# 1 Asset-backed pension systems in the time of COVID-19

This chapter provides a historical account of the initial assessment of the impact that COVID-19 had on asset-backed pension arrangements and presents the initial policy messages that the OECD put forward to guide policy makers in 2020.

The OECD provides policy guidelines to assist policy makers in dealing with different challenges. The OECD Working Party on Private Pensions (WPPP) focusses on the policy, design, regulation, and supervision of pension arrangements where contributions are invested to build assets to back retirement income (asset-backed pension arrangements).

The outbreak of COVID-19 and its associated economic shocks presented serious challenges to asset-backed pension arrangements. Since the onset of the COVID-19 pandemic the OECD and its WPPP have been examining the different policies implemented by OECD and non-OECD countries to distil good international practices to confront shocks like the one posed by COVID-19.

This chapter provides a historical account of the initial assessment of the challenges posed by COVID-19 and the main OECD policy guidelines put forward during the first year of the pandemic. The OECD policy guidelines built on the experience of the financial and economic crisis of 2008-11 (Antolín and Stewart, 2009[1]) and the specific nature of the COVID-19 shock, which led to an unprecedented stop in economic activity. In the wake of the 2008 financial crisis, the OECD already provided policy guidelines to pension policy makers, regulators, and supervisors, arguing for staying the course, avoiding the materialisation of losses and continuing savings for retirement. It also recommended to use flexible, proportionate, and risk-based supervision and counter-cyclical funding and solvency rules for defined benefit (DB) plans, among others. Those recommendations together with the lessons learnt were still valid to address the shock posed by the COVID-19 pandemic.

The OECD presented in June 2020 a set of policy guidelines to assist pension policy makers, regulators and supervisors in navigating the shock posed by COVID-19 (OECD, 2020[2]). During 2020, the OECD and its WPPP continued to examine the impact of COVID-19 on pensions and asset-backed pension arrangements. This led to updated guidelines that were published in the OECD Pensions Outlook (OECD, 2020[3]).

This chapter consists of four sections in which it documents the challenges posed by COVID-19 and the development of the initial policy guidelines. Section 1.1 presents the main policy challenges that COVID-19 posed to asset-backed pension arrangements. Section 1.2 provides the initial policy messages issued by the OECD in June 2020. Section 1.3 provides further policy considerations examined during the year 2020, and Section 1.4 summarises the main resulting policy guidelines.[1]

## 1.1. Challenges that COVID-19 posed to asset-backed pension arrangements

COVID-19, the associated lockdowns and the economic downturns that ensued had or were expected to have several different impacts on retirement savings, providers, regulators, and supervisors and which could potentially lead to future lower incomes in retirement and important dysfunctions in the market. The main impacts were:

- An initial sharp fall in the value of assets in asset-backed pension accounts from falling financial markets
- An increase in liabilities from falling interest rates in asset-backed pension arrangements with retirement income promises (e.g. defined benefit retirement plans and life annuity arrangements)
- A lower capacity for individuals to continue saving for retirement, as they saw their wages reduced or lost their jobs, and employers were suffering financial distress
- Operational disruptions as a result of working remotely
- Cyber-attacks, frauds and scams directed at individuals, regulators, supervisors and providers of asset-backed pension schemes (e.g. pension funds)
- A need to tap into savings, including retirement savings.

### 1.1.1. Decline in the value of assets in retirement portfolios

There was a large fall in the value of equities at the onset of COVID-19 in the first quarter of 2020. Major stock markets suffered setbacks between mid-February and end-March 2020 as governments were taking precautionary measures to limit the spread of the virus and shutting down parts of the economy.

As a result, the market value of asset-backed pension accounts suffered a large reduction in the first quarter of 2020. Losses on financial markets lowered the value of assets in pension plans. Forecasts suggested at the time that pension fund assets would have declined by 8% in the first quarter of 2020 in the OECD area, from USD 32.3 trillion at end-December 2019 to USD 29.8 trillion at end-March 2020 (OECD, 2020[4]).

The inclination may be to sell when the value of assets in a portfolio falls. However, this locks in the losses, and may be far from the best reaction. This issue can be particularly relevant in jurisdictions where members of asset-backed pension plans can switch to another (more conservative) investment strategy. Opportunities to recoup losses are more limited as the expected return is lower with investments that are more conservative. Members may also lose an opportunity to benefit from an upturn of capital markets if they withdraw their retirement savings when markets are low.

### 1.1.2. Additional pressure on the solvency of asset-backed pension plans offering a benefit promise

The shock to financial markets in the first quarter of 2020 was a blow for the solvency position of defined benefit (DB) plans and for their sponsors. The devaluation of assets following falling stock prices affected all asset-backed pension plans. However, DB plans embed a benefit promise that is not necessarily linked to the amount of assets accumulated but depends on other parameters (such as the length of employment of plan members). The drop in the value of assets in the first quarter of 2020 was therefore a source of potential mismatch between the assets and the liabilities of DB plans.

While the value of pension assets was falling in the first quarter of 2020, the value of liabilities of DB plans increased, creating another source of mismatch between assets and liabilities. When pension providers promise a future benefit level (such as providers of DB plans), they have to discount the value of future pension income payments to express it in today’s terms and have an estimate of their liabilities. The lower the discount rate is, the higher is the valuation of liabilities. Some pension providers may use a risk-free rate as a discount rate, such as the long-term government bond yields (i.e. long-term rates). These long-term rates tend to follow the direction of short-term rates. The COVID-19 outbreak, and its economic consequences led some central banks to cut interest rates to support the economy in March 2020, such as the Bank of England and the Federal Reserve Bank in the United States.[2] These moves worsened the funding levels of pension providers promising a certain benefit level.

### 1.1.3. Reduced ability to save for retirement

People may face more difficulties in saving and accumulating assets for retirement when they lose their jobs or experience a reduction in hours worked because of shocks like COVID-19. Spells of full or partial unemployment could lead to contribution gaps if employees or employers stop contributing to asset-backed pension plans. Employers may also face more difficulties in paying wages and contributions to their employees’ pension plans while they experience business downturns. Likewise on the employee side, a salary loss or cut may also reduce voluntary contributions, as people may be less likely to contribute voluntarily to asset-backed pension plans when they are under financial strain. Interruptions or reductions in pension contributions would slow the accrual of pension assets for retirement. Members may also miss the opportunity to benefit from the upturn in capital markets.

It was thought at the onset of COVID-19 that the impact on contributions of such shocks depends on many factors. Countries may introduce policies to defer, reduce or stop pension contributions, or alternatively may subsidise wages directly or indirectly to help people to continue contributing to their retirement savings pots (e.g. job-retention schemes, JRS). Moreover, this type of shocks may change consumption and savings behaviours. Dire and uncertain times may divert people from saving for retirement, however, confinement may lead some people to reduce consumption and save more.

### *1.1.4. General operational disruptions*

COVID-19 also led to important operational disruptions. Governments introduced preventive measures (e.g. lockdowns) aiming at limiting physical meetings and encouraging people to stay at home in order to limit the spread of the virus. These measures created disruptions in all operations where plan members have to meet staff of their pension providers physically (e.g. to deliver or sign documents in person).

Preventative health measures also affected the internal operation of pension providers. Staff of pension providers had to work remotely to carry out their regular activities (such as collecting and remitting contributions to schemes or individual accounts, investing assets, paying pensions and other benefits). The pandemic made it, at least initially, more complicated to apply usual processes that involve in-person meetings (e.g. meeting of board members and/or subcommittees).

All these general operational issues led to delays in some operations. Providers had to put in place business continuity plans, adapt their processes and tackle the challenges from the COVID-19 outbreak, on top of their regular duties towards their members and their supervisors (e.g. reporting, actuarial valuation).

Pension supervisors also faced disruptions because of the COVID-19 outbreak. They too had to carry out operations remotely and favour digital tools to exchange with pension providers and plan members. Some of the activities of pension supervisors, such as on-site inspections, had to be initially suspended.

### *1.1.5. Cyber risks, fraud, and scams*

COVID-19 has bolstered the use of digital tools but may have also exacerbated the threat of cyber-attacks, frauds and scams to pension supervisors, providers and plan members.

The sudden increase in the number of staff from pension supervisory authorities and pension providers working remotely created unprecedented data privacy and cybersecurity challenges. Scammers may have tried to take advantage of people teleworking or members using online platforms to conduct cyber-attacks.

Plan members also had to rely more on online platforms and call centres than on physical meetings with their pension providers to manage their plans, and may have been subject to fraudulent attacks. Scammers may have tried to steal and use their personal information.

Scammers may also have exploited fears from members while they faced financial distress in a context of volatile financial markets to take their money. They could offer ways to access their pension savings, ways to transfer their pension assets or rights to another plan, or investment opportunities too good to be true. In the United Kingdom, the National Reporting Centre for Fraud and Cybercrime (ActionFraud) recorded 2 866 victims of COVID-19 related financial scams (including pension scams) by early July 2020.[3] These attacks have deprived some members of some of their savings for retirement.

#### *1.1.6. A reduction in savings and compound interest earned because of prioritising short-term relief measures*

The loss of income because of shocks like COVID-19 can lead to a reduction in savings and compound interest earned because of measures intended to provide relief in the short term, which can have a large negative impact in the long term, especially on retirement income adequacy.

Governments may implement policies lowering, stopping or pausing contributions to pension plans (contribution holidays). A one-year pause in contributions could lead to a reduction in income at retirement of around 2-3%.[4] While people could recoup this reduction by voluntarily increasing contributions once the economy recovers, evidence from the previous crisis suggests that this generally does not happen as the short-term needs prevail over the long-term financial planning. Moreover, people may not have more resources to increase contributions in the future than they had before the crisis.

Governments can also allow universal early access to balances accumulated to finance retirement, which may be attractive to offset the loss of income, but can, even if partial, easily jeopardise the future adequacy of retirement income. Early withdrawals could lead to lower balances accumulated at retirement, which would translate into lower income at retirement. The impact of granting universal access to retirement pots on future retirement income is potentially significantly larger than the impact of stopping contributions. The reduction in retirement income resulting from allowing a 10% withdrawal over a year could vary from 2% to 9% depending on the length of the contribution horizon, with older people experiencing a larger impact because they may have accumulated larger balances to withdraw income from.[5]

In addition, granting universal access to balances may lead to materialising the market losses and to liquidity management concerns. Pension funds have cash and liquid assets in their portfolios to address liquidity demands from regular payments and income withdrawals arising from exceptional circumstances. They also count on contribution inflows to manage liquidity needs. However, contribution holidays can create a negative cash flow. Coupled with substantial calls for cash from retirement pots, due to policies granting universal access, this can force pension funds to act pro-cyclically by selling assets in falling markets and materialising value losses. Long-term strategies can also be jeopardised. All these actions are in sharp contrast with the recommendation of staying the course, maintaining long-term retirement investment portfolios and avoiding the materialisation of asset value losses.

## 1.2. Initial policy messages

The OECD issued the following policy messages at the onset of the COVID-19 pandemic.[6]

Policy makers should make sure that people saving for retirement and pension providers stay the course:

- Saving for retirement is for the long term. Maintain investments in retirement portfolios to avoid selling and materialising value losses when markets are low.
- Continue contributing to retirement plans. Governments may make the income of people full as part of the many programmes to assist the populations facing the economic fall from COVID-19, the lockdown and the associated economic downturn.

Policy makers, regulators and supervisors should:

- Allow for regulatory flexibility in recovery plans to address funding problems stemming from retirement promises (e.g. DB pension arrangements, and lifetime income products).
- Make sure that funding and solvency rules for DB plans are counter-cyclical. Introduce flexibility in meeting funding requirements, thereby avoiding ‘pro-cyclical policies’ and allowing pension funds to act as long-term investors and potentially stabilising forces within the global financial system.

- Provide proportionate, flexible and risk-based supervisory oversight coupled with adequate communication to reduce frauds, and facilitate efficient operations. Supervisory oversight should concentrate on prudential and market conduct regulation, including ensuring protection of members and beneficiaries against COVID-19 related scams, especially of the most vulnerable individuals. Supervisors should communicate to market participants and individuals on their prudential expectations and recommendations in time of the crisis and actions made to facilitate pension funds' operations and to ease administrative burden.
- Allow access to retirement savings as a measure of last resort and based on individual specific exceptional circumstances. Retirement pots are to finance retirement. Accessing retirement savings could lead to materialising temporary asset values losses, liquidity and investment management problems for pension funds, and, more importantly to retirement income adequacy shortfalls. Current regulatory frameworks already allow for tapping retirement savings in exceptional circumstances when substantial income losses occur, and should not be expanded further.
- Develop close co-operation with stakeholders, regulators and supervisors at the national and international levels, to share solutions and effective ways to deal with the current crisis.

## 1.3. Additional policy considerations examined during 2020

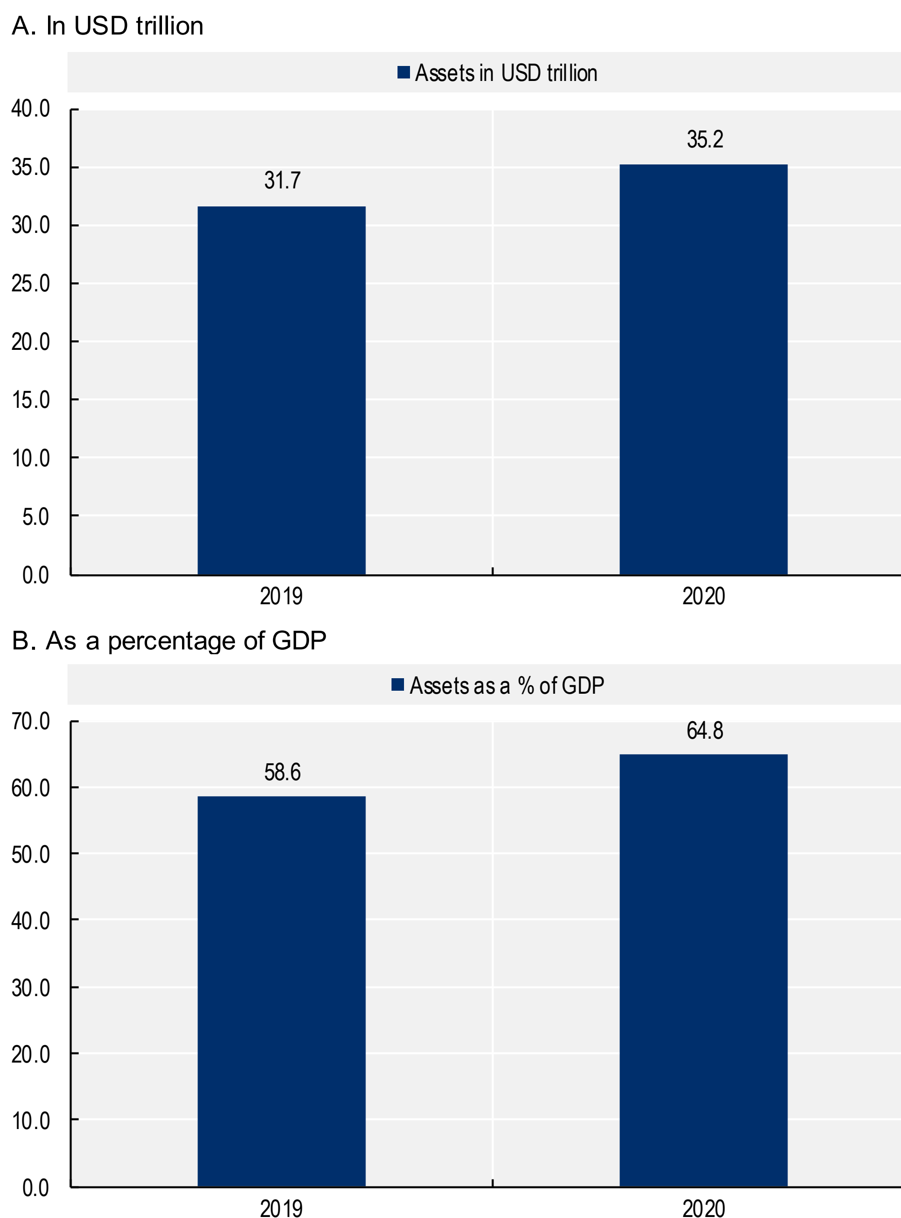
The OECD and its WPPP continued monitoring policy developments and examining the usefulness of their initial policy messages during 2020 with a view to improving them. Developments during 2020 confirmed that the initial policy messages were well-founded and needed just a few adjustments to reflect the new experiences. Moreover, calls to use assets earmarked for retirement to support the economy led the OECD to examine the grounds for this policy.

### *1.3.1. Stay the course*

The response to the decline of asset values in retirement portfolios is to stay the course and avoid materialising value losses by selling. Saving for retirement is for the long haul. Fluctuations in asset values are inevitable during the life of a retirement portfolio. Over the long term, portfolio investment provides a return to people's savings for retirement. Experience shows that selling when markets go down and buying when they go up, is far from appropriate as 'timing the market' (i.e. attempting to predict future market movements) does not work. Selling assets when shocks occur risks materialising the reduction in value and precludes opportunities to recover those losses.

As long as people do not sell their assets, they do not materialise the losses and their portfolios eventually could recover and resume their long-term trend upwards. OECD data published at the end of 2021 (OECD, 2021[5]), referring to end 2020, indicated that the value of assets in retirement savings accounts recovered at the end of 2020 to above pre-COVID-19 levels, thanks to the recovery of financial markets. Indeed, capital markets recovered after the first quarter of 2020 in many countries, and so did assets in retirement savings plans. Actual data shows that at the end of 2020, thanks to those positive developments in capital markets, the value of retirement savings was higher than at the end of 2019 (Figure 1.1).

**Figure 1.1. OECD pension fund assets at end 2019 and 2020**




Note: Investments are used as a proxy of assets. Total pension fund assets as a percentage of GDP are calculated as the ratio between the sum of all pension fund assets and the sum of all the GDPs (in USD) of OECD countries.
Source: OECD Global Pension Statistics.

Pension providers should also stay the course and maintain their investment strategies. All pension providers should have an investment policy establishing clear investment objectives consistent with their retirement income objective and liabilities, and at arm's length from governments. It is important that pension providers act in accordance with these investment objectives to be able to deliver on their promises and keep trust in the system. In particular, pension providers should maintain diversified investments, both domestically and globally. They should also carefully assess new investment opportunities linked, for example, to the recovery post COVID-19, and not engage in those for which they lack the skills and expertise to appropriately assess the risks and rewards.

### *1.3.2. Regulatory and supervisory flexibility*

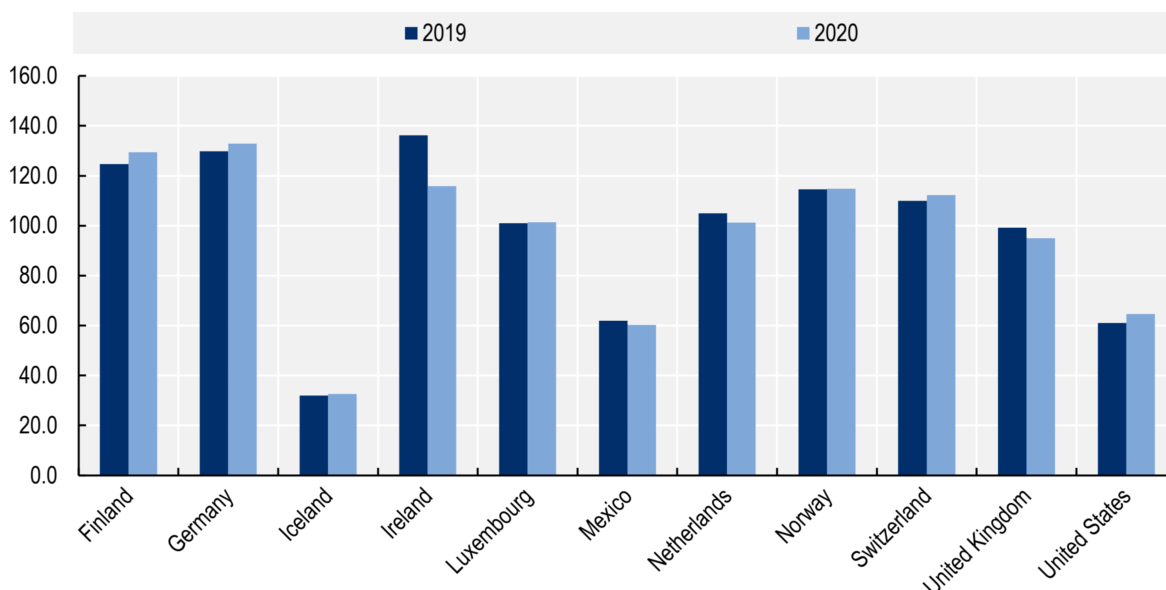
It is important to allow for regulatory flexibility in recovery plans to address liability problems stemming from retirement promises. Regulatory rules, including mark-to-market valuation principles and recovery plans, remain essential for the long term but need to be flexible during exceptional circumstances. However, it is also important to reverse that flexibility once the exceptional circumstances fade.

Flexibility with respect to regulatory compliance and supervisory oversight in a proportionate, flexible and risk-based manner could help alleviate pressures that could lead to poor decisions or exacerbate the financial difficulties that the sponsor faces. Flexibility in regulation and supervisory oversight should focus on making sure that the increase in the liabilities of DB pension plans and insurance companies offering life annuities would not put further strain on those offering retirement income promises during difficult times.

The funding ratio of DB plans deteriorated in the first quarter of 2020 but improved thereafter. Funding ratios declined in the first quarter of 2020 in a number of countries, including Finland, the Netherlands, Switzerland and the United Kingdom (OECD, 2020[3]). However, the recovery of financial markets contributed to the improvement of the funding ratio of DB plans by the end of 2020 in several countries (Figure 1.2).

**Figure 1.2. Funding ratio of defined benefit plans in selected OECD countries, at the end of 2019 and 2020**

In percent




Note: 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).
Source: OECD Global Pension Statistics.

Additionally, funding and solvency rules for DB plans should be counter-cyclical. Introducing flexibility in meeting funding requirements would help to avoid 'pro-cyclical policies' and allow pension funds to act as long-term investors and potentially stabilising forces within the global financial system.

### 1.3.3. Scams and frauds

Disclosure of the type of scams and frauds on the websites of national authorities and pension providers could reduce frauds and scams. Advice to trustees and advisors to send regular and clear information to plan members could also help in that regard as scammers may exploit misunderstandings and people's fears.

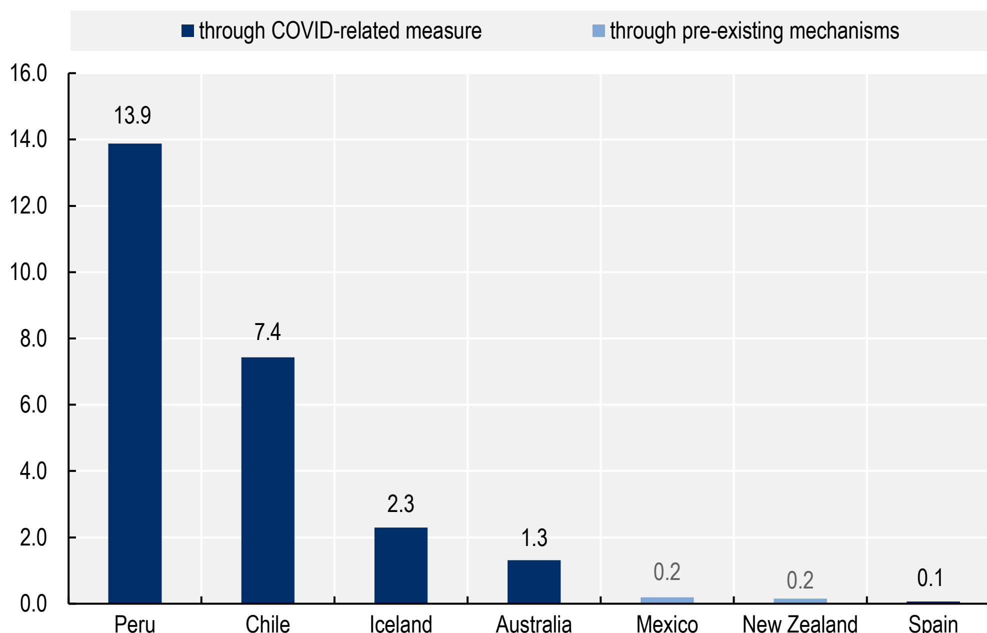
### 1.3.4. Inclination to prioritise short-term relief measures

Early access to savings in asset-backed pension plans should be a measure of last resort. Notwithstanding this, there can be room for the need for flexibility in exceptional personal circumstances. Specific exceptional circumstances include hardship situations like unemployment accompanied by protracted and large losses of income, or terminal illnesses. These measures should be maintained for people in the greatest need. Governments may already have and could favour the use of aid programmes, such as unemployment or job-retention programmes, as an emergency mechanism to assist people with large temporary losses in income. Access to retirement savings should remain an exceptional measure based on individual specific circumstances and, where needed, as a temporary expansion of measures already in place for that purpose.

Countries with regulatory frameworks that allowed early access to retirement savings in exceptional situations of hardship had lower retirement savings withdrawals that countries that introduced the possibility of early withdrawals during 2020. In some countries, existing regulatory frameworks allowed plan members to access their retirement savings before retirement under certain exceptional conditions when unemployment or substantial income losses occur (OECD, 2019[6]). In New Zealand for example, individuals are eligible to withdraw their own and their employers' contributions from their KiwiSaver plan if they experience financial hardship (e.g. if they cannot meet their minimum living expenses or pay the mortgage on their home). In Mexico, plan members are allowed to withdraw a part of their pension assets if they have lost their (formal) job and have been unemployed for a minimum of 46 days, and if they have not already requested a similar withdrawal in the last five years. In both countries, members made use of this possibility for early access. In other countries (e.g. Chile, Peru) a regulatory framework did not exist and early access to retirement savings was legislated during the pandemic in 2020. Countries that allowed access during the pandemic had larger overall withdrawals during 2020 (Figure 1.3), especially when they allowed mostly unconditional early withdrawals such as in Chile and Peru.

**Figure 1.3. Value of early withdrawals in selected countries, in 2020**

As a percentage of total assets in retirement savings plans at end-2019




Note: Data refer to early withdrawals up to: end-July 2020 for Peru, end-September 2020 for Chile, October 2020 for Iceland, 8 November 2020 for Australia (as part of the Early Release Initiative only), end-June 2020 for Mexico (due to unemployment only), end-August 2020 for New Zealand (for financial hardship reasons only, and expressed as a percentage of assets in KiwiSaver schemes at end-March 2020), end-September 2020 for Spain.
Source: OECD (2020[7]), *Retirement savings and old-age pensions in the time of COVID-19*, https://doi.org/10.1787/b698aae4-en.

### *1.3.5. Assets earmarked for retirement*

Policy makers should promote a favourable environment for pension providers to use assets earmarked for retirement to support the economy. During 2020, there were calls to use assets earmarked for retirement to assist economies in distress. The WPPP felt that was important to look at this issue. The analysis suggested that appropriate policies and regulations needed to be in place. In particular, policy makers could encourage long-term investment in alternative asset classes by considering structural solutions to develop the market for alternative investments, and making sure that such investments are available, transparent and financially attractive. They should better account for the desired risk-return profiles of pension providers when designing public-private partnerships to encourage their participation. Policy makers also need to make sure that appropriate investment vehicles are available to support programmes addressing the effects of the pandemic (e.g. COVID-19 bonds), to finance small and large businesses, and to contribute to the economic recovery. They may also have a role to play to help pension providers gain access to better quality data to assess investments and enhance pension providers' capabilities to invest in alternative asset classes through targeted educational initiatives. This could favour the loosening of some investment restrictions that limit investment in less liquid assets.

## 1.4. Policy guidelines at the time of the *OECD Pensions Outlook 2020*

The lessons learnt during 2020 led the OECD to publish at the end of that year an updated set of policy guidelines to assist policy makers, regulators and supervisors to confront the implications of COVID-19 on asset-backed pension arrangements (Box 1.1).

### Box 1.1. OECD policy guidelines for asset-backed pension arrangements to confront COVID-19 presented at the time of the *OECD Pensions Outlook 2020*

Policy makers should make sure that people saving for retirement and pension providers stay the course:

- Saving for retirement is for the long term. Maintain investments in retirement portfolios to avoid selling and materialising value losses when markets are low.
- Continue contributing to retirement plans. Governments may make the income of people whole as part of the many programmes to assist the populations facing the economic fall from COVID-19, the lockdown and the associated economic downturn.
- Act in accordance with investment objectives. Pension providers should adhere to their investment objectives and carefully assess new investment opportunities. Their investment decisions should be at arms-length from governments.

Policy makers, regulators and supervisors should:

- Allow for regulatory flexibility in recovery plans to address funding problems stemming from retirement promises (e.g. DB pension arrangements, and lifetime income products). Make sure that once the emergency is over, measures providing flexibility are removed.
- Make sure that funding and solvency rules for DB plans are counter-cyclical. Introduce flexibility in meeting funding requirements, thereby avoiding 'pro-cyclical policies' and allowing pension funds to act as long-term investors and potentially stabilising forces within the global financial system.
- Provide proportionate, flexible and risk-based supervisory oversight coupled with adequate communication to reduce frauds, and facilitate efficient operations. Supervisory oversight should concentrate on prudential and market conduct regulation, including ensuring protection of members and beneficiaries against COVID-19 related scams, especially of the most vulnerable individuals. Supervisors should communicate to market participants and individuals on their prudential expectations and recommendations in time of the crisis and actions made to facilitate pension funds' operations and to ease administrative burden.
- Allow access to retirement savings as a measure of last resort and based on individual specific exceptional circumstances. Retirement pots are to finance retirement. Accessing retirement savings could lead to materialising temporary asset values losses, liquidity and investment management problems to pension funds, and, more importantly to retirement income adequacy shortfalls. Current regulatory frameworks already allow for tapping retirement savings in exceptional circumstances when substantial income losses occur, and may only be expanded further on a temporary and targeted manner, where needed, to address genuine financial hardship.
- Develop close co-operation with stakeholders, regulators and supervisors at the national and international levels, to share solutions and effective ways to deal with the current crisis.

Policy makers can promote the use of assets earmarked for retirement to support the economy while ensuring that these investments are in the best interest of members. They can enhance the quality of data to assess investments and pension providers' capabilities to invest in different asset classes; adjust investment regulations; promote a favourable environment for long-term investment and suitable investment vehicles; and ensure appropriate alternative investments are available and financially attractive.

The main additions with respect to those published in June 2020 were:

- Policy makers should make sure that people saving for retirement and pension providers stay the course and act in accordance with investment objectives. Pension providers should adhere to their investment objectives and carefully assess new investment opportunities. Their investment decisions should be at arms-length from governments.
- Policy makers, regulators and supervisors should make sure that measures providing regulatory flexibility in recovery plans to address funding problems stemming from retirement promises are removed once the emergency is over.
- Regulatory frameworks already allow for tapping retirement savings in exceptional circumstances when substantial income losses occur and may only be expanded further on a temporary and targeted manner, where needed, to address genuine financial hardship.
- Policy makers can promote the use of assets earmarked for retirement to support the economy while ensuring that these investments are in the best interest of members. They can enhance the quality of data to assess investments and pension providers' capabilities to invest in different asset classes; adjust investment regulations; promote a favourable environment for long-term investment and suitable investment vehicles; and ensure appropriate alternative investments are available and financially attractive.

The OECD continued monitoring policy developments and country experiences. What follows in this publication compiles the lessons learnt and it provides a set of policy guidelines to strengthen asset-backed pension systems in a post-COVID-19 world.

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## Notes

[1] Contained in the OECD Pensions Outlook (OECD, 2020[3]).

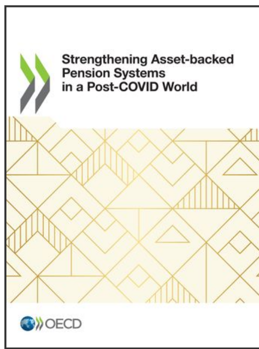
[2] See https://countryeconomy.com/key-rates/uk (for the United Kingdom) and https://countryeconomy.com/key-rates/usa (for the United States)

[3] https://www.actionfraud.police.uk/COVID-19

[4] These numbers are an approximation using a standard actuarial calculation for an individual contributing 10% of wages over a 40-year period, starting at age 25, with inflation at 2%, productivity growth at 1.5%, nominal returns at 4%, discount rate at 2%, life expectancy at age 65 of 18 years, and contributions to a retirement account stopping for a complete year for someone aged 30, 45 or 60.

[5] These numbers are an approximation using a standard actuarial calculation for an individual contributing 10% of wages over a 40-year period, starting at age 25, with inflation at 2%, productivity growth at 1.5%, nominal returns at 4%, discount rate at 2%, life expectancy at age 65 of 18 years, and withdrawing 10% of the assets accumulated at age 30, 45 or 60.

[6] https://www.oecd.org/coronavirus/policy-responses/retirement-savings-in-the-time-of-COVID-19-b9740518/

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