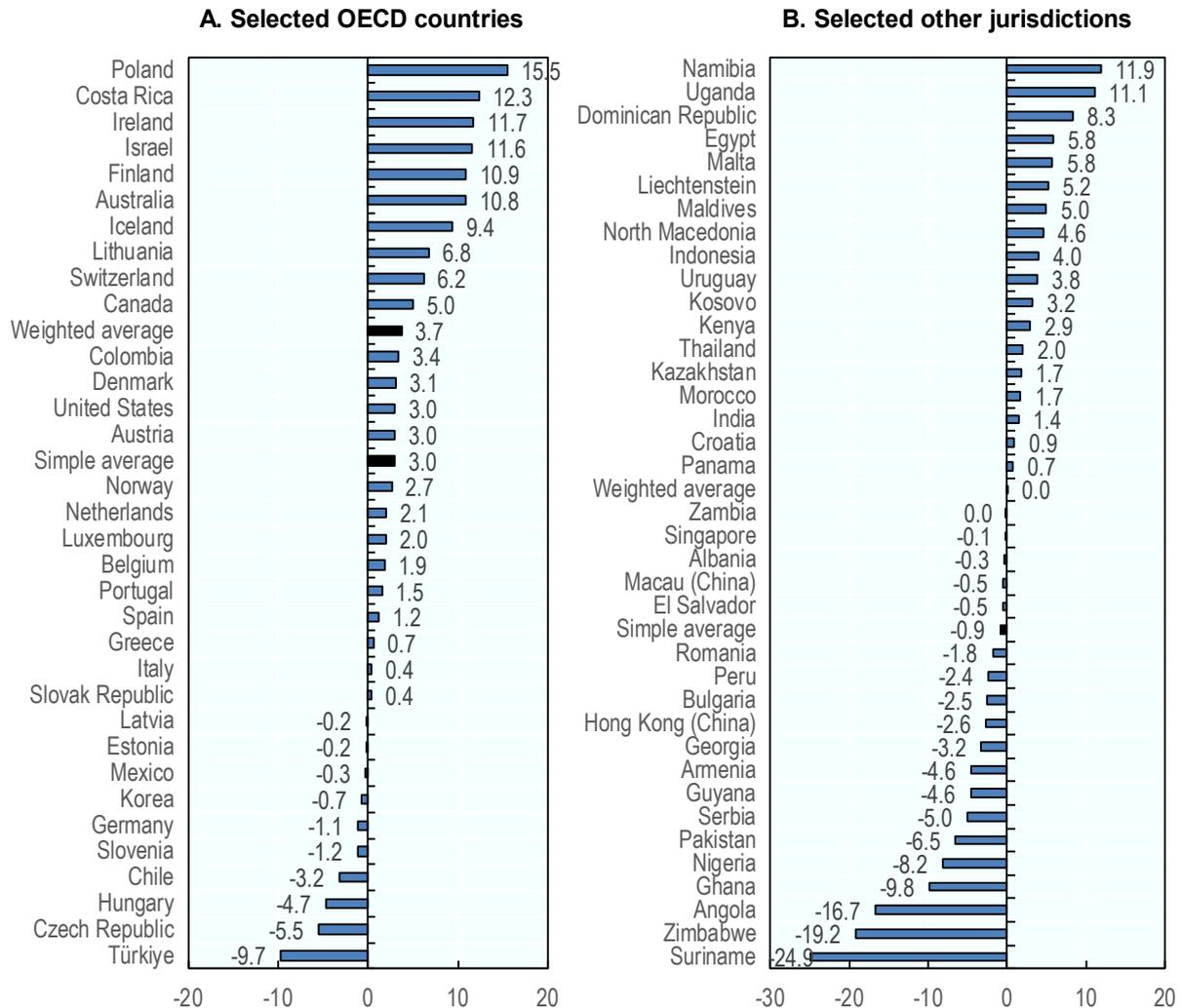
Pension plans recorded positive real investment rates of return (net of investment expenses) in 41 out of 70 reporting jurisdictions in 2021 (Figure 1.12). The real net investment return was 3% in the OECD (on average). Some of the largest pension markets recorded positive and higher real net investment returns, such as Australia (10.8%), Canada (5%), Switzerland (6.2%) and the United States (3%). Poland and Costa Rica recorded the strongest investment performance among OECD countries in 2021, at 15.5% for pension funds in Poland and 12.3% for personal plans in Costa Rica. Yet pension plans in a number of jurisdictions did not manage to achieve positive real net investment returns, especially in non-OECD jurisdictions (19 out of 37 non-OECD jurisdictions), accounting for an average investment performance below 0% among non-OECD reporting jurisdictions.

³⁵ For more information on the survey of Fidelity International, see <https://www.pensions-expert.com/DB-Derisking/Number-of-workers-delaying-retirement-due-to-Covid-19-rises>.

³⁶ See OECD (2022^[46]) for a description of policy responses to the impact of COVID-19 on pension plans in the OECD.

Figure 1.12. Annual real investment rates of return of funded and private pension plans, 2021

In %



Note: Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

Generally, pension plans benefitted from buoyant stock markets in 2021, continuing their recovery after the drop in early 2020. Major stock markets recorded gains in 2021, ending at higher levels at the end of the year than at the beginning: +6% for Nikkei 225, +14% for FTSE 100, +16% for DAX, and +27% for S&P 500 for example, according to the Market Data Center of the Wall Street Journal. In the United States, energy and real estate were the best performing sectors in the S&P 500 in 2021, with the tech sector also continuing to record strong gains.³⁷ By contrast, pension plans may have seen the value of some of their bond holdings decline by end-2021, as the value of some bond indices showed a decline in 2021 (e.g. the S&P Global Developed Sovereign Bond Index declined by 6.8% between end-2020 and end-2021).

While pension plans achieved investment gains, in nominal terms, in nearly all reporting jurisdictions in 2021 like in 2019 and 2020, these gains were insufficient in 2021 to offset a rising inflation in 28 reporting jurisdictions (Table 1.2). More countries registered a negative real net investment rate of return in 2021

³⁷ See [S&P 500 ends 2021 with a nearly 27% gain, but dips in final trading day \(cnbc.com\)](https://www.cnbc.com)

than in 2019 and 2020. Inflation had already hit a 30-year high in the OECD area by December 2021, at 6.6%.³⁸ The lowest investment rates of return in real terms in 2021 were reported in Suriname (-24.9%), Zimbabwe (-19.2%), Angola (-16.7%) and Ghana (-9.8%), where inflation was also among the highest among all reporting jurisdictions (60.7% in Suriname and Zimbabwe, 27% in Angola and 12.6% in Ghana). In the OECD area, pension plans recorded the lowest real investment rate of return in Türkiye (-9.7%), where inflation reached 36.1%.

Table 1.2. Nominal and real investment rates of returns of funded and private pension plans in 2019, 2020 and 2021

In %

A. Selected OECD countries

B. Selected other jurisdictions

	Nominal			Real				Nominal			Real		
	2019	2020	2021	2019	2020	2021		2019	2020	2021	2019	2020	2021
Australia	7.6	0.3	15.1	5.9	0.6	10.8	Albania	3.9	3.5	3.4	2.8	2.4	-0.3
Austria	11.0	2.5	7.4	9.2	1.4	3.0	Angola	5.5	6.0	5.8	-9.7	-15.3	-16.7
Belgium	14.3	4.1	7.7	13.4	3.7	1.9	Armenia	13.3	11.2	2.8	12.5	7.3	-4.6
Canada	9.1	6.3	10.1	6.7	5.6	5.0	Botswana	8.0	0.8	..	5.7	-1.3	..
Chile	15.2	5.7	3.7	11.9	2.7	-3.2	Bulgaria	6.7	2.5	5.1	2.8	2.3	-2.5
Colombia	15.2	9.0	9.2	11.0	7.2	3.4	Croatia	8.4	0.9	6.4	7.0	1.6	0.9
Costa Rica	13.5	9.1	16.0	11.8	8.1	12.3	Dominican Republic	10.2	9.8	17.5	6.3	4.0	8.3
Czech Republic	1.7	1.1	0.8	-1.4	-1.2	-5.5	Egypt	13.3	14.3	12.0	5.8	8.4	5.8
Denmark	10.9	9.2	6.3	10.1	8.7	3.1	El Salvador	6.2	4.2	5.5	6.2	4.3	-0.5
Estonia	8.4	4.0	11.9	6.6	4.8	-0.2	Georgia	7.3	10.3	10.2	0.3	7.7	-3.2
Finland	11.5	4.7	14.7	10.5	4.5	10.9	Ghana	..	..	1.6	..	..	-9.8
Germany	4.7	2.9	4.1	3.1	3.2	-1.1	Guyana	1.8	0.9	0.8	-0.3	-0.1	-4.6
Greece	10.3	2.1	5.8	9.5	4.5	0.7	Hong Kong (China)	12.2	11.7	-0.3	9.1	12.7	-2.6
Hungary	9.4	3.9	2.4	5.2	1.1	-4.7	India	7.6	13.4	7.1	0.3	8.4	1.4
Iceland	13.9	12.6	15.0	11.6	8.7	9.4	Indonesia	8.2	8.7	5.9	5.3	7.0	4.0
Ireland	20.0	5.0	17.9	18.5	6.0	11.7	Kazakhstan	6.3	10.3	10.3	0.9	2.7	1.7
Israel	11.4	5.0	14.7	10.8	5.8	11.6	Kenya	..	6.2	8.8	..	0.6	2.9
Italy	6.0	2.8	4.3	5.5	3.0	0.4	Kosovo	8.4	3.3	10.1	7.1	3.2	3.2
Japan	1.6	-1.3	12.3	1.1	-1.9	12.7	Liechtenstein	10.0	3.2	6.8	9.8	4.0	5.2
Korea	..	3.0	3.0	..	2.4	-0.7	Macau (China)	6.1	6.0	0.5	3.4	6.9	-0.5
Latvia	9.8	2.3	7.7	7.4	2.8	-0.2	Malawi	13.0	13.1	19.0	1.3	5.1	..
Lithuania	10.0	5.4	18.1	7.1	5.2	6.8	Maldives	5.1	5.1	5.0	3.7	6.5	5.0
Luxembourg	7.7	2.8	6.2	6.0	2.3	2.0	Malta	..	3.0	8.5	..	2.8	5.8
Mexico	13.3	12.7	7.1	10.2	9.3	-0.3	Morocco	..	..	5.0	..	..	1.7
Netherlands	15.9	7.7	7.9	12.8	6.6	2.1	Mozambique	16.8	..	..	12.9	..	..
Norway	9.6	7.5	8.1	8.1	6.0	2.7	Namibia	..	6.8	16.9	..	4.3	11.9
Poland	0.9	-2.3	25.5	-2.2	-4.4	15.5	Nigeria	11.4	18.3	6.2	-0.5	2.2	-8.2
Portugal	7.9	3.9	4.3	7.4	4.1	1.5	North Macedonia	10.6	3.8	9.6	10.1	1.6	4.6
Slovak Republic	6.4	2.7	6.3	3.3	1.1	0.4	Pakistan	10.3	10.5	5.0	-3.0	2.4	-6.5
Slovenia	5.8	2.1	3.7	3.9	3.2	-1.2	Panama	6.4	5.3	3.4	6.5	7.0	0.7
Spain	8.5	1.3	7.9	7.7	1.8	1.2	Peru	12.1	8.6	4.5	10.1	6.3	-2.4
Sweden	11.3	5.9	..	9.4	5.4	..	Romania	11.4	7.0	6.2	7.1	4.9	-1.8
Switzerland	10.2	4.2	7.8	10.0	5.1	6.2	Russia	8.1	5.1	..	4.9	0.2	..
Türkiye	20.2	19.6	22.9	7.4	4.3	-9.7	Serbia	8.1	2.1	2.4	6.1	0.8	-5.0
United States	12.3	9.3	10.3	9.8	7.8	3.0	Singapore	3.9	3.9	3.9	3.1	3.9	-0.1
							South Africa	5.2	0.1	..	1.2	-2.9	..
							Suriname	11.2	18.5	20.6	6.7	-26.3	-24.9
							Thailand	3.1	-1.1	4.2	2.2	-0.8	2.0
							Trinidad and Tobago	6.5	3.3	..	6.1	2.5	..
							Uganda	8.9	13.0	14.3	5.2	9.1	11.1
							Ukraine	12.6	9.3	..	8.2	4.1	..
							Uruguay	12.9	10.0	12.1	3.8	0.5	3.8
							Zambia	10.0	13.4	16.3	-1.5	-4.9	0.0
							Zimbabwe	..	..	29.8	..	..	-19.2

Note: Investment returns are highlighted in blue when they are negative. Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

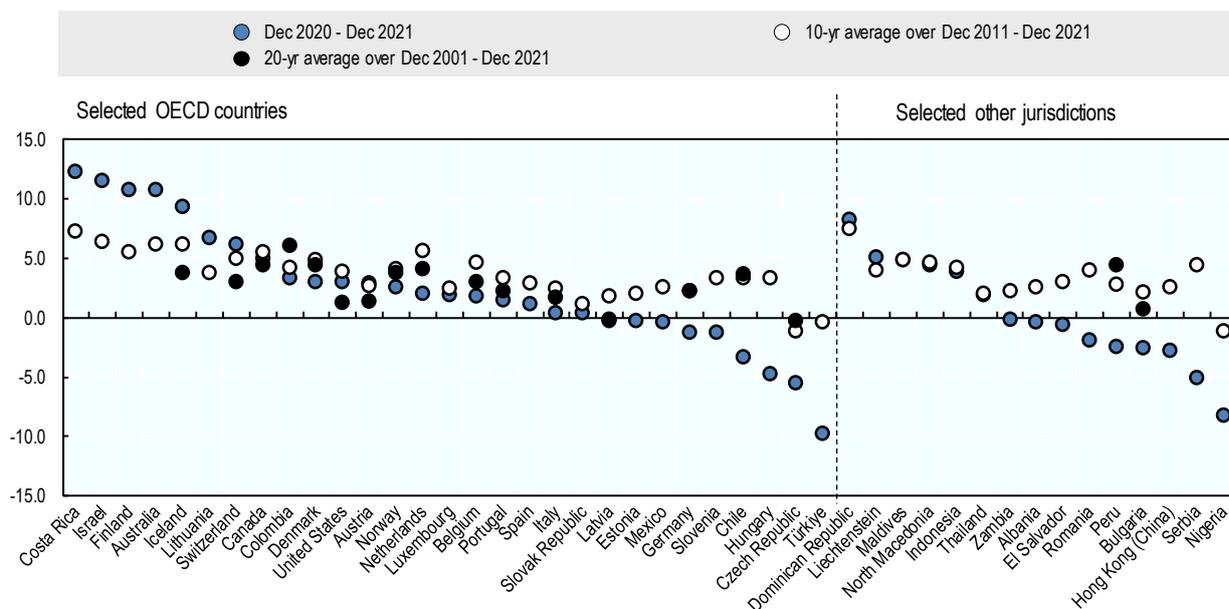
³⁸ [Consumer Price Index – News Release \(oecd.org\)](https://www.oecd.org/consumer-price-index/)

The investment performance of pension plans over the long term is more important than short-term gains or losses as saving for retirement is for the long haul. Fluctuations in investment performance may be inevitable during the life of a retirement portfolio.

Over the last two decades, pension plans obtained net investment gains in real terms in most jurisdictions, despite the rising inflation in 2021 and shocks in financial markets (such as in Q1 2020 at the beginning of the pandemic). The annual investment performance of pension plans was positive on average in real terms in 41 out of 44 reporting jurisdictions over the last 10 years, and in 16 out of 18 reporting jurisdictions over the last 20 years (Figure 1.13). The strongest average annual real investment rates were recorded in the Dominican Republic (7.6%), Costa Rica (7.3%) and Israel (6.4%) over the last 10 years, and Colombia (6.2%), Denmark (4.6%) and Peru (4.6%) over the last 20 years. By contrast, the lowest annual returns were recorded in Türkiye (-0.3%), the Czech Republic (-1%) and Nigeria (-1.1%) over the last 10 years, and Latvia (-0.1%) and the Czech Republic (-0.2%) over the last 20 years.

Figure 1.13. Real geometric average annual investment rates of return of funded and private pension plans in 2021 and over the 10 and 20 years

In %



Note: Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

1.2.2. Asset allocation

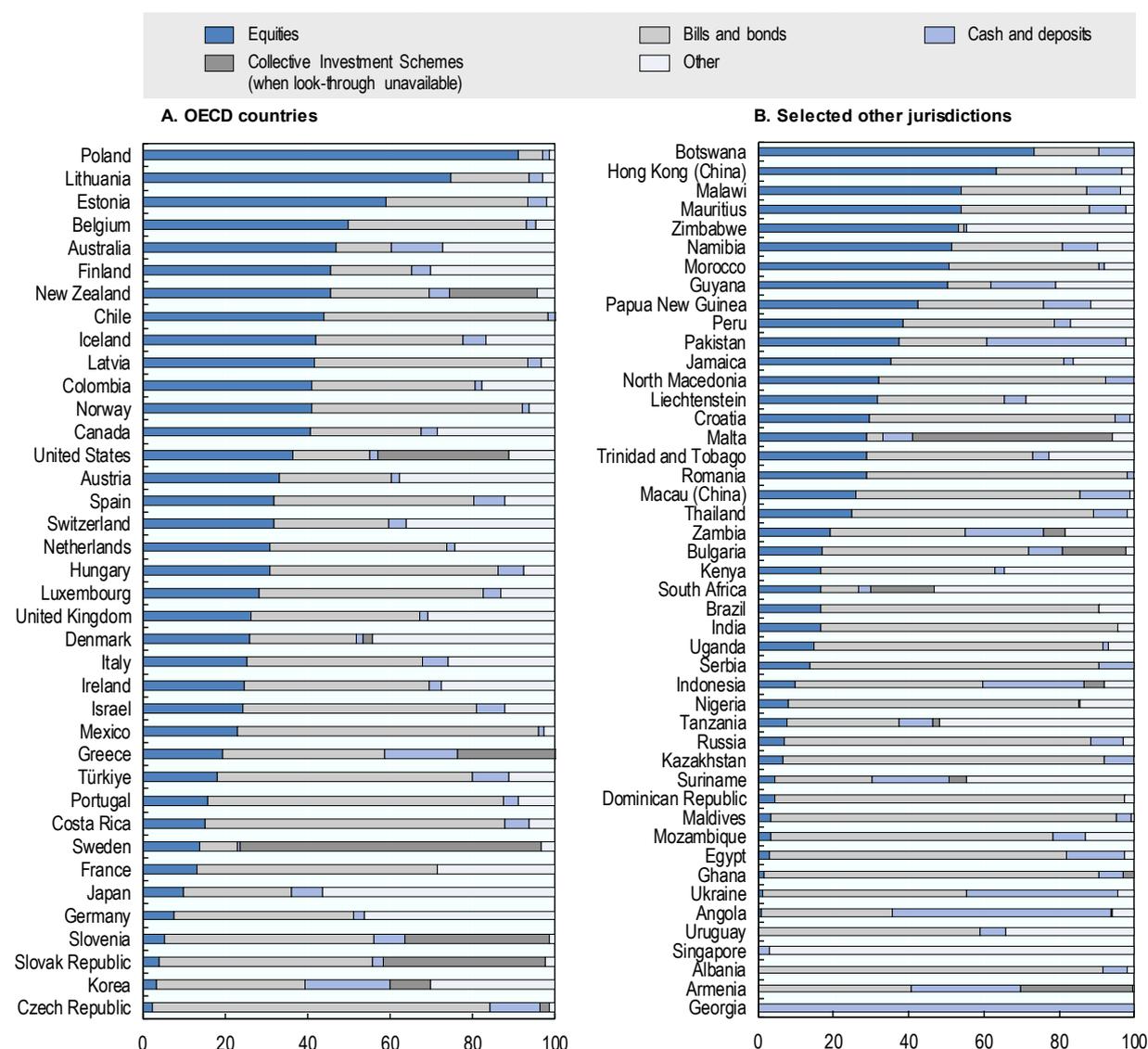
Asset allocation and returns go hand in hand, as well as risk levels. Higher portfolio allocation to risky assets entails higher potential returns and higher return volatility.

In most countries, bonds and equities were the two main asset classes in which retirement savings were invested at the end of 2021, accounting for more than half of investments in 35 out of 38 OECD countries,

and 38 out of 46 other reporting jurisdictions (Figure 1.14).³⁹ Therefore, developments in bond and equity markets play a major role in the financial performance of pension plans. The combined proportion of bonds and equities was the highest (relative to the size of the portfolio) in Chile (98.2%), Romania (97.9%), the Dominican Republic (97.2%), Poland (97.1%), Mexico (96%), India (95.4%) and the Maldives (95.3%).

Figure 1.14. Allocation of assets in funded and private pension plans in selected asset classes and investment vehicles, 2021 or latest year available

As a percentage of total investment



Note: Please see the methodological notes at the end of the report.
Source: OECD Global Pension Statistics.

³⁹ The category “bonds” refers to both bills and bonds.

Pension assets can be invested in bonds and equities either directly or indirectly through collective investment schemes (CIS). For some countries, the look-through of investments in collective investment schemes was not available, such as for the Slovak Republic (where 39.1% of assets were invested in CIS), Sweden (73.1% of investments) and the United States (32% of investments). Only the direct investments in bonds and equities are available: 55.8% for the Slovak Republic, 22.9% for Sweden, 54.9% for the United States. The overall exposure of pension assets to fixed income securities and equities is therefore probably higher in these countries.

The relative importance of equities and bonds varied considerably across countries in 2021. Although there was in general a greater preference for bonds, the reverse was true in 14 OECD countries and 13 other jurisdictions where equities outweighed bonds. This was the case for instance in Botswana where 73.2% of assets were invested in equities compared to 17.2% in bonds, and Zimbabwe where 53.1% of assets were invested in equities compared to 1.4% in bonds.

Public sector bonds, as opposed to corporate bonds, represented a larger share of the combined direct bond holdings (i.e. excluding investment via collective investment schemes) in a number of jurisdictions. For example, public sector bonds accounted for 100% of total direct bond holdings in Albania and Serbia, 99.9% in North Macedonia, 99.8% in Uganda, 99% in Kenya, 97.7% in Croatia and 97.1% in the Maldives but only 19.7% in Malta, 18.9% in New Zealand and 8.3% in Macau (China).

Several reasons may account for the high proportion of investments in government bonds in some countries. One of them may be a lack of other investment opportunities domestically, as reported by some national authorities (e.g. Albania, the Maldives, Serbia). Albania created a stock exchange recently (the Albanian Stock Exchange) that may enable a greater diversification of pension assets, currently almost fully invested in domestic government bonds. Another reason may be the need for a fixed and guaranteed income stream. For example, in the Czech Republic, transformed pension funds offering an annual non-negative nominal guarantee to plan members invest in bills and bonds to receive a fixed income stream and ensure they keep their promise. Government bonds may be perceived as safer assets compared to others, entailing less uncertainty. Investment regulations in some countries may also require pension providers to invest a certain proportion of their assets in certain instruments (e.g. at least 35% of the assets of the Moroccan Inter-professional Pension Fund have to be invested in bonds issued or guaranteed by the Moroccan State).

Cash and deposits also accounted for a significant share of pension assets in some jurisdictions, exceeding 20% of assets in 9 out of 84 reporting jurisdictions. For example, in Korea, 20.4% of pension assets are in cash and deposits, which are part of guaranteed interest products in which Korean retirement pension plans invest the most, for the security these products offer (OECD, 2022^[8]). Georgia is the country with the highest share of assets in cash and deposits at end-2021 (100%) for the recently introduced second pension pillar, until the agency in charge of managing the assets can start investing in other securities.

The proportion of pension assets invested in loans, real estate (land and buildings), unallocated insurance contracts, private investment funds and other alternative investments (shown as “other” in Figure 1.14) varies widely across jurisdictions. In Greece, these “other” investments accounted for 0.1% of assets at end-2021. By contrast, in some other countries, the share of these investments was relatively high, such as in Austria (37.8%), Denmark (44.2%), Germany (46.2%) and Switzerland (36%). In some cases, real estate is a significant component of the portfolios of pension providers (directly or indirectly through collective investment schemes) such as in Switzerland (20.9%). A relatively large share of assets in alternative investments may deserve monitoring from the supervisory authorities.

Many jurisdictions set limits on investments of pension assets in less traditional asset classes such as real estate (OECD, 2022^[9]). Direct investment in real estate is not allowed in Colombia, Costa Rica, the Czech Republic (for participation funds), Ireland (for personal retirement savings accounts), Italy, Japan (except for Mutual Aid Associations), Lithuania, Mexico, Poland, Portugal (for personal retirement savings schemes financed through harmonised and non-harmonised investment funds), Türkiye among OECD countries;

and Albania, Armenia, Croatia (for pension funds), Georgia (for mandatory pension funds), Hong Kong (China), India, Kazakhstan, the Maldives, Nigeria, North Macedonia, Pakistan, Peru, Romania, Thailand and Uruguay for instance among non-OECD jurisdictions. However, in most of the jurisdictions previously listed, only direct investment is prohibited and indirect investments in real estate may be allowed to some extent through bonds and shares of property companies, or real estate investment trusts (REITs) for instance.

Some countries have loosened investment limits over recent years and encouraged investments in infrastructure, long-term projects and other alternative assets. For example, Croatia has expanded the investment opportunities for mandatory pension funds, allowing them to invest in infrastructure projects directly from 1 January 2019. Indonesia's Financial Services Authority (OJK) has also recently added infrastructure investment funds as permissible investments for pension funds. Since 2019, pension funds in Romania have been allowed to invest 15% of their assets in infrastructure projects created under the national legislation of the Emergency Government Ordinance. Hong Kong (China) removed the aggregate investment limit of 10% for REITs listed on selected approved stock exchanges in 2020. In Switzerland, the investment category for infrastructure has now its own limit at 10%, separated from the 15% limit for alternative investments since October 2020, to allow pension funds to expand their exposure to infrastructure.

While the allocation of pension assets remained broadly the same at end-2021 compared to end-2020, a slight shift from bonds to equities was noticeable. The proportion of pension assets invested in equities increased by 2 percentage points while the proportion in bonds declined nearly by the same extent between end-2020 and end-2021 on average among 73 reporting jurisdictions (Figure 1.15, Panel A). This trend probably resulted from a rise in the value of equities in the portfolios or a reallocation towards this instrument to benefit from recovering stock markets (as noted by the Australian pension supervisor for instance).

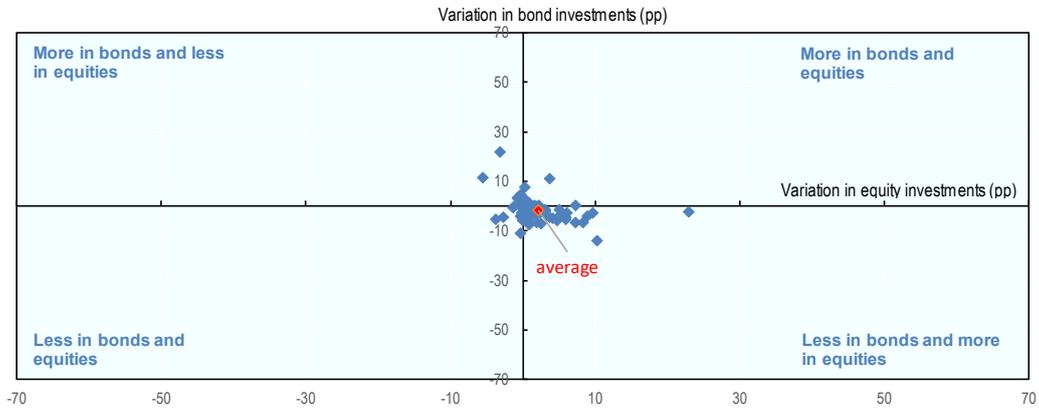
A shift away from bonds is more visible over the last 10 and 20 years (Figure 1.15, Panels B and C).⁴⁰ The proportion of investments in bonds declined by 8 percentage points on average among 48 reporting jurisdictions over the last 10 years, and by 17 percentage points on average among 16 reporting jurisdictions over the last 20 years. The decline in investments in bonds was not always offset by an increase in investments in equities of the same scale. For instance, the proportion that pension funds in Switzerland invested in bonds declined by 10 percentage points between 2011 and 2021, but only 6 percentage points were directed to equities. A part of the reallocation went to other investments.

⁴⁰ The allocation of pension assets in selected investment categories is available for each reporting jurisdiction and each year in Table A.B.8 (for equities), Table A.B.9 (for bills and bonds), Table A.B.10 (for cash and deposits) and Table A.B.11 (for the "other" category) in the statistical annex of this report, accessible online at: <https://www.oecd.org/pensions/private-pensions/pensionmarketsinfocus.htm>

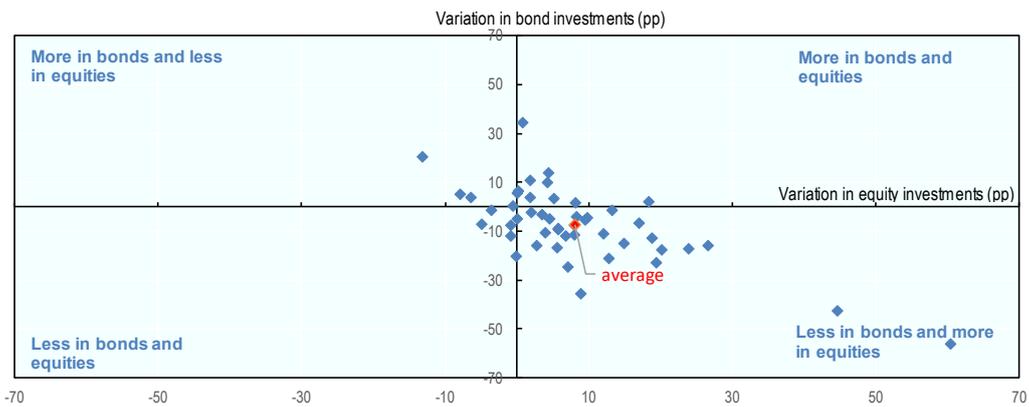
Figure 1.15. Variations in the proportion of pension plan assets invested in equities and bills and bonds between 2020 and 2021 and over the last 10 and 20 years in selected jurisdictions

In percentage points

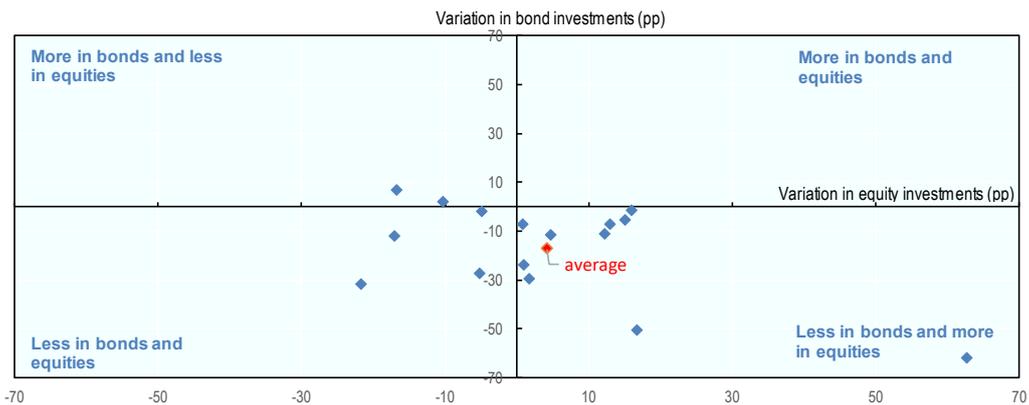
A. Between 2020 and 2021



B. Between ~2011 and 2021



C. Between ~2001 and 2021

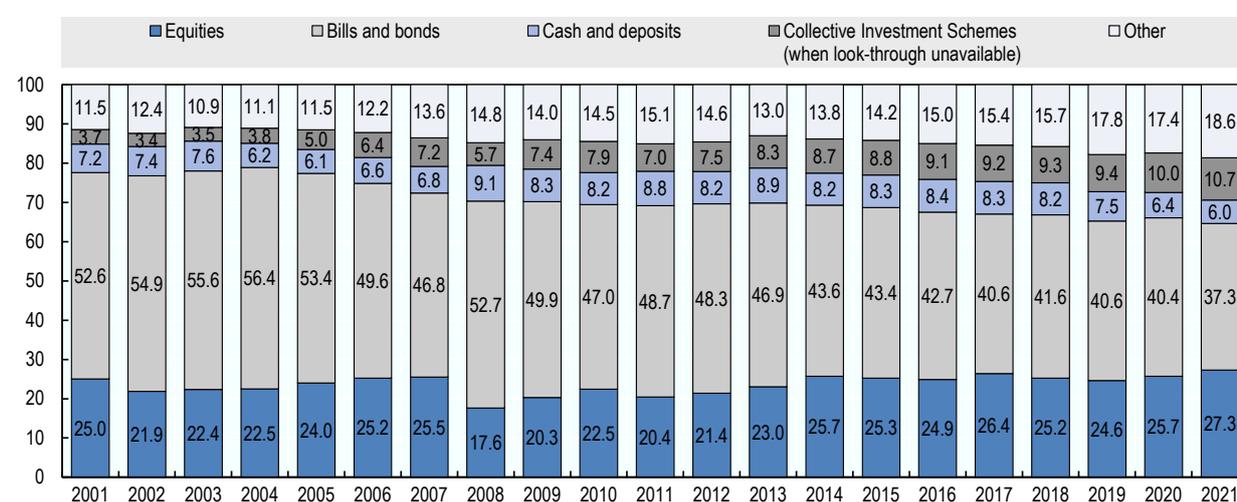


Note: Please see the methodological notes at the end of the report.
Source: OECD Global Pension Statistics.

Investments in alternative asset classes – i.e. investments in other classes than equities, bills, bonds, cash and deposits – have increased over the last 20 years.⁴¹ Figure 1.16 shows the average allocation of pension assets in 16 OECD and non-OECD reporting jurisdictions between 2001 and 2021. The proportion of pension assets in alternative investments increased from 11.5% in 2001 to 18.6% in 2021 on average in these 16 jurisdictions. Adjustments to the portfolio of pension providers, potentially as a search for yield to meet pension promises, are not intrinsically bad as long as they do not imply an excessive increase in the risk profile of the portfolio. Nevertheless, pension regulators and supervisors need to continue to monitor these developments closely to avoid damaging increases in the risk profile of the portfolio of pension providers in their search for yield. The OECD argues that pension providers should only engage in these investments when they have the skills and expertise to assess the risks and potential rewards appropriately (OECD, 2022_[10]).

Figure 1.16. Average allocation of pension plan assets in selected asset classes and investment vehicles in a selection of 16 jurisdictions, 2001-21

As a percentage of total investment



Note: Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

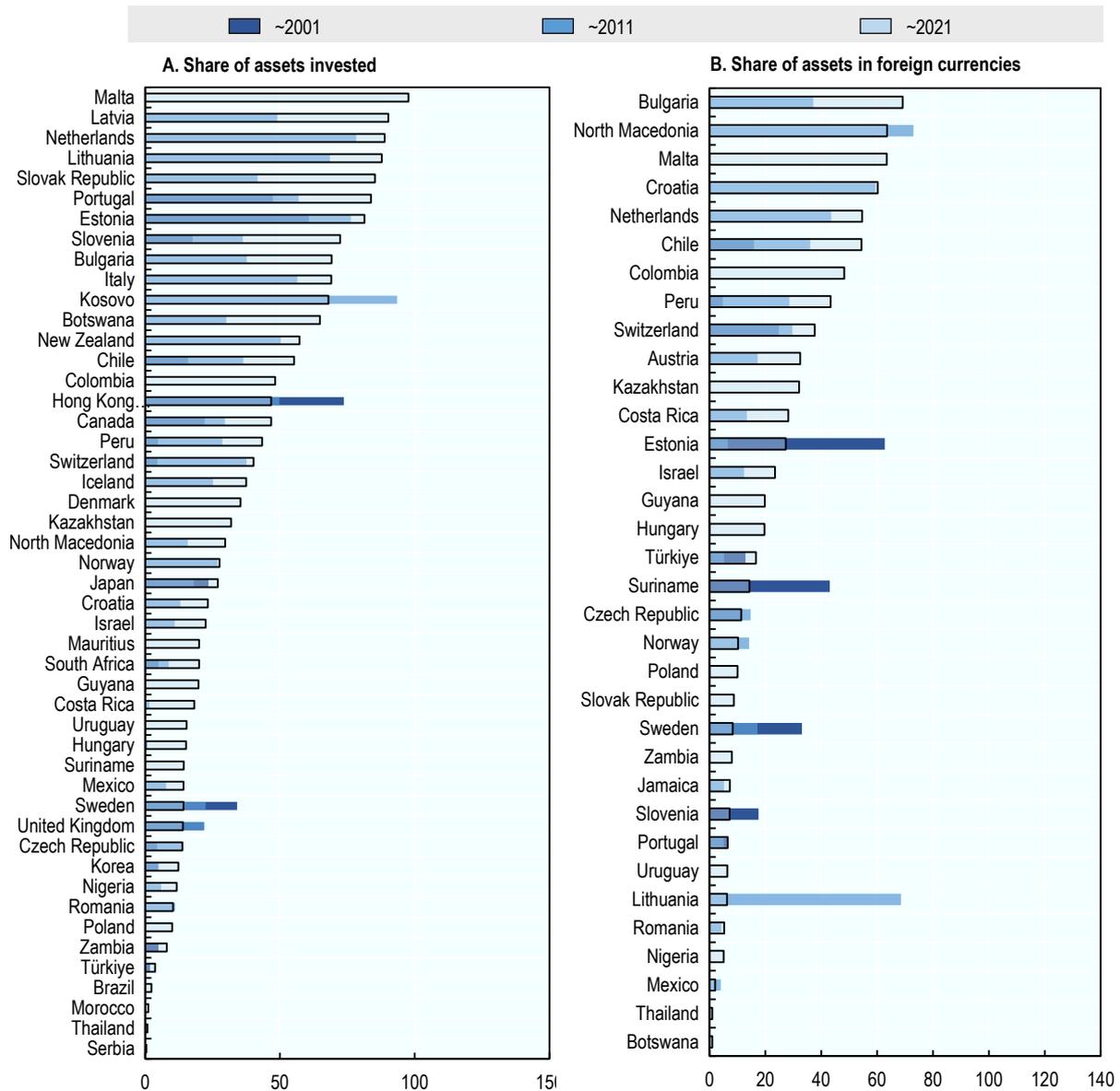
The proportion of pension assets invested abroad increased for 32 out of 38 reporting jurisdictions over the last 10 years, and 17 out of 20 over the last 20 years (Figure 1.17).⁴² This increase may be related to the lifting of investment restrictions on foreign investments (such as in Peru) and a potential search for investment opportunities, higher yields or risk diversification.

⁴¹ Results here are based on the asset allocation of pension providers in a group of 16 jurisdictions reporting data over the period 2001 – 2021.

⁴² The share of pension assets invested abroad is available for each reporting jurisdiction and for each year between 2001 and 2021 in Table A.B.12 in the statistical annex of this report, accessible online at: <https://www.oecd.org/pensions/private-pensions/pensionmarketsinfocus.htm>

Figure 1.17. Share of pension plan assets invested abroad and in foreign currencies, in 2001, 2011 and 2021 (or nearest year available)

As a percentage of GDP



Note: “~” means around. Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

Countries with the highest proportion of pension assets invested abroad were European countries with small capital markets. Among the ten countries with the largest proportion of assets invested abroad, nine were from the euro area or were using the euro as their main currency in 2021: Malta (98% of assets invested abroad), Latvia (90%), the Netherlands (89%), Lithuania (88%), the Slovak Republic (85%), Portugal (84%), Estonia (81%), Slovenia (72%) and Italy (69%). The domestic capital markets of some of these countries may be too small to absorb the savings from pension plans (Stewart, Despalins and Remizova, 2017^[11]). A significant share of pension assets may have been invested in other countries within the euro area, as the share of pension assets exposed to foreign currency was much lower than the share of assets abroad for Estonia (27%), Lithuania (6%), Portugal (6%), the Slovak Republic (9%) and Slovenia

(7%) for instance. The share of pension assets exposed to foreign currencies dropped between 2011 and 2021 in Lithuania (which adopted the euro in 2015) and between 2001 and 2021 in Estonia (which adopted the euro in 2011).⁴³

Some other countries with small domestic capital markets have opted for domestic investment options instead of investments abroad. Pension funds from Albania and the Maldives did not invest abroad at all for instance. These funds mainly invest in domestic bonds instead, even though domestic regulation does not prevent them from investing abroad. Investing abroad is forbidden only in a few reporting non-OECD jurisdictions, including the Dominican Republic, Egypt, India, Nigeria, Uganda and Zimbabwe (OECD, 2022^[9]).⁴⁴

1.3. Specificities and challenges of defined benefit and defined contribution plans

The pension landscape includes various types of pension plans worldwide.⁴⁵ The features of these plans may entail specific challenges, such as the sustainability of the pension promise or the adequacy of retirement benefits. Plan sponsors, members and providers may also be exposed to and bear different risks depending on the design of the plan. The following subsections describe the pension landscape in more detail, before looking into the funding levels of defined benefit (DB) plans and the fees that members of defined contribution (DC) plans are charged.

1.3.1. The landscape of funded and private pension plans

Individuals may be accumulating savings for retirement through various types of pension plans. They may be members of occupational pension plans, accessed through employment and established by employers on behalf of their employees, or by social partners. Depending on how pension benefits are calculated and who bears the risks, occupational plans can be either DB or DC. In DC plans, participants bear most of the risks, while in DB plans, sponsoring employers assume some of the risks if assets do not cover pension liabilities. Individuals may also have the option of opening a personal plan with a pension fund or another financial institution without any intervention from their employer and not necessarily in the context of an employment relationship.⁴⁶

In almost all OECD countries, employers can set up occupational plans for their employees (Table A A.1). In OECD countries where employers do not set up occupational plans (e.g. Colombia, Estonia, Lithuania and the Slovak Republic), individuals can usually still have access to (personal) pension plans through their work and choose the fund they would like to join. All OECD countries and most other reporting jurisdictions in this report offer personal plans.

⁴³ The share of assets denominated in foreign currency is available for each reporting jurisdiction and for each year between 2001 and 2021 in Table A.B.13 in the statistical annex of this report, accessible online at: <https://www.oecd.org/pensions/private-pensions/pensionmarketsinfocus.htm>

⁴⁴ In Nigeria, some legacy (DB) schemes were in existence prior to the commencement of DC schemes and have been allowed to continue. Some of these DB schemes have investments in foreign assets. In Uganda, the Retirement Benefits Regulatory Authority Act does not allow foreign investments beyond the East African region.

⁴⁵ See Features of pension plans in annex.

⁴⁶ There is nowadays a full range of plans between traditional DB plans where plan sponsors bear all the risks (e.g. investment, inflation and longevity risks) and individual DC plans where individuals bear all the risks. The features of these plans may be closer to DB or DC plans but all have some risk sharing components between the different parties.

Most countries – 27 OECD countries and 25 out of the 45 other reporting jurisdictions – had DB plans in 2021, but the size of these plans varied. DB plans have a relatively large prominence, in terms of assets, in some pension markets such as in Finland and Switzerland (over 90% of all pension assets) (Table 1.3). However, the proportion of pension assets in DB plans was lower than in occupational DC and in personal plans combined in 37 out of 41 reporting jurisdictions. Some countries had no occupational DB plan at all, especially in Latin America and Central and Eastern Europe.

Table 1.3. Share of assets in occupational DB, DC and personal plans, in 2001, 2011 and 2021 (or nearest year available)

As a percentage of total assets

	Occupational DB plans			Occupational DC plans			Personal plans		
	~ 2001	~ 2011	~ 2021	~ 2001	~ 2011	~ 2021	~ 2001	~ 2011	~ 2021
Selected OECD countries									
Australia	..	10.4	..	..	28.4	..	..	61.2	..
Canada	62.4	58.4	..	2.9	3.6	..	34.7	38.0	..
Chile (1)	x	x	x	..	..	..	100.0	100.0	100.0
Colombia	x	x	x	x	x	x	100.0	100.0	100.0
Costa Rica	..	..	29.1	..	..	5.4	..	..	65.5
Czech Republic	x	x	x	x	x	x	100.0	100.0	100.0
Denmark	2.5	1.6	1.1	62.9	61.4	71.0	34.6	37.0	27.9
Estonia	x	x	x	x	x	x	100.0	100.0	100.0
Finland (2)	..	89.1	92.5	..	0.4	0.0	..	10.6	7.5
France	..	28.0	22.6	..	63.6	67.2	..	8.4	10.2
Hungary (3)	x	x	x	..	..	..	100.0	100.0	100.0
Iceland	17.0	23.6	6.0	81.7	61.1	79.1	1.3	15.3	14.9
Israel	91.0	76.4	47.3	x	x	x	9.0	23.6	52.7
Italy	40.1	9.9	2.6	56.8	68.6	61.9	3.1	21.5	35.4
Korea	..	19.3	26.3	..	5.6	19.0	..	75.1	54.7
Latvia	x	x	x	..	2.8	1.1	..	97.2	98.9
Lithuania	x	x	x	x	x	x	100.0	100.0	100.0
Mexico	..	20.1	10.1	..	1.4	0.6	..	78.5	89.4
New Zealand	30.0	24.2	..	27.0	30.1	..	43.0	45.7	..
Poland	x	x	x	0.1	1.5	11.4	99.9	98.5	88.6
Portugal (4)	..	..	38.6	..	..	11.3	..	..	50.0
Slovak Republic	x	x	x	x	x	x	100.0	100.0	100.0
Spain	..	47.8	34.6	..	6.9	7.6	..	45.3	57.8
Switzerland	..	89.0	90.6	x	x	x	..	11.0	9.4
Türkiye	..	71.0	..	..	3.2	..	..	25.8	..
United States	43.4	36.3	29.6	23.3	25.1	27.5	33.3	38.6	42.8
Selected other jurisdictions									
Albania (5)	x	x	x	x	69.6	50.7	x	30.4	49.3
Armenia (6)	x	x	x	x	x	x	x	100.0	100.0
Brazil	..	54.9	41.5	..	5.9	6.9	..	39.2	51.7
Bulgaria	x	x	x	0.0	0.1	0.1	100.0	99.9	99.9
Croatia	x	x	x	..	0.9	1.0	..	99.1	99.0
Dominican Republic	..	16.5	6.0	..	0.1	0.0	..	83.4	94.0
Guyana	..	..	88.1	..	..	11.9	..	..	x
Isle of Man	..	..	66.3	..	..	23.0	..	..	10.8
Kazakhstan	x	x	x	x	x	x	100.0	100.0	100.0
Liechtenstein	..	36.4	11.8	..	63.6	88.2	x	x	x
Malawi	..	..	4.6	..	..	95.4	..	..	x

	Occupational DB plans			Occupational DC plans			Personal plans		
	~ 2001	~ 2011	~ 2021	~ 2001	~ 2011	~ 2021	~ 2001	~ 2011	~ 2021
Maldives (7)	x	x	x	x	x	x	x	100.0	100.0
Malta (8)	x	x	x	x	..	0.8	x	..	99.2
Morocco	x	x	x	100.0	100.0	100.0	x	x	x
Namibia	..	72.5	..	..	27.5	..	..	0.0	..
Nigeria	..	39.9	21.4	x	x	x	..	60.1	78.6
Peru	x	x	x	x	x	x	100.0	100.0	100.0
Romania (9)	x	x	x	x	x	x	x	100.0	100.0
Uganda	..	..	4.9	..	..	95.1	..	..	0.0
Uruguay	x	x	x	x	x	x	100.0	100.0	100.0

Note: “~” means around; “.” means missing; “x” means not applicable. Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

Occupational DC plans and personal plans have been gaining prominence at the expense of DB plans even in countries with a historically high proportion of assets in DB plans such as the United States. In the United States, the proportion of assets in DB plans declined from 43.4% in 2001, to 36.3% in 2011 and further down to 29.6% in 2021. The fastest shift away from DB plans among the reporting jurisdictions happened in Israel, where the proportion of assets in DB plans declined from 91% in 2001 to 47.3% in 2021 as DB plans have been closed to new members since 1995. Some other countries also closed DB plans to new members, such as Italy in 1993. New members have had the option (in Italy) or the obligation (in Israel) to join DC plans instead. More recently, Iceland reformed a pension plan for state and municipal employees at the end of 2016, converting it from DB to DC. Some major European markets (e.g. the Netherlands and the United Kingdom) are also transitioning from a DB to a DC system.⁴⁷

1.3.2. Funding ratio of defined benefit plans

Funding ratios measure the proportion of liabilities that available assets cover. When the value of assets in DB plans is less than the value of liabilities arising from the retirement income promise, or in other words, when the funding ratio is below 100%, the plan is underfunded. DB plan sponsors are usually responsible for guaranteeing the funding of the plan.

Funding ratios are not strictly comparable across jurisdictions as there are different national valuation methods of assets and liabilities. Assets can be expressed at mark-to-market or book values. The valuation of liabilities relies on several assumptions, including the treatment of current members and new entrants, discount rates and the life expectancy of members. These assumptions vary across countries and sometimes even within a given country depending on the purpose of the valuation. Liabilities of DB plans could be measured for an assessment of the solvency position of these plans by the supervisor (and a comparison with minimum funding requirements), but also for accounting purposes for the plan sponsors for example (Yermo, 2007_[12]).

The size of the liabilities partly depends on how current members and new entrants are treated in the valuation. The valuation may exclude new entrants as well as any additional rights that current workers could accrue after the valuation year, reflecting only accrued-to-date liabilities of the plan. Accrued-to-date liabilities could be calculated following an accrued benefit obligation (ABO) approach where future benefits are calculated based on the salary and past service at the time of the valuation, or a projected benefit obligation (PBO) approach that takes into account expected future increases in salaries. The choice

⁴⁷ In the United Kingdom, single employers can apply for authorisation to set up a collective defined contribution (CDC) pension scheme as of 1 August 2022: <https://www.aon.com/unitedkingdom/media-room/articles/aon-says-new-legislation-first-august-is-cdc-day>

between an ABO and a PBO approach varies across jurisdictions and depends on the purpose of the valuation in some jurisdictions (Han and Staňko, 2021^[13]). Another way of valuing liabilities of a DB plan can be to consider that current workers will continue to accrue rights and that the plan remains open (with or without new entrants). This going-concern approach is for instance applied in the valuation of liabilities of DB plans in Spain, where future contributions into the plans are also taken into account.

Different discount rates are used across countries to express future pension obligations in today's terms. Discount rates can lie anywhere between the risk-free rate (e.g. a long-term government bond yield) and the expected return on the assets backing the liabilities (OECD, 2020^[5]). For example, the UK's Pension Protection Fund uses conventional and index-linked gilt yields to calculate the liabilities of the DB plans in the scope of its index (PPF 7800).⁴⁸ Discount rates of single-employer pension plans in the United States are determined by reference to high-quality corporate bonds. In the Netherlands, pension funds use an Ultimate Forward Rate (UFR), which is an extrapolation of the observable term structure to take into account the very long duration of pension liabilities. By contrast, some countries, such as Finland, Iceland and Luxembourg use fixed discount rates (at 3%, 3.5% and 5% respectively).

The liabilities also depend on how long benefits will be paid to retirees. These calculations are based on mortality tables. Mortality tables may be built on the experience of different populations (e.g. annuitant population, general population) and may take into account future mortality improvements using different methods and models across countries (e.g. Lee Carter, Cairns-Blake-Dowd).

Available data show that assets in DB plans were equal or even exceeded the level of pension liabilities, as calculated and aggregated by data providers at the national level, in most jurisdictions at the end of 2021 (or the latest year available) (Figure 1.18).⁴⁹ Funding levels of DB plans were above 100% in 10 out of the 14 reporting jurisdictions, and between 95% and 100% in another one (Indonesia). By contrast, the funding ratio in three reporting jurisdictions (i.e. Iceland, Mexico and the United States) ranged from 33% (in Iceland) to 70% (in the United States), meaning that assets in DB plans would not have been sufficient to cover all the pension liabilities at the end of 2021 (2020 for Mexico). However, these aggregated funding ratios hide disparities in the solvency of the many DB plans that sometimes exist within each country.

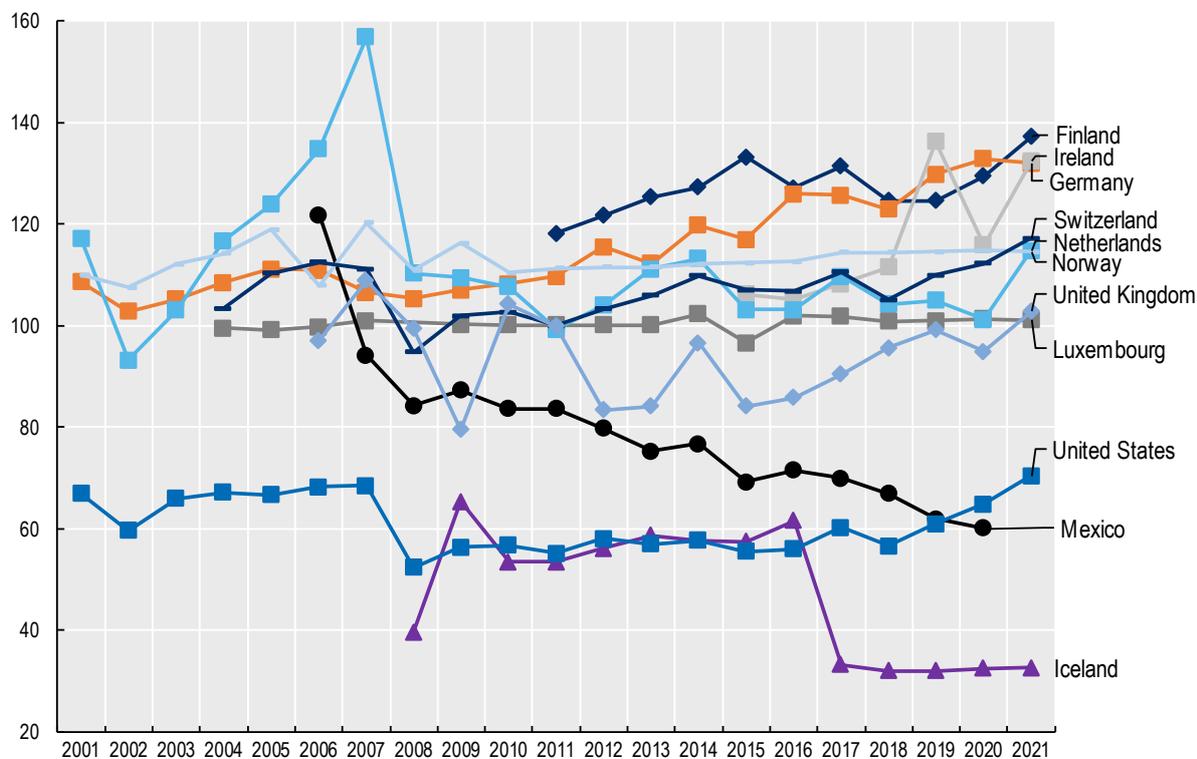
⁴⁸ See [The PPF 7800 index](#)

⁴⁹ The funding position of DB plans is assessed in this report as the ratio between the investments and the technical provisions (net of reinsurance) of DB plans. Calculations are based on data provided by national authorities. Investments of DB plans may be a low estimate of assets of DB plans as they would not include receivables and claims against the plan sponsor to cover the funding shortfall. Technical provisions represent the amount that needs to be held to pay the actuarial valuation of benefits that members are entitled to. This is the minimum obligation (liability) for all DB pension plans.

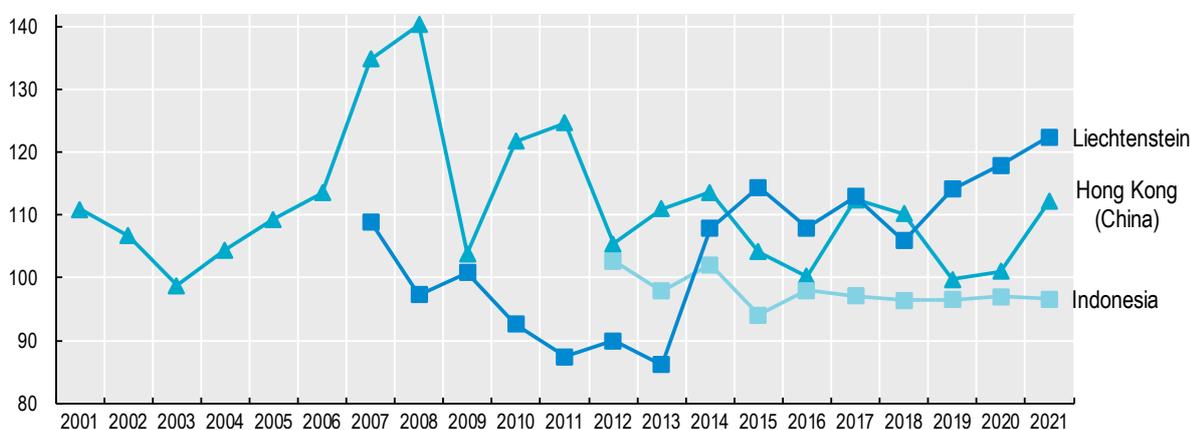
Figure 1.18. Funding ratio of defined benefit plans in selected jurisdictions, 2001-21

In %

A. Selected OECD countries



B. Selected other jurisdictions



Note: Please see the methodological notes at the end of the report.

Source: OECD Global Pension Statistics.

The funding ratio of all DB plans (aggregated at the national level) has fluctuated over the years and evolved differently across jurisdictions. For example, the funding ratio of DB plans has deteriorated in Iceland (from 40% in 2008 to 33% in 2021 with fluctuations in-between), Indonesia (from 103% in 2012 to 97% in 2021) and Mexico (from 122% in 2006 to 60% in 2020). By contrast, the funding position of DB plans has improved in several other jurisdictions, even reaching its highest level during the period under review in 2021 in Finland, Liechtenstein, Switzerland and the United States.

The evolution of the number of DB plans for which the aggregated funding ratio was calculated may influence the trends. Liechtenstein reported that many DB plans were converted into DC plans, leaving a single well-funded DB plan in the market and probably accounting for the improvement of the aggregated funding ratio in 2014. In Iceland, the funding ratio dropped between 2016 and 2017 as a public-sector scheme for state and municipal employees (one of the most highly funded) was converted into a DC plan and therefore not included anymore in the aggregated funding ratio from 2017 onwards.

The funding ratio of DB plans was higher at end-2021 than at end-2020 in most reporting jurisdictions (nine out of 13), with the strongest increase recorded in Ireland (from 116% at end-2020 to 132% at end-2021). The funding ratio also improved by more than 5 percentage points (pp.) between end-2020 and end-2021 in the Netherlands (14 pp.), Hong Kong (China) (11 pp.), the United Kingdom (8 pp.), Finland (8 pp.), the United States (5 pp.) and Switzerland (5 pp.). These improvements may be due to investment gains in 2021 and/or a decline in the value of pension obligations. For example, in the United States, the long-term corporate bond yields that many companies use to value the liabilities of their DB plans rose in 2021, driving the size of the liabilities down.⁵⁰ The funding ratio of DB plans only decreased in 2021 in four reporting countries (Germany, Indonesia, Luxembourg and Norway), but by less than 1 percentage point. The funding ratio was still above 100% in three of these four countries (Germany, Luxembourg and Norway).

Countries usually have some mechanisms in place to ensure the sustainability of DB plans and guarantee the benefits promised to members to some extent. Some countries use minimum funding requirements, usually requesting a recovery plan (with different timeframes across countries) for underfunded plans. These recovery plans could imply additional contributions from employers (e.g. the United Kingdom) and penalties for the sponsors failing to make these deficit-repair contributions (e.g. up to KRW 10 million in Korea from 2022). Recovery plans could also include benefit cuts or adjustments (e.g. in the Netherlands). Some countries may request a funding ratio over 100% through the holding of a capital buffer (e.g. 4% for Pensionskassen in Austria). Some countries have a pension protection fund (e.g. the Guarantee Fund in Liechtenstein, the Pension Protection Fund in the United Kingdom, the Pension Benefit Guarantee Corporation in the United States), which can take over the liabilities of a DB plan and pay benefits to members when an employer goes bankrupt or an underfunded plan is wound up.

1.3.3. Fees charged to members of defined contribution plans

Fees charged by pension providers for the cost of running pension plans reduce the amount of assets in those plans. This affects negatively the retirement benefit payments that members will eventually get.

The fee structures that pension providers apply vary across countries. Fees can be charged on contributions or on salaries directly as in some Latin American countries (e.g. Colombia), on assets (e.g. Estonia, Spain), on performance, or a combination (e.g. the Czech Republic where pension funds can charge fees on assets and profits, Bulgaria where supplementary voluntary pension funds can charge fees on contributions and returns).⁵¹ On top of regular fees, members in some countries can be charged fees when they join, switch or leave a pension provider (e.g. Albania, the Czech Republic, Hungary).

Most countries – 36 out of 42 reporting countries – cap some of the fees that pension providers can charge to members (Table 1.4). Most of them cap fees on assets (29 out of 36), which is the most widespread ways for pension providers to charge members. Armenia has one of the highest caps on fees on assets among those setting one, at 5% of the net value of the assets annually for voluntary plans. By contrast,

⁵⁰ [Companies' U.S. Pension Plans Are More Overfunded Than They Have Been in Years – Pension Policy International](#)

⁵¹ In February 2020, the Dominican Republic changed the way fees could be levied on personal pension plans, previously from salary and returns, now from assets only.

Croatia sets one of the lowest caps on fees on assets for mandatory pension funds (at 0.284% of assets under management).

Table 1.4. Fee structure and caps in selected OECD countries and other jurisdictions

	Fees on salaries	Fees on contributions	Fees on assets	Fees on returns / performance	Other fees (e.g. exit fees, entry fees, switching fees)
Selected OECD countries					
Australia (except MySuper)	No cap	No cap	No cap except for low balances (3% each year for balances below AUD 6 000)	No cap	No switching fee for asset transfer to another provider No exit fees
Chile	No cap	x	Capped	x	x
Colombia	3% (including insurance)	x	x	x	Programmed retirement management fees and transfer fees are capped (fixed cap). Fees charged to inactive members are set in the regulation of each mandatory fund based on the returns.
Costa Rica – ROP	x	x	0.35%	x	x
Czech Republic – transformed funds	x	x	0.8% of the average annual value of the funds	10% of profit	Up to CZK 800 per switch
Czech Republic – participation funds	x	x	1% of the average annual value of the fund (0.4% for conservative funds)	15% (10% for conservative funds) of (average value of the pension unit in t – highest annual average value of the pension unit since t ₀) × the average number of pension units in t, where t is the current period and t ₀ is the time since the creation of the fund	Up to CZK 800 per switch and CZK 500 per change of investment strategy
Denmark	No cap	No cap	No cap	No cap	No cap
Estonia – 2 nd pension pillar	x	x	Max 1.2%, mandatory reduction depending on the size of the assets.	The lower between: 2% of assets and 20% of the excess of the increase in net asset values over a reference index	Redemption fee could be charged (max 0.1%)
Estonia – 3 rd pension pillar	x	x	No cap	x	No cap
Hungary – voluntary personal pension funds	x	6%	max 0.8%	Included in the 0.8% legal cap for fees on assets	Entry fee: max. HUF 4 000
Ireland	No cap	No cap	No cap	No cap	No cap
Israel	x	6%	0.5%	x	x
Italy	x	No cap	No cap	Possible but rare	Not above the actual administration costs
Korea – occupational DC	x	x	No cap	x	x
Latvia – state funded scheme	x	2.5% (SSIA)	Up to 0.6% of average value of assets for assets up to EUR 300 million and 0.4% for the part of assets above EUR 300 million	Total fixed fee plus performance fee: 0.85% of average value of assets for plans not investing in commercial companies, other equity securities and equivalent securities. 1.1% otherwise.	x

	Fees on salaries	Fees on contributions	Fees on assets	Fees on returns / performance	Other fees (e.g. exit fees, entry fees, switching fees)
Latvia – private pension funds	x	No cap	No cap	No cap	x
Lithuania – 2nd pillar	x	x	0.5% for life-cycle funds; 0.2% for asset preservation funds	x	Switching fee up to 0.05% of assets
Lithuania – 3rd pillar	x	No cap	No cap	No cap	Switching fee up to 0.5% of assets
Mexico – personal plans	x	x	Not more than the average fee charged by DC plans in Chile, Colombia and the United States	x	x
Poland – open pension funds	x	1.75%	0.54% of net assets annually (regressive fee algorithm, bigger funds charge smaller percentage), no more than PLN 186 million annually	0.06% of net assets annually multiplied by the percentage premium ratio = $(R_i - R_{min}) / (R_{max} - R_{min})$, where R_i is the rate of return of the pension fund, R_{min} (resp. R_{max}) the rate of return of the pension fund with the worst (resp. best) performance	x
Poland – PPK	x	x	0.5% of AUM annually, with assets capped at 15% of PPK market assets	0.1% of AUM when positive rate of return above the benchmark defined in secondary legislation	No cap
Portugal	No cap	No cap	No cap	No cap	Capped
Slovak Republic – 2nd pillar	x	0.25% (SIA) + 1% (maintaining the account)	0.3% annually of the average annual net asset value	10% of net asset value × (value of the pension point/highest value of the point – 1). The highest value of the point is calculated over a defined period.	x
Slovak Republic – 3rd pillar	x	x	Pay-out supplementary pension funds: up to 0.6% annually of the average annual net asset value Contributory pension funds: up to 1.2% annually of the average annual net asset value	10% of net asset value × (value of the pension point/highest value of the point – 1). The highest value of the point is calculated over a defined period.	Switching fee: 5% of the member's account balance in the first year after concluding a contract. No switching fee after 1 year. Termination settlement fee: 20% of the member's account balance (only for old contracts).
Slovenia	x	3%	1% of average assets	x	Custody fee: no cap Switching fee: EUR 15 per switch Exit fee: 1% of assets
Spain	x	x	Cap on management fees varying by fund: 0.85% for fixed income funds, 1.3% for mixed funds, and 1.5% for other funds. Custodian fees: 0.20% (calculated daily).	No cap	x
United Kingdom – default funds	x	x	0.75%	x	x
United States	No cap	No cap	No cap	No cap	No cap
Other jurisdictions					
Albania	x	x	3% of the net value of the pension fund annually	x	Switching fee up to 0.5% of the amount transferred Early withdrawal fee

	Fees on salaries	Fees on contributions	Fees on assets	Fees on returns / performance	Other fees (e.g. exit fees, entry fees, switching fees)
					from 2% to 20% of the net asset value withdrawn depending on the length of membership
Armenia – mandatory plans	x	x	1.5% of the net asset value	x	Redemption fee up to 1% of NAV of redeemed units
Armenia – voluntary plans	x	No cap	5% of the net asset value	x	No cap
Brazil – open pension entities	x	5%	No cap	No cap	Fee on transfers and withdrawals: up to 10% of the amount transferred or withdrawn
Bulgaria – VPFOs and VPF funds	x	7%	x	10% of the return (in any) accumulated from the start of the year, calculated daily	Entry fee: up to BGN 10 Other fees: up to BGN 20
Bulgaria – UPF and PPF	x	3.75%	0.75% of the net assets calculated daily	x	Up to BGN 10 when transferring funds from UPF/PPF to a pension scheme of the EU, ECB or EIB
Croatia – mandatory pension funds	x	x	0.284%	x	Entry fee: up to 0.5% of contributions Switching fee: up to 0.8% of the member's assets
Croatia – voluntary pension funds	x	x	Up to 3%	x	Switching fee: up to 2.5% of the member's assets
Croatia – pension insurance companies	x	Up to 1.5% (single payment) or 0.17% (every year during the pay-out) of the amount transferred from mandatory plans	x	Up to 0.6% in 2021 (decreasing by 10% every year until it reaches 0.3%). Charged on assets less financial liabilities if assets covering technical provisions are higher than current and future pension liabilities.	x
Dominican Republic – personal plans	x	x	1.2%	x	x
Ghana	x	x	2.5%	x	No cap
Kazakhstan – mandatory plans	x	x	0.01% per month set by law	7.5% of investment income in the law, lowered to 2% in the by-law of the National Bank of Kazakhstan	x
Kosovo – voluntary pension fund	x	Up to 3%	0.125% monthly commission	Up to 20% of yield above benchmark in the internal act	No cap
Liechtenstein	x	No cap	No cap	x	No cap
Macau (China)	x	No cap	x	x	Maximum rate set in the pension fund management regulation
Maldives	x	x	0.6%	x	x
Nigeria	x	NGN 100 monthly per contribution	2.025% for Fund I; 1.65% for Fund II; and 1.5% for Fund III	7.5% on earned income for AES Fund and RSA Fund IV	x

	Fees on salaries	Fees on contributions	Fees on assets	Fees on returns / performance	Other fees (e.g. exit fees, entry fees, switching fees)
North Macedonia – mandatory pension funds	x	2%	0.03% of assets monthly	x	Switching fee up to EUR 15 per member if membership is less than 720 days, otherwise no switching fee
North Macedonia – voluntary pension funds	x	7%	0.15% of assets monthly	x	Switching fee up to EUR 10 per member if membership is less than 360 days, otherwise no switching fee
Pakistan – voluntary pension funds	x	x	1.5% of average net assets	x	3% of contribution
Peru	No cap	x	No cap	x	x
Romania – 2nd pillar	x	0.5%	Depends on rate on return: 0.02% of AUM per month if rate of return below inflation; 0.03% of AUM per month if rate of return is between 0 and 1 pp. above inflation; 1 additional basis point of fee on AUM per month for each additional pp. of the rate of return above inflation up to 0.07% of AUM per month if rate of return is over 4 pp. above inflation.	x	Switching fee: 5% of the amount transferred
Romania – 3rd pillar	x	5%	2.4%	x	Switching fee: 5% of the amount transferred
Serbia	x	No cap	1.25%	x	No cap (switching fee)
Thailand	x	x	No cap	No cap	Fixed amount per member
Uruguay	x	1.5 times the lowest fee available in the market	x	x	x

Note: “x” means that the type of fee does not exist or is not allowed in the country. “No cap” means that this type of fees exists and there is no limit in the amount that can be charged to members. In Portugal, in the specific case of personal retirement saving schemes, transfer fees are subject to a maximum of 0.5% of the transferred amount if there is a capital or return guarantee and cannot be charged otherwise.

Source: OECD Global Pension Statistics.

Jurisdictions such as Bulgaria, Costa Rica, Croatia, Estonia, the Maldives and Romania have been lowering their cap on fees recently. Bulgaria progressively reduced the maximum fees that supplementary mandatory universal pension funds (UPF) and supplementary mandatory professional pension funds (PPF) could charge on contributions (now at 3.75%, from 5% in 2015) and on assets (now at 0.75%, from 1%). Costa Rica had been reducing the maximum fees on assets for the mandatory ROP system from 0.7% to 0.5% in 2017 and 0.35% in 2020. In Croatia, the cap on the asset management fee in the second pension pillar declined from 0.3% of assets in 2020 to 0.284% in 2021, and will continue to decline by 5.5% until it reaches 0.27% in 2022. In Estonia, the cap for management fees of second pillar pension funds dropped to 1.2% for all pension funds in September 2019 (the cap was previously 1.2% for conservative funds and 2% for other funds). In the Maldives, the administration fee that is charged to members of the Maldives Retirement Pension Scheme was reduced from 0.8% to 0.6% in January 2018. In the case of Romania, the government reduced the 2.5% cap on fees on contributions to mandatory pension plans (before December 2018) to 0.5% (at the beginning of 2020), with 0.1% (out of these 0.5%) redirected to the centralised institution in charge of transferring contributions to pension fund management companies. Romania has also changed the cap on fees on assets, which was fixed at 0.05% of net assets monthly

before but is now determined depending on the investment rate of return of pension companies and the inflation rate.

Some countries have also introduced other initiatives to reduce the fees charged by the industry or improve their value for money. In Australia, the pension supervisor publishes heatmaps highlighting underperformance and high fees of superannuation product offerings, so as to urge trustees to reduce fees and review investment performance. Chile, New Zealand and Peru have auction mechanisms for the selection of default funds, which aim at driving fees down. Pension providers in Chile and Peru bid on fees charged to members. The winning pension provider receives all new eligible entrants for a period of two years. In New Zealand, default providers are selected for a period of seven years based on a range of selection criteria that include fees. In Mexico, the pension supervisor introduced in 2021 a cap on the fees that pension fund managers (AFOREs) can charge to members, based on an average of the fees charged by DC plans in Chile, Colombia and the United States.

The actual level of fees charged to members is difficult to compare across countries. High aggregated amounts of fees could be the result of many factors, including the fee structure and the maturity of the system. Additionally, aggregated amounts, shown at a given point in time, do not reflect the amount of fees that individuals bear over their lifetime nor how expensive DC plans are from the perspective of members whatsoever. Fees may also pay for different levels of services across countries and should be examined in light of these services and of the value they generate for plan members. Some indirect charges that reduce the pension pot of plan members may also still need to be uncovered and disclosed.

However and for instance, it is possible to compare the amount of fees charged on assets (expressed as a percentage of assets) to the cap set in the legislation for this type of fee, which are almost the same in several countries.⁵² For instance, pension providers levied fees on assets worth 0.31% of assets in Costa Rica (with a cap at 0.35%), 0.8% in the Czech Republic (with a cap at 0.8% for transformed funds), 0.11% in Kazakhstan (with a cap at 0.011% monthly (ca. 0.132% annually) in the by-law of the National Bank of Kazakhstan), 1.3% in Pakistan (with a cap at 1.5%), 1.21% in Serbia (with a cap at 1.25%). The choice of the level of the cap is therefore important, but challenging. If the cap is too high, charges may rise to the level of this cap. If the cap is too low, pension providers may try to lower costs and could lower the quality of the services they provide (OECD, 2018^[14]). In a number of countries, pension providers charge less on assets than the cap (which may therefore not be binding), such as in Albania (1.9%, with a cap at 3%), 0.6% in Estonia (with a cap at 1.2% for the second pension pillar and no cap for the third pension pillar), 0.4% in Hungary (with a cap at 0.8%).

⁵² The value of assets that is used in the OECD calculation of the ratio of fees charged on assets over the total assets is measured at the end of the year, which could be higher than at other times of the year.

2 The potential impact of the Russian invasion of Ukraine on the portfolios of pension providers in the OECD

The war following Russia's invasion of Ukraine in February 2022 is likely to have an impact on the portfolios of pension providers. The war has disrupted global supply chains and affected the relationships and capital flows between Ukraine, Russia and the rest of the world. These developments could affect the value of the assets of pension providers depending on where and how they are invested.

This section considers the potential impact of Russia's war in Ukraine on the portfolios of pension providers in the OECD. This analysis can support regulators and supervisors seeking to assist pension providers facing new challenges in a context of heightened geopolitical tensions.

Available data suggest that pension providers have recorded negative investment performance and a decline in the total amount of their assets in early 2022. Yet, the funding ratio of defined benefit plans has improved. The war in Ukraine has played a partial role in these developments in several different ways. The war and the ensuing sanctions and counter-sanctions following Russia's invasion of Ukraine have led to a loss in the value of all assets linked to Russia, in particular assets in Russia or issued by Russian entities that pension providers held in their portfolios. Pension providers have also felt the consequences of the war through other assets than those issued by Russian entities and through macroeconomic channels, such as inflationary pressures, higher interest rates and lower economic growth.

This section is structured as follows. It first presents the performance and solvency position of pension providers in the OECD in early 2022. It then looks at the direct impact of the war in Ukraine on the value of the securities issued by Russian entities and on other (non-Russian) assets in the portfolio of pension providers, such as the securities of companies doing business in Russia or Ukraine but whose headquarters are outside those two countries. This section then explores how other indirect consequences of the war, such as a surge in inflation, an increase in interest rates and a lower economic growth, may also affect the portfolio and investment rates of return of pension providers.

2.1. Performance and solvency position of pension providers in early 2022

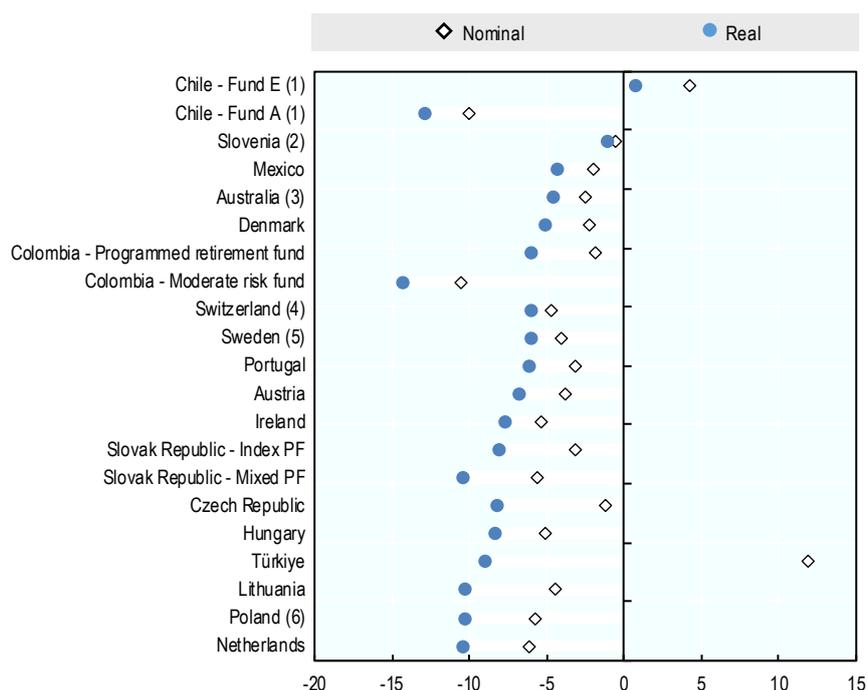
Available data suggest that pension providers recorded a negative investment performance in the first quarter of 2022.⁵³ Pension plans experienced investment losses in nearly all reporting OECD countries in nominal terms (Figure 2.1). After accounting for inflation, investment returns varied from close to 0% (e.g.

⁵³ Available data for 2022 give an idea of the impact that the war in Ukraine may have had on pension providers and their portfolios. As the war started at the end of February 2022, its impact could already show in data for Q1 2022.

-1.1% for companies supervised by Slovenia's Insurance Supervision Agency) to below -10% (-10.2% in Lithuania, -10.3% for open pension funds in Poland, -10.5% in the Netherlands). The investment performance of funds with different investment profiles could also vary widely within a given country, such as in Chile where the real investment rate of return ranged from -12.9% for the riskiest fund (Fund A) to 0.8% for the most conservative fund (Fund E).⁵⁴

Figure 2.1. Nominal and real investment rates of return of pension plans in selected OECD countries, Dec 2021 – March 2022

In %



Note: "PF" means pension funds. Please see the methodological notes at the end of the report.

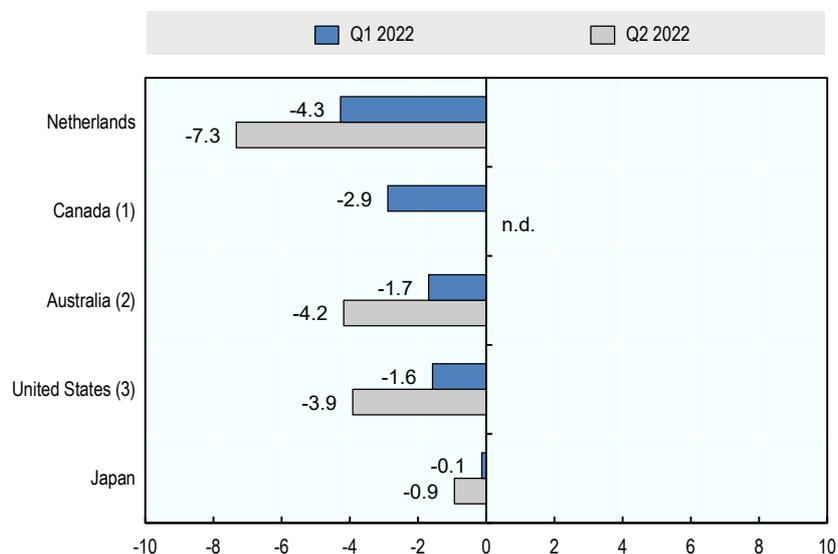
Source: OECD Global Pension Statistics and other sources.

This negative investment performance may have contributed to the decline of assets in pension plans in the first quarter of 2022. For example, assets dropped by 1.7% in Australia and by 4.3% in the Netherlands (Figure 2.2) where pension funds recorded a nominal investment return of -2.5% and -6.2% respectively. Some other large pension markets also experienced a decline in assets in Q1, such as Canada (-2.9%), Japan (-0.1%) and the United States (-1.6%). This decline continued in Q2 and was even more pronounced, ranging from -0.9% (Japan) to -7.3% (Netherlands).

⁵⁴ Source: Superintendencia de Pensiones.

Figure 2.2. Nominal growth rates of pension assets in selected large pension markets in Q1 and Q2 2022

In %



Note: "n.d." means not available. Please see the methodological notes at the end of the report.

Source: APRA (Australia); Statistics Canada; DNB (Netherlands); Bank of Japan; FRB (United States).

Despite these developments, the funding ratio of DB plans has improved in several countries in early 2022. The funding ratio of DB plans improved on average in Canada (from 103% at end-2021 to 108% at end-March 2022 for a sample of DB plans), and in the Netherlands (from 114.3% at end-December 2021 to 118.8% at end-March 2022 and 122.4% at end-June 2022) where the liabilities of DB plans fell more than their assets.⁵⁵ The funding ratio of DB plans also improved in the United Kingdom (from 107.7% at end-2021 to 111.4% at end-March 2022 and 120.1% at end-June 2022) for an aggregate of DB plans in the PPF 7800 index, and in the United States (from 97.9% at end-2021 to 103.2% at end-March 2022 and 106.3% at end-June 2022) for an aggregate of the largest 100 U.S. corporate DB pension plans.⁵⁶ By contrast, the funding ratio in Switzerland dropped in the first half of 2022.⁵⁷

Although the war in Ukraine is likely to explain part of the evolution in the investment performance and solvency of pension providers during the first part of 2022, the data do not allow to disentangle the effects from the war from any other events or developments that could affect the portfolio of pension providers too, such as the lingering effects from the pandemic (e.g. supply chains problems). Additionally, the war may have affected the portfolios of pension providers through different mechanisms. The following subsections discuss the potential direct and indirect repercussions of the war on the portfolios of pension providers.

⁵⁵ [Canadian DB plans' average solvency ratio increases to 108% in Q1: report | Benefits Canada.com](#) (Canada); [Dutch pension funds' average funding ratio improved \(dnb.nl\)](#) (Netherlands)

⁵⁶ [DB funding tracker — March 2022: PPF ratio hits 15-year high \(professionalpensions.com\)](#) (United Kingdom) and [Pension Funding Index July 2022 \(milliman.com\)](#) (United States)

⁵⁷ [Funding ratios of Swiss pension schemes plunge to 103.4% in H1 | News | IPE](#)

2.2. Direct repercussions of the war in Ukraine on the Russian assets of pension providers

The investment performance and the assets of pension providers in early 2022 may marginally be affected by the Russian assets held by pension providers. Although pension providers in many OECD countries only held a minor proportion of Russian assets in their portfolios before the war, these assets lost value in 2022. Pension providers may be facing difficulties in selling them.

2.2.1. Russian assets of pension providers before the war

Pension providers in the OECD had a small proportion of assets in their portfolio directly linked to Russia before 2022. These assets accounted for less than 1% of the investments of pension providers in Hungary (0.95%), Chile (0.8%), Mexico (0.7%), the Slovak Republic (0.5%), the Netherlands (0.3%), Slovenia (0.3%), Austria (0.2%), Israel (0.1% in 2020), Latvia (less than 0.1%), the United Kingdom (less than 0.1%) and the Czech Republic (nearly 0%).⁵⁸ Other anecdotal evidence suggests that pension providers in Australia, Denmark, Finland, Sweden and the United States also had a low exposure to Russian assets before 2022.⁵⁹ For example, most state pension funds in the United States had less than 1% of their assets in Russian-domiciled investments.⁶⁰ Pension providers in Iceland have no investment in Russia at all as they are only allowed to invest in the OECD, the European Union and the Faroe Islands (OECD, 2022^[9]).

Pension providers that were investing in Russia before the war were doing so through different instruments and vehicles. They could be holding Russian government bonds, stocks or debt of Russian companies, or real estate, or they could be investing indirectly through mutual funds and exchange-traded funds (ETFs) among other investment opportunities.⁶¹ The selection of the instruments and vehicles varies across pension providers. For example, CalPERS, one of the largest public pension funds in the United States, held public stocks and illiquid real estate in Russia, but it had no Russian government debt.⁶² Ilmarinen, which is one of the largest pension companies in Finland, had direct investments in Russian government loans, a share of a shopping centre property in St Petersburg and indirect investments in Russia through funds (Ilmarinen, 2022^[15]).

Some pension providers had been scaling down their investments in Russia over the recent years before the escalation of the war in Ukraine in 2022. For example, the proportion of assets that Latvian pension providers had in Russia peaked in 2013 (1.9%) before declining and reaching almost 0% in 2021 (Figure 2.3). In the Netherlands, ABP had also reduced its investments in Russia following Russia's illegal

⁵⁸ Available data also suggest that the amount of pension assets invested in Ukraine was small as well, such as in Austria (0.2%), Latvia (0.1%), the Netherlands (less than 0.1%). These findings are in line with those found by EIOPA (2022^[45]) for insurers and IORPs.

⁵⁹ Examples include: the Commonwealth Superannuation Corporation (CSC) in Australia, pension and insurance companies in Denmark, Ilmarinen and Varma in Finland, pension funds in Sweden, public pension funds in the United States. Source: CSC, European Pensions, IPE, Forbes.

⁶⁰ [A Guide To The Public Pension Funds Divesting From Russia \(forbes.com\)](https://www.forbes.com)

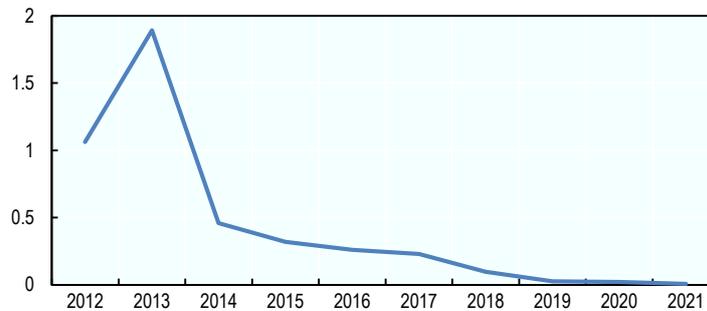
⁶¹ Over 150 ETFs (e.g. Franklin FTSE Russia ETF, iShares MSCI Russia ETF) had some sort of exposure with Russia in 2021: [ETF Country Exposure Tool | ETF Database \(etfdb.com\)](#)

⁶² [California Public Employees Retirement System Russian Investments \(natlawreview.com\)](https://www.natlawreview.com)

annexation of Crimea in 2014.⁶³ Some funds had not invested directly in Russia since the invasion of Crimea (e.g. Varma in Finland).⁶⁴

Figure 2.3. Proportion of assets that Latvian pension providers invested in Russia, 2012-21

As a percentage of total investments



Source: Latvia's Financial and Capital Market Commission.

Policies on ESG investment may have contributed to the reduction of the investments in Russia by some pension providers before the war in Ukraine. Investors considering ESG factors may examine the country of the issuing company, the characteristics of the issuing company along various criteria (e.g. climate change, energy consumption, corporate governance, human rights), and the type of security the company issues (OECD, 2020^[16]). Investors assess ESG risks depending on their own policies. Some asset managers were already considering the risk of a war in Ukraine before 2022 and marking Russia as a high-risk country from an ESG perspective.⁶⁵ Some pension schemes had a low exposure in Russia due to governance concerns and ownership rights.⁶⁶ The fossil fuel industry is also an important component of the Russian stock market, but as this industry is not in line with ESG criteria, it is often excluded from the investments of investors integrating ESG factors in their investment decisions (OECD, 2020^[16]).

2.2.2. Consequences of the war on the assets of pension providers directly linked to Russia

The war in Ukraine in 2022 and the sanctions imposed on selected Russian individuals, companies and institutions have affected some of the assets that pension providers held in Russia or Russian entities in 2022 in several ways. These include through restrictions in the trading of some Russian securities, a loss of value, and a downgrade in the credit or ESG ratings of some of these assets.

A number of jurisdictions have adopted economic and financial sanctions against Russia in 2022, which could have a direct implication for the asset allocation of pension providers. For example, the European Union had taken eight packages of sanctions by early October 2022.⁶⁷ These sanctions include restrictions

⁶³ ABP placed Russian government bonds on its exclusion list following the annexation of Crimea and the EU arms embargo towards Russia in 2014: [Russian invasion puts ESG investing in new light | Pensions & Investments \(pionline.com\)](https://www.pionline.com/news/2014/03/russian-invasion-puts-esg-investing-in-new-light/)

⁶⁴ [Russian losses for Nordic pension funds unclear, but allocations small | News | IPE](https://www.ipe.com/news/2014/03/russian-losses-for-nordic-pension-funds-unclear-but-allocations-small/)

⁶⁵ [Ukraine & Russia: Asset allocation and investing in a time of war | Features | IPE](https://www.ipe.com/features/2022/03/ukraine-russia-asset-allocation-and-investing-in-a-time-of-war/)

⁶⁶ [Pension schemes respond to Russian invasion of Ukraine – Pensions Age Magazine](https://www.pensionsage.com/news/2022/03/pension-schemes-respond-to-russian-invasion-of-ukraine/)

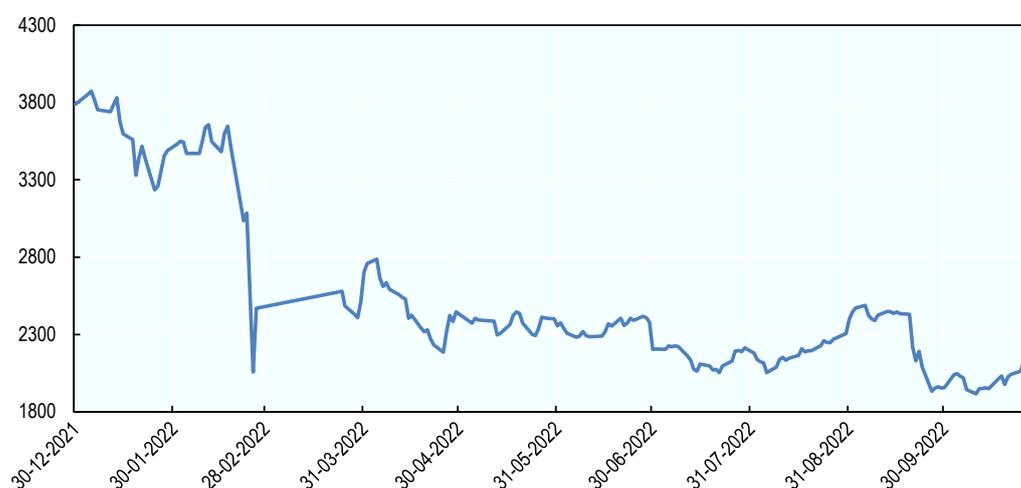
⁶⁷ [EU sanctions against Russia following the invasion of Ukraine | European Commission \(europa.eu\)](https://ec.europa.eu/eu_sanctions/2022/10/eu-sanctions-against-russia-following-the-invasion-of-ukraine/) and [Ukraine: EU agrees on eighth package of sanctions \(europa.eu\)](https://ec.europa.eu/eu_sanctions/2022/10/ukraine-agrees-on-eighth-package-of-sanctions/)

in the purchase of securities issued by selected Russian institutions (e.g. some major credit institutions). The United Kingdom has also imposed restrictions on dealing with transferable securities or money market instruments issued by selected Russian institutions among other sanctions.⁶⁸ The United States also announced sanctions targeting Russia's largest financial institutions, state-owned and private entities at the end of February 2022.⁶⁹ The United States Treasury specified in a guidance on 6 June 2022 that U.S. investors were not allowed to purchase new or existing securities issued by any Russian entity, extending the ban beyond those only named in sanctions.⁷⁰ However, U.S. investors could still hold and sell these securities to non-U.S. counterparts. As they participate in financial markets, pension providers have *de facto* to consider the restrictions in the trading of some securities in their investment operations. Pension supervisors have urged their supervised entities to ensure their investments comply with the sanctions towards Russia (e.g. Denmark, Norway, the United Kingdom).⁷¹ The situation has led pension providers to review their portfolio holdings and compare them with the list of individuals and companies subject to sanctions.

The war and retaliation measures have driven the value of some Russian assets down. The MOEX, one of the main Russian stock indices, dropped by over 30% in February 2022 (from its end-2021 value).⁷² The index had not recovered by end-October 2022 and was still below its level before the war in Ukraine (Figure 2.4, Panel A). Pension providers are therefore likely to suffer a loss when they held Russian stocks. The depreciation of the rouble in early March may have also reduced the value of some assets in roubles in the portfolio of investors, although the loss due to the exchange rate was probably temporary as the rouble has appreciated relative to the US dollar since then (Figure 2.4, Panel B).

Figure 2.4. Evolution of the MOEX Russia Index and the RUB/USD exchange rate in 2022

A. MOEX Russia Index



⁶⁸ [Financial sanctions, Russia – GOV.UK \(www.gov.uk\)](https://www.gov.uk/financial-sanctions/russia)

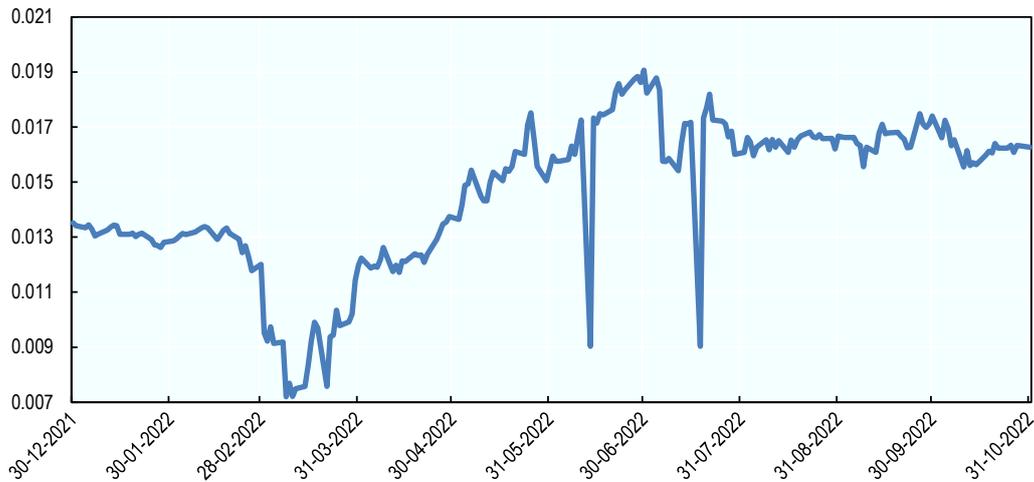
⁶⁹ [U.S. Treasury Announces Unprecedented & Expansive Sanctions Against Russia, Imposing Swift and Severe Economic Costs | U.S. Department of the Treasury](https://www.treasury.gov/press-releases/Pages/pr20220228.aspx)

⁷⁰ [1054 | U.S. Department of the Treasury](https://www.treasury.gov/press-releases/Pages/pr20220606.aspx)

⁷¹ See: [Sanktioner mod Rusland og Belarus](#) for Denmark (in Danish); [Sanctions against Russia incorporated into Norwegian law](#) for Norway; and [Conflict in Ukraine – information for trustees | The Pensions Regulator](#) for the United Kingdom.

⁷² [MOEX: Moscow Exchange MICEX-RTS PJSC Stock Price Quote – MICEX Main – Bloomberg](https://www.bloomberg.com/quote/MOEX:RUB)

B. Exchange rate USD per RUB



Source: Based on Yahoo Finance.

Pension providers that were holding or exposed to Russian government bonds may have also seen the credit rating of these bonds decline as a result of the economic sanctions towards Russia. Fitch, Moody's and S&P downgraded Russia's ratings in early March 2022 due to the difficulties of the Russian government to pay dollar-denominated bonds and the restrictions to access foreign exchange reserves.⁷³ Russian government bonds became non-investment grade securities at that time. Credit rating agencies specified in mid-March 2022 that the payment on dollar-denominated bonds in Russia's local currency would be considered as a (restricted) default.⁷⁴ As a consequence, the existing investment rules applying to pension providers in some countries (e.g. Colombia, Korea, Israel) may automatically exclude Russian government bonds (which are non-investment grade since early March 2022) from the investment universe allowed for pension providers. Credit rating agencies stopped to assign any rating to Russian government bonds at the end of March 2022 (Fitch, Moody's) and in early April (S&P).

The ESG rating of Russian assets in the portfolio of pension providers may also have declined as a result of the war in Ukraine and isolation of Russia. Some ESG research teams have downgraded Russia from a general ESG perspective. For example, MSCI ESG Research assigned the lowest ESG Government Rating to Russia in early March 2022, notably due to higher financial governance risks.⁷⁵ Concerns could arise in ESG terms due to a potentially reduced transparency or weakened governance of Russian corporates. Russian assets may not be compliant any longer with the ESG investment policy of some pension providers.

Against this backdrop, pension providers may divest from Russia, following public opinion or political pressure. Some funds decided to halt future investment in Russian assets but refrained from a fire sale of their current holdings.⁷⁶ Some others announced they would try to divest from Russia and sell their current holdings, as the Financial Conduct Authority (FCA) in the United Kingdom reports for example.⁷⁷ The loss

⁷³ [Russia – Credit Rating \(tradingeconomics.com\)](https://tradingeconomics.com/russia/credit-rating)

⁷⁴ [Russia – Understanding Potential Sovereign Default Events \(fitchratings.com\)](https://www.fitchratings.com/news/russia-understanding-potential-sovereign-default-events), [Announcement: Moody's says repayment of Russia's foreign-currency bond in rubles does not meet contractual promise](https://www.moody.com/news/announcements/2022/03/23/announcement-moody-says-repayment-of-russia-s-foreign-currency-bond-in-rubles-does-not-meet-contractual-promise)

⁷⁵ [Russia MSCI ESG Government Rating downgraded from B to CCC](https://www.msci.com/esg/russia-msci-esg-government-rating-downgraded-from-b-to-ccc)

⁷⁶ [Kansas Employee Pension System Halts Russia Investments | Kansas News | US News](https://www.kansasnews.com/story/news/2022/03/23/kansas-employee-pension-system-halts-russia-investments/7000000001/)

⁷⁷ [FCA response to Chancellor's call to stop investing in Russia | FCA](https://www.fca.org.uk/news/2022/03/23/fca-response-to-chancellor-s-call-to-stop-investing-in-russia)

of value of Russian assets constitutes a financial factor that could further drive the willingness to divest, on top of the compliance with rules or the consideration of other non-financial factors.

Some pension providers may have seen an automatic reduction of their Russian assets when the funds they invest in divest themselves from Russia. Pension providers may invest in active or passive funds. Active managers may remove their exposure to Russia where they deemed it prudent.⁷⁸ Passive funds have removed their exposure in line with the index they track. For example, FTSE Russell removed Russia from all of its indices. The MSCI Inc. also removed Russian equities and bonds from its emerging market indices.⁷⁹

2.2.3. Practical challenges of divesting from Russia

Pension providers may face practical challenges when they seek to sell their Russian assets, because of sanctions targeting certain transactions and institutions, the legal ground for divestments and the lack of markets to sell these assets.

Pension providers may face difficulties to sell assets from entities that are subject to sanctions. Sanctions prohibit certain transactions. Pension providers may need financial advice to ensure they carry out their divestment in compliance with the regulations, which are fast evolving, and avoid committing a criminal offence.

Pension providers also have legal obligations towards their members that they need to consider before divesting from Russia. Pension providers have a duty to manage the assets in the best interest of plan members, raising some potential issues on the legal ground for divesting from Russia. However, the current loss of values of Russian assets may partly solve the problem in this specific context. Divesting from Russia could be accounted for by a financial factor as pension providers have been incurring investment losses from their assets in Russia. Pension providers could therefore comply with their duties towards members by trying to sell these assets, as long as the expectation is that these assets will not recover.

Pension providers seeking to divest also face a decline in the demand for Russian securities and potential buyers. Pension providers may not be able to sell securities to potential buyers targeted by sanctions. This is compounded by the closure of the Russian stock market in March 2022, preventing the sale of assets, which was followed by the prohibition for foreigners from selling shares when it reopened. Some financial service providers have also backed away from Russian securities, such as Euroclear that stopped the clearing of bonds, stocks and other securities in rouble traded within and outside Russia, preventing investors from buying and selling these assets.⁸⁰

Some pension providers may have had to write off their Russian assets as they were having difficulties in selling them.⁸¹ These assets have become stranded assets. While this means a loss on these assets, this loss is however expected to be limited due to the relative low proportion of Russian assets in the portfolio of pension providers (in many cases below 1% of total assets) before 2022.

National authorities have sought to provide assistance to pension providers and other financial institutions in a context of sanctions, calls for divestments and loss of values of Russian assets. Pension supervisors have provided guidance to pension providers with respect to their fiduciary duties. The Australian Prudential Regulation Authority (APRA) announced it would not be taking actions against superannuation funds divesting their Russian assets. However, APRA expected trustees to consider these divestments in

⁷⁸ [U.S. funds remain vigilant over exposure to Russian securities | Pensions & Investments \(pionline.com\)](#)

⁷⁹ [Russian invasion puts ESG investing in new light | Pensions & Investments \(pionline.com\)](#)

⁸⁰ [Dismantling Begins of Financial Infrastructure Used to Trade Russian Stocks and Bonds Abroad \(wsj.com\)](#)

⁸¹ [Analysis: Locked Russian assets add to war woes for British pension funds | Reuters](#)

accordance with their duties.⁸² Likewise, the Pensions Regulator (TPR) in the United Kingdom reminded trustees they needed to prioritise fiduciary duties when considering divestment, but acknowledged that divestment may be in line with the fiduciary duties of trustees.⁸³ National authorities may also have searched options with respect to stranded assets. As an example, the FCA in the United Kingdom has been considering giving retail fund managers the option to create “side pockets”. These side pockets enable to separate Russian assets that are difficult to sell, from the other assets in the portfolio. These side pockets could help existing investors in funds with Russian exposure to redeem the rest of their investments and keep illiquid Russian assets separately.⁸⁴

2.3. Direct repercussions of the war in Ukraine on other assets of pension providers

The investment losses that pension providers incurred in Q1 2022 may also come from the impact of the war in Ukraine on financial markets. Global stock markets dropped following the invasion of Ukraine in February 2022. For example, the MSCI All Country World Index declined by 13% between end-2021 and the end of February 2022.⁸⁵ Stock prices fell in emerging markets in Europe, and to a lesser extent in some advanced markets such as Japan and the United States (Figure 2.5). This drop, partly driven by fears of changes in the macro-economic environment and disruptions in the global supply chains, may have entailed short-term losses on other assets held by pension providers, beside the losses from their Russian assets.

Stock markets have been volatile throughout 2022. While they recovered after the drop in Q1, they fell again later on as fears of inflation and economic downturn were increasing.⁸⁶ For example, the S&P 500 entered bear market territory on 13 June 2022 for the first time since March 2020.⁸⁷ The decline in the prices of some securities that pension providers have in their portfolios would materialise as losses only if they have to sell at times of market lows.

⁸² [APRA will not be taking action against Trustees regarding divestment of Russian assets | APRA](#)

⁸³ [Conflict in Ukraine – information for trustees | The Pensions Regulator](#)

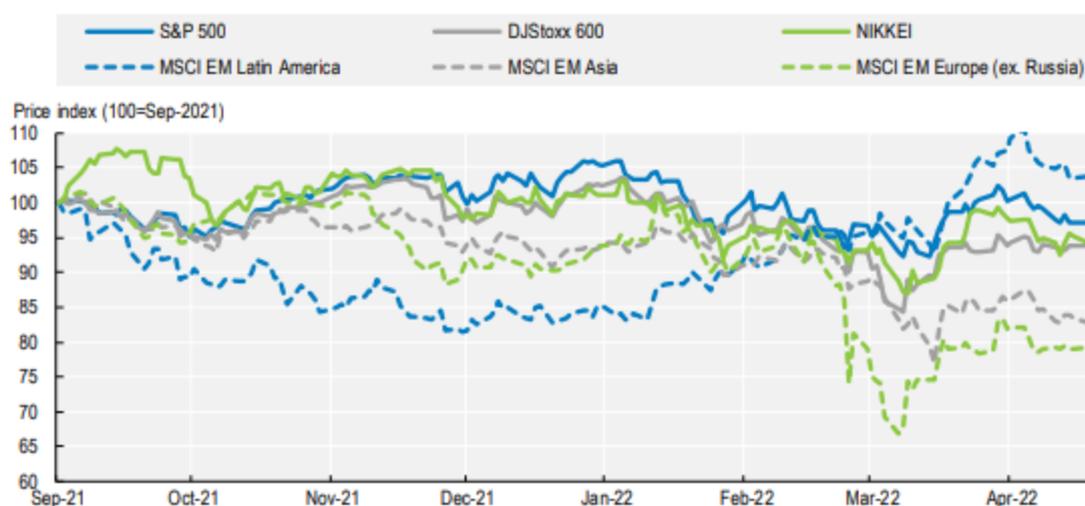
⁸⁴ [UK may allow ‘side pocket’ model to manage Russian assets \(privatebankerinternational.com\)](#)

⁸⁵ [MSCI ACWI Index – MSCI](#)

⁸⁶ The next subsection discusses the indirect effects of inflation and economic downturn on the portfolios of pension providers.

⁸⁷ Markets may be said to be in a bear territory when stocks fall by at least 20% of their high (Source: Investopedia).

Figure 2.5. Performance of selected equity benchmarks



Source: OECD (2022_[17]).

Pension providers may have felt in particular the impact of the war and sanctions on the value of the securities from companies with their headquarters outside Russia but with subsidiaries located in Russia or selling products and services there. Companies exiting Russia may incur costs and losses through the writing off or sale at low value of their Russian assets, and through lost revenues in Russia, although some researchers argue that companies curtailing their operations in Russia have been performing better than those continuing them and even reported gains after initial losses (Sonnenfeld, Tian and Zaslavsky, 2022_[18]).⁸⁸

The war and sanctions may also affect the operation and therefore performance of companies relying on exports from Russia and Ukraine, through disruptions in trade and supply chains. Companies may face challenges from shortages in the supply of energy, commodities, metals and other industrial materials and goods, which Russia and Ukraine are major exporters of. The tighter supply can hit sectors dependent on these goods and curb the production of their outputs, such as in the automotive, aerospace and semiconductor industries (IMF, 2022_[19]) (Zhang, 2022_[20]). The war and following sanctions can therefore weigh on the earnings of companies in some sectors, and subsequently on their security prices and the investment returns of pension providers holding these securities. By contrast, some other sectors may have fared better and may have been experiencing profits, such as the defence and oil sectors (following the price hike), which could have offset some of the losses of pension providers.⁸⁹ Companies with pricing power may cope better with a price hike than others.⁹⁰ Other commodity producers in other regions may also benefit from a decline in supplies coming from Russia and higher commodity prices (J.P.Morgan, 2022_[21]).

Although the war in Ukraine has had specific effects on specific companies and sectors (e.g. automotive, defence) and a negative impact on global stock markets, it has certainly led to heightened uncertainties. Volatility in equity markets rose, especially in Europe, although this volatility has declined afterwards (IMF, 2022_[19]). The uncertainties in financial markets and the risk of other sudden declines may be similar to

⁸⁸ Based on a sample of 600 publicly traded companies over the period from 23 February to 8 April.

⁸⁹ [Best Stocks to Watch in Wartime | IG UK](#)

⁹⁰ [Market Comment: How the Ukraine war affects equity sectors – ABN AMRO MeesPierson](#)

other shocks in stock markets, non-related to geopolitical events. Pension providers usually monitor investment risk and manage it as part of their risk management framework.

2.4. Indirect repercussions of the war in Ukraine on pension providers through macroeconomic and other channels

The war in Ukraine can have indirect effects on the portfolios of pension providers. These indirect effects could be through higher inflation that can lead to lower investment returns on certain asset classes; higher interest rates that reduce the liabilities of pension providers with a benefit promise; lower economic growth that reduces the prospects of investment returns; and heightened geopolitical risks that could reinforce the home bias in the investment decisions of pension providers.

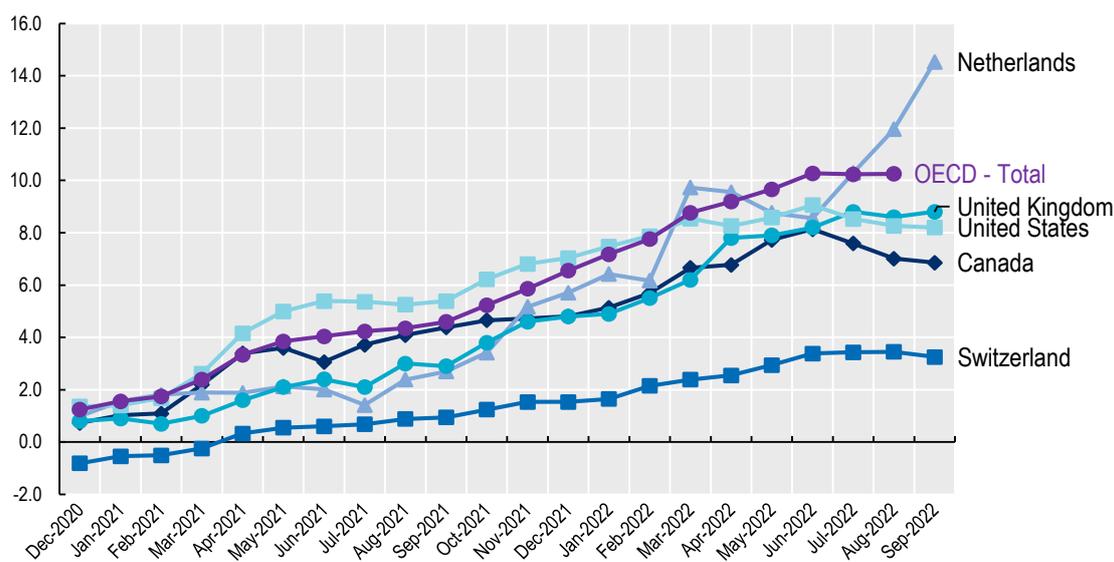
2.4.1. Inflationary pressures

Higher inflation rates affecting the returns of selected asset classes and the funding position of defined benefit plans

Pension providers were already facing a rising inflation before 2022, fuelled further by the war in Ukraine. Inflation was on the rise because of the pandemic in 2021 (World Economic Forum, 2022^[22]), reaching 6.6% in December 2021 in the OECD area and hitting a 30-year high (OECD, 2022^[23]). The war in Ukraine has exacerbated inflationary pressures through an increase in the price of oil, gas and other commodities (such as food) imported from Russia or Ukraine. Inflation in the OECD was already at 8.8% (year-on-year) at end-March 2022, kept rising to 10.3% at end-June 2022 before stabilising just above 10% by August 2022 (Figure 2.6). The Netherlands experienced a jump in inflation in the first month of the war in Ukraine, by 3.6 percentage points. Inflation was also increasing, at least until end-June 2022, in some other large pension markets (e.g. Canada, Japan and the United Kingdom). In the United States, inflation rose from 7% at end-2021 to 8.5% at end-March 2022 and 9.1% at end-June 2022, before going down to 8.2% at end-September 2022.

Figure 2.6. Consumer prices in selected jurisdictions and in the OECD, Dec 2020 – Sept 2022

Percentage change on the same month of the previous year



Source: OECD Consumer Price Indices database.

Pension providers are therefore facing the materialisation of the inflation risk, with inflation potentially undermining the asset values and the investment performance more than expected. The impact of inflation varies by asset class. The rise of inflation particularly affects the investment performance of some asset classes, such as those providing a fixed nominal stream of income (e.g. fixed-rate bonds). While equities are sometimes perceived as providing income that can offset inflation, they have showed mixed returns when inflation was already high and rising (Markowicz, 2021^[24]). Manulife (2022^[25]) found a low correlation between the CPI and the monthly returns of stocks in the United States.⁹¹ The rise of inflation may therefore lead to lower or even negative investment rates of return for pension providers, depending on their asset allocation.

A rising inflation can also deteriorate the funding ratios of DB plans, *ceteris paribus*, if benefits due increase. Most countries require mandatory pension plans to index benefits to inflation (Table 2.1). In the United Kingdom, most DB schemes also provide benefits indexed on inflation, with the indexation capped at 5% per year (Pension Protection Fund, 2021^[26]). In some countries, the indexation of benefits is conditional on the financial position of the fund (e.g. Netherlands) or the employer (e.g. Germany).

Table 2.1. Indexation of retirement benefits in selected OECD countries

Mandatory indexation	Conditional indexation
Austria (VO, book reserves): LI, in line with social security benefits	Austria (VO, plans other than book reserves): LI
Chile (MP): LI and PW, in line with CPI	Canada (VO): LI
Colombia (MP): LI and PW, in line with CPI	Denmark (MP): LI
Finland (MO): LI, in line with 80% CPI and 20% wage growth	Germany (VO, DB plans and social partner model): LI
Germany (VO): LI, in line with CPI, wage growth or 1% /year	Lithuania (AE): LI
Iceland (MO): LI, in line with CPI	Netherlands (QMO): LI
Mexico (MP): LI, in line with CPI	Norway (MO): LI
Türkiye (VP): LI, in line with CPI	Sweden (MP/QMO): LI
	Switzerland (MO): LI

Note: MO = mandatory occupational; QMO = quasi-mandatory occupational; VO = voluntary occupational; MP = mandatory personal; VP = voluntary personal; AE = automatic enrolment; CPI = Consumer Price Index; LI = lifetime income; PW = programmed withdrawals.

Tools for mitigating inflation risk

Some instruments may mitigate the impact of inflation on the investment revenue of pension providers, in a context of rising inflation. Some of these instruments may adjust automatically to inflation while some others may indirectly protect their holders from inflation.

Some instruments are a direct hedge against inflation, linking investment income explicitly with inflation. These instruments include inflation-indexed bonds and inflation derivatives (such as inflation swap). Inflation-indexed bonds protect the buyers by linking the principal and interest payments of bonds contractually to a nationally recognised inflation measure, such as the retail price index (RPI) in the United Kingdom, the European Harmonised Index of Consumer Prices (HICP) excluding tobacco in Europe, or the Consumer Price Index (CPI) in the United States (PIMCO, 2016^[27]). A rising inflation translates into higher principal values for these bonds. Inflation derivatives also protect their buyers from the rise of inflation through a transfer of the inflation risk. Inflation derivative contracts may be tailored more

⁹¹ According to Manulife, the correlation with the CPI in the United States was -0.14 for large-cap stocks, 0.17 for large-cap growth stocks and 0.25 for large-cap value stocks in the United States over 40 years, as of 7 February 2022.

specifically to the need of the buyer than inflation-indexed bonds (Kerkhof, 2005^[28]). For example, inflation swaps can provide a floating inflation-linked cash flow in exchange for a fixed-rate cash flow.⁹²

However, these direct hedges against inflation have some limits that pension providers may encounter, should they hold or look for such instruments. The market for liquid products with an explicit inflation hedge may be limited.⁹³ Inflation-indexed debt accounted for 8% of outstanding long-term debt in 2021 in the OECD (OECD, 2022^[29]). Some countries do not issue inflation-indexed bonds (e.g. the Netherlands). An increased demand for inflation-linked products (“linkers”) may lead to a rise in the price of these products and lower their investment returns (PwC, 2021^[30]). These instruments may also be less liquid than conventional bonds as buyers of linkers would usually be buy-and-hold investors (OECD, 2017^[31]). Inflation-indexed bonds may not be perfectly tailored to the needs of pension providers, for instance when liabilities are indexed to another measure (e.g. CPI and wage growth) than the index in the linkers. Inflation derivatives also have some downsides, such as a counterparty default risk (Mathysen, 2017^[32]).

Pension providers may be indirectly protected against inflation to some extent through investments in infrastructure or real estate for example. This type of investments can generate inflation-linked revenues due to monopolistic pricing power (e.g. toll road) and inelastic demand from consumers even during inflationary periods. The rental rates of real estate may increase in a period of rising inflation. Real estate may provide attractive returns through capital appreciation and current income (Allspring, 2022^[33]).

Despite the rising inflation even before the war in Ukraine, some pension providers have shown little appetite for inflation-hedge instruments, such as in the Netherlands (at least before 2022).⁹⁴ One of the reasons could be that pension funds in the Netherlands have a conditional indexation of benefits on inflation, depending on the level of the funding ratio. Pension funds may therefore have an approach focusing on the funding ratio, including all the other parameters affecting it, rather than inflation alone.

Some pension providers may indirectly hedge against the effect of a rising inflation on their liabilities by using a lower protection against low interest rates. Some investors may foresee increases in interest rates from central banks to tackle a rising inflation. Those with a lower protection against low interest rates may therefore benefit more from rising interest rates.

2.4.2. Expectations of higher interest rates

Central banks may react to rising inflation by increasing interest rates to curb it. The Fed increased its federal funds rate by 0.25 percentage point in March 2022, 0.5 percentage point in May, 0.75 percentage point four times afterwards (in June, July, September and November) and 0.5 percentage point in December.⁹⁵ The Bank of England also raised its base rate, by 0.25 percentage point four times in the first half of 2022 (in February, March, May, June), 0.5 percentage point in August and September, 0.75 percentage point in November and 0.5 percentage point in December.⁹⁶ The European Central Bank raised its key interest rates as well, by 0.5 percentage point in July 2022, by 0.75 percentage point once in September 2022 and another time in November 2022, and by 0.5 percentage point in December.⁹⁷

⁹² [Inflation Swap – Overview, How It Works, and Example \(corporatefinanceinstitute.com\)](https://www.corporatefinanceinstitute.com/resources/derivatives/inflation-swap/)

⁹³ [Solidarity buffer to absorb inflation shocks in new Dutch pension system | News | IPE](#)

⁹⁴ [Dutch pension funds see no need to tackle inflation risk | News | IPE](#)

⁹⁵ See [Federal Funds Rate History 1990 to 2022 – Forbes Advisor](#). The federal funds rate is the interest rate that banks charge each other to borrow or lend excess reserves overnight (Source: Investopedia).

⁹⁶ [Bank Rate history and data | Bank of England Database](#)

⁹⁷ [Key ECB interest rates \(europa.eu\)](#)

Changes in interest rates may have an impact on the value of some assets in the portfolios of pension providers. Higher interest rates may negatively affect the earnings and stock prices of some companies, through higher borrowing costs and potentially less revenue coming from reduced consumer demand and spending. The ECB (2022^[34]) estimates that equity valuations could decline in the case of a limited increase in longer-term risk-free real interest rates. The price and value of existing bonds may also decline as interest rates increase and investors turn to newly issued and higher-yielding bonds. The impact of higher interest rates may be less pronounced on the price of bonds with shorter duration, floating interest rates bonds or higher-yield bonds, as they performed better than other government bonds in recent periods of rate hikes (J.P. Morgan, 2022^[35]).

Higher interest rates could be beneficial to DB plans and their funding position. Higher interest rates lead to an increase in the discount rate that is used in the calculations of the liabilities of DB plans, automatically reducing the value of liabilities of the plans. This reduction in the present value of liabilities can improve the funding position of DB plans depending on the duration gap, or in other words the sensitivity of the assets and liabilities of the plans to changes in interest rates. An increase in interest rates positively affects the funding ratio of DB plans when the weighted duration of liabilities exceeds the weighted duration of assets (OECD, 2015^[36]).

2.4.3. Lower economic growth

Recent analyses by the OECD, the IMF and the World Bank suggest that the war in Ukraine has affected the global economy as a result of the disruptions in the supply chains and trade. In November 2022, the OECD (2022^[37]) projected a global GDP growth of 3.1% for 2022, lower than in the GDP growth in 2021 (5.9%) and the pace foreseen before the war in Ukraine. In October 2022, the IMF (2022^[38]) also forecast the global growth to slow from 6% in 2021 to 3.2% in 2022 and 2.7% in 2023 as the war in Ukraine, the lingering pandemic and the cost-of-living crisis weighed on the outlook. The World Bank (2023^[39]) revised its projections downwards in January 2023, forecasting a global GDP growth of 2.9% in 2022 (down by 1.2 percentage point compared to its projections in January 2022) and 1.7% in 2023 (down by 1.5 percentage point). The extent of the economic slowdown will vary across countries and regions and will be driven by several factors including: a decline in trade; less tourism in some countries (e.g. Central Europe); and worsening of external financing conditions for some countries (IMF, 2022^[40]; 2022^[41]). The underlying factors reducing growth may lead to lower investment returns in some sectors and could therefore affect the investment performance of pension providers depending on their asset allocation.

2.4.4. Other impacts on pension providers

The war in Ukraine entails additional risks for pension providers, such as a risk of cyber-attacks and a heightened geopolitical risk. These risks could affect the amount of their assets and their asset allocation if they materialise.

The digital warfare that may involve Russian, Ukrainian and potential external stakeholders could expose pension providers to a heightened risk of cyber-attacks. Some experts warned at the early stage of the war about a potential rise of cyber-attacks outside the conflict area (WTW, 2022^[42]). The Pensions Regulator (TPR) in the United Kingdom urged trustees in March 2022 to ensure their cyber security procedures remain adequate and to review processes and procedure in terms of cyber-crime, in a context of potential heightened risk of cyber-attacks.⁹⁸ Pension providers and their members could either be a direct target or be facing the indirect consequences of broader cyber-attacks. The risk of cyber-attacks that pension providers face is not new and cyber security incidents before 2022 included phishing, malware, spam, identity thief, account takeover, ransomware and social engineering (Paklina, 2021^[43]). Pension providers may also be indirectly exposed to attacks targeting and affecting public infrastructure, such as power

⁹⁸ [Conflict in Ukraine – information for trustees | The Pensions Regulator](#)

outage and interruptions in internet traffic. Depending on their forms, cyber-attacks may cause operational issues, loss of data on members and financial losses for pension providers. Yet, after several months of war, OECD countries have not reported any significant increase in attacks in relation to the war in Ukraine, implying that the financial losses that pension providers would have incurred due to cyber-attacks related to the war in 2022 would be minimal.

2.5. Conclusions

Available data for early 2022 already provide some information on the investment performance and solvency of pension providers since the beginning of the war in Ukraine. These data show that pension providers recorded investment losses in Q1 2022 and a drop in assets in the first half of 2022. Yet, the funding of DB plans has improved in several countries.

The war in Ukraine may have contributed to these developments as it could have affected the portfolios of pension providers in 2022 beyond Russia and Ukraine in multiple ways. Its effects could be direct through a loss in the value of their Russian assets or a change in the values of the securities of companies located outside Russia and Ukraine but affected by the war, and indirect through macro-economic channels (e.g. a rise in inflation and interest rates, lower economic growth). Pension providers may also have faced a heightened risk of cyber-attacks in a context of heightened geopolitical tensions. This risk has not materialised so far for pension providers in the OECD area. Pension providers have also been less likely to feel the impact of the war in Ukraine through their holdings of Russian assets than through other channels, given their minimal exposure to Russia before the war.

Yet, available data on pension providers do not allow to isolate the effect of the war on their investment performance and solvency from other developments. Actual data could embed and reflect other events and developments that are not related to the war, such as the lingering effects from the pandemic (e.g. supply chain disruptions, inflation started rising before the war). As a result, it may not be possible to assess the effect of the war and its consequences alone.

The use of simulation techniques could help to assess the impact of the war in Ukraine on the portfolios of pension providers more precisely. These simulations could either test the sensitivity of portfolios to a change in a single parameter (or risk factor) such as a change in interest rates (i.e. sensitivity testing) or test the response of portfolios to a simultaneous change in a group of parameters (i.e. scenario analysis). These approaches could be useful for an assessment of the impact of an event abroad, or more broadly the materialisation of any geopolitical risk or other shock, on the portfolios of pension providers, whether the changes such event implies are purely theoretical or based on actual developments.

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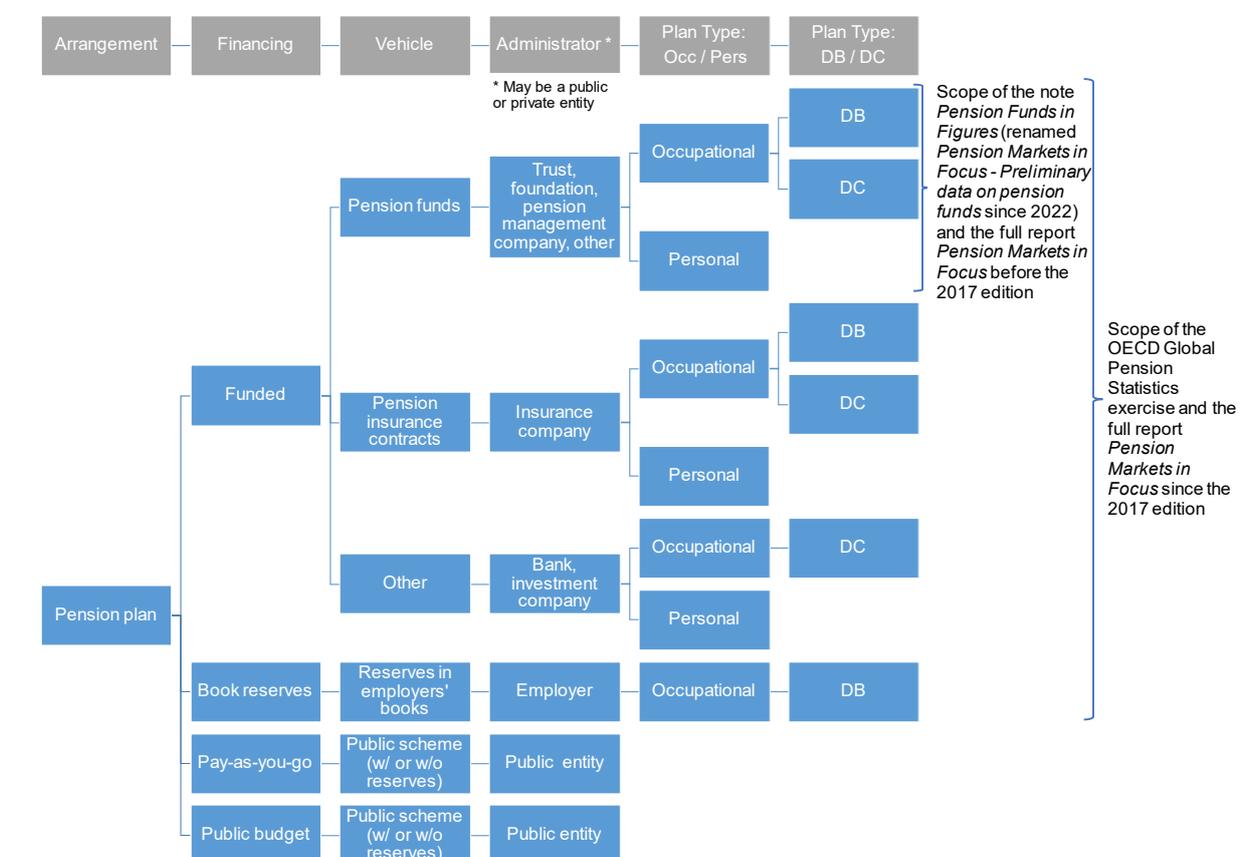
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Annex A. Features of pension plans

The pension landscape includes various types of plans around the world. These plans finance the benefits of retirees in different ways, through specific vehicles administered by different entities (Figure A A.1). The way individuals get access to these plans and the type of benefits offered also vary across jurisdictions.

Figure A A.1. Features of pension plans



Pension plans are designed to provide benefits to individuals at retirement but finance these benefits in various ways. Benefits can be financed through assets accumulated in funded plans, through provisions in employers' books, from the contributions of current employees or from the public budget.

In funded plans, members accrue rights or accumulate assets for their retirement through their contributions or the contributions of their employers during their working lives. These assets are legally separated from the sponsors of the plans. Members have a legal or beneficial right or some other contractual claim on these assets.

By contrast, provisions in employers' books are not legally separated from the employers. The accrued pension rights of employees could potentially be at risk if the employers go bankrupt. Some countries where this financing method exists have set up insolvency guarantee schemes (e.g. Germany). Other

countries encourage or require employers to purchase credit insurance or arrange equivalent guarantees (e.g. Sweden) to protect the pension rights of employees in the event of employer insolvency.

In some public pension plans, contributions of current workers are used to pay benefits of current retirees (i.e. pay-as-you-go plans) while in some others, public budget may be used to finance retirement income (e.g. some social assistance programmes). These plans that are usually administered by a public institution may build up reserves to cover expenses and smooth benefit payments over time.

Some plans have both a funded and pay-as-you-go component, such as the earning-related pension plans regulated by the Employees' Pension Act (TyEL) and the Seafarer's Pensions Act (MEL) in Finland. The main part of the pensions in a given year is paid by the contributions received that year. The remaining part is financed by accumulated assets.

Pension plans may be funded through the establishment of pension funds, pension insurance contracts or the purchase of other authorised retirement savings products. Pension funds represent a pool of ring-fenced assets forming an independent legal entity. When pension insurance contracts are used for retirement saving, individuals or their employers pay premiums to insurance companies. Insurance companies manage the assets coming from these premiums (or contributions) together with those coming from their other insurance activities. While the amount of premiums paid for these policies is usually known, it is more difficult to assess the size of assets that insurance companies hold as a result of their pension activities. Individuals or their employers may also open or purchase other retirement savings products offered and administered by banks or investment companies (such as individual retirement accounts (IRAs) in the United States).

Pension funds take different forms around the world (Stewart and Yermo, 2008^[44]). Pension funds may have a legal personality and capacity in some countries (e.g. Pensionskassen in Austria and Germany, contractual pension funds in Italy, pension funds in the Netherlands and Switzerland). Pension funds in these countries have their own governing board. In some other countries, pension funds are a segregated pool of assets without legal personality and capacity. In this case, pension funds are governed and administered by a separate entity. This entity may be a pension fund management company (e.g. in the Czech Republic, Chile, Mexico, the Slovak Republic), a bank or an insurance company for instance. In some other countries (e.g. Ireland, the United Kingdom), the legal form of the pension fund is a trust. The trustees legally own and administer the assets of the trust in the interest of plan members. Irrespective of the legal form of the pension funds, some of the activities, such as those related to the investment of assets or the collection of contributions, may be outsourced to third parties (e.g. asset managers).

Employers (from the public or private sector) may set up funded plans on behalf of their employees. In such cases, the plans are considered as occupational in the OECD taxonomy.⁹⁹ Access to the plans is linked to employment. When individuals choose and set up plans themselves with a dedicated provider, the plans are personal. Access to certain plans may however be limited to individuals in a professional activity but open to both public and private sector workers (e.g. Mexico). These plans are still considered as personal as individuals independently select material aspects of the plan such as the investment strategy, the fund or the administrator of the fund.

Where the employer is responsible for guaranteeing a benefit or return promise to plan members, the OECD considers such occupational plans as defined benefit (DB) plans. The benefit promise may be a pension calculated on a number of parameters (e.g. salary, length of employment) or an investment rate of return. In the first case, the plans are considered as DB traditional, while the plans are considered as DB hybrid in the second case. When another party offers a guarantee (e.g. an insurance company), the

⁹⁹ The definitions of pension plans by the OECD's Working Party on Private Pensions are available in the publication *Private Pensions: OECD Classification and Glossary*, available at <https://www.oecd.org/daf/fin/private-pensions/privatepensionsoecdclassificationandglossary.htm>.

plans are considered as DC protected. Otherwise, if there is no (fixed) guarantee, the plans are DC unprotected.

The Global Pension Statistics (GPS) that the OECD carries out in cooperation with the IOPS and the World Bank cover employers' book reserves (which are private pension plans) and all funded plans regardless of the financing vehicle and its administrator (public or private institution), the type of plans (occupational, personal, DB or DC) and the type of people covered (public sector workers, private sector workers). Unfunded or pay-as-you-go schemes with their reserves are out of the scope of this exercise.

This publication mainly relies on all the data collected through this statistical exercise. It endeavours to show data for data for all funded pension plans and employers' book reserves, since the 2017 edition of this annual report. Previous editions of Pension Markets in Focus before 2017 were mainly focusing on pension funds. This change may account for the potential differences between the results in this report and results in editions prior to 2017.

Data in the GPS exercise – and therefore in this report – may not always cover all funded pension plans and book reserves that exist in each country due to data availability issues. Data are sometimes unavailable (“missing”) for a given type of plan in a country (e.g. book reserves in Austria). In other cases, data may be missing only for some plans in a given type of plan. In Ireland for example, two plans qualify as pension insurance contracts according to the OECD taxonomy: retirement annuity contracts and personal retirement savings accounts (PRSAs). Data in the GPS exercise only cover PRSAs. Table A A.1 shows the types of plans that exist in all the jurisdictions participating in the OECD, IOPS and World Bank statistical exercise. The table also specifies the coverage of the OECD data by type of plan. More information is available online on the different funded and private pension plans in each jurisdiction.¹⁰⁰

Table A A.1. Existing types of funded and private pension plans by country and data coverage of the Global Pension Statistics exercise

	Funded						Book reserves	
	Pension funds			Pension insurance contracts				
	Occupational		Personal	Occupational		Personal		Other
	DB	DC		DB	DC			
OECD countries								
Australia	✓	✓	✓				Some	
Austria	Some	✓		✓	Some	Missing		Missing
Belgium	✓	✓	Some	✓	✓	✓	Some	
Canada	✓	✓	Some	✓	✓	✓	Some	✓
Chile		✓	✓		Missing	Missing	Missing	Missing
Colombia			✓					
Costa Rica	✓	✓	✓					
Czech Republic			✓					
Denmark	✓		✓		✓	✓	✓	✓
Estonia			✓			✓		
Finland	✓			✓	✓	✓		Missing
France	✓	✓	✓	✓	✓	✓		
Germany	✓			Missing	Missing	Missing	Missing	Missing
Greece		✓				Missing		
Hungary		Missing	✓			✓	✓	
Iceland	✓	✓	✓			✓	✓	
Ireland	✓	✓				Some	✓	
Israel	✓		✓			Missing	Some	
Italy	✓	✓	✓			✓		✓
Japan	✓	✓	✓			✓		✓
Korea				✓	✓	✓	✓	✓
Latvia		✓	✓				✓	
Lithuania			✓					

¹⁰⁰ See <https://www.oecd.org/pensions/private-pensions/pensionmarketsinfoocus.htm>

	Funded								Book reserves	
	Pension funds			Pension insurance contracts			Other			
	Occupational		Personal	Occupational		Personal	Occupational	Personal		
	DB	DC		DB	DC					
Luxembourg	✓	✓			Missing	Missing		Missing	Missing	
Mexico	✓	✓	✓	✓	✓	Missing	✓	Missing	Missing	
Netherlands	✓	✓		Missing	Missing	Missing				
New Zealand	✓	✓	✓					✓		
Norway	✓			✓	✓	✓				
Poland		✓	✓		✓	✓	✓	✓		
Portugal	✓	✓	✓	Missing	Missing	✓		✓		
Slovak Republic			✓							
Slovenia		✓	✓		✓	✓				
Spain	✓	✓	✓	✓	✓	✓			✓	
Sweden	✓	✓	✓	✓	✓	Some		✓	Some	
Switzerland	✓					✓		✓		
Türkiye	Some	✓	✓						✓	
United Kingdom	✓	✓		Missing	Missing	Missing				
United States	✓	✓				✓		✓		
Other jurisdictions										
Albania		✓	✓							
Armenia			Some							
Botswana		✓	✓							
Brazil	✓	✓				✓				
Bulgaria		✓	✓							
Croatia		✓	✓							
Dominican Republic	✓	Some	✓							
Egypt			✓							
Georgia			Some			Missing				
Ghana		✓	✓							
Gibraltar				✓	✓	Missing	✓			
Guyana	✓	✓								
Hong Kong (China)	✓	✓		✓	✓					
India	Some	✓								
Indonesia	✓	✓	Some							
Isle of Man	✓	✓	✓							
Jamaica	✓	✓	✓							
Kazakhstan			✓							
Kenya	✓	✓	✓							
Kosovo		✓	✓							
Liechtenstein	✓	✓								
Macau (China)	✓	✓	✓							
Malawi	✓	✓								
Malaysia	Missing		✓			✓				
Maldives			✓							
Malta		✓	✓			✓				
Mauritius	✓	✓	Missing			Missing				
Morocco		✓	✓							
Mozambique	✓	✓	✓							
Namibia	✓	✓	✓			✓				
Nigeria	✓		✓							
North Macedonia		✓	✓							
Pakistan	Missing	Missing	✓							
Peru			✓							
Romania			✓							
Russia	✓	✓	✓							
Serbia		✓	✓							
South Africa	✓	✓	✓				✓	✓		
Suriname	✓	✓			Missing	Missing				
Tanzania	Some		✓							
Thailand		Some	Missing							
Uganda	✓	✓	✓							
Ukraine			✓							
Uruguay			✓							
Zambia	Some	✓	Missing			Missing				

Note: “DB”: defined benefit; “DC”: defined contribution. This Table gives the data coverage of this report, based on the OECD/IOPS/World Bank Global Pension Statistics (GPS) exercise. When a cell is grey with a tick, this means that the GPS exercise covers all the plans of this type for a given country. “Some” means that the GPS exercise only covers some plans of this type. “Missing” means that this type of plan exists but the OECD data do not cover it. Data for Australia cover the whole superannuation sector except retirement savings accounts (RSAs). Data for Germany refer to Pensionskassen and Pensionsfonds only. In Hungary, there is one institution for occupational retirement provision but its market share is negligible compared to other pension providers administering personal pension plans. In Norway, since 2021, members of DC schemes can consolidate their previous DC savings and contributions from their current job into a single account (own pension account). Data for Kenya do not include the newly formed public service superannuation scheme. See the metadata file available on the OECD webpage for a full and detailed description of all types of funded and private plans in the countries participating in the OECD/IOPS/World Bank Global Pension Statistics exercise. Any deviation to this data coverage in this report is reported in the specific notes of the related Table or Figure.

Annex B. Methodological notes

Pension authorities and other bodies provided the primary source material for this report, as part of the OECD/IOPS/ World Bank Global Pension Statistics (GPS) exercise. Data come from official administrative sources and are revised on an ongoing basis so as to better reflect the most recent figures for every past year. Some divergences may exist between national reporting standards and the compilation method of certain data for the GPS exercise. For this reason, data providers are regularly requested to provide methodological information relevant for developing a thorough understanding of their submission under the GPS framework. The general and specific methodological notes below provide some explanations in this respect.

General notes

- Conventional signs: “..” means not available. “|” means methodological break in series.
- This report (in particular the first section) is mainly based on the answers of pension authorities and other bodies to an annual data request. Some statistics for some jurisdictions come from publicly available reports, databases or websites of other national or international organisations: Japan (Bank of Japan) and Switzerland (Federal Social Insurance Office’s publication *Statistique des assurances sociales suisses* for personal plans) among OECD countries; and Argentina (International Association of Pension Fund Supervisors (AIOS)), Bolivia (AIOS), China (People’s Republic of) (Ministry of Human Resources and Social Security (MOHRSS)), Croatia (website of the Croatian Financial Services Supervisory Agency (HANFA) before 2014), the Dominican Republic (AIOS before 2014), El Salvador (AIOS), India (annual reports of the Employees’ Provident Fund Organisation for Employees’ Provident Fund, Employees’ Pension Scheme and Employees’ Deposit Linked Insurance Scheme), Panama (AIOS) and Uruguay (AIOS before 2016) among non-OECD jurisdictions.
- Data on stock variables refer to the end of the year while data on flow variables are provided over the whole year in the report. The reference period is the calendar year, except for: Australia where the reference period is the financial year ending in June; India where the reference period ends in March for Employees’ Provident Fund, Employees’ Pension Scheme and Employees’ Deposit Linked Insurance Scheme; and New Zealand (until 2014). Data for New Zealand up to 2013 are based on a 31 March balance date for most of the schemes.
- Data on defined benefit plans in Ireland include one large scheme in which members build up rights on a defined contribution basis but which is subject to the Irish funding standard because there is an option for members to purchase an annuity from the scheme at retirement.
- Slovenia adopted the euro in 2007, the Slovak Republic in 2009, Estonia in 2011, Latvia in 2014 and Lithuania in 2015. The whole time series (in millions of national currency) are expressed in millions of euro for these countries (even before their adoption of the euro).
- This report uses five main additional reference series: exchange rates to convert values in US dollars, GDP, the variation of the consumer price index (CPI), population and average annual wages:

- This report uses end-of-period exchange rates for all variables valued at the end of the year, and period-average rates for variables representing a flow over the year. These rates come from the IMF International Financial Statistics database.
- GDP values for OECD countries are extracted from the OECD Annual National Accounts and Quarterly National Accounts databases. GDP values for non-OECD jurisdictions come from the IMF World Economic Outlook released in April 2022, except for Gibraltar (Abstract of Statistics 2015 of the Statistics Office of Gibraltar), Isle of Man (the National Income webpage of the Official Isle of Man Government website) and Liechtenstein (UN National Accounts Main Aggregates Database).
- Consumer price indices are from the OECD Main Economic Indicators database for OECD countries, and from the IMF International Financial Statistics database for non-OECD jurisdictions except for Angola in 2020 (National Institute of Statistics), Gibraltar (Abstract of Statistics 2015 of the Statistics Office of Gibraltar), Kazakhstan in 2021 (Bureau of National Statistics), Macau (China) in 2021 (Statistics and Census Service), Papua New Guinea (World Bank Consumer Price Index database) and Uganda in 2021 (Uganda Bureau of Statistics).
- Data on population are from the OECD Labour Force Statistics database for OECD countries and from the World Bank World Development Indicators for all the other jurisdictions.
- Data on average annual wages come from the OECD Average Annual Wages database for OECD countries (except Colombia and Costa Rica) and from an ILO online database for all the other jurisdictions.

Specific notes

Figure 1.1:

The maps show the amount of assets in funded and private pension plans in a selection of jurisdictions in 2021, except for: Belgium (2020) and France (2020) among OECD countries; and Botswana (2020), Dominican Republic (2020), India (2020), Isle of Man (2019), Liechtenstein (2020), Papua New Guinea (2018), Russia (2020), South Africa (2019), Tanzania (2017), Trinidad and Tobago (2020) and Ukraine (2020) among other reporting jurisdictions.

Figure 1.2:

The geographical distribution is calculated as the amount of total pension assets in a country relatively to the whole OECD area. The grouping “Other OECD countries” includes the remaining 31 OECD countries, for which data refer to end-2021 except for Belgium and France where data refer to end-2020.

Figure 1.3:

The charts show the amount of assets in funded and private pension plans, expressed as a % of GDP, at the end of 2001, 2011 and 2021 (exact value also provided for this last year) or the nearest year available, when possible. Data refer to the end of 2005 instead of 2001 for Belgium, Luxembourg and Mexico. Data refer to the end of 2013 for Switzerland, and 2014 for Angola, Brazil and the Dominican Republic instead of 2011. These data and the whole time series can be retrieved in the statistical annex of this publication. There is a methodological break in series for some jurisdictions (namely Belgium, Canada, Costa Rica, Croatia, Hungary, Iceland, Portugal, the Slovak Republic) between 2001 and 2021, further described in the statistical annex and which needs to be accounted for when analysing the evolution of the amount of assets. The totals in and outside the OECD area are calculated as the sum of all pension assets (in USD) over the sum of all GDPs (in USD) of all reporting jurisdictions in a given year. The number of reporting jurisdictions differs between the three time references (~2001, ~2011, ~2021).

Figure 1.4:

The charts show the average annual nominal growth rate of pension assets over the last year, and the last 10 and 20 years or so. The average over the last 10 years is calculated between end-2011 and end-2021 except for: Kosovo, Malaysia and Mauritius (between end-2012 and end-2021); Egypt, Malawi and Switzerland (between end-2013 and end-2021); and Angola, Armenia, Brazil, Ghana and Uganda (between end-2014 and end-2021). The average over the last 20 years is calculated between end-2001 and end-2021 except for: Croatia, El Salvador, Estonia, Korea, Spain, Suriname and Uruguay (between end-2002 and end-2021); Slovak Republic and Slovenia (between end-2003 and end-2021); China (People's Republic of), Jamaica and Türkiye (between end-2004 and end-2021); and Luxembourg and Mexico (end-2005 and end-2021). There is a methodological break in series for some jurisdictions (namely Canada, Costa Rica, Croatia, Hungary, Iceland, Portugal, the Slovak Republic) between 2001 and 2021, further described in the statistical annex and which needs to be accounted for when analysing the evolution of the amount of assets. The growth rate of pension assets in Zimbabwe between end-2020 and end-2021 (189%) is not shown in the chart for readability purposes.

Figure 1.5:

The chart shows the amount of assets in funded and private pension assets at the end of each year, from end-2001 to end-2021, based on annual data. Therefore, it smooths out fluctuations happening over a year. The total amounts of assets at the end of a given year are calculated on all the jurisdictions for which a value is available. The number of jurisdictions that the totals include may therefore vary over the years. Totals are expressed in current prices.

Figure 1.6:

Coverage rates are provided with respect to the total working-age population (i.e. individuals aged 15 to 64 years old), except for Germany (employees aged 25 to 64 subject to social insurance contributions), Iceland (Icelandic citizens and foreign workers in Iceland aged between 16 and 64), Ireland (workers aged between 20 and 69), Portugal and Spain (households). "CPS"= Contributory Pension Scheme. "EPF"= Employer Pension Funds. "FIPF"= Financial Institution Pension Funds. "MPF" = Mandatory Provident Funds. "OFE" = Open pension funds. "ORSO" = Occupational Retirement Schemes. "PFs" = Pension funds. "PGBL & VGBL" refers to two types of variable contribution plans in Brazil. "PRPP" = Pooled registered pension plans. "PPS"= Premium pension system. "PZV" refers to a personal annuity insurance contract in Austria. "QMO" = Quasi-mandatory. "ROP" refers to a mandatory supplementary pension scheme in Costa Rica. "RPP" = Registered pension plans. "RRSP" = Personal registered retirement saving plans.

Data refer to 2021 or to the latest year available. Data refer to 2020 for Belgium, Canada, France, Mexico (occupational plans), Netherlands, Portugal and Spain among OECD countries; and Brazil, the Dominican Republic, Nigeria and Russia among other jurisdictions. Data refer to 2019 for Denmark (QMO and personal plans), Germany, Iceland, Korea and the United States (individual retirement accounts). Data refer to 2018 for Finland.

Data on personal plans for Austria refer to PZV contracts. Data on personal plans refer to PER individuel, PERP & Madelin schemes while data on occupational plans refer to all the other schemes for France. Data for Israel refer to new and general pension funds. For Italy, the coverage rate that is shown under voluntary occupational plans also covers individuals automatically enrolled in a plan. In Korea, the retirement benefit system is mandatory and can take two forms: a severance payment system and an occupational pension plan. The obligation of the employer in Korea is to provide a severance payment system, but, by labour agreement, the company can set up an occupational pension plan instead. Data on occupational plans for Norway refer to private and municipal group pensions.

Table 1.1:

The tables show the average annual variation of the coverage of funded and private pension plans, in percentage point of the working-age population, between 2020 and 2021, over 10 and 20 years or so (depending on data availability).

Figure 1.7:

The category “Total” shows the cases where the contributions cannot be split precisely between employers, employees (and state). The time series of total contributions as a % of GDP is available in the statistical annex of this report. Please refer to the notes in this annex for more country-specific notes on total contributions. (1) Data on state contributions refer to contributions to mothers.

Figure 1.8:

The category “Total” shows the cases where the contribution rates cannot be split precisely between employers, employees (and state). (1) Employers also contribute an additional 6% to provide severance insurance which, if used, reduces the pension at retirement. (2) Members get contribution credits that are expressed as a percentage of a so-called coordinated salary. Contribution credits vary across age groups, from 7% between 25 and 34 years old up to 18% beyond 55 years old. The chart shows an average of the age-specific rates (7% at ages 25-34, 10% at 35-44, 15% at 45-54 and 18% at 55-64). The employer must pay at least half of these credits, the employee the remainder. Contribution rates may differ from the minimum contribution credits. (3) The superannuation guarantee rate rose from 9.5% to 10% on 1 July 2021. (4) The contribution rate is a minimum for quasi-mandatory occupational plans. Contribution rates are set by the collective agreement and are similar for all workers under the agreement. Contribution rates range between 10% and 18%. (5) The contribution rates are shown for private-sector workers. The contribution rates are higher for public-sector workers. The government supplements the total contribution with a flat-rate amount (the social quota – *cuota social*). Its amount depends on the salary level for private-sector employees. The state contribution here includes the social quota of a private-sector worker earning 2.2 times the minimum wage at end-2021. (6) The contribution rate is the minimum employer contribution to occupational defined contribution plans. (7) The minimum contribution rate is 6% equally split between the employer and employee from 1 April 2013. Members can however select a higher personal contribution rate of 4%, 6%, 8% or 10% of salary. The government contributes 50 cents for every dollar of member contribution, up to NZD 521.43 annually. (8) The contribution to the pension premium system amounts to 2.5% of the pensionable income. Contribution rates to quasi-mandatory occupational plans vary according to the income level: 4.5% for earnings under 7.5 income base amount (IBA) and 30% for earnings over 7.5 IBA for ITP1 and SAF-LO. Contribution rates are shown here for an average earner who has earnings below 7.5 IBA. (9) Employer contributions to the second pillar were suspended from 1 July 2020 to 31 August 2021. Upon application, members could also suspend their 2% contributions from 1 December 2020 until 31 August 2021. From 2021, participation in the second pension pillar is voluntary. New labour markets entrants are automatically enrolled in the second pension pillar but can opt out. (10) Data refer to voluntary employment-related plans. The contribution rate was set to increase (from 4%) gradually by 0.25 pp each year from January 2017, reaching 5.25% in 2021. (11) The contribution rate is for the ROP, a mandatory supplementary pension scheme in Costa Rica. (12) Data show the minimum contribution rates to employee capital plans (PPK). The employee’s minimum contribution could be lowered to 0.5% for employees with less than 120% minimum income. The welcome contribution of the state is not included here. (13) Data do not include the one-time contribution for those who do not opt out within the first two months, nor the additional government contribution if the individual chooses a minimum 10-year annuity at retirement. Following an amendment on 22 January 2022, the state matching contribution increased from 25% to 30%. (14) The contribution rates are for the contributory pension scheme. (15) While the overall contribution rate remains the same, the share of the employee contribution has raised and is expected to continue to do so and cover half of the contributions by 2023 while the state contribution declines. The contribution rate for employees was 3.5% at end-2021, and increased to 4.5% from 1 January 2022. (16)

The state contributes between 0% and 2% of the salary of individuals depending on their income bracket. (17) Workers in the construction sector are exempt from contributing to the private pension system in the period 2019-2028.

Figure 1.9:

The charts show the average annual nominal growth rate of contributions into funded and private pension plans over the last year, and the last 10 and 20 years or so. The average over the last 10 years is calculated between 2011 and 2021 except for: Egypt (between 2008 and 2021); Austria (between 2010 and 2021); Costa Rica and Türkiye (between 2012 and 2021); Czech Republic (between 2013 and 2021); and Angola, Armenia, Croatia, Malawi and Uganda (between 2014 and 2021). The average over the last 20 years is calculated between 2001 and 2021 except for: Chile, Estonia, Hong Kong (China), Indonesia, Korea, Portugal and Spain (between 2002 and 2021); Iceland and Slovak Republic (between 2003 and 2021); Slovenia and Türkiye (between 2004 and 2021); and Italy, Luxembourg and Mexico (between 2005 and 2021). There is a methodological break in series for some jurisdictions (namely Croatia, Iceland, Portugal, the Slovak Republic) between 2001 and 2021, further described in the statistical annex and which needs to be accounted for when analysing the evolution of the amount of contributions.

Figure 1.10:

(1) Data refer to pension funds only. (2) Data refer to mandatory plans only. (3) Data refer to KiwiSaver plans only. Members below 18 and those above 65 are excluded from the calculation. (4) Data refer to the 2nd pillar only. (5) Data refer to the ROP only. (6) Data refer to PPK plans. Source: KNF. (7) The average contribution is given for personal plans. (8) Data refer to UPFs only. (9) Data refer to occupational plans only.

Figure 1.11:

This Figure shows the total amount of benefits paid from funded and private pension plans as a percentage of GDP in 2021 (or the latest year available), also available in the statistical annex of this report (please refer to the notes of the related Table for more country-specific notes). This Figure shows the breakdown of benefits paid into lump sum payments and pensions when such information is available. This Figure also shows the amount of assets that may be transferred to an insurance company or any another entity (different from the ones in charge of the accumulation phase) which will be in charge of paying benefits to retirees.

Figure 1.12:

The charts are based on the annual real investment rates of return reported in the statistical annex of this report. Please refer to the notes of this statistical annex for more country-specific notes. The annual returns are calculated over the period Dec 2020-Dec 2021 except for Australia (June 2020-June 2021). The charts do not include the investment return for Japan (12.7%), which is an average calculated for the fiscal year 2020 (ending in March 2021) over a sample of plans only. The weighted averages are calculated by using weights based on the share that pension assets in a given jurisdiction represent compared to the overall amount of pension assets in the group of jurisdictions considered.

Table 1.2:

Time series of nominal and real investment rates of return, going back to 2002, are available in the statistical annex of this report. The statistical annex also includes more information about the calculation methods of the investment returns, as well as country-specific notes.

Figure 1.13:

The chart is based on the annual real investment rates of return reported in the statistical annex of this report. Please refer to the notes of this statistical annex for more country-specific notes. The investment returns over the last year and the average annual returns over the last 10 and 20 years are calculated over

the periods Dec 2020-Dec 2021, Dec 2011-Dec 2021 and Dec 2001-Dec 2021 respectively, except for Australia (from June to June). The chart only includes jurisdictions for which it was possible to calculate an average annual investment return over the last 10 or 20 years.

Figure 1.14:

The “Other” category includes loans, land and buildings, unallocated insurance contracts, hedge funds, private equity funds, structured products, other mutual funds (i.e. not invested in equities, bills and bonds or cash and deposits) and other investments. Negative values (due to derivatives) have been excluded from the calculations of the allocation of pension plan assets. The Global Pension Statistics exercise gathers information on investments of pension plan assets in collective investment schemes (CIS) and the look-through of these investments in equities, bills and bonds, cash and deposits and other. Data on asset allocation in this Figure include both direct investments in equities, bills and bonds, cash and deposits and indirect investments through CIS when the look-through of CIS investments is available. In such case, the Figure shows the overall exposure of pension plan assets in the selected asset classes. When the look-through is not available, the Figure only shows the direct investments of pension plan assets in equities, bills and bonds, cash and deposits and other assets, and investments in collective investment schemes are shown in a separate category. This Figure is based on the allocation of pension plan assets reported in the statistical annex of this report. Please refer to the notes of this statistical annex for more country-specific notes.

Figure 1.15:

This Figure is based on the allocation of pension plan assets reported in the statistical annex of this report. Each diamond shows the variation in percentage points (pp) in the proportion of pension plan assets invested in equities (x-axis) and bills and bonds (y-axis) in a given jurisdiction between 2021 and: 2020 (Panel A); 2011 (+/- 3 years depending on data availability) (Panel B); and 2001 (2002, 03 or 04 depending on data availability) (Panel C). The red diamond is an average over all reporting jurisdictions (varying between Panels A, B and C). Panels A, B and C cover 73, 48 and 16 jurisdictions respectively.

Figure 1.16:

The average allocations of pension plan assets have been calculated over 16 jurisdictions: Austria, Czech Republic, Denmark, Germany, Japan, Korea (from 2002 onwards), Netherlands, Norway, Poland, Slovenia (from 2003 onwards), Sweden, Türkiye (from 2004 onwards) and the United States among OECD countries; and Bulgaria, Hong Kong (China) (from 2002 onwards) and Peru among other jurisdictions. The whole time series of the asset allocation in each of these 16 jurisdictions are available in the statistical annex of this publication. The asset allocation of pension plans in 2019 in Korea and in 2011 in Türkiye are OECD estimates based on the data available for the year before and after the missing year.

Figure 1.17:

The charts show the amount of assets in funded and private pension plans invested abroad (Panel A) and in foreign currencies (Panel B) at the end of 2001, 2011 and 2021 or the nearest year available (+/- 3 years), when possible. The charts draw on the statistics shown in the statistical annex of this report. There is a methodological break in series for some jurisdictions between 2001 and 2021, further described in the statistical annex and which needs to be accounted for when analysing the evolution of the amount of assets invested abroad (i.e. for Canada, Costa Rica, Croatia, Portugal) and in foreign currencies (i.e. for Costa Rica, Croatia, Portugal). Please refer to the notes of this statistical annex for more country-specific notes.

Table 1.3:

The table shows the split of pension assets between occupational DB, DC and personal plans in 2001, 2011 and 2021 or nearest year available. Instead of 2001, data refer to: 2002 for Denmark, Estonia and Iceland; 2003 for Bulgaria; 2004 for Lithuania; and 2005 for Slovak Republic. Instead of 2011, data refer to: 2012 for Albania; 2013 for Switzerland; and 2014 for Armenia, Brazil, Croatia and Dominican Republic. Instead of 2021, data refer to: 2020 for Dominican Republic, Mexico and Switzerland; and 2018 for France. (1) Data about Collective Voluntary Pension Savings that are managed by the AFPs are classified together with personal plans, although these plans are occupational. (2) There is one voluntary occupational DC pension fund, with a small amount of assets though. (3) There is one institution for occupational retirement provision operating in Hungary. Its market share is negligible compared to other pension providers administering personal pension plans. (4) Data on personal plans offered by life insurance companies have only been available since 2017, making the calculations of the split of assets by type of plan only possible from that date onwards. (5) Voluntary occupational and personal plans were created by a law on voluntary pension funds in 2009. Source: IOPS country profile. (6) A voluntary funded third pillar has been in effect since 2011 in Armenia. The mandatory funded second pillar was introduced in 2014. (7) The Maldives Retirement Pension Scheme was created in 2009. (8) Occupational pension schemes and personal pension provisions were still in a very nascent stage of development in Malta at the end of the 2000s. Source: IOPS country profile. (9) The second pillar started operating in September 2007 while the voluntary pillar started in June 2006. Source: IOPS country profile.

Figure 1.18:

The funding ratio has been calculated as the ratio of total investment and net technical provisions for occupational DB plans managed by pension funds using values reported by national authorities in the OECD questionnaire. All liabilities of DB plans (instead of technical provisions only) are considered for Ireland, Mexico (occupational DB plans in pension funds only) and the United States. Data for Finland refer to DB plans in pension funds only. Data for Luxembourg refer to DB traditional plans under the supervision of the CSSF. Data for the Netherlands and Switzerland include all types of pension funds. Data for the United Kingdom come from the Purple Book 2021 published by the Pension Protection Fund and show the ratio of assets and liabilities valued on an s179 basis (instead of net technical provisions). Liabilities for Hong Kong, China refer to the amount of aggregated past service liability in DB ORSO schemes. Data for Indonesia refer to EPF DB funds and are based on OJK Pension Fund Statistics reports before 2016.

Figure 2.1:

(1) Source for nominal returns: Superintendencia de Pensiones. Real returns are OECD calculations. (2) Data refer to companies supervised by the Insurance Supervision Agency. (3) Source: APRA. (4) Source: IPE. Data refer to Pensionskassen. (5) Source: European Pensions. Data refer to occupational pension and life insurance companies in Sweden. (6) Data refer to open pension funds.

Figure 2.2:

(1) Data refer to trustee pension funds. (2) Data refer to the growth rates of total assets of superannuation entities with more than four members. (3) Data refer to the growth rates of total financial assets of public and private pension funds.

