2022 IORP Climate Stress Test

Report

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European Insurance and
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CONTENTS

EXECUTIVE SUMMARY

The European Insurance and Occupational Pensions Authority (EIOPA) has carried out its first climate stress test for the Institutions for Occupational Retirement Provisions (IORPs) sector in the European Economic Area (EEA) to gain insights into the effects of environmental risks on the occupational pension sector. The awareness of sustainability and environmental risks and its impact on long-term investors like IORPs has increased over the last years and this stress test will further enhance our understanding.

The 2022 IORP stress test is assessing the resilience of IORPs against a climate change scenario, which was developed together with the European Systemic Risk Board (ESRB) and the European Central Bank (ECB). It is designed to simulate the scenario of a sudden, disorderly climate-policies transition to a green economy, which results in a sharp rise in carbon prices. This abrupt carbon price increase triggers transition risk effects to the entire economy.

The climate stress test was carried out against the backdrop of a severely challenging macro-economic environment and high geopolitical tensions. In particular, a combination of high inflation and energy costs, increasing interest rates and substantial stock market volatility has dominated the financial outlook throughout 2022. While it is tempting to read a stress test in light of on-going and more immediate risks, it is important to bear in mind that this particular stress test considers the more long-term perspective of climate change risks and as such the results of this stress test cannot lead to conclusions on the current macro-economic situation. The resilience of the European occupational pensions sector to an adverse market scenario characterised by a sudden reassessment of risk premia and shocks to interest rates and inflation swap curves was assessed in EIOPA's 2019 IORP Stress Test[1]. That stress test showed that the long-term nature of IORPs' pension obligations allows them to sustain short-term market volatilities in their investment portfolios for longer time periods than other types of financial institutions.

A climate stress test differs from traditional market scenario stress tests and the risk drivers of a typical transition scenario are inherently different than in scenarios such as a market downturn or a liquidity crisis. For instance, unlike adverse scenarios of earlier stress tests, the climate change scenario is not calibrated to a certain, low probability of occurrence. The purpose of this climate stress test is to understand potential risk drivers and identify potential pockets of risk, not to assess the financial position as such. Similarly to EIOPA's IORP Stress Tests in the past, the results should in no way be interpreted as a "pass or fail"-type exercise.

Due to the nature of the disorderly climate-policies transition scenario, the focus of the exercise is on the asset portfolio of IORPs. The decrease of the assets of the total sample in the adverse scenario is

[1] For more details on the impact of an inflationary scenario on the sector, please see link: https://www.eiopa.europa.eu/occupational-pensions-stress-test-2019_en

12.9%, implying overall losses on the asset valuation of 255 billion euro. The scenario impacts the assets of DB IORPs by -13.2%, which includes losses from rising interest rates, and the assets of DC IORPs by 10.3%. These impacts are sizeable and indicate that IORPs have a non-negligible exposure to transition risks, especially in the form of investments in climate-relevant sectors.

Due to their role as pension providers, the risks that affect the asset side will also have an impact on the long-term liabilities of IORPs. In particular, the scenario included interest rate movements that impact pension liabilities (especially when using market valuation in the common methodology, but also often on the national balance sheet). As market interest rates rise, the value of technical provisions decreases in most Member States. This decrease does not fully offset the decrease in the value of the assets, resulting in a slight deterioration of the financial position. However, in most Member States the aggregate funding ratios of DB schemes remain above 100% in the adverse scenario. In some countries the deterioration of the financial position is mitigated by the use of security mechanisms, like sponsor support, pension protection schemes and benefit adjustments. However, the application of these security mechanisms was only required to a limited extent because for most IORPs the financial position is relatively strong in the pre-shock and post-shock situation. The funding ratio based on national methodologies declines 2.5%-points (from 122.7% to 120.2%). Funding ratios based on national methodologies decline for 13 out of the 18 participating Members States. In the common methodology the excess of assets over liabilities (EAL) declines by 75 billion euro (from 203 billion euro to 127 billion euro) resulting in a reduction of the funding ratio by 2.9%-points (from 119.9% to 117.0%). In the common methodology all assets are valued marked-to-market, which explains why the adverse scenario has a greater negative impact compared to the national methodologies.

The climate stress test also included a qualitative survey to understand the extent to which scheme characteristics and national frameworks provide for mitigating measures or adaptations to protect against a transition scenario such as the one tested in the stress test. More than 90% of IORPs consider Environmental, Social and Governance (ESG) factors when determining their investment policy, which is a material increase when compared to the 55% corresponding figure in 2019. But IORPs nonetheless still experience noteworthy hurdles to allocate investments to (climate risk-sensitive) business activities, in particular for investments via investment funds. Moreover, there is an important difference between merely considering ESG factors and actually stress-testing the portfolio: Only 14% of IORPs reported that they are using environmental stress testing in their own risk management. Importantly, the results seem to indicate that these IORPs performed better overall in this stress test than the 86% of IORPs which do not employ stress testing.

The majority of participating IORPs use classification systems (taxonomy), standards and other guidance, such as external ESG ratings or indices, to consider ESG factors in the investment policies and determine if an investment can be classified as „sustainable“. This does not prevent them from encountering difficulties in defining and identifying sustainable investments. Many IORPs state that the Sustainable Finance Disclosure Regulation (SFDR) has helped them in making ESG policies more explicit.

Finally, the stress test package included an inflation qualitative survey to gain further insights into IORPs' frameworks aimed at potentially mitigating the loss in purchasing powers of future retirement income resulting from higher inflation. A majority of DB IORPs provide schemes where benefits are directly linked to inflation (55% of respondents). Only 15% of DC IORPs provide schemes where benefits

are directly linked to inflation. This is related to the characteristics of DC schemes: when there is no defined benefit, it is difficult to implement an inflation protection of this not-defined benefit into the scheme. Inflation protection of benefits varies significantly between IORPs and Member States. Where benefits are linked to inflation, the mitigation of the effects of inflation can be set by a variety of mechanisms (conditional, automatic, or mandatory). The most common one is contractually determined mitigation. Taking inflation protection of benefits in consideration into the investment strategy is of growing importance for the IORPs participating to the survey, and 67% of respondents declared that their investments strategy was targeted at outperforming inflation or at least one of the targets being mitigation of the effect of inflation on purchasing power.

The 2022 stress test is a pioneer work and represents the first climate stress test for IORPs in Europe. It provided useful results but also insights for improvements going forward. The availability of data for such analyses is constantly evolving. The scenarios and methodology chosen in this report reflect meaningful progress in terms of quantifying possible transition risks at European level. But they should be seen as part of a learning process for supervisors and participants, rather than as definitive scenarios or necessarily the only or most suitable approach. In a scenario with rising interest rates and the corresponding lower present value of liabilities, the impact on funding ratios appears manageable. An analysis of different economic transition scenarios may provide further insights in climate risks for IORPs. Nevertheless, the impact on the asset side is substantial, and illustrates the importance of assessing the impact of different transition scenarios or scenarios with other interest movements, as well as the need for careful monitoring of transition risks within the portfolio of IORPs.

1. INTRODUCTION

1.1 OBJECTIVES

Sustainable investments and the management of environmental risks are highly relevant for all IORPs. The main objective of the first EIOPA IORP Climate Stress Test was therefore to assess IORPs' exposure to environmental risks by estimating the impact of a typical transition risk focused climate change scenario on IORPs' financial position.

A climate stress test differs from traditional market scenario stress tests and the risk drivers of a typical transition scenario are inherently different than in scenarios such as a market downturn or a liquidity crisis. For instance, unlike adverse scenarios of earlier stress tests, the climate change scenario is not calibrated to a certain, very low probability of occurrence. The purpose of this climate stress test is to understand potential risk drivers and identify potential pockets of risk, not to assess the financial position as such. Similarly to EIOPA's IORP Stress Tests in the past, the results should in no way be interpreted as a "pass or fail"-type exercise.

This exercise tested the resilience of European IORPs against a climate change scenario[2], which was developed together with the European Systemic Risk Board (ESRB) and the European Central Bank (ECB). While EIOPA's 2019 IORP stress test already included an assessment of Environmental, Social and Governance (ESG) exposures, focusing on qualitative aspects, it did not assess quantitatively the effects of an adverse climate change scenario.

In line with the methodological framework for stress testing IORPs, the impact of the scenario on the balance sheet was assessed. This was done by a revaluation of the IORPs' assets and liabilities following the assumptions of the climate change scenario. Hereby, the focus of the assessment is on the investments held by the IORPs. The assessment of the IORPs' financial position requires considering the assumed market value changes of the IORPs' investments in the scenario, taking into account the investment-specific exposures to climate change risks. Further, the potential impact on the pension liabilities, which may be affected by the revaluation of the assets as well as due to interest rate movements in the climate change scenario, was also assessed.

To ensure comparability of the results between scheme types and countries, the common methodology[3] for the valuation of the balance sheet was applied. Further, to gain an understanding of potential funding needs or prudential consequences from the IORPs' impaired financial situation, the

[2] Climate scenario for the European Insurance and Occupational Pensions Authority's EU-wide pension fund stress test in 2022 https://www.eiopa.europa.eu/climate-stress-test-occupational-pensions-sector-2022_en

[3] See the PDF-document 2022 IORP Stress Test Common Balance Sheet Technical Specifications available at https://www.eiopa.europa.eu/climate-stress-test-occupational-pensions-sector-2022_en ,

effect of the scenario on the IORPs' balance sheets under the national valuation standards was assessed.

The analysis focuses on assessing the effects on the IORPs' financial position and does not focus on the consequential effects on members and beneficiaries or the timing of the cash flows. Hence, the analysis is limited to a balance sheet approach and does not include a cash flow analysis.

To provide insights into the IORPs' own climate risk management and climate change stress-testing, IORPs could provide EIOPA with additional voluntary information to present the financial impact of the climate change scenario under the IORPs' own models providing a higher granularity of the shocks.

To complement the quantitative analysis of potential risks from the scenario, the exercise also included a qualitative questionnaire regarding ESG aspects following up on the analysis on ESG factors in the 2019 IORP stress test as well as for providing information about practical issues IORPs experienced during the stress test. The qualitative questionnaire addresses issues like the use of environmental stress tests by IORPs in their own risk management, ESG factors in IORPs' investment policy and ESG-related disclosures of IORPs.

In line with EIOPA's methodological framework for stress testing IORPs[4], the choice of analytical approaches and tools followed the objectives of the stress test exercise. In potential future stress tests related to the risk of climate change, EIOPA will consider, based on the methodological framework, whether the approaches can be enriched. Considerations may include

- the use of top-down approaches;
- the number and characteristics of stress scenarios to be applied – different scenarios may deliver significantly different results;
- the most suitable definition of "climate sensitivity of assets" in relation to the goal of the exercise, including the level of granularity of specifying shocks for different types of assets.

Another objective of the stress test was to assess potential effects of a rise in inflation on retirement income. The impact of rising inflation may negatively affect the purchasing power of (expected) benefit payments. Depending on the obligation of IORPs to adjust benefits to inflation, there may also be an impact on IORPs liabilities. Also, operational expenses of IORPs may increase when inflation rises. The basis of this assessment was a qualitative analysis regarding the interrelation between inflation and future retirement income, as well as potential mitigating mechanisms and the information of members and beneficiaries about the effects of inflation on the purchasing power of (expected) benefits. For the analysis, a dedicated questionnaire was used.

[4] EIOPA, Methodological Framework for Stress Testing IORPs, 24 November 2021: https://www.eiopa.europa.eu/sites/default/files/publications/other_documents/methodological-framework-for-stress-testing-iorps-cover.pdf

The risk of climate change as well as rising inflation rates may materially impact all IORPs. Therefore, all types of IORPs and schemes, simplified to defined benefit (DB) and defined contribution (DC) schemes[5], were within the scope of the stress test[6].

1.2 EIOPA'S MANDATE

EIOPA is required[7] to initiate and coordinate, in cooperation with the ESRB, European stress tests of IORPs, assessing:

- the resilience of IORPs to adverse market developments;
- the potential for systemic risk that may be posed by, or to, IORPs to increase in situations of stress, including potential environmental-related systemic risks.

EIOPA has to develop:

- criteria for the identification and measurement of systemic risk;
- common methodologies for assessing the effect of economic scenarios on an IORP's financial position taking into account inter alia risks stemming from adverse environmental developments;
- common approaches to communication on the outcomes of these assessments of the resilience of IORPs.

1.3 NARRATIVE AND CLIMATE CHANGE SCENARIO

The climate change scenario explores high transition risk due to climate policies being implemented late. It is based on the disorderly transition scenario developed by the Network for Greening the Financial System (NGFS). Specifically, the scenario assumes that new policies are not introduced until 2030. Therefore, stronger policies would subsequently be needed to limit global warming to below 2°C in line with the Paris Agreement[8]. This would result in higher carbon prices, based on the objective of

[5] In a (pure) DC scheme the sponsor pays fixed contributions and has no legal or constructive obligation to pay further contributions, f.i. in case of an adverse scenario. DB schemes are all schemes which are not DC schemes, usually with a guaranteed level of benefits and/or benefits calculated through a clear formula. In recent years, the traditional difference between DB and DC has increasingly become blurred. Definitions for DB and DC schemes are derived from OECD's definitions. Available here: https://stats.oecd.org/glossary/index.htm;

[6] See 2022 IORP stress test technical specifications available in EIOPA website: https://www.eiopa.europa.eu/climate-stress-test-occupational-pensions-sector-2022_en

[7] See Art. 23 and 32 of EIOPA Regulation: Regulation (EU) No 1094/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Insurance and Occupational Pensions Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/79/EC (OJ L 331, 15.12.2010, p. 48).

[8] https://unfccc.int/sites/default/files/english_paris_agreement.pdf

achieving a greater reduction in carbon emissions to compensate for the delay in implementing policy actions.

The availability of carbon removal technologies is assumed to be low, pushing carbon prices even higher in an effort to curb emissions. As a result, emissions exceed the carbon budget temporarily, but decline more rapidly after 2030 to ensure a 67 % chance of limiting global warming to below 2°C. This leads to higher transition risk compared with an orderly transition scenario.

The abrupt implementation of policies affects the energy sector, including its mix of sources, and the aggressive carbon pricing has an impact on several areas of the real economy. Overall, the risk drivers of this disorderly transition scenario are inherently different from other risk scenarios (e.g. a market downturn or a liquidity crisis). Also, unlike adverse scenarios of earlier stress tests, the climate change scenario is not calibrated to a certain, very low probability of occurrence.

The increase in carbon prices leads to a strong price increase in fossil fuels and therefore energy prices. Conceptually, such cost-push shocks affect carbon dependent sectors more. The general economic outlook worsens, which also has an impact on financial markets. Equity markets fall, especially in carbon intensive sectors. Similarly, corporate credit spreads for brown industries rise sharply, mirroring the perceived difficulties of specific industries to decarbonize quickly or face the rising emission permit costs. The cost of issuing sovereign debt also increases with yields rising across jurisdictions.

The climate change scenario focuses on transition risk and does not consider physical risks, which reduces the level of complexity of this exercise.

For the purpose of the stress test, the effects of the scenario are applied instantaneously on 31 December 2021.

To apply the shocks of the scenario, IORPs had to classify their corporate credit and equity investments by 22 NACE[9] codes. EIOPA provided a helper tool, which, amongst others, provided for the applicable shocked risk-free interest rate curve, the applicable shocks to the sovereign bond credit spreads/shocked yield levels and the shocks to be applied to equity and real estate. An overview of the shocks can be found in the Annex.

1.4 SAMPLE

1.4.1 PARTICIPATING EEA MEMBER STATES

The 2022 IORP stress test is a European-wide exercise, including all EEA countries with material IORP sectors and covering all types of IORPs. EEA Member States with material IORP sectors were determined as those with assets of IORPs in the respective Member State exceeding EUR 500 million

[9] See Eurostat (2008): Statistical Classification of Economic Activities in the European Community, https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NACE_REV2&StrLanguageCode=EN.

by year-end 2020[10]. Consequently, the 2022 stress test exercise had to be carried out in 18 countries: AT, BE, CY, DE, DK, ES, FI, FR, IE, IT, LI, LU, NL, NO, PT, SE, SI and SK.

EIOPA requested to reach a coverage rate of at least 60% of assets of IORPs' DB schemes and of at least 50% of assets of IORPs' DC schemes in each participating Member State. A lower coverage than 60%, yet not lower than 50%, was deemed acceptable if, after including the largest IORPs, IORPs with less than EUR 25 million balance sheet total or less than 100 members and beneficiaries would need to be included in the exercise. This proportionate approach was to address extreme national specificities, for example the very high number of very small IORPs in IE[11].

Table 1.1: IORP Sector coverage by Member State (in % of total assets)

Member State	Coverage national DB sector (in % of assets)	Coverage national DC sector (in % of assets)
AT	90.8%	91.8%
BE	59.7%	*See Footnote*[12]
CY	89.2%	53.4%
DE	61.8%	n/a
DK	93.4%	n/a
ES	82.6%	56.0%
FI	62.6%	n/a

[10] EIOPA's IORP statistics were used to determine the aggregate size of the corresponding IORP sectors at 31st December 2020: Occupational pension statistics | Eiopa (europa.eu); in cases where current information of 2020 was not available, the values of 31st December 2019 were used.

[11] The very high number of very small DC IORPs in Ireland was addressed in a proportionate manner by the NCA and EIOPA. IE did not reach the general coverage requirement but achieved a significantly higher coverage level than in the 2019 IORP stress test exercise.

[12] All Belgian schemes, including DC schemes, are officially classified as DB schemes for EIOPA reporting purposes because of a legal minimum return in the DC schemes (non-pure DC). Therefore, as in EIOPA's previous IORP stress tests, BE applied the DB threshold of 60% for the selection of all participating BE IORPs. However, for this stress test exercise the non-pure DC schemes were reported as DC schemes, which is why there is data on DC schemes from BE in other parts of this report. BE didn't reach the required 60% threshold as of December 31, 2021, because the selection of participating IORPs was, as for other Member States, based on the data as at December 31, 2020. Based on this data, the coverage was above 60%.

FR	69.1%	52.9%
IE	56.4%	7.6%
IT	74.3%	57.9%
LI	86.1%	n/a
LU	69.0%	53.5%
NL	62.0%	73.4%
NO	63.5%	n/a
PT	78.7%	51.5%
SE	61.1%	91.6%
SI	71.9%	n/a
SK	n/a	96.7%
Total	66.8%	70.6%

1.4.2 PARTICIPATING IORPS

The stress test included all types of IORPs, i.e. IORPs providing DB schemes and IORPs providing DC schemes. Insurers subject to Article 4 of the IORP Directive[13] were not within the scope of this stress test.

187 IORPs from 18 countries participated in the stress test. 99 IORPs from 14 countries reported only DB assets, 63 IORPs from 9 countries reported only DC assets and 25 IORPs from 8 countries reported both. The number of participating IORPs per country varied from one to 28. Consequently, not all

[13] DIRECTIVE (EU) 2016/2341 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 December 2016 on the activities and supervision of institutions for occupational retirement provision (IORPs) (recast)

results can be presented in aggregate manner per country, so to ensure full confidentiality of individual IORPs' results.

Total DB assets (EUR 1,746 billion) included in the stress test are much larger than total DC assets (EUR 240 billion), reflecting the size of the respective markets.

The following tables reflect the particularities of the national sectors regarding the provision of DB and DC schemes, respectively, as well as the relative significance of IORPs providing pensions within the national social security systems:

- **DB schemes:**

Relative weight in terms of total DB assets in the unstressed common balance sheet in the sample

NL	DE	SE	IE	NO	BE	PT	DK	AT	Other
69.1%	11.9%	9.5%	3.2%	1.7%	1.3%	0.9%	0.5%	0.3%	1.2%

The 'Other' category includes CY, ES, FI, FR, IT, LI, LU and SI. IORP from the remaining Member State didn't report any DB items.

- **DC schemes:**

Relative weight in terms of total DC assets in the unstressed common balance sheet in the sample

IT	SE	NL	AT	ES	IE	SK	BE	Other
30.8%	28.6%	9.0%	8.9%	8.2%	1.8%	1.2%	1.1%	10.3%

The 'Other' category includes CY, FR, LU and PT. IORPs from the remaining Member States did not report DC assets.

1.5 PROCESS

EIOPA developed the objectives of the 2022 stress test and, based on the methodological framework for stress testing IORPs, its technical specifications and reporting templates.

EIOPA developed the climate change scenario of the stress test together with the ESRB and the ECB.

The stress test exercise started on 4 April 2022. National Competent Authorities (NCAs) and participating IORPs were invited to a launch event to clarify the suggested methodologies and approaches on 7 April 2022.

NCAs chose the national, representative samples of participating IORPs which had to carry out the exercise and submit the results to the corresponding NCAs by 13 June 2022. A dedicated Q&A process with timely publications further enhanced the practicability and quality of the exercise.

After a first validation by NCAs, the national results were submitted to EIOPA by 18 August 2022, where they were centrally validated during the course of August and September and further analyzed throughout October and November 2022.

2. QUANTITATIVE RESULTS OF SCENARIO

2.1 INTRODUCTION

The first EIOPA IORP Climate Stress Test, assessed the resilience of European IORPs against a climate change scenario. The climate change scenario that was used to this end has been described in chapter 1. This "disorderly transition" scenario assumes an instantaneous economic shock triggered by a sharp increase in the price of carbon emissions. It is inspired by one of the scenarios developed by the NGFS and financial shocks were calibrated by the ESRB. IORPs were requested to apply this instantaneous shock to their assets and liabilities, resulting in changes to their balance sheets and financial positions.

The balance sheets had to be provided by IORPs according to two different methodologies. One methodology is referred to as the National Balance Sheet (NBS), which follows national valuation regulations. Funding requirements and valuation standards are largely determined at national level[14]. The other is the Common Balance Sheet (CBS), which involves the valuation of assets and liabilities on a marked-to-market basis. The CBS is used as a tool to enhance comparability across European IORPs. It contains separate items for security mechanisms and benefit adjustment mechanisms, like sponsor support, pension protection schemes or benefit reductions. IORPs generally don't use the CBS outside the stress test and national funding requirements are not based on it.

The analysis in this chapter is structured as follows: First, the consequences of the adverse scenario are analyzed on the level of the CBS. This provides insights into the impact of the scenario given IORP's investment policy choices on the level of the strategic asset allocation. Then a more granular approach is applied to zoom in on investments related to carbon intensive industries (based on NACE codes) and the geographical differences with respect to government bonds and real estate (residential and commercial). This provides insight into the consequences of different investment choices IORPs make regarding environmental investment by asset type. Finally, attention shifts to the results based on national methodologies, which mainly focusses on the differences with the common methodology.

[14] National prudential regulation generally supplements the minimum requirements for the valuation of liabilities, the funding of technical provisions and regulatory own funds that are laid down in the IORP II Directive.

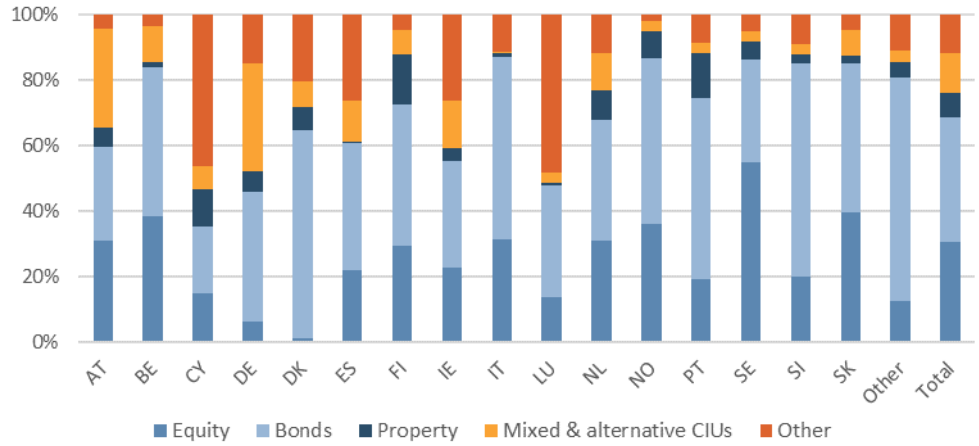
2.2 COMMON BALANCE SHEET

2.2.1 ASSETS IN THE BASELINE SCENARIO

The aggregate value of assets[15] of the participating IORPs at the end of 2021 amounted to EUR 1,985 bn. Of this, 88% is attributed to DB schemes and 12% to DC schemes. From the 18 participating Member States 6 countries provide DB schemes only, 1 country provides DC schemes only and 11 countries provide both pension scheme types.

Figure 2.1 illustrates the allocation of the total assets for all participating IORPs per country broken down by investment category. It depicts the situation pre-shock.

Figure 2.1: Asset Allocation by Member State pre-shock (in %)[16]



Note: The categories Equity, Bonds and Property include indirect investments via Collective Investment Undertakings (CIUs). The asset category 'other' mainly contains derivatives, cash, reinsurance recoverables.

On average, nearly 40% of the total assets are allocated to **fixed income** assets (38%); more than half of these investments are comprised of government bonds (60%). At the country level, the share of fixed income ranges from 20% for Cyprus to 65% for Slovenia.

On average, 30% of the total assets are invested in **equity**. Denmark has the lowest exposure to equity (1%) and Sweden the highest (55%).

Property investments are more significant in Finland, Portugal and Cyprus, with weights of 16%, 14% and 12% respectively. On average, this category represents 8% of the total assets. Furthermore,

[15] These are the total assets of the CBS taking into account i.a. security mechanisms (sponsor support and pension protection schemes).

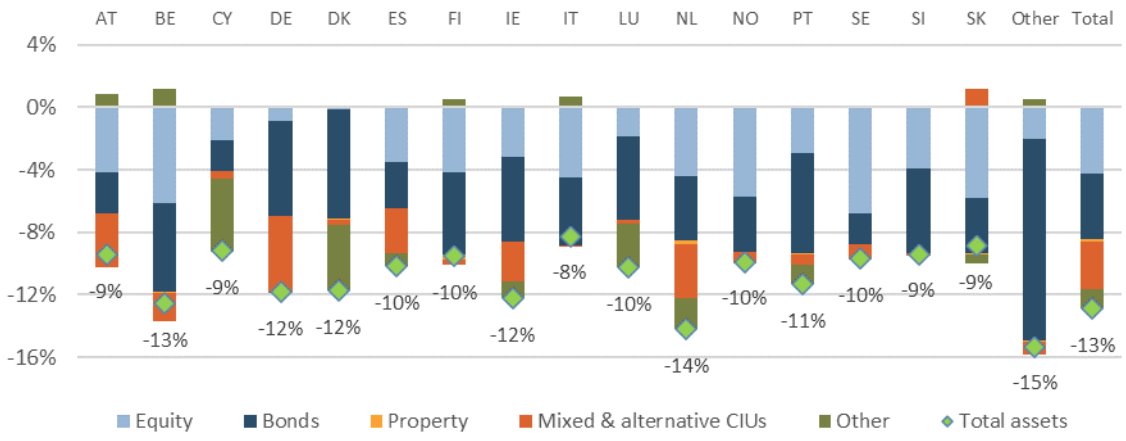
[16] To ensure full confidentiality of individual data, "Other" countries category covers the Members States with less than three IORPs.

12% of the investments are allocated to mixed or alternative funds, ranging from 33% by German IORPs to 1% by Italian IORPs. Finally, the **other assets** represent 12% of the assets.

2.2.2 ASSETS IN THE ADVERSE SCENARIO

At the European level, the adverse market scenario leads to a fall of 12.9% in the value of the assets, in absolute terms of approximately EUR 255 bn. These figures include balance sheet items for security mechanisms like sponsor support and pension protection schemes. The decrease in the value of the assets ranges from 8.2% for IT IORPs to 14.2% for NL IORPs (Figure 2.2). These differences can have different causes. For example, for NL IORPs this asset impact can only be meaningfully interpreted in relation to the impact of the scenario on the liabilities, as NL IORPs hedge the interest mismatch between their assets and liabilities. Consequently, NL IORPs experience a higher loss of the asset value in the current adverse scenario, as the interest rates rise in this scenario.

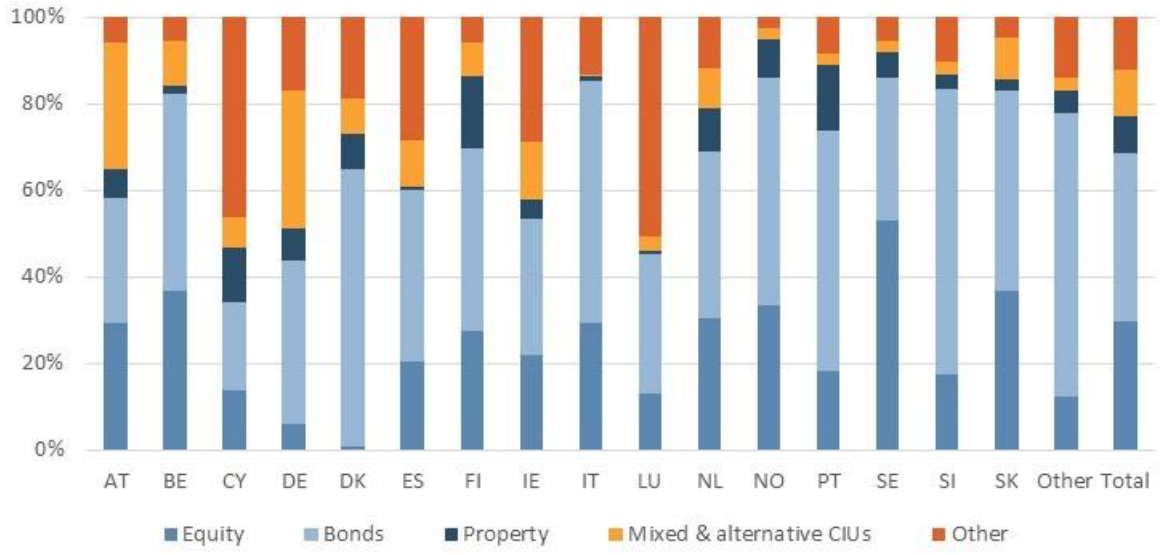
Figure 2.2: Impact Adverse Scenario on CBS Assets (in %)



Note: The categories Equity, Bonds and Property include indirect investments via investment funds. The category 'other' mainly contains derivatives, cash, reinsurance recoverables.

As equity and bond investments are the dominant asset classes and experience the most severe shocks, these investments are the main drivers of the drop in the value of assets in the scenario. Despite the decrease of the assets due to the scenario shock, substantial changes in the asset allocation over the different categories don't occur (Figure 2.3).

Figure 2.3: Asset Allocation by Member State post-shock (in %)



The impact of the adverse scenario on the assets is at first sight not always directly linked to the global asset allocation in equity, bonds, property, etc. of the participating IORPs of each Member State. To get a better understanding of the impact of the adverse scenario on the results, it is necessary to assess the asset allocation in the NACE codes and geographical zones that were most affected in the adverse scenario.

The impact of the adverse scenario on **equity and corporate bonds** depends on the economic activity. Five industries experience the largest shock in the scenario:

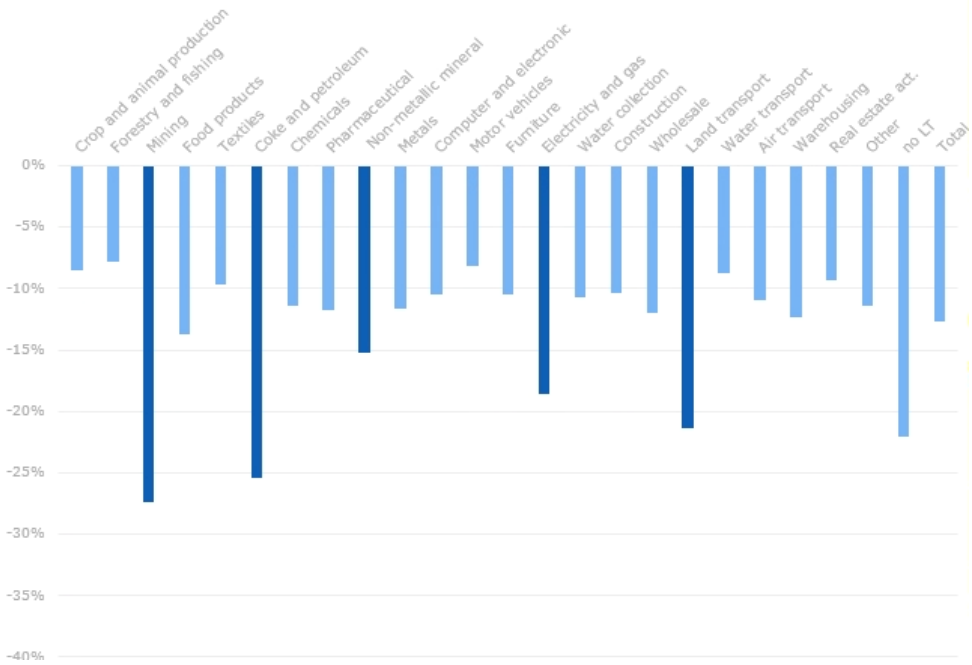
NACE	Industry	Equity	Corporate Bonds
B05-B09	Mining & Quarrying	-37.8%	+467 bp
C19	Manufacturing Petroleum	-32.2%	+397 bp
C23	Manufacturing Mineral & non-metal	-20.4%	+252 bp
D35	Electricity & Gas	-23.0%	+284 bp
H49	Transport via Land & Pipeline	-22.6%	+279 bp

The impact of the adverse scenario on the investments in these five sectors is substantial (Figure 2.4). This figure shows, e.g., that investments in corporate bonds related to the Mining & Quarrying

industry (NACE B05-B09) drop by more than 25%. Equity investments in these five industries are hit even harder in the adverse scenario, ranging from -38% to -20%[17].

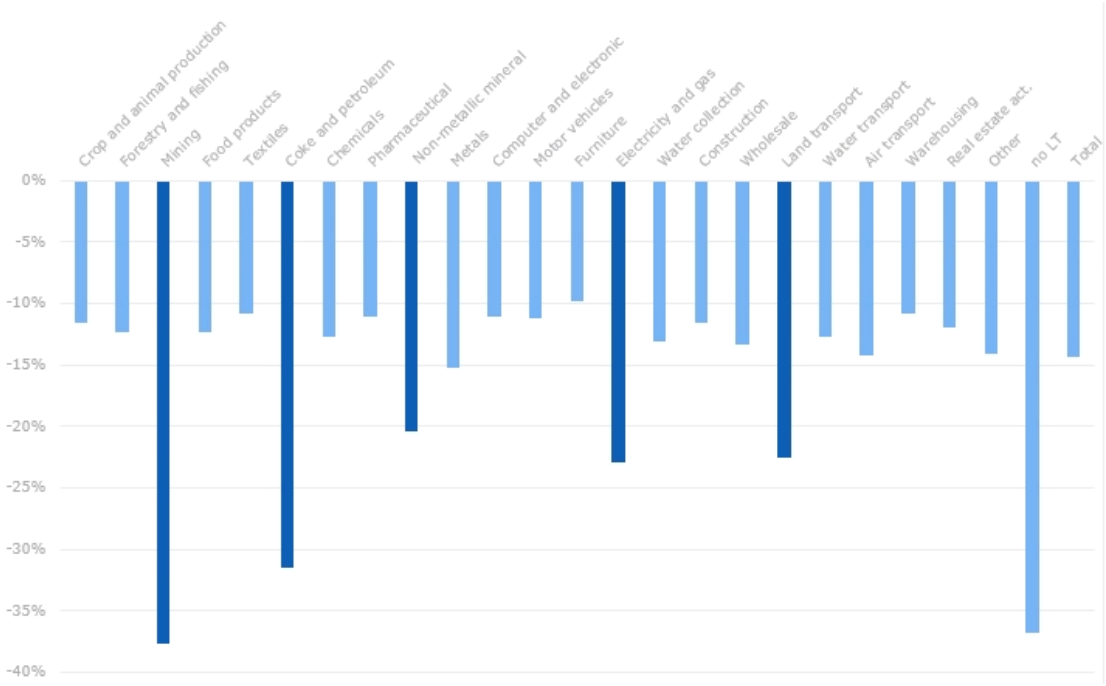
Figure 2.4: Impact of the Adverse Scenario on Investments in Corporate Bonds and Equity per NACE Code (%); "no LT" means "no look-through possible" – the highest shock had to be applied then

Corporate Bonds



[17] In cases where it was impossible to provide a breakdown of their investments by industry (NACE code), IORPs had to apply the highest shock for these investments (-37.8%).

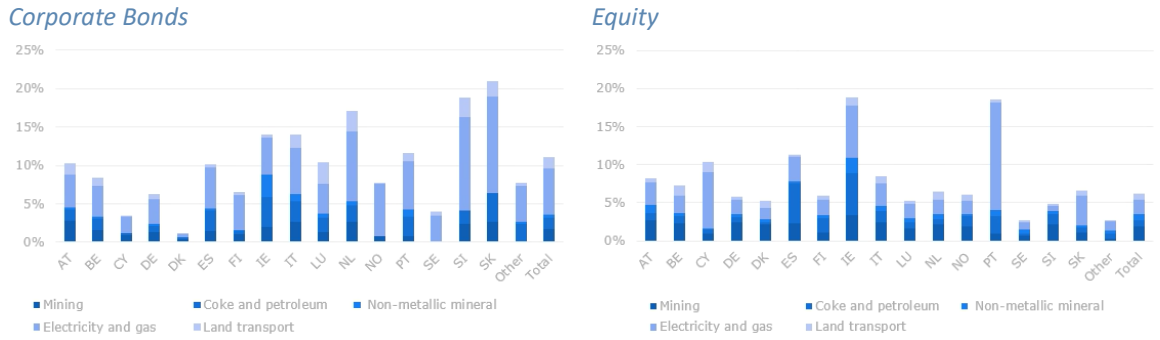
Equity



Note: The five highest shocks (where look through is possible) are represented with dark blue color.

Figure 2.5 shows the asset allocation according to these NACE codes by Member State.

Figure 2.5: Corporate Bond and Equity Investments in the five most ESG sensitive Industries according to the scenario (by Member State)



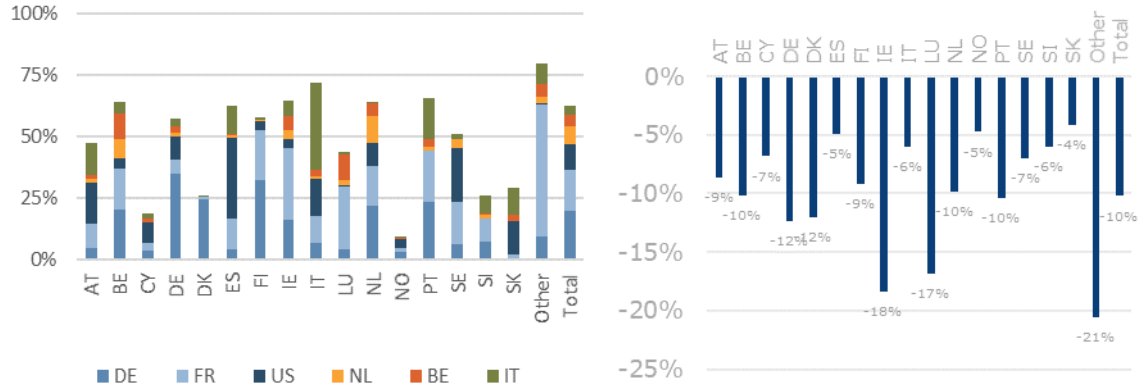
On average, 6% of the investments in equity are allocated to the five NACE codes with the largest shocks, with the highest exposure in Mining & Quarrying (B05-B09) and in Electricity & Gas (D35). Countries with the highest allocation to those five industries are IE and PT, with equity exposures of more than 18% towards these industries, CY and ES, with exposures of around 10%.

With regard to the corporate bonds, the exposure for all participating Member States is slightly higher than 10% with a largest exposure to Electricity & Gas (D35). NL, SI and SK have exposures of more than 15%.

When we look at the impact on the assets for all participating Member States, we see e.g. that although SE has the largest exposure to equities, the global impact on the assets is relatively small in the adverse scenario (-10%) because of the very small exposure to the five NACE codes with the highest shocks.

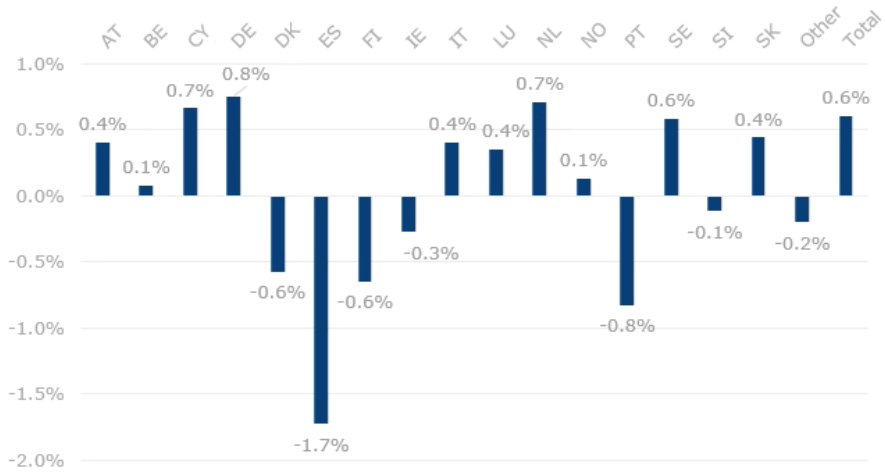
The impact of the adverse scenario on **government bonds** and **property** depends on the geographical allocation of the assets. The impact of the shocks on government bonds was, in aggregate terms, equal to -10% (Figure 2.6). It ranges from -4% to -21%, in the latter case due to a high proportion of government bonds being classified as not possible to apply look-through, in relation to which a variation of -37% was applied.

Figure 2.6: Government bond investments (baseline) in six main issuing countries (percentage of total investment in government bonds) and change in value of total investments in government bonds (%)



Reflecting the calibration of the adverse scenario, the impact of this scenario on property held by IORPs would have, on average, a small but positive effect on its value. (Figure 2.7).

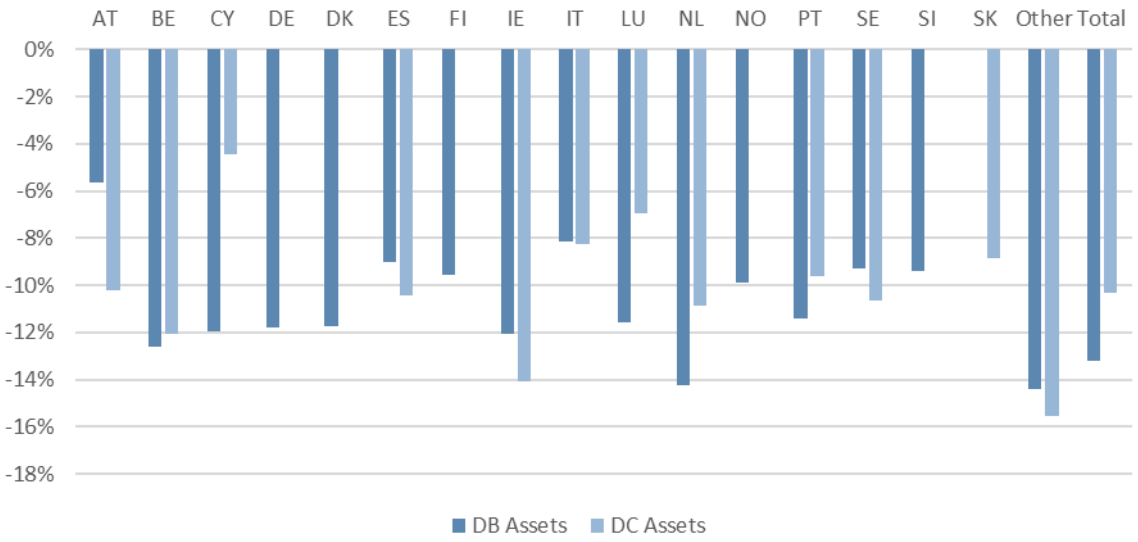
Figure 2.7: Value Change of Property Post-Shock by Member State



Note: Look-through approach is applied.

On average, DB-assets (-13%) are more impacted than DC assets (-10%), however, this is not the case in all Member States. In AT, ES, IE and SE the assets of the DC schemes are more impacted than those of the DB schemes (Figure 2.8).

Figure 2.8: Change in Assets by Member State (%)



2.2.3 LIABILITIES

The technical provisions for DB schemes shown on the CBS are being calculated using the risk-free interest rate term structures provided in the baseline and adverse scenario[18].

For pure DC schemes the technical provisions or liabilities are in general equal to the assets so they are in "equilibrium" by definition; therefore, changes in liabilities/technical provisions merely reflect changes in assets. Member States where in the sample all DC schemes are pure DC schemes are, e.g., IT, NL and PT. However, non-pure DC schemes could either be classified as DB or DC schemes in this exercise. This implies that for some Member States[19] the technical provisions for DC pension schemes are the (partial) result of an actuarial calculation. And therefore, the value of the liabilities for non-pure DC pension schemes can differ from the opposing assets. For a few Member States, it was not possible to distinguish within DC schemes between pure and non-pure so the analysis on DC liabilities should be taken with caution.

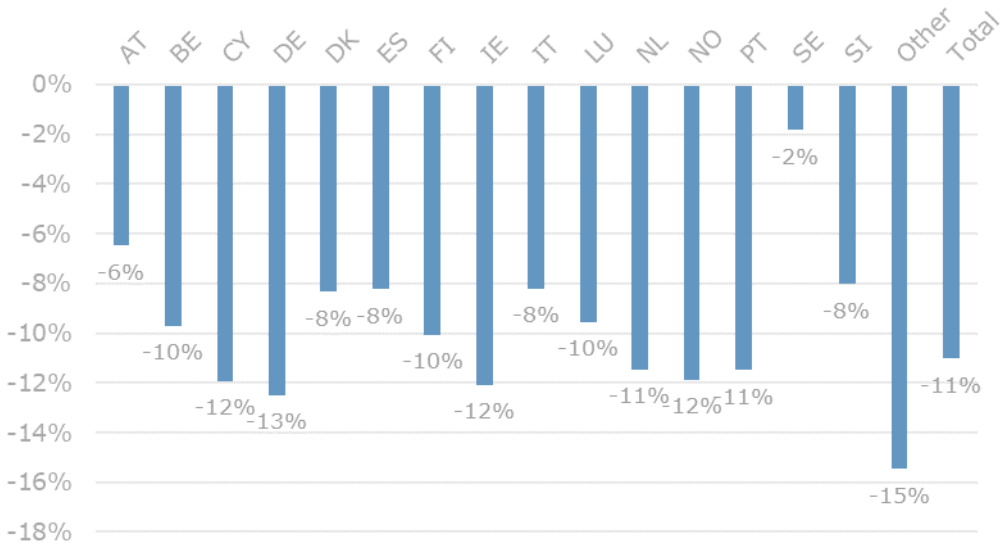
On aggregate, the adverse scenario has a 'positive' impact on the IORPs' pension obligations, i.e. the technical provisions decrease due to the increase in the risk free rates. On an aggregated level, the technical provisions are reduced by 11%.

When we consider the **DB schemes**, the overall impact on the technical provisions amounts to -11% (Figure 2.9). We observe a small impact on the technical provisions of SE (less than -2%) and AT (-6%), and a relatively high impact for DE (-13%). The impacts for the other Member States are in a range between -8% and -12%.

[18] IORPs have also the possibility to calculate the technical provisions as a "whole" when future cash flows associated with pension obligations can be replicated reliably using financial instruments for which a reliable market value is observable.

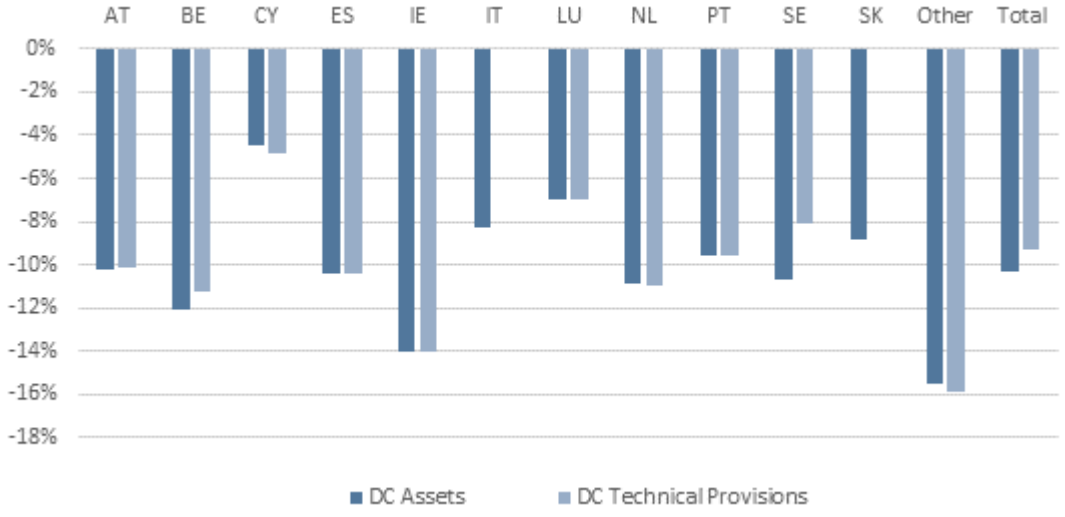
[19] BE (a.o.) reported non-pure DC schemes as DC schemes for the purpose of this stress test.

Figure 2.9: Change in Technical Provisions DB Pension Schemes



The impact on the technical provisions of **DC schemes** is to a high extent correlated to the impact on the investment assets (See figure 2.10). Only for SE and BE the assets are clearly more impacted than the technical provisions, probably due to the existence of non-pure DC pension schemes.

Figure 2.10: Impact of the Adverse Scenario on Assets and Technical Provisions of DC Pension Schemes



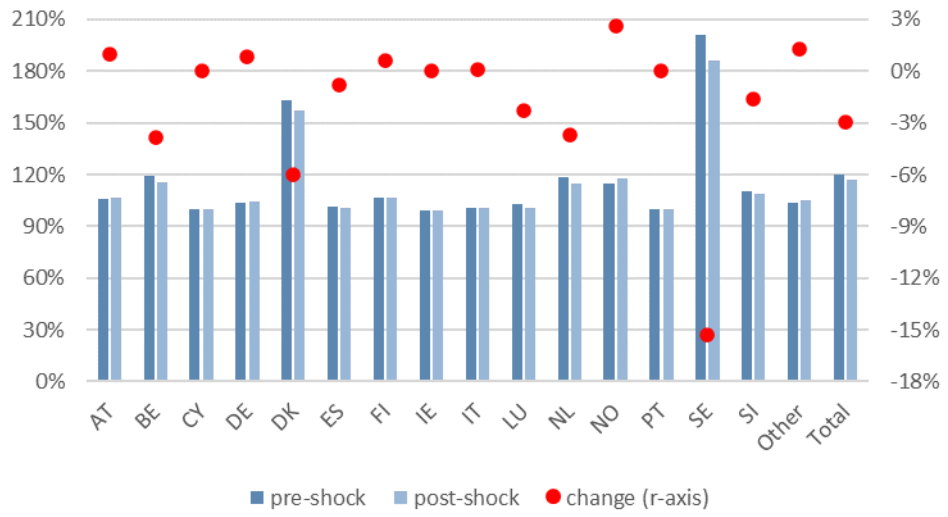
Note: The impact of the adverse scenario on the DC Assets and DC Technical Provisions might differ somewhat due to the existence of non-pure DC Pension Schemes in some Member States. Due to particular features of the Slovakian and Italian DC IORP sector, technical provisions are not shown.

2.2.4 FUNDING RATIO

The funding ratio based on the CBS is, by definition, always equal to or above 100%. Any shortfall between financial assets and liabilities needs to be covered by sponsor support, pension protection schemes and/or benefit reductions. So, in aggregate terms, the pre-stress EAL and the post-stress EAL both are always positive or equal to zero. Indeed, taking into account that deficits should always be balanced within the CBS, only aggregate surpluses are technically possible.

The funding ratio for DB schemes decreased with 2.9%-points from 119.9% in the baseline scenario to 117.0% in the adverse scenario (Figure 2.11). For nearly all Member States the size of the EAL related to DB schemes is between 0% and 20% of the liabilities. Two exceptions are however DK and SE, who have an EAL higher than 50% corresponding to a funding ratio of over 150%.

Figure 2.11: Funding Ratios and Change by Member State (DB schemes)

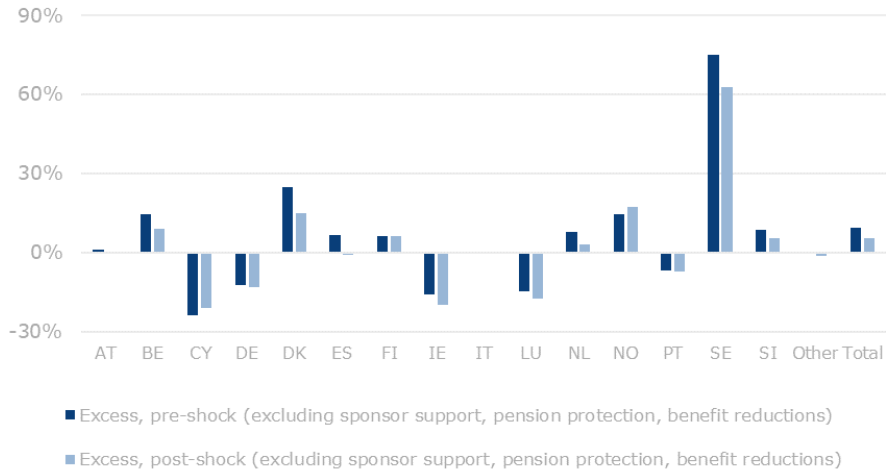


However, for the analysis of the financing level of the technical provisions by the investment assets, the EAL is not a good indicator. Sponsor support, pension protection schemes and benefit reductions can be used as mechanisms to absorb a possible deficit on the CBS.
Figure 2.12 shows the EAL after excluding sponsor support, pension protection schemes and benefit reductions. Without these mechanisms the global overfunding amounts to 9.4% of the liabilities in the baseline scenario and 5.3% in the adverse scenario.

On a Member State level we observe heterogeneous results. Without considering security and benefit adjustment mechanisms, nine countries experience some level of overfunding in the baseline scenario (AT, BE, DK, ES, FI, NL, NO, SE and SI) and five countries experience underfunding (CY, DE, IE, LU and PT) in the baseline scenario. The funding status without the security mechanisms ranges from a deficit of 24% of the liabilities in CY to a surplus of 75% of the liabilities in SE.

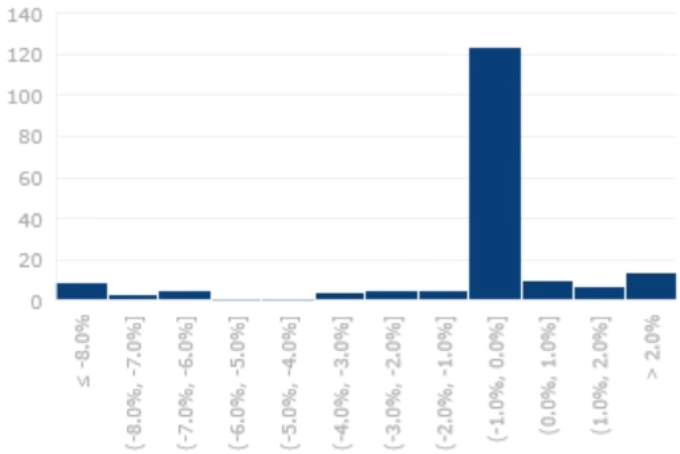
In the adverse scenario, ES also presents a very small underfunding. The funding status ranges from a deficit of 21% in CY to a surplus of 63% in SE.

Figure 2.12 Excess of Assets over Liabilities by Member State excluding security mechanisms (CBS)



The change in the funding ratio for DB schemes differs for each individual IORP (Figure 2.13). For 48 IORPs the funding ratio declines in the adverse scenario, whereas 31 IORPs experience an increase. The changes of funding ratios range from -20.9% to +12.4%. Finally, 45 IORPs do not experience a change in their funding ratio at all, as security mechanisms on the CBS compensate losses.

Figure 2.13 Distribution of the change in funding ratios for DB Schemes (CBS)

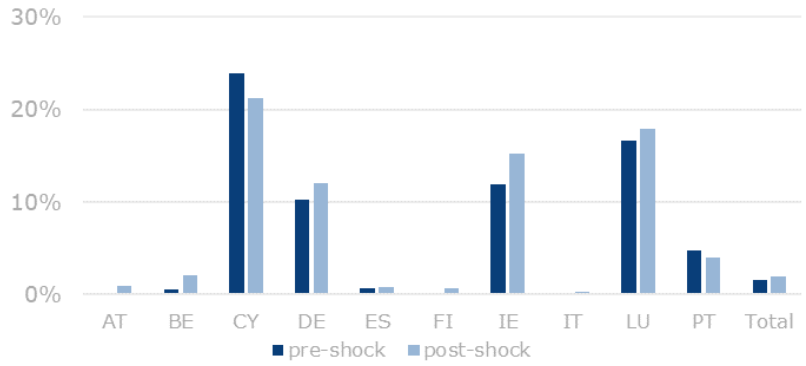


2.2.5 SECURITY AND BENEFIT ADJUSTMENT MECHANISMS

The stress test also provided information about potential impact of the adverse scenario on both members and beneficiaries of IORPs and the IORPs' sponsors. When IORPs can't cover for their pension obligation, if any (not the case for pure DC), they – based on the applicable framework – may either be able to reduce the initial promises, by cutting the benefits, which impacts on the members' pension outcomes or they may be able to or have to require additional funding from the sponsor, which – depending on the size of the shortfall – may significantly impact the financial situation of the sponsor (Figure 2.14).

On the liabilities side six Member States apply benefit reductions. On aggregate this leads to a reduction of the technical provisions by 1.0% in the post-shock situation.

Figure 2.14 Sponsor Support as % of Total Assets



2.3 NATIONAL BALANCE SHEET

The National Balance Sheet (NBS) provides an overview of balance sheet items according to national funding requirements and valuation standards. The IORP II Directive lays down minimum requirements for the valuation of liabilities, the funding of technical provisions and regulatory own funds, which may be supplemented through national prudential regulation. So, in some countries, like e.g. NL, IORPs value their assets on a market basis (marked-to-market). In other countries, like FR and DE, assets may be reported using measurement approaches like historical values, acquisition costs or amortized costs. Something similar applies to liabilities in general and technical provisions in particular. Also this value is determined in different ways across the EU countries. As a result, funding and valuation standards vary between Member States and comparability is limited.

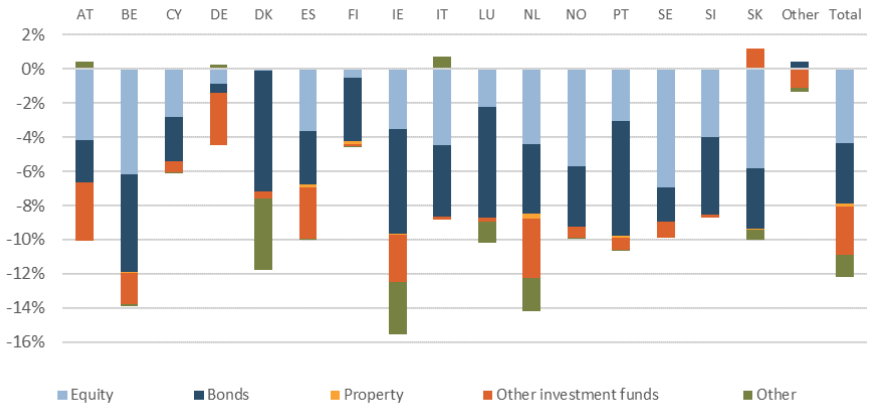
For some Member States the differences of the impact of the adverse scenario between the CBS and the NBS are significant. This applies to CY, DE, FI, FR, IE and LU for both assets and liabilities, and for BE and SE with respect to their liabilities. For the other Member States the differences of the impact of the adverse scenario between the CBS and the NBS are in this exercise non-existent or negligible. This chapter mainly focuses on the differences.

2.3.1 ASSETS ACCORDING TO THE NBS

Despite all the caveats, the NBS provides useful insights into the financial position of IORPs because it is based on national regulations, which might f.i. trigger supervisory actions in case the scenario actually materialized. Under the NBS, the aggregate value of assets of the participating IORPs at the end of 2021 was equal to EUR 1,922 bn. This is somewhat lower than the value of all assets on the CBS, mainly because some of the above mentioned Member States value their assets on book value. Of this, 85% is attributed to DB schemes and the remaining part, consequently, to DC schemes.

The impact of the adverse scenario on the assets considering the total sample is equal to -12.2%, which is somewhat less severe than the impact on the CBS (-12.9%) (Figure 2.15). The main difference occurs in DE, where assets based on national methodology lose 4.2%, whereas the decrease in the value of the assets according to the common methodology equals 11.8%. Similar occurrences can be observed for CY (-6.0% versus -9.2%) and FI (-4.6% versus -9.5%). For IE a reversed development is observed (-15.6% versus -12.2%).

Figure 2.15: Impact Adverse Scenario on NBS Assets by Country (in %)



Equity is one of the main drivers for the drop in the value of the assets (Figure 2.16). This might be one reason why the decrease of the asset value of DE IORPs is relatively limited, as their investments in equity are relatively limited. The opposite probably applies for SE IORPs, as their allocation towards equity investments is relatively high.

Another main contributor to the decrease in the value of the assets are bonds and other investment funds.

Figure 2.16: Impact of the Adverse Scenario on the Assets by Asset Category

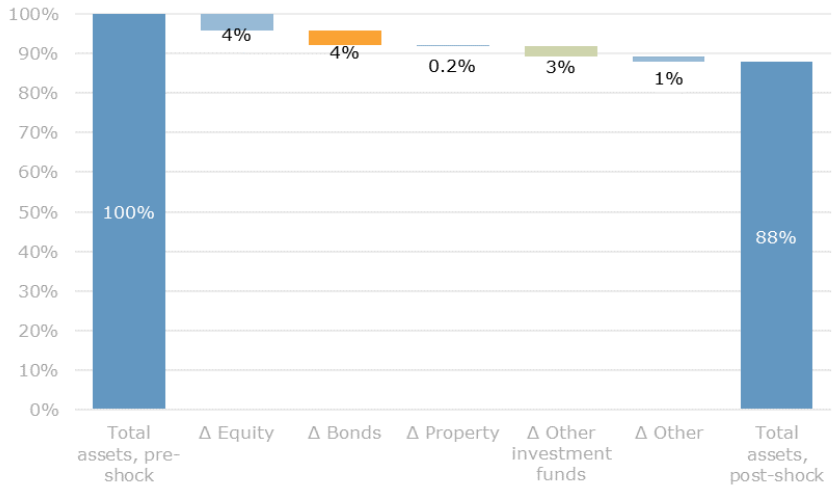
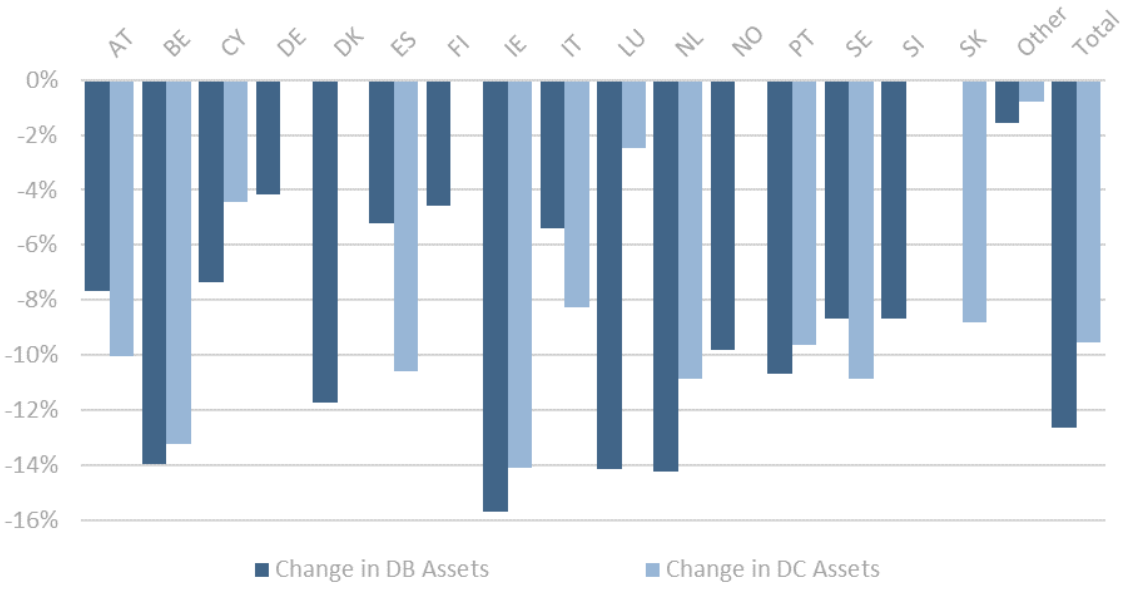
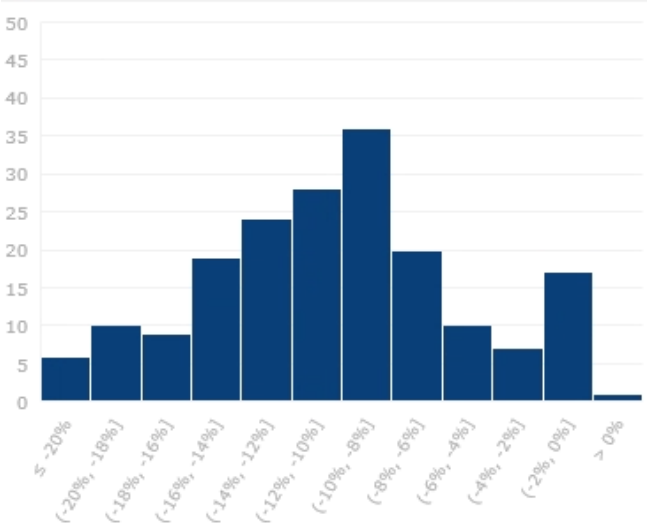


Figure 2.17: Change in assets (DB and DC, per country)



The adverse scenario would lead to a decrease of the value of assets of 10% or more for around half of the participating IORPs and only a small number of IORPs would suffer a drop in the value of assets of 20% or more (Figure 2.18).

Figure 2.18: Distribution of the Change in assets by individual IORPs (NBS)



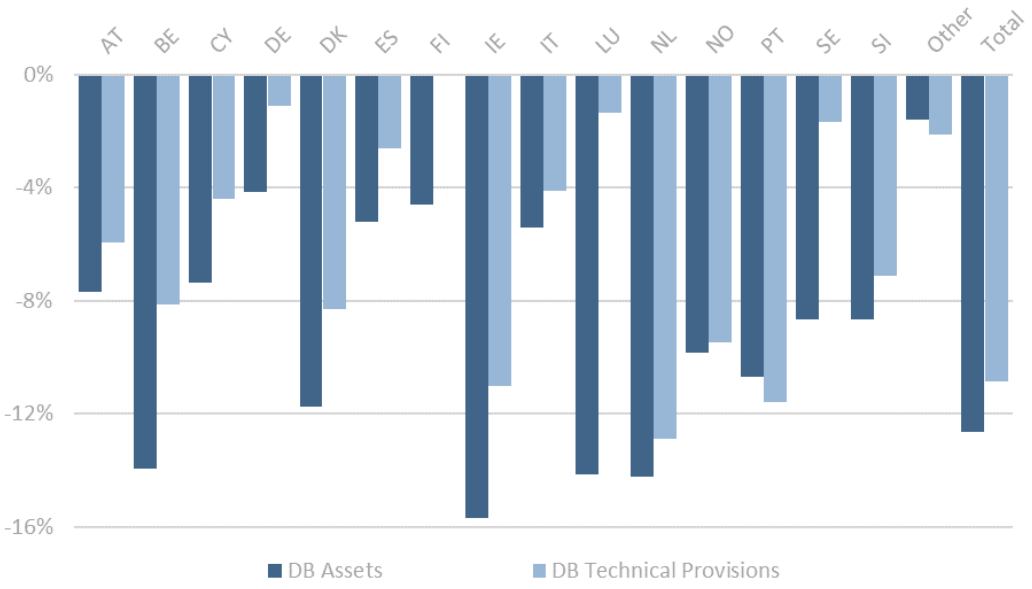
2.3.2 LIABILITIES ACCORDING TO THE NBS

For DB schemes, the impact of the adverse scenario on technical provisions depends on national valuation standards, namely the interest rate approach used in the discount of the cash flows. Following the positive shock on the risk-free interest rate term structure, technical provisions based on national methodologies decreased on aggregate by some 11%. Based on the NBS, this ranges from -2.6% for SE to -12.9% for NL (Figure 2.19).

For CY, DE, FI and LU the decrease of the technical provisions in the NBS is much smaller than in the CBS. One reason for this might be that according to their national methodologies fixed discount rates are used to determine the value of the technical provisions.

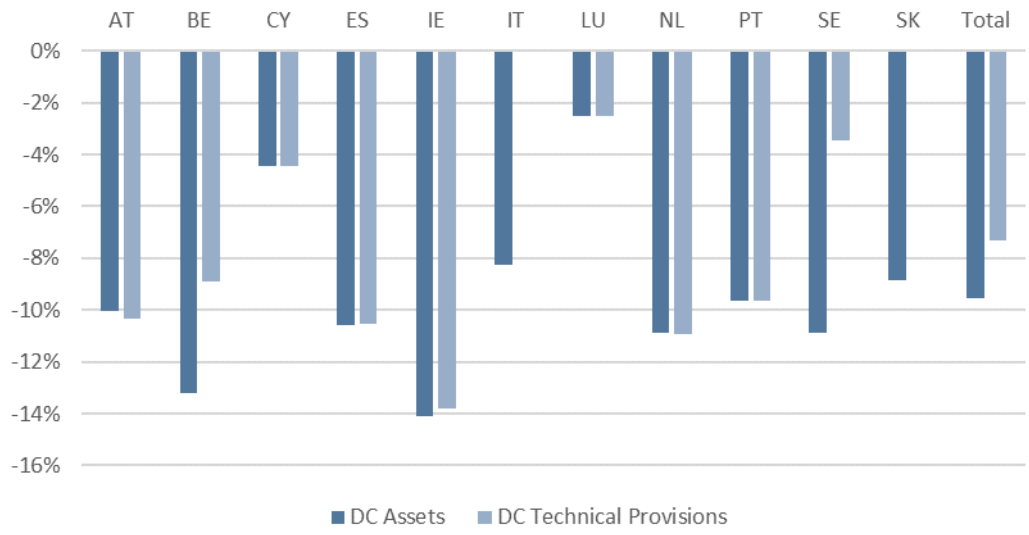
The figure below shows that for the vast majority of countries the relative decrease of the technical provisions is offset by a larger decrease of the value of the assets, resulting in a deterioration of the financial position of IORPs according to national regulations.

Figure 2.19: Change in DB Assets and DB Technical Provisions on the NBS (per Country)



In DC schemes, in general, technical provisions move more in tandem with the change in assets, as explained above. There are some exceptions, such as BE and SE, which likely point at non-pure DC schemes in those Member States (Figure 2.20).

Figure 2.20: Change in DC Assets and DC Technical Provisions (per Country)



Note: The impact of the adverse scenario on the DC Assets and DC Technical Provisions might differ somewhat due to the existence of non-pure DC Pension Schemes in some Member States. Due to particular features of the Italian DC IORP sector, technical provisions are not shown.

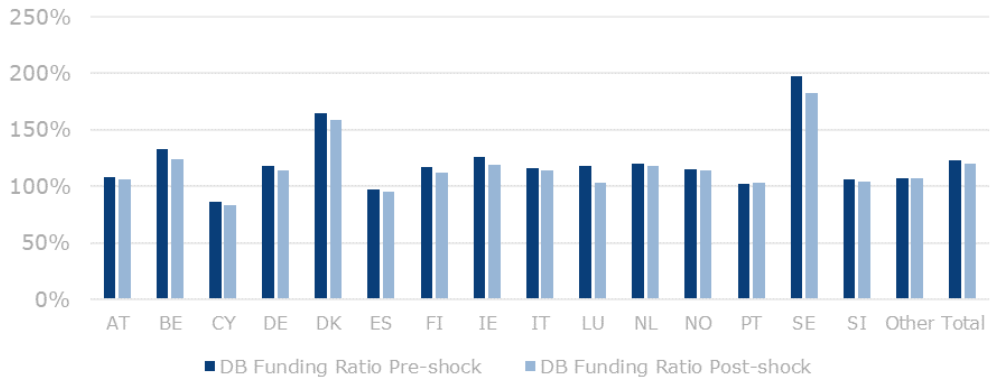
2.3.3 FUNDING RATIO

On aggregate basis, the funding ratio for DB IORPs, measured as the total assets over technical provisions reported on the NBS for DB schemes, was equal to 122.7% at the end of 2021[20]. This is somewhat higher than the funding ratio based on the CBS (119.9%). The main differences are observable for the four countries mentioned above (CY, DE, FI and LU), BE and SE. In all countries, except for CY (86.3%) and ES (97.5%), in the baseline scenario the value of assets for DB schemes exceeded the value of the corresponding technical provisions (Figure 2.21).

In the adverse scenario, the overall funding ratio for DB pension schemes decreased to 120.2%. It remained above 100% in most countries, with the exception of CY (83.6%) and ES (94.9%). In absolute terms, the excess of assets over technical provisions for DB schemes would decrease by approximately EUR 62 bn (from EUR 300 bn to EUR 238 bn).

[20] These funding ratios are estimated and based on the quantitative data submitted specifically for this exercise. The calculations of these funding ratios do not apply nationally applied methodologies and might therefore differ from the funding ratios published by national authorities.

Figure 2.21: Funding ratio (DB, per country)

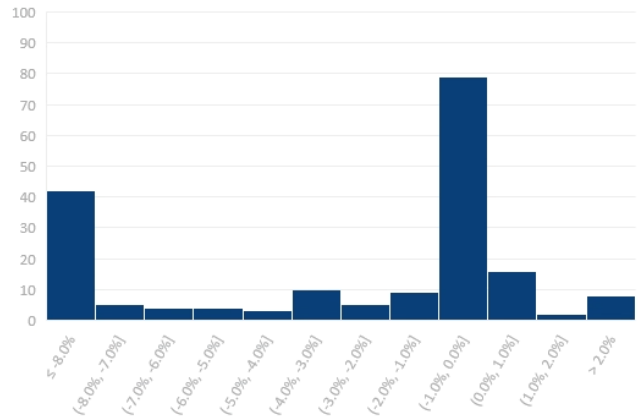


Note: Funding ratio = Total Assets / Technical Provisions

From an individual country perspective, the highest decrease in the funding ratio was observed in LU (-15.3%-points) and SE (-14%-points) due to a more limited reduction of the value of technical provisions in comparison to the shock on the asset side.

For 63 out of 187 participating IORPs (35% of the total sample), the adverse scenario had a positive effect on the funding ratio and for another 45 the reduction was less than 2 percentage points (Figure 2.22). The distribution is somewhat different when looking only at the DB schemes, still around 20% of this subset presents an improvement in the funding ratio in the adverse scenario. For a quarter of these IORPs, the DB funding ratio suffered a decrease of 10 percentage points or more.

Figure 2.22: Distribution of the change in funding ratios for DB Schemes (NBS)



VOLUNTARY SUBMISSION OF ADDITIONAL INFORMATION

INTRODUCTION

In addition to the compulsory part of the stress test, the 2022 IORP stress test enabled participating IORPs to perform a voluntary part: IORPs could apply "their own" more granular asset shocks to their balance sheets. These shocks had to be consistent with the (less granular) shocks in the climate change scenario of the stress test.

The goal of this additional, voluntary, exercise was to let IORPs conduct an additional exercise with shocks based on their own ESG-investment policies and climate risk-classifications.

EIOPA received voluntary submissions from five DB IORPs, all from NL. Together, these IORPs represent 74% of the assets of the stress test DB sample and 59% of the total (DB and DC) stress test sample.

METHODOLOGY

The participating five IORPs together devised a single methodology for the voluntary exercise. This methodology focused exclusively on investments in NACE sector D35, the energy sector (amongst which electricity and gas production), due to its obvious relevance for climate (transition) risk.

The IORPs calculated unique shocks for each of their equity and corporate credit investments in D35, based on the PACTA (Paris Agreement Capital Transition Assessment) methodology. Consistency with the ESRB scenario was ensured by setting the average of these shocks equal to the shocks applied to assets with NACE code D35 in the ESRB scenario ("ESRB D35 shock").

RESULTS: GRANULARITY

The voluntary submissions from the Dutch IORPs can be used to get insight in the impact of the chosen level of granularity of the Stress Test scenario: The five Dutch IORPs reported the results on NACE granularity level 4, which means for several subsectors of NACE code D35, whereas the scenario specified shocks for equity and credit investments on NACE granularity level 2.

For equities, the ESRB D35 shock was -23.0%. The results of the voluntary stress test show that the more granular shocks range from NACE-subsector to subsector: the mildest reported shock is -9.8%, the heaviest -32.1%.

For corporate credits the voluntary stress test shocks vary between -3.3% and -42.4%, compared to -15.7% to -20.7% in the compulsory part of the stress test (for corporate credits the shocks depend on duration, so unlike equity there is no "single" shock to compare the results to).

CONCLUSIONS

The results suggest that a stress test with more granularity can provide additional insight. This seems especially so if the goal is to get insight in IORPs' climate risk exposure with respect to individual investments, for example within a certain asset class and within specific economic sectors.

This may be a relevant approach to the IORP stress test in an effort to also raise IORPs' awareness of the climate sensitivity of assets held in their portfolios, e.g., carbon footprint, transition risk or climate goal-alignment of their (individual) assets.

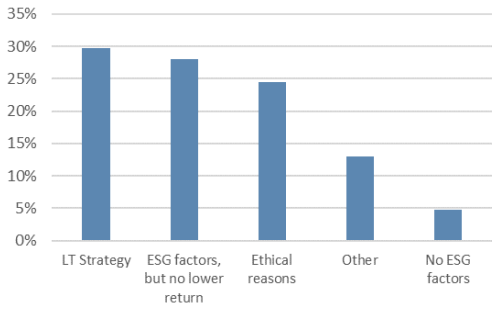
It should be noted that the participating Dutch IORPs reported that the voluntary exercise was relatively time-consuming. This may be a consideration should comparable exercises be considered in the future, especially considering the diversity of IORPs across the EEA and the fact that the majority of IORPs participating in the stress test faced challenges in allocating their assets even to high level sector classifications (see Chapter 3). However, as classification systems, their consistency and IORPs ability to employ them are expected to improve over time, future exercises could also consider elements such as increased granularity when it comes to the inputs and the outputs of the scenarios and the modelling framework, a targeted in-depth analysis of certain sectors or asset classes or even centrally provided tooling.

3. ESG EXPOSURES - QUALITATIVE SURVEY

The 2022 IORP Climate Stress Test for IORPs also includes a horizontal assessment analysis in a qualitative manner to identify and understand the potential effects of environmental risks on the European IORP sector. This qualitative part can be also viewed as a step to understand the extent to which scheme characteristics and national frameworks provide for mitigating measures or adaptations to protect against a transition scenario towards a low-carbon economy. The qualitative analysis follows on the ESG analysis of the 2019 IORP stress test.

The majority of the participating IORPs indicated to consider ESG factors when determining their investment policies (Figure 3.1). To achieve their ESG objectives, IORPs adopt diverse approaches. Most of the IORPs take into account ESG factors in a long-term strategy and/or consider ESG factors if it does not lead to lower financial returns. Further, due to ethical reasons, some of the participating IORPs do not invest in predetermined sectors or investments, thus no research is conducted into the investment income from it.

Figure 3.1: ESG factors considered while determining investment policy



Note: The percentages are based on the number of IORPs that selected the option. The selection of more than one option was possible.

Since 2019, the inclusion of ESG factors in the IORPs' investment policies has grown. In 2022, only 5% of the participating IORPs reported not to integrate ESG objectives, against 45% of the IORPs in the 2019 Stress Test[21]. The raise in risk awareness posed by climate change in the last years may have led IORPs, among other factors, to adjust their investment strategies to protect against a transition scenario towards a low-carbon economy.

Despite the development of the integration of ESG factors, IORPs continue experiencing difficulties in identifying sustainable investments. On average, 61% of IORPs face hurdles to allocate investments to business activities by NACE codes, at least to a certain extent (Figure 3.2), while 35% of the sample indicated that it is possible for them to distinguish the business activities in their

[21] Please refer to 2019 Institutions for Occupational Retirement Provision (IORPs) Stress Test Report: https://www.eiopa.europa.eu/occupational-pensions-stress-test-2019_en

investment portfolio by NACE code. Of the IORPs reporting difficulties, 70% indicated that simplifications are used.

Figure 3.2: Hurdles allocating investments to business activities by Member State

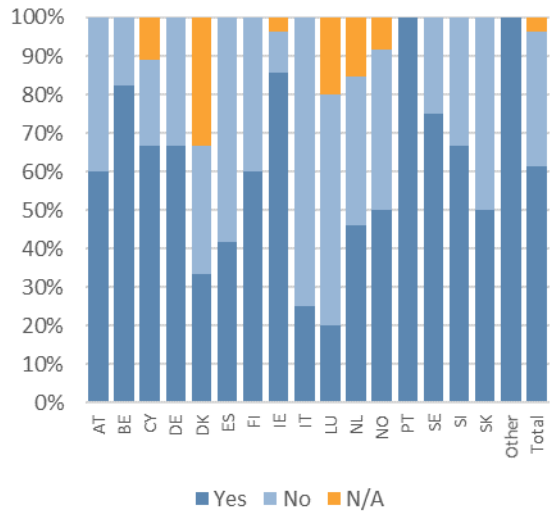
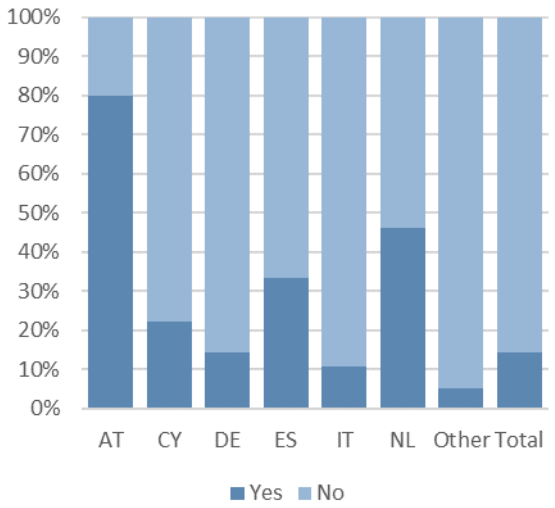


Figure 3.3: Use of environmental stress tests in IORPs' own risk management by Member State



Note: In order to ensure full confidentiality of individual IORPs, some Member States are included in "Other" category.

In particular, investment funds are identified by almost half of the participating IORPs (44%) as an asset category where look through is not always possible to be applied with the required level of granularity, and hence, identifying the business categories. Alternative investments, mutual funds, real estate, and derivatives were also identified as a source of hardship for retrieving NACE code information, although to a lower extent. Furthermore, almost one third of the IORPs reported to record NACE code information on a systematic basis about their investments (Figure 3.4), and more in particular for the underlying investment funds.

Furthermore, the IORPs that indicated to experience more hurdles allocating investments to business activities tend to hold more investment funds in their portfolios, on average 51% of total assets, in comparison with the 40% (average) for the IORPs that do not experience difficulties to distinguish the business activities.

Among Member States, some differences should also be featured. While at least half of the IORPs located in ES, IT, LU seem to be able to distinguish the business activities without experiencing major hurdles, the majority of IORPs in at least four Member States reported facing difficulties when allocating NACE codes to their investment's portfolio.

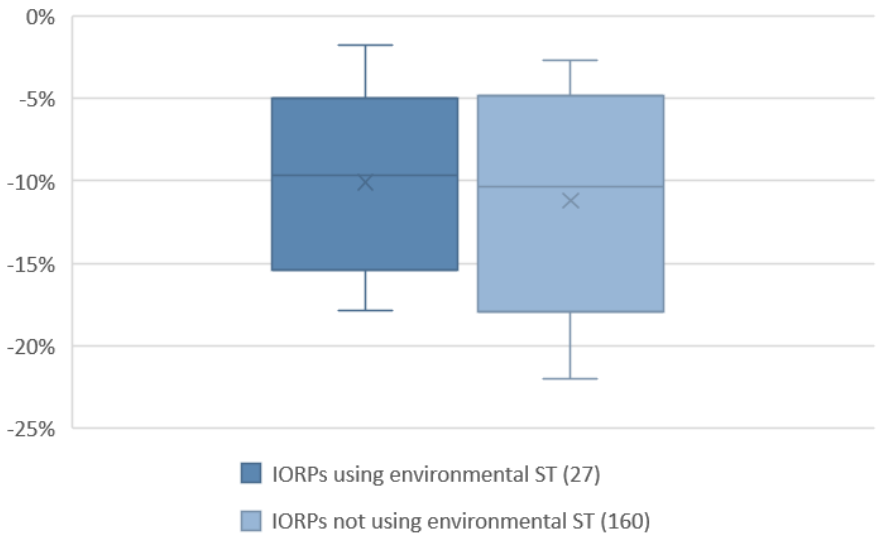
Similarly, most of the participating IORPs (86%) reported not to use environmental stress tests in their own risk management (Figure 3.3). There is a noteworthy heterogeneity among national

frameworks. In half of the Member States (included in the "Other" category) none of the IORPs located there use environmental stress tests in their own risk management. In the other half, the use of environmental stress tests is quite divers.

Of the IORPs using environmental stress tests in their own risk management, the majority of IORPs opt for using a third-party provider, instead of using their own projections and scenarios.

Furthermore, when analyzing the value of IORPs' assets after the shock it is noteworthy to mention that IORPs which use environmental stress tests in their own risk management seem to be more resilient to the climate change scenario. This is indicated by the fact that the average effect of the scenario on assets of those IORPs is -9.6%, against -10.3% for the IORPs that do not use environmental stress tests (Figure 3.4). The latter IORPs also experienced stronger, on aggregate, shocks in their assets. The strongest shock reached by those IORPs is almost 24%, while no IORPs using environmental stress tests experienced a shock higher than 20%.

Figure 3.4: Shock in assets for IORPs using or not environmental stress tests in their own risk management (in %; median, interquartile range and 10th and 90th percentile)



3.1 ESG AND SUSTAINABILITY INVESTMENT POLICY

Almost all participating IORPs integrate ESG factors to achieve their ESG objective. IORPs incorporating ESG factors adopt various approaches. The majority of them integrate ESG objectives through excluding policies (i.e. certain categories of assets are excluded based on a set of criteria chosen by the IORP) and implementing international principles for sustainable investing (like UNPRI[22]) (Figure 3.5). Although to a lesser extent, IORPs also opt to vote (i.e. use of the voting rights at shareholder meetings to promote sustainable investments at companies the IORP invests on) and apply an engagement strategy (i.e. actively approaching the investee to promote behavior towards sustainability).

Of the IORPs adopting ESG factors in their investment policies, 67% takes them into account when appointing an asset manager, and in some cases, the agreement is tailored to corresponding rules or specifications regarding ESG.

Figure 3.5: Implementation of ESG objectives

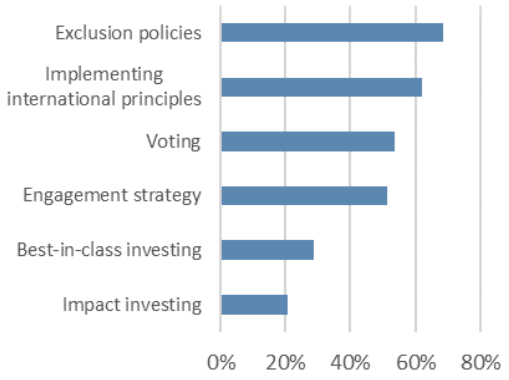
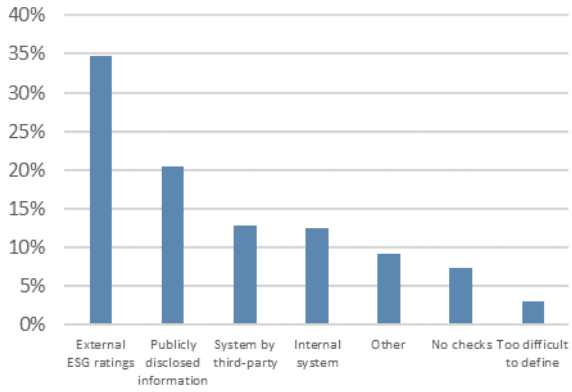


Figure 3.6: Taxonomy applied to check „sustainability“ investments



Note: The percentages are based on the number of IORPs that selected the option. The selection of more than one option was possible.

IORPs use different classification systems (taxonomy), standards and other guidance in order to consider ESG factors in the investment policies and determine if an investment can be classified as

[22] United Nations Principles for Responsible Investment, www.unipri.org

„sustainable“. More than one third of the participating IORPs (35%) use external ESG ratings or indices, followed by 21% of the IORPs that consider publicly disclosed information by investees (Figure 3.6). In addition, IORPs also use classification systems, developed internally or by a third party, against which investments are checked to determine their „sustainability“. These systems are used in most of the cases complementary with the information publicly disclosed or based on external rating.

While at least 90% of participating IORPs use different alternatives to classify investments as „sustainable“, around half of them indicated to experience difficulties defining and identifying sustainable investments.

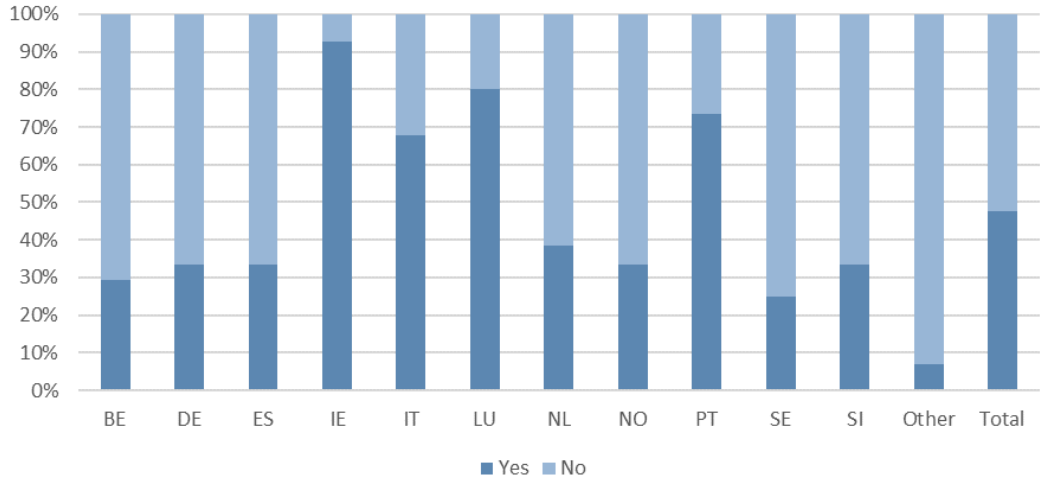
When IORPs consider ESG factors in their investment policies, environmental, social and governance factors are equitably considered. Furthermore, IORPs indicated that they assess ESG factors at individual investment and sector levels.

3.2 ESG AND SUSTAINABILITY DISCLOSURES BY THE IORP

Recently, the Sustainable Finance Disclosure Regulation (SFDR)[23] came into force. This regulation provides guidance on when to call investments sustainable and comes with a number of requirements regarding transparency and disclosures. Broadly speaking, the SFDR divides financial products in three categories: non-sustainable (art. 6), partly sustainable (art. 8) and sustainable (art. 9). Of the IORPs participating in the stress test at hand, almost half (48%) state that the SFDR has affected their ESG policies. When asked for clarification, respondents state that the SFDR in some cases forced them to make ESG disclosures more explicit and in other cases made it possible to enhance their ESG (investing) policies by the now available data (i.e., by requiring their asset managers to run art. 8 or art. 9 funds that are in line with the IORP's own ESG policy). In general, the IORPs view the SFDR as helpful for their ESG policies, however, some IORPs note that the SFDR and taxonomy disclosures can be an extra administrative burden.

[23]Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector: EUR-Lex - 32019R2088 - EN - EUR-Lex (europa.eu)

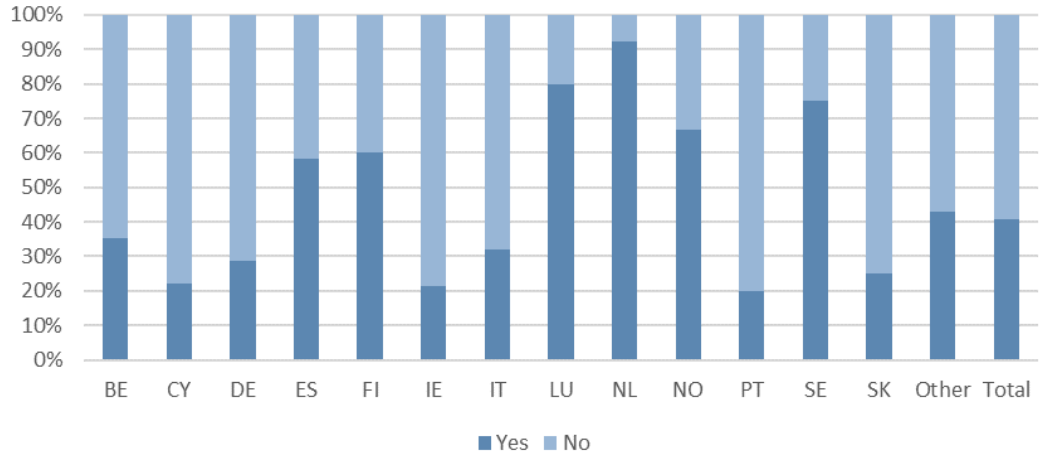
Figure 3.7: IORPs that state the SFDR has had impact on their ESG policies, by country.



Note: In order to ensure full confidentiality of individual IORPs, some Member States are included in "Other" category.

41% of participating IORPs identified one or more schemes promoting ESG characteristics or sustainable investing. Only a limited number of IORPs reported not to consider ESG factors in their investment policies (Figure 3.1). Hence, this result should be interpreted with caution. A possible explanation is that 59% of IORPs do not promote the ESG characteristics actively.

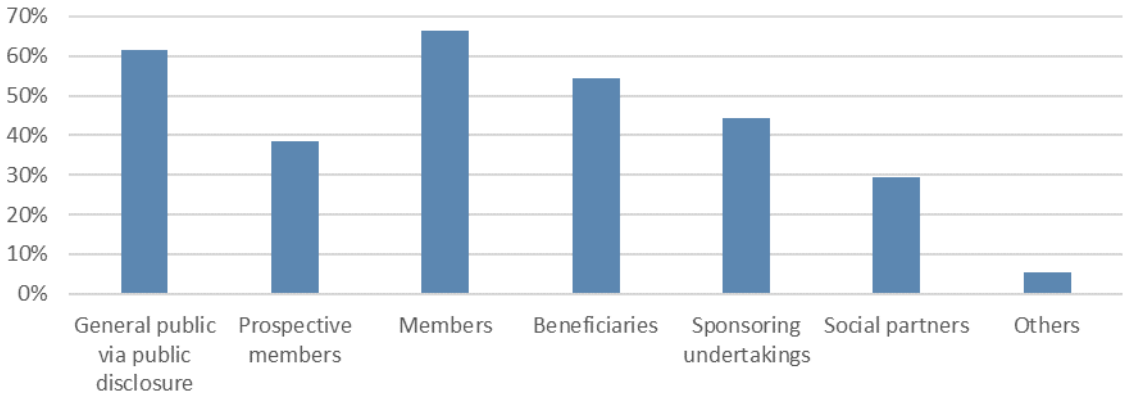
Figure 3.8: IORPs identifying schemes or investment options promoting ESG, by country.



Note: In order to ensure full confidentiality of individual IORPs, some Member States are included in "Other" category.

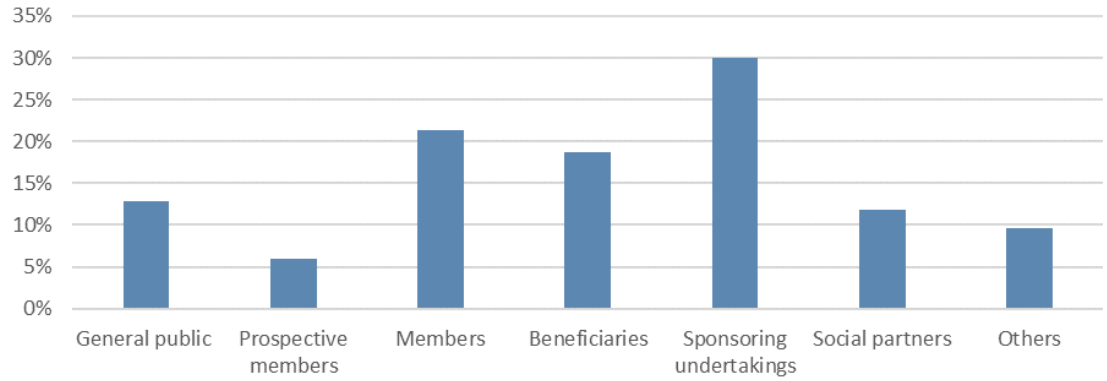
89% of the IORPs inform stakeholders about the way in which ESG factors are taken into account in their investment policies. This is a significant increase from the previous stress test, where 65% stated to inform stakeholders. Members are most often informed, followed by the general public and beneficiaries. See figure 3.9 for more detail.

Figure 3.9: Types of stakeholders that are informed by the 89% of IORPs that inform their stakeholders about ESG factors in their investment policies



In the 2019 IORP stress test, 62% of the IORPs reported to not have experienced that stakeholders were seeking to integrate ESG factors in their investment policies. Stakeholders seem to have become more proactive, as this number is now down to 49%. Of the 51% that do experience this, they most often state that the sponsoring undertakings seek to integrate ESG factors.

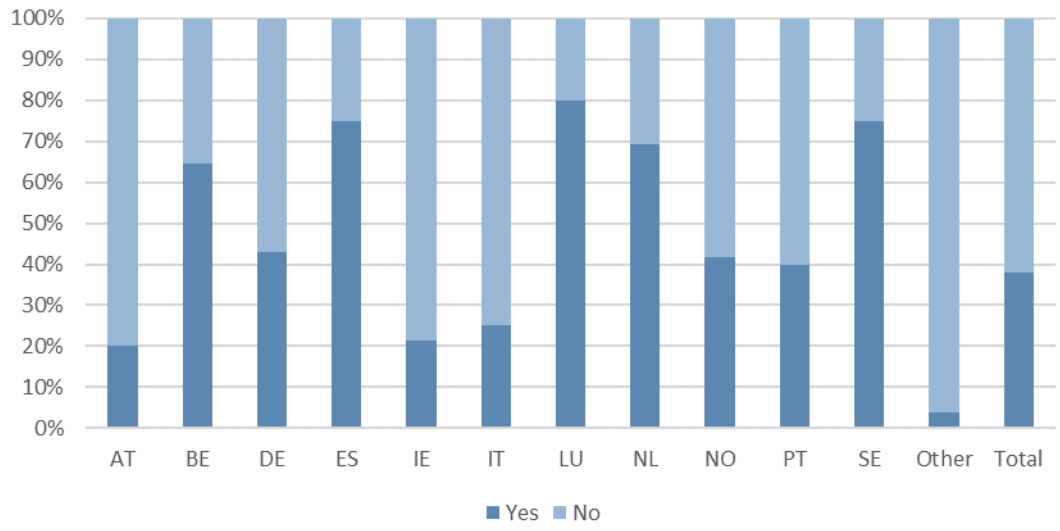
Figure 3.10: Types of stakeholders that seek to integrate ESG factors in their investment policies. Note that 49% of the IORPs do not experience this behaviour of their stakeholders.



38% of participating IORPs consult their stakeholders about how they would like to see ESG factors integrated in their investment policies. Zooming in to country level, IORPs from BE, ES, LU, NL and SE more often report to consult their stakeholders. Regarding the form of consulting stakeholders,

surveys are quoted as a popular method for this, as well as (board) meetings where stakeholders are represented.

Figure 3.11: IORPs that consult their stakeholders, by country.

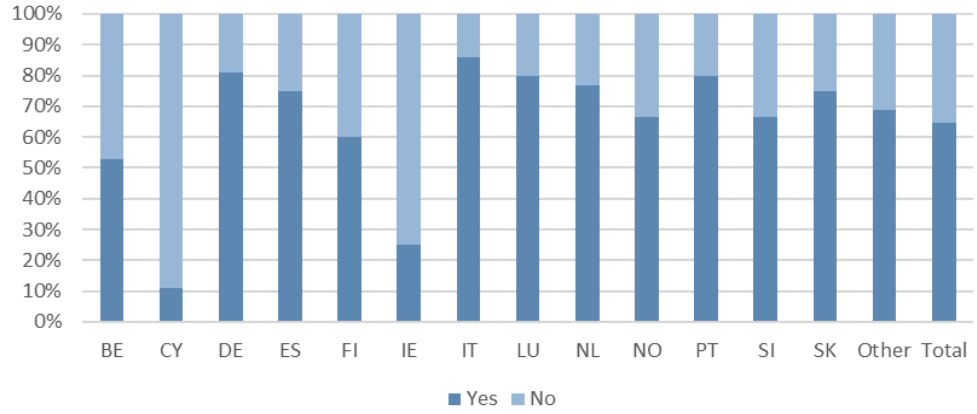


Note: In order to ensure full confidentiality of individual IORPs, some Member States are included in "Other" category.

3.3 ESG AND SUSTAINABILITY RISK MANAGEMENT

64% of participating IORPs reported to have documented processes to identify, asses, monitor and/or manage ESG and sustainability risks. This is a massive increase from the previous IORP stress test, where only 36% of IORPs reported to have such processes. In the 2022 IORP stress test, CY and IE reported to have documented less than 50% of the ESG risk management processes.

Figure 3.12: IORPs that have documented ESG risk management processes, by country.

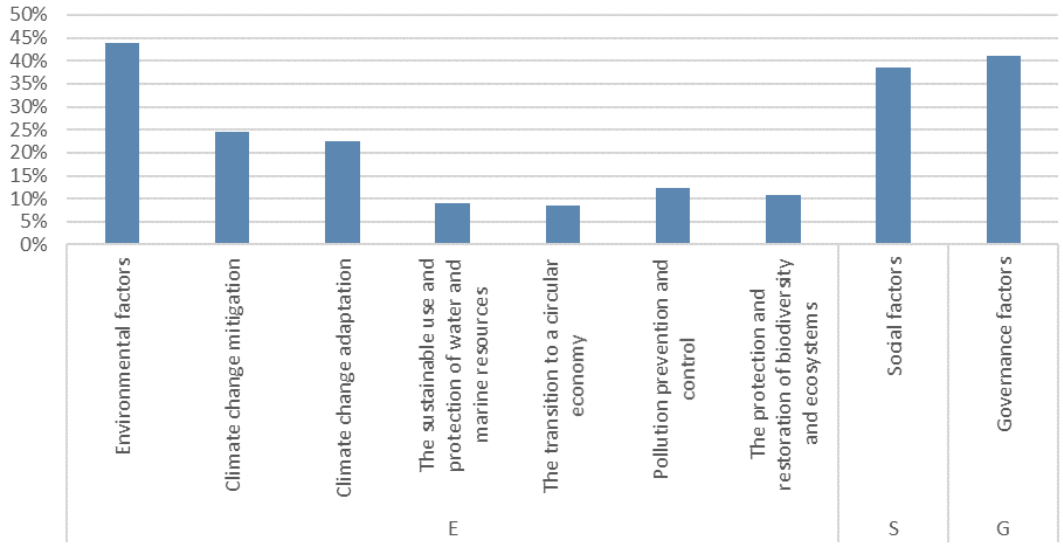


Note: In order to ensure full confidentiality of individual IORPs, some Member States are included in "Other" category.

Of the participating IORPs, about 40% report to have identified assets that are prone to E, S and G risks. This percentage is slightly higher than in the previous stress test, were the result was approximately 30%.

Focusing on the environmental risks, climate change mitigation and adaptation are the most commonly identified risks. Water usage, the circular economy, pollution and biodiversity are only taken into account by ca. 10% of the IORPs.

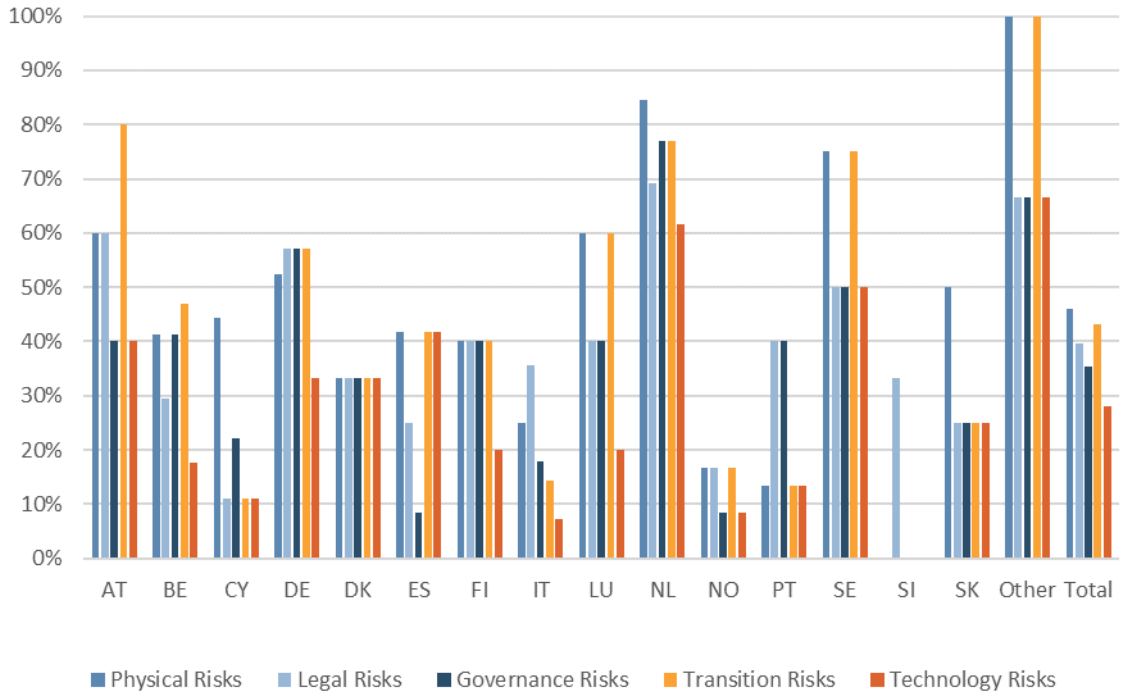
Figure 3.13: Percentage of IORPs that reported to have identified assets prone to ESG risks.



When asked about risks related to climate change, legal risks stemming from ESG factors, governance risks, the depreciation of assets due to regulatory change ('stranded assets') and technology risks, 48% of IORPs state to perform a risk assessment of one or more of these types of risks. This is an improvement compared to the previous stress test, where 34% stated to do so.

Recall that the IORP II Directive requires that the risk management system of IORPs shall cover, where relevant, environmental, social and governance risks relating to the investment portfolio and the management thereof.[24] It should however not be immediately concluded that 52% of participants are not compliant with the IORP II Directive: A possible explanation could be that these IORPs do not consider ESG risks relevant, another could be that they define "environmental, social and governance risks" differently than the wording in the questionnaire.

Figure 3.14: Percentage of IORPs that perform a risk assessment of their assets in light of different ESG risks.



Only 16% of IORPs report to use scenario analyses to identify, assess, monitor and/or manage ESG and sustainability risks. This means that 84% does not do so, which highlights the importance of the stress test at hand. Of the 16% that do report to perform scenario analyses, most use a couple of

[24] Article 25(2)(g) of the IORP II Directive

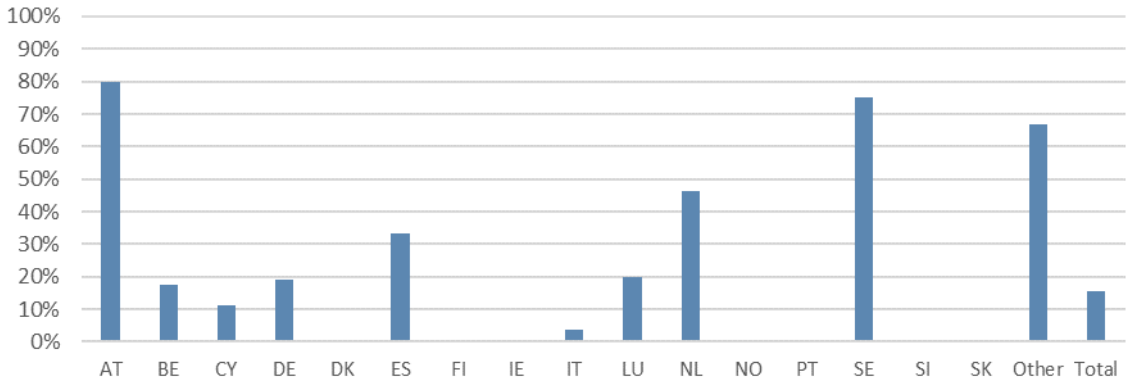
different scenarios, for example a disorderly transition scenario (like the one that was also used in this stress test), an orderly transition scenario and a scenario in which the 1.5 degrees target is not reached. The time horizons of these scenarios also vary, ranging from overnight stresses to 100-year horizons. 2050 is often mentioned as the time horizon, but on average the time horizons seem to be a little over 10 years. From the responses, it is not clear whether these longer horizons are frontloaded as in the stress test at hand, or if explicit calculations are made for all future periods in these time horizons.

These scenarios focus mostly on equities and corporate bonds, with sovereigns following closely. Real estate is only included in half of the scenarios and commodities are rarely in scope of these climate scenarios. Focusing on the type of risks considered by IORPs using these scenario analyses, transition risks are always considered whereas physical risks are almost always considered.

The most noted difficulty for these scenarios is data. IORPs note for example that climate data is changing over time, making it difficult to steer on. Data on individual companies might not take into account cross-effects, whereas for other assets classes, the data is even more scarce.

Above results also allow to reflect on the ESRB scenario that was used in the stress test at hand. A major strength of the scenario is its coverage of all asset classes, which is especially neat considering the data limitations that play a large role in some asset classes. The scenario's focus on transition risks is also in line with what IORPs are using themselves, however, the scenario could be improved by taking into account physical risks. Further, due to the extreme uncertainty around climate risks, considering multiple scenarios might also be an appropriate addition. With respect to the time horizon, the ESRB scenario seems to be in line with what is common in the industry.

Figure 3.15: Percentage of IORPs that report to use scenario analyses to identify, assess, monitor and/or manage ESG and sustainability risks, by country.



BUSSINESS ACTIVITIES OF SPONSORING UNDERTAKINGS

The results of the survey illustrate that more than half (65%) of the total number of sponsoring undertakings reported corresponds with key climate relevant sectors (Figure B1).

Figure B1: Sponsoring undertakings by key climate relevant sectors per Member State

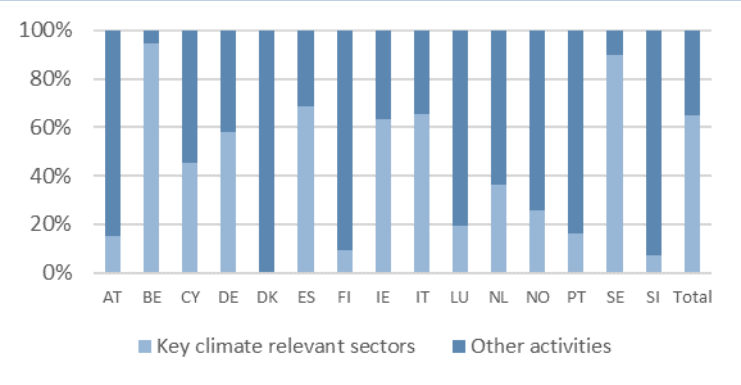
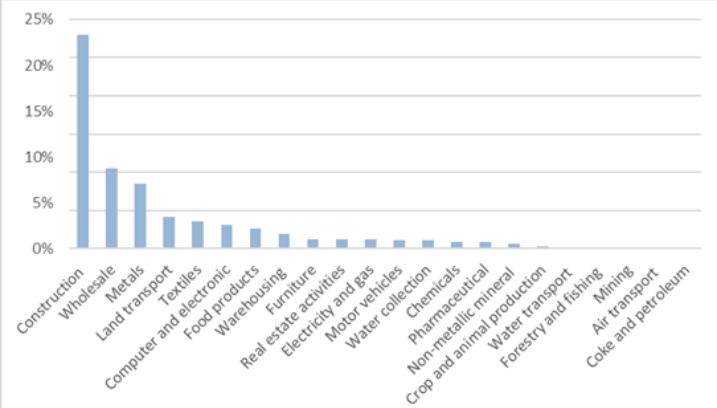


Figure B2: Sponsoring undertakings by business activities



Among Member States, some differences should also be featured. Six countries reported that at least half of their sponsoring undertakings belong to key climate relevant sectors.

When looking into the different key climate relevant sectors (Figure B2), 21% of the total number of sponsoring undertakings belongs to the construction sector, followed by 8% of Wholesale and retail trade and repair of motor vehicles and 6% of Manufacture of basic metals.

4. INFLATION IN SCHEME DESIGN AND INVESTMENT STRATEGY – QUALITATIVE SURVEY

The 2022 IORP stress test exercise also had the objective of gaining further insights into IORPs' frameworks aimed at potentially mitigating the loss in purchasing powers of future retirement income resulting from higher inflation. To understand how IORPs' schemes are designed to mitigate such effects, EIOPA had developed, as part of the stress test exercise, a qualitative questionnaire that explored exposure to inflation, mitigation mechanisms and the growing importance of this issue in investment strategy.

Some results of this questionnaire are presented by Member State in what follows. It is important to note here that these results are not necessarily representative for the concerned Member States because (i) the IORPs that participated in the stress test exercise might not be representative of a Member State's entire second pillar sector (which may not only include IORPs) (ii) some IORPs carry out cross-border activities in other countries.

4.1 LINKAGE OF BENEFITS TO INFLATION: DB/DC COMPARISON

A majority of IORPs providing DB schemes provide schemes where benefits are directly[25] linked to inflation. However, the difference between IORPs operating DB and DC schemes is significant: for 55% of participating IORPs offering DB schemes, benefits of all or some DB schemes are directly linked to inflation whereas for only 15% of participating IORPs offering DC schemes the benefits provided in those DC schemes (all or some) are directly linked to inflation (c.f. figure 4.1 and 4.2).

This is related to the characteristics of DC schemes, in particular for pure DC schemes. When there is no defined benefit, it is less likely to have a direct link to inflation of this not-defined benefit into the scheme.

[25] As stated in the qualitative questionnaire, the 'direct link' to inflation is understood as that benefit payments and/or contributions are indexed or determined with regard to inflation.

Figure 4.1: Benefits for DB pension schemes linked to inflation (EEA)

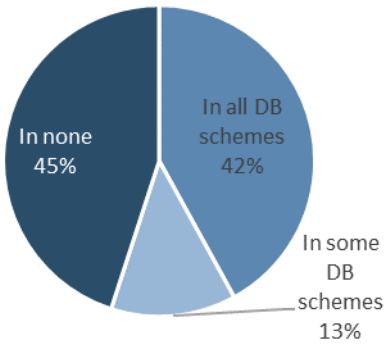
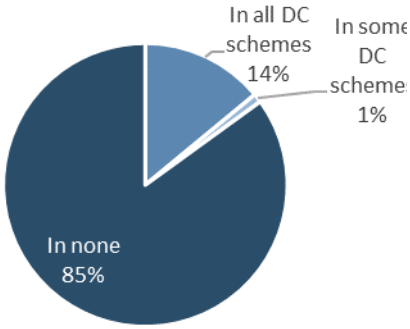


Figure 4.2 : Benefits for DC pension schemes linked to inflation (EEA)

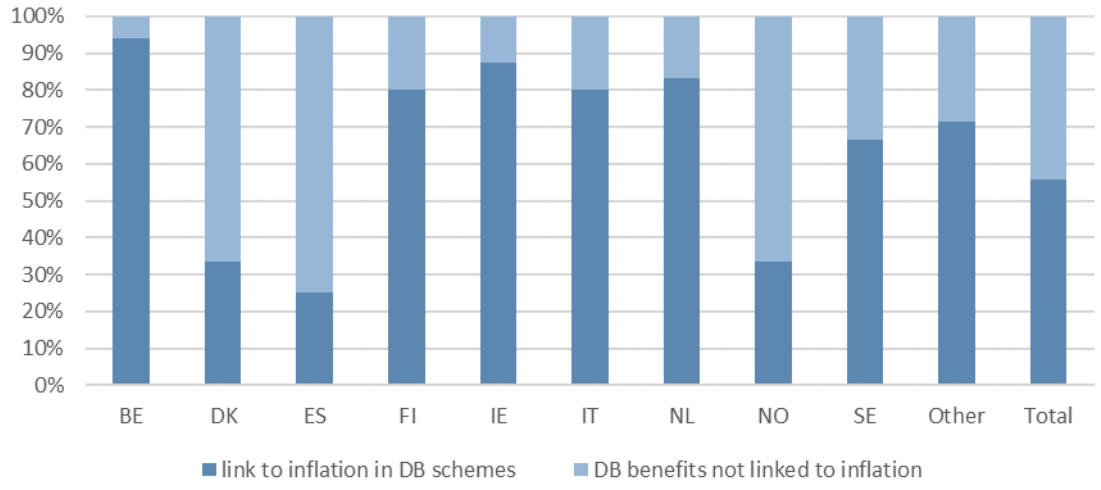


On this matter, national specificities of Member States present a certain heterogeneity:

- DB schemes: On average, 55% of participating IORPs providing DB schemes offer DB benefits linked to inflation. Most Member States where participating IORPs offer DB schemes (9 out of 15 reported individually in figure 4.3) are above this average, and at least 67% of IORPs in those Member States provide DB schemes with benefits directly linked to inflation. In DK, ES and NO there are schemes with benefits directly linked to inflation, but no more than 33% of participating IORPs provide such schemes.
- DC schemes: On average, 15% of participating IORPs providing DC schemes offer DC schemes with benefits linked to inflation. In BE and CY there is a particularly high proportion of DC schemes linked to inflation of 56% and 86%, respectively. In most Member States where participating IORPs offer DC schemes (Figure 4.4), there is no link of benefits to inflation in DC schemes, which is most likely related to their nature (pure DC IORPs)[26].

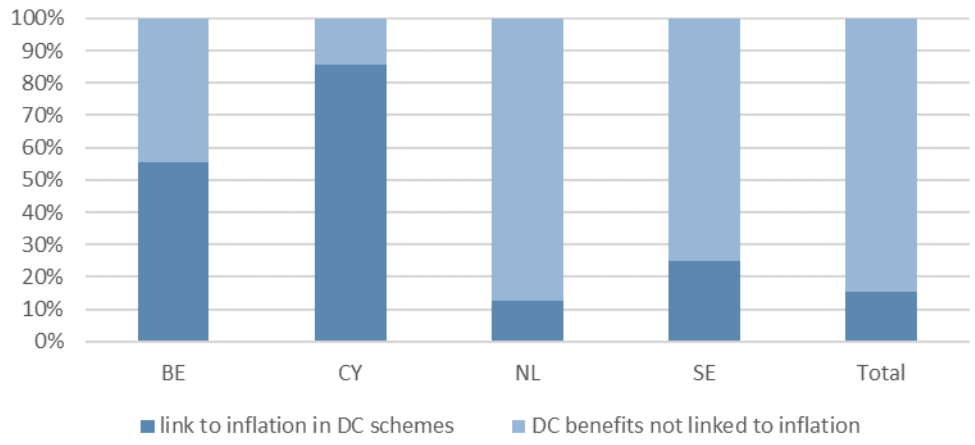
[26] It was not possible for IORPs when answering the question of the questionnaire asking for the link of benefits to inflation to distinguish between past and future accruals in DC schemes, as it was the case for DB schemes. So, not all IORPs providing DC schemes may have considered the future accruals of their DC schemes in their answer to this question, while some IORPs have done so (e.g. because future contributions are indexed) to indicate that there is a link with inflation.

Figure 3.3: DB linkage to inflation - MS comparison (only MS with DB schemes are included)



Note: In order to ensure full confidentiality of individual IORPs, some Member States are included in "Other" category.

Figure 4.4: DC linkage to inflation - MS comparison (only MS with DC schemes are included)



Note: Member States with more than 90% of IORPs reporting DC benefits not linked to inflation have been excluded from the chart, in order to ensure full confidentiality of individual IORPs.

Where (future) benefits of the IORP are directly linked to inflation, the adjustment of benefits is, in most cases, equal to the increase of the consumer price index as established by the relevant national authority, f.i. the national statistics authority. In case of cross border activity this can be a national authority of a member state different from the home member state of the IORP.

There can also be (nominal) caps and floors to the adjustment, or the adjustment can be equal to a function of consumer price index, f.i. a percentage, or linked to salary increases, or a combination of consumer price index and a wage index. There can also be different types of consumer price indices, like f.i. the "health index" in BE[27], which are relevant.

Adjustments can be mandatory by law or f.i. be based on agreements of social partners. In some cases, there are additional conditions implemented, f.i. based on the funding ratio of the IORP or the growth of national GDP

4.2 MECHANISMS OF DIRECT AND INDIRECT LINKAGES OF CONTRIBUTIONS TO INFLATION

4.2.1 DIRECT AND INDIRECT LINKAGES OF CONTRIBUTIONS

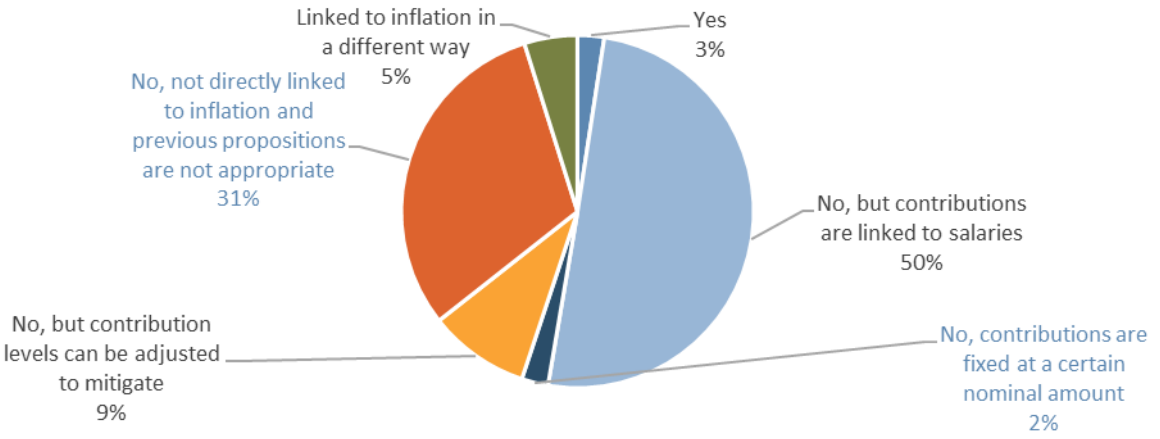
Participants also provided information about linkage of contributions to inflation. When (future) contributions are linked to inflation, it is mostly through indirect links and not often through "direct" links (the latter is the case for only 3% of responses). Where contributions are linked to inflation directly, they are usually linked to consumer price indices as established by the relevant national authority, f.i. the national statistics authority.

Indirect links are for example through salaries which are automatically adjusted to inflation (50% of responses), possibility of adjustment of contribution levels to mitigate the risk of lower retirement income (9%), or other different ways (5%). Direct and indirect linkages sum at 67% of responses. Where contributions are not directly linked to inflation, there is often a link to salaries (which may be affected by inflation).

Conversely, 33% of responses declared having no links between contributions and inflation (In 2% of responses, contributions are of fixed amounts, for 31% of responses there is no link of any of the types mentioned in the paragraph before.). Where there is no direct link of contributions to inflation, in some cases members or IORPs, potentially in consultation with social partners, can adjust contributions to mitigate the effects of inflation (c.f. figure 4.5)

[27] National CPI excluding certain products, such as alcoholic beverages, tobacco and fuel.

Figure 4.5: (Future) contributions to the IORP directly linked to inflation

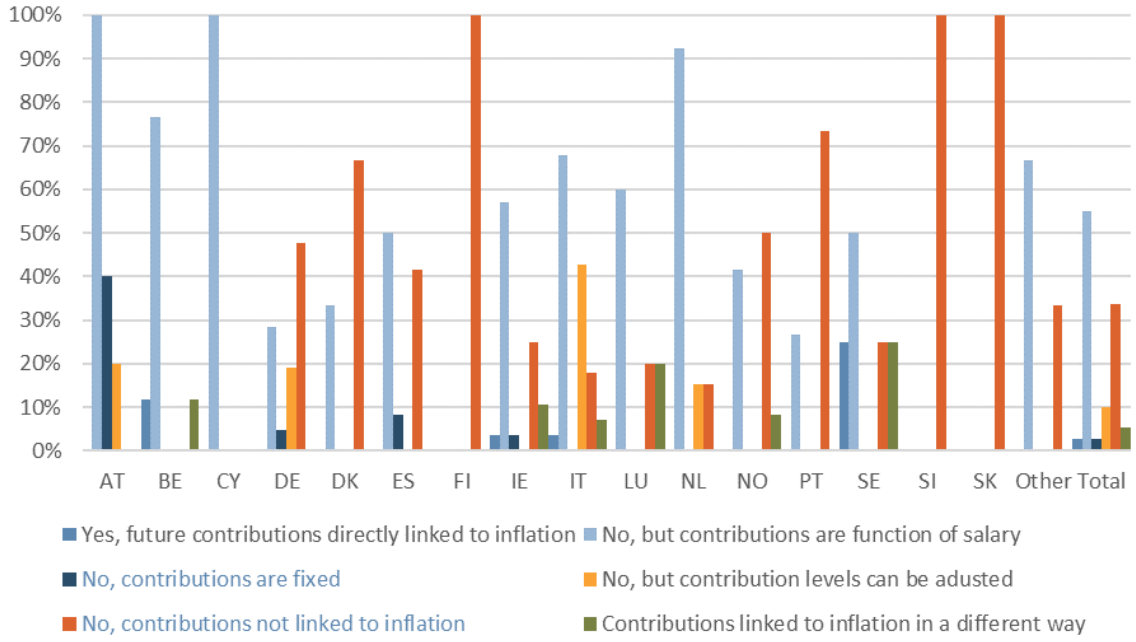


Note: In blue the answers that are considered as "not linked to inflation". It is possible that some IORPs with DC schemes where contributions are determined as a function of the salary selected the option „No, not directly linked to inflation and previous propositions are not appropriate", due to the fact that the corresponding salary is not directly linked to inflation.

This ratio of 67% of direct and indirect links of contributions to inflation versus 33% of no such links can be compared between Member States:

- In some Member States, more than 80 % of responses reported a direct link of contributions to inflation: BE, CY, LU, NL and SE.
- In some Member States, contributions may be adjusted to mitigate the effect of inflation, but without a predefined result like f.i. a complete mitigation of any effects of inflation (indirect link).
- Three Member States (FI, SI, SK) reported that in their IORP sector a link between contributions and inflation does not exist.

Figure 4.6: Are (future) contributions linked to inflation?



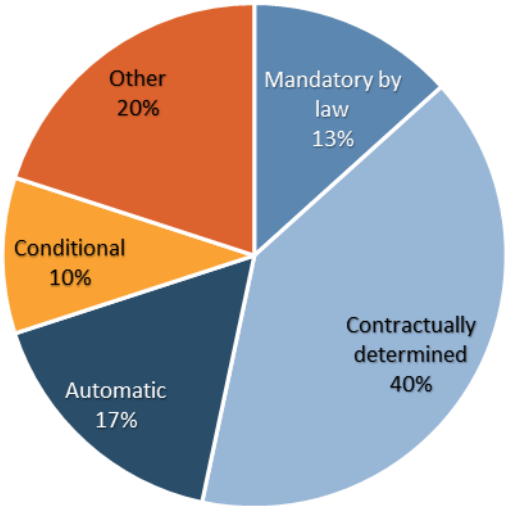
Note: In blue the answers that are considered as "not linked to inflation".

4.3 MECHANISMS OF COMPENSATION

When the (future) benefits are linked to inflation, the compensation can be set by a variety of mechanisms (conditional, automatic, mandatory), yet the most common one is a contractually determined compensation. 40% of responses reported that compensation for the loss of purchasing power due to increased inflation levels is determined contractually, but it may also be automatic (17%), mandatory by law (13%) or only conditional (10%) (see Figure 4.7).

Some IORPs in some Member States pointed out that the direct link to inflation may not apply to all members and schemes, and also be different pre and post retirement.

Figure 4.7: If (future) retirement payments of the IORP are directly linked to inflation and so adjusted to compensate for the loss in purchasing power through inflation, is the compensation:

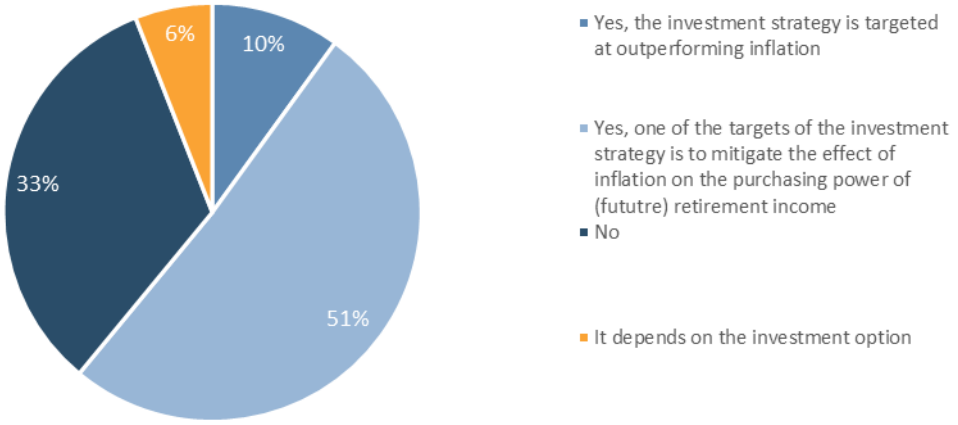


4.4 INVESTMENT STRATEGY AND INSTRUMENTS USED TO GEAR IT TOWARDS INFLATION PROTECTION

4.4.1 GENERAL OBSERVATIONS

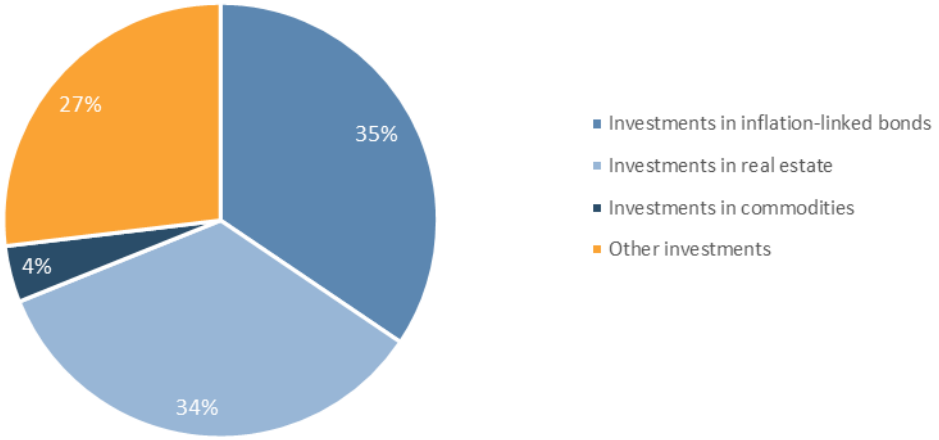
Consideration of inflation protection, such as future income protection, in the investment strategy is important for IORPs participating to the exercise: almost 67% of participants declared that their investment strategy is geared towards inflation protection by either being targeted at outperforming inflation (10%) or at least one of the targets being mitigation of the effect of inflation on purchasing power (51%) or that it depends on the investment option (6%) (Figure 4.8).

Figure 4.8: Is the IORP's investment strategy geared towards inflation protection of (future) retirement income?



As for the instruments used to gear towards inflation protection, they are divided almost equally between investments in inflation-linked bonds (35%) and real estate (34%) and other investments (31%)[28] including commodities (4%).

Figure 4.9: If the IORP's investment strategy is geared towards inflation protection, please specify which instruments are used and how the investment strategy addresses inflation



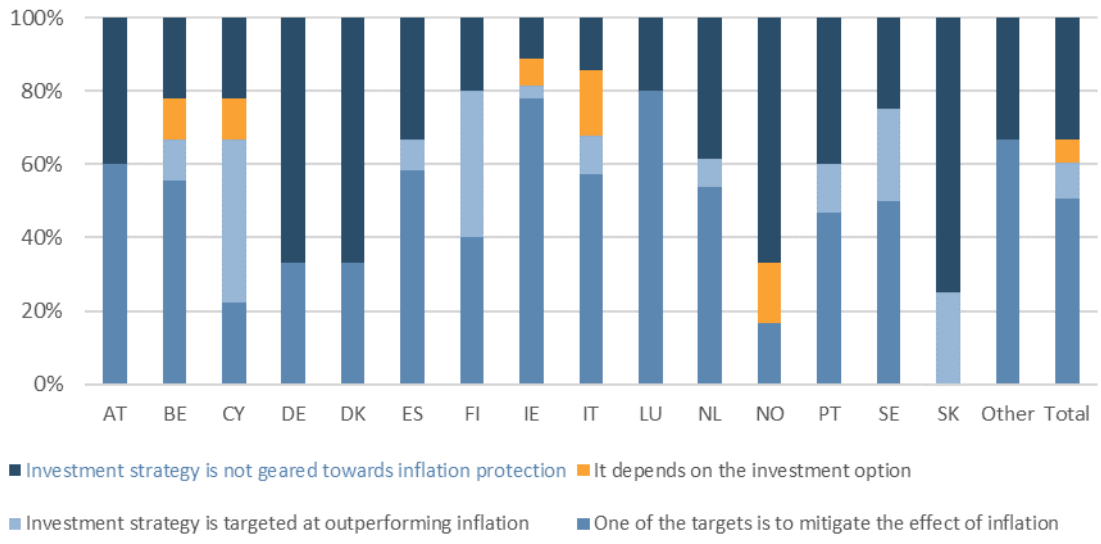
[28] For instance, equities or inflation swaps. Equities have an important part (10% of other investments).

4.4.2 NATIONAL SPECIFICITIES

In the following Member States, it is most common for IORPs to have an investment strategy which is either targeted at outperforming inflation or at least has as one of its targets to mitigate the effects of inflation: BE, CY, ES, FI, IE, IT, LU, SE and SI.

The share of participants which have an investment strategy not aiming at protecting against inflation is particularly high in DE, DK, NO, SK.

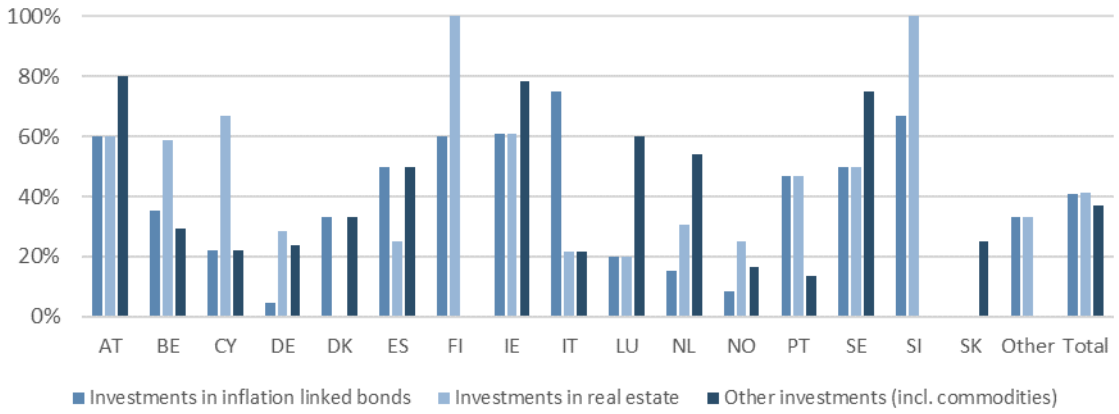
Figure 4.10: Is the IORP's investment strategy geared towards inflation protection of (future) retirement income?



Note: In blue the answers that are considered as "Not geared towards inflation protection". In order to ensure full confidentiality of individual IORPs, some Member States are included in "Other" category.

A particularly high share of IORPs in IT and DK report to invest significantly more than average in inflation-linked bonds, whereas a higher share of IORPs from BE, CY, DE, FI, NO, and SI choose preferably investments in real estate.

Figure 4.11: If the IORP's investment strategy is geared towards inflation protection, please specify which instruments are used and how the investment strategy addresses inflation



4.5 PERSPECTIVE AND ADAPTATION OF INVESTMENT STRATEGY IN A CONTEXT OF INFLATION RISE

Only in IT and SI most participants considered changing their investment strategy as a result of the recent rise in inflation. In three Member States (DK, NL and NO), no IORPs considered doing so. Overall, 32% of the participants have considered changing the investment strategy in the context of the inflation rising, but their motives for this answer are mixed.

Figure 4.12: Have you considered making changes to your investment strategy - with the aim of inflation protection - following the recently rising inflation rates?

Note: In order to ensure full confidentiality of individual IORPs, some Member States are included in "Other" category.

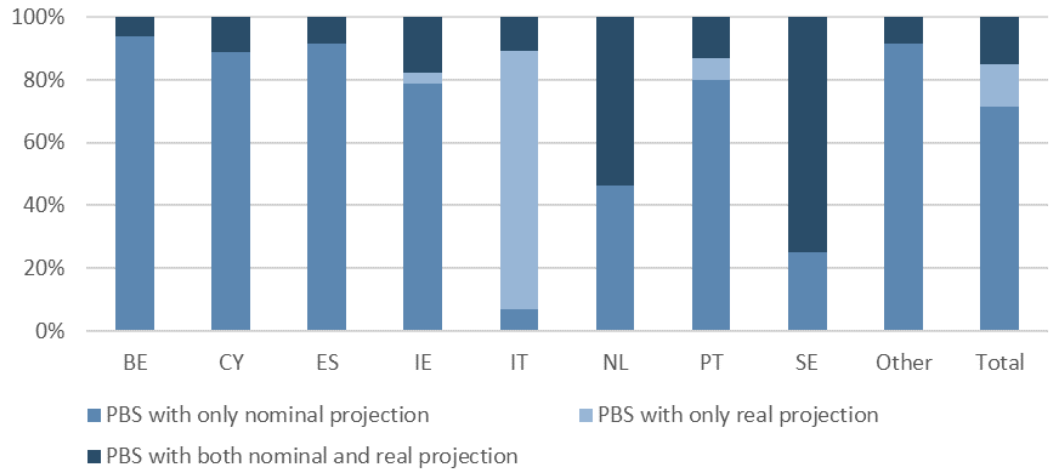
The 32% of IORPs who considered making changes to their investment strategy, with the aim of inflation protection, considered or made typically the following changes: increase of investments in inflation linked bonds, real estate, infrastructure, commodities and equity in general. Several IORPs also mentioned that they would reduce investment in fixed income assets, or reduce duration of such assets in their portfolios.

Some of 68% of IORPs which have not considered changing their investment strategy advocated that they had no need to change the investment strategy, because their investment strategy already considered inflation. Other explanations were that the rise in inflation is expected to be temporary or that it is too early to conclude that it is not, existing investment strategy already considers inflation and/or provides some protection against inflation, liabilities of the IORP are not linked to inflation or consideration of changing investment strategy is still going on.

This shows that there are valid reasons for changing the investment strategy following rising inflation levels as well as for not changing it. The overall conclusion is that the rise of inflation, how and if it integrates into the investment strategy (currently or prospectively) is a matter for reflection for a large majority of respondents.

4.6 PROJECTED NOMINAL OR REAL RETIREMENT INCOME IN PBS

Figure 4.13: Please indicate whether members are provided with projected nominal or real (future) retirement income (or both nominal and real) in their annual pension benefit statement (PBS)



Note: In order to ensure full confidentiality of individual IORPs, some Member States are included in "Other" category.

Despite EIOPA's expectations[29] that the pension benefit statement (PBS) shows the pension projection in real terms, 71% of participants provide this document with a nominal projection only. 15% of participants deliver the PBS with both a nominal and real projection, while 13% of participants provide the PBS with a real projection only. The participants that present a PBS with a real projection only are almost all Italian IORPs (92% of responses).

[29] EIOPA outlines the principles and guidance for the pension benefit statement | Eiopa (europa.eu) "The Pension Benefit Statement should present pension projections in real terms"

5. ANNEXES

5.1 LIST OF PARTICIPATING IORPS PER MEMBER STATE[30]

AUSTRIA

Allianz Pensionskasse Aktiengesellschaft
APK Pensionskasse AG
BONUS Pensionskassen Aktiengesellschaft
Valida Pension AG
VBV-Pensionskasse Aktiengesellschaft

BELGIUM

Amonis OFP
Belfius OFP
BP Pensioenfonds OFP
ELGABEL OFP
ExxonMobil OFP[31]
Fonds de Pension Proximus OFP
J&J Pension Fund OFP
Nokia Bell Pensioenfonds OFP
Pensio B OFP
PENSIOBEL OFP
Pensioenfonds KBC OFP
Pensioenfonds Metaal OFP
Pensions Complémentaires d'ING Belgique OFP
Sanofi European Pension Fund OFP
TotalEnergies Pension Fund Belgium OFP

CYPRUS

Hotel Industry Employees Provident Fund
Multi-Employer Aon Provident Fund
Pancyprian Provident Fund Of Peo Members
Pensions And Grants Fund Of The Personnel Of Cyprus Telecommunications Authority

[30] The names of IORPs belonging to Member States with less than three participating institutions are not disclosed in order to ensure full confidentiality of individual IORPs.

[31] Please note that three separate reports were submitted for ExxonMobil OFP.

Pensions And Grants Fund Of The Personnel Of Electricity Authority Of Cyprus
Provident Fund Of The Cyprus Banks Employees
Tameio Pronoias Tou Taktikou Oromisthiou Kyvernitikou Prosopikou
Tameio Προνοιας Εργατουπαλληλων Μελων Σεκ
Tameio Προνοιας Των Εργατοϋπαλληλων Της Οικοδομικης Βιομηχανιας Και Συναφων Κλαδων Κυπρου

DENMARK

Danmarks Nationalbanks Pensionskasse under afvikling
IBM Pensionsfond (pensionskasse)
TDC Pensionskasse

FINLAND

Finnairin Eläkesäätiö
Keskon Eläkekassa
Nordean eläkesäätiö
OP-Eläkesäätiö
VR Eläkesäätiö

GERMANY

Allianz Pensionskasse AG
Allianz Versorgungskasse VVaG
BASF Pensionskasse VVaG
Bayer-Pensionskasse VVaG
Bosch Pensionsfonds AG
BVV Versicherungsverein des Bankgewerbes a.G.
Daimler Pensionsfonds AG
ERGO Pensionskasse AG
Hamburger Pensionskasse von 1905 VVaG
IBM Deutschland Pensionsfonds AG
Metzler Pensionsfonds AG
Pensionskasse Degussa VVaG
Pensionskasse der Mitarbeiter der Hoechst-Gruppe VVaG
Pro bAV Pensionskasse AG
R+V Pensionsversicherung a.G.
RWE Pensionsfonds AG
Siemens Pensionsfonds AG
Sparkassen Pensionskasse AG
Versorgungsanstalt des Bundes und der Länder - freiwillige Versicherung
Willis Towers Watson Pensionsfonds AG
Zusatzversorgungskasse des Baugewerbes AG

IRELAND

AIB Group Defined Contribution Scheme

AIB Group Irish Pension Scheme
An Post Superannuation Scheme
Analog Devices International Investment Partnership Plan
Aviva Ireland Staff Pension Fund
AXA Ireland Pension Fund
Bank of Ireland Staff Pension Funds
Cadbury Ireland Pension Scheme
Central Bank and Financial Services Authority of Ireland Superannuation Scheme 2008
CIE Pension Scheme for Regular Wages Staff
CIE Superannuation Scheme 1951
Construction Workers' Pension Scheme
Danske Bank (Ireland) Pension Scheme
Eircom Superannuation Fund
ESB Defined Benefit Pension Scheme
Guinness Ireland Group Pension Scheme
IBM Ireland Defined Contribution Plan
Intel Ireland Limited Pension Scheme
Irish Airlines (General Employees) Superannuation Scheme
Irish Airlines (Pilots) Superannuation Scheme
Irish Aviation Authority Pension Plan
Irish Life Staff Benefits Scheme
Mercer DC Master Trust
MSD Ireland CARE Retirement and Death Benefit Scheme
Roadstone Group Pension Scheme
RTE Superannuation Scheme
Ulster Bank Pension Scheme ROI
Zurich Ireland Group Pension Scheme

ITALY

Alifond
Allianz Previdenza
Arca Previdenza
Azimut Previdenza
Azione Di Previdenza
Cometa
Fon.Te.
Fonage
Fonchim
Fondenergia
Fondo Pensione Fideuram
Fondoposte
Fopen
FP A Prestazione Definita Del Gruppo Intesa San Paolo
FP Per Il Personale Cariplo
FP Per Il Personale Della Cassa Di Risparmio Di Firenze

FP Per Il Personale Delle Aziende Del Gruppo Unicredit
Gommaplastica
Il Mio Domani
Laborfonds
Perseo Sirio
Previambiente
Previdenza Cooperativa
Previmoda
Priamo
Secondapensione
Solidarietà Veneto
Telemaco

LUXEMBOURG

BIL Pension Fund - Compartment BIL 1999
Compagnie Luxembourgeoise de Pension - BCEE compartment
Compagnie Luxembourgeoise de Pension - Luxair S.A. compartment
Swiss Life International Pension Fund a.s.b.l.
The Unilever Pension Plan - Defined Benefit Ireland Compartment

NETHERLANDS

ABN Amro Pensioenen
Aegon Cappital B.V.
Allianz Premie Pensioen Instelling
ASR PPI N.V.
BeFrank PPI N.V.
Pensioenfonds Metaal & Techniek
Pensioenfonds Metalektro
PFZW
Stichting Pensioenfonds ABP
Stichting Bedrijfstakpensioenfonds voor de Bouwnijverheid
Stichting Bedrijfstakpensioenfonds voor het Beroepsvervoer over de Weg
Stichting LifeSight
Zwitserleven PPI N.V.

NORWAY

Bærum kommunale pensjonskasse
Bergen kommunale pensjonskasse
ConocoPhillips Norge Pensjonskasse
DNV PENSJONSKASSE
Equinor Pensjon
Kristiansand Kommunale Pensjonskasse
MP Pensjon PK
Nordea Norge Pensjonskasse

Norsk Hydros Pensjonskasse
Pensjonskassen for helseforetakene i hovedstadsområdet
Telenor pensjonskasse
Trondheim kommunale pensjonskasse

PORTUGAL

Fundo de Pensões Aberto BPI Acções
Fundo de Pensões Aberto BPI Segurança
Fundo de Pensões Aberto BPI Valorização
Fundo de Pensões Aberto Horizonte Valorização
Fundo de Pensões Banco BPI
Fundo de Pensões Banco Santander Totta
Fundo de Pensões do Banco de Portugal - Benefício Definido
Fundo de Pensões do Banco de Portugal - Contribuição Definida
Fundo de Pensões do Grupo Banco Comercial Português
Fundo de Pensões do Grupo EDP
Fundo de Pensões do Novo Banco
Fundo de Pensões Galp Energia
Fundo de Pensões NAV-EP Complementos
Fundo de Pensões Pessoal da Caixa Geral de Depósitos
Fundo de Pensões The Navigator Company

SLOVAKIA

DDS Tatra Banky
NN Tatry-Sympatia, d.d.s.
Stabilita, d.d.s.
UNIQA d.d.s.

SLOVENIA

Prva Pokojninska Družba, D.D.
Sava Pokojninska Družba, D.D.
Triglav, Pokojninska Družba, D.D.

SPAIN

Plan Empleados Mapfre
PP Administración General Del Estado
PP Banco De Sabadell
PP De Empleados Del Grupo Bankia
PP De Empleo De Caixabank Sa
PP Empleados De Telefonica
PP Empleados Grupo Endesa
PP Iberdrola
PP Santander Empleados
PP Sistema Empleo Bbva

PPPC Empresas Grupo Nestlé Subplan 1 Y 2
PPPC Empresas Grupo Nestlé Subplan 3

SWEDEN

Alecta Tjänstepension Ömsesidigt
AMF Tjänstepension
Kåpan tjänstepensionsförening
KPA Tjänstepensionsförsäkring AB

5.2 DESCRIPTION OF NACE CODES

NACE industrial sectors	NACE industrial sector description
A01	Crop and animal production, hunting and related service activities
A02-A03	Forestry and logging; Fishing and aquaculture
B	Mining and quarrying
C10-C12	Manufacture of food products, beverages and tobacco products
C13-C18	Manufacture of textiles; Manufacture of wearing apparel; Manufacture of leather and related products; Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of
C19	Manufacture of coke and refined petroleum products
C20	Manufacture of chemicals and chemical products
C21-C22	Manufacture of basic pharmaceutical products and pharmaceutical preparations; Manufacture of rubber and plastic products
C23	Manufacture of other non-metallic mineral products
C24-C25	Manufacture of basic metals; Manufacture of fabricated metal products, except machinery and equipment
C26-C28	Manufacture of computer, electronic and optical products; Manufacture of electrical equipment; Manufacture of machinery and equipment not elsewhere classified
C29-C30	Manufacture of motor vehicles, trailers and semi-trailers; Manufacture of other transport equipment
C31-C33	Manufacture of furniture; Other manufacturing; Repair and installation of machinery and equipment
D	Electricity, gas, steam and air conditioning supply
E36-E39	Water collection, treatment and supply; Sewerage; Waste collection, treatment and disposal activities; Materials recovery; Remediation activities and other waste management services
F	Construction
G45-47	Wholesale and retail trade and repair of motor vehicles and motorcycles; Wholesale trade, except of motor vehicles and motorcycles; Retail trade, except of motor vehicles and motorcycles
H49	Land transport and transport via pipelines
H50	Water transport
H51	Air transport
H52-H53	Warehousing and support activities for transportation; Postal and courier activities
L	Real estate activities
XXX	Other activities

5.3 SCENARIO SHOCKS

SHORT TERM AND LONG TERM INTEREST RATES

Short term interest rates % per annum		
Geographic area	Country	3M
EU	Austria	0.06
EU	Belgium	0.06
EU	Cyprus	0.06
EU	Germany	0.06
EU	Estonia	0.06
EU	Spain	0.06
EU	Finland	0.06
EU	France	0.06
EU	Greece	0.06
EU	Ireland	0.06
EU	Italy	0.06
EU	Lithuania	0.06
EU	Luxembourg	0.06
EU	Latvia	0.06
EU	Malta	0.06
EU	Netherlands	0.06
EU	Portugal	0.06
EU	Slovenia	0.06
EU	Slovakia	0.06
EU	Euro area	0.06
EU	Czech Republic	4.31
EU	Denmark	0.19
EU	Croatia	3.11
EU	Poland	1.48
EU	Sweden	0.56
EU	Hungary	2.78
EU	Romania	1.49
EU	Bulgaria	0.77
Advanced economies	Norway	1.34
Advanced economies	Iceland	2.90
Advanced economies	Switzerland	-0.14
Advanced economies	Liechtenstein	-0.14
Advanced economies	United Kingdom	1.44
Advanced economies	United States	1.68
Advanced economies	China	1.28
Advanced economies	Japan	0.48
World	Rest of the World	4.64

Long term interest rates bps per annum		
Geographic area	Country	10Y
EU	Austria	132
EU	Belgium	138
EU	Cyprus	170
EU	Germany	98
EU	Estonia	147
EU	Spain	177
EU	Finland	129
EU	France	140
EU	Greece	214
EU	Ireland	116
EU	Italy	214
EU	Lithuania	158
EU	Luxembourg	100
EU	Latvia	139
EU	Malta	187
EU	Netherlands	119
EU	Portugal	169
EU	Slovenia	149
EU	Slovakia	132
EU	Euro area	143
EU	Czech Republic	230
EU	Denmark	117
EU	Croatia	172
EU	Poland	267
EU	Sweden	110
EU	Hungary	347
EU	Romania	397
EU	Bulgaria	170
Advanced economies	Norway	284
Advanced economies	Iceland	451
Advanced economies	Switzerland	96
Advanced economies	Liechtenstein	96
Advanced economies	United Kingdom	154
Advanced economies	United States	168
Advanced economies	China	383
Advanced economies	Japan	105
World	Rest of the World	395

SOVEREIGN YIELDS

Sovereign yields bps per annum		
Geographic area	**Country**	**10Y**
EU	**Austria**	132
EU	**Belgium**	138
EU	**Cyprus**	170
EU	**Germany**	98
EU	**Estonia**	147
EU	**Spain**	177
EU	**Finland**	129
EU	**France**	140
EU	**Greece**	214
EU	**Ireland**	116
EU	**Italy**	214
EU	**Lithuania**	158
EU	**Luxembourg**	100
EU	**Latvia**	139
EU	**Malta**	187
EU	**Netherlands**	119
EU	**Portugal**	169
EU	**Slovenia**	149
EU	**Slovakia**	132
EU	**Euro area**	143
EU	**Czech Republic**	230
EU	**Denmark**	117
EU	**Croatia**	172
EU	**Poland**	267
EU	**Sweden**	110
EU	**Hungary**	347
EU	**Romania**	397
EU	**Bulgaria**	170
Advanced economies	**Norway**	284
Advanced economies	**Iceland**	451
Advanced economies	**Switzerland**	96
Advanced economies	**Liechtenstein**	96
Advanced economies	**United Kingdom**	154
Advanced economies	**United States**	168
Advanced economies	**China**	383
Advanced economies	**Japan**	105
World	**Rest of the World**	395

CARBON PRICES

Carbon prices levels in EUR, USD*		
Geographic area	**Country**	
EU	**Austria**	321
EU	**Belgium**	321
EU	**Cyprus**	321
EU	**Germany**	321
EU	**Estonia**	321
EU	**Spain**	321
EU	**Finland**	321
EU	**France**	321
EU	**Greece**	321
EU	**Ireland**	321
EU	**Italy**	321
EU	**Lithuania**	321
EU	**Luxembourg**	321
EU	**Latvia**	321
EU	**Malta**	321
EU	**Netherlands**	321
EU	**Portugal**	321
EU	**Slovenia**	321
EU	**Slovakia**	321
EU	**Euro area**	321
EU	**Czech Republic**	321
EU	**Denmark**	321
EU	**Croatia**	321
EU	**Poland**	321
EU	**Sweden**	321
EU	**Hungary**	321
EU	**Romania**	321
EU	**Bulgaria**	321
Advanced economies	**Norway**	321
Advanced economies	**Iceland**	321
Advanced economies	**Switzerland**	321
Advanced economies	**Liechtenstein**	321
Advanced economies	**United Kingdom**	321
Advanced economies	**United States**	439
Advanced economies	**China**	201
Advanced economies	**Japan**	473
World	**Rest of the World**	192

* Carbon prices reported in EUR for EU27, EFTA countries and UK, USD for other georgaphies

RESIDENTIAL AND COMMERCIAL REAL ESTATE PRICES

Residential Real Estate prices y-o-y % change		
Geographic area	Country	
EU	Austria	-0.6
EU	Belgium	-0.6
EU	Cyprus	0.8
EU	Germany	1.5
EU	Estonia	0.8
EU	Spain	-2.0
EU	Finland	-1.1
EU	France	-0.5
EU	Greece	3.7
EU	Ireland	-0.5
EU	Italy	0.7
EU	Lithuania	0.8
EU	Luxembourg	0.8
EU	Latvia	0.8
EU	Malta	0.8
EU	Netherlands	0.1
EU	Portugal	-1.4
EU	Slovenia	0.8
EU	Slovakia	0.8
EU	Euro area	0.8
EU	Czech Republic	0.8
EU	Denmark	-1.3
EU	Croatia	0.8
EU	Poland	0.8
EU	Sweden	0.8
EU	Hungary	0.8
EU	Romania	0.8
EU	Bulgaria	0.8
Advanced economies	Norway	0.3
Advanced economies	Iceland	0.3
Advanced economies	Switzerland	2.9
Advanced economies	Liechtenstein	2.9
Advanced economies	United Kingdom	0.5
Advanced economies	United States	2.8
Advanced economies	China	7.0
Advanced economies	Japan	1.1
World	Rest of the World	1.0

Commercial Real Estate prices y-o-y % change		
Geographic area	Country	
EU	Austria	-0.3
EU	Belgium	-0.3
EU	Cyprus	0.8
EU	Germany	0.7
EU	Estonia	0.4
EU	Spain	-0.7
EU	Finland	-0.6
EU	France	-0.3
EU	Greece	3.1
EU	Ireland	-0.6
EU	Italy	0.4
EU	Lithuania	0.4
EU	Luxembourg	0.4
EU	Latvia	0.4
EU	Malta	0.4
EU	Netherlands	0.1
EU	Portugal	-0.8
EU	Slovenia	0.4
EU	Slovakia	0.4
EU	Euro area	0.4
EU	Czech Republic	0.3
EU	Denmark	-1.4
EU	Croatia	0.4
EU	Poland	0.4
EU	Sweden	0.4
EU	Hungary	0.5
EU	Romania	0.4
EU	Bulgaria	0.4
Advanced economies	Norway	0.2
Advanced economies	Iceland	0.2
Advanced economies	Switzerland	1.6
Advanced economies	Liechtenstein	1.6
Advanced economies	United Kingdom	0.4
Advanced economies	United States	1.5
Advanced economies	China	3.8
Advanced economies	Japan	0.6
World	Rest of the World	0.5

COMMODITY PRICES

Commodities y-o-y % change				
Geographic area	**Country**	**Oil**	**Gas**	**Coal**
EU	**Austria**	275	239	1294
EU	**Belgium**	275	239	1294
EU	**Cyprus**	275	239	1294
EU	**Germany**	275	239	1294
EU	**Estonia**	275	239	1294
EU	**Spain**	275	239	1294
EU	**Finland**	275	239	1294
EU	**France**	275	239	1294
EU	**Greece**	275	239	1294
EU	**Ireland**	275	239	1294
EU	**Italy**	275	239	1294
EU	**Lithuania**	275	239	1294
EU	**Luxembourg**	275	239	1294
EU	**Latvia**	275	239	1294
EU	**Malta**	275	239	1294
EU	**Netherlands**	275	239	1294
EU	**Portugal**	275	239	1294
EU	**Slovenia**	275	239	1294
EU	**Slovakia**	275	239	1294
EU	**Euro area**	275	239	1294
EU	**Czech Republic**	275	239	1294
EU	**Denmark**	275	239	1294
EU	**Croatia**	275	239	1294
EU	**Poland**	275	239	1294
EU	**Sweden**	275	239	1294
EU	**Hungary**	275	239	1294
EU	**Romania**	275	239	1294
EU	**Bulgaria**	275	239	1294
Advanced economies	**Norway**	275	239	1294
Advanced economies	**Iceland**	275	239	1294
Advanced economies	**Switzerland**	275	239	1294
Advanced economies	**Liechtenstein**	275	239	1294
Advanced economies	**United Kingdom**	275	239	1294
Advanced economies	**United States**	271	235	1271
Advanced economies	**China**	128	107	580
Advanced economies	**Japan**	291	253	1368
World	**Rest of the World**	120	100	542

EQUITY PRICES AND CORPORATE CREDIT SPREADS BY NACE CODE SECTOR

Equity prices y-o-y % change	
NACE Sector code	
A01	-11.5
A02-A03	-11.8
B05-B09	-37.8
C10-C12	-12.3
C13-C18	-10.9
C19	-32.2
C20	-12.7
C21-C22	-11.1
C23	-20.4
C24-C25	-15.3
C26-C28	-11.1
C29-C30	-11.2
C31-C33	-9.8
D35	-23.0
E36-E39	-13.1
F41-F43	-11.5
G45-G47	-13.4
H49	-22.6
H50	-12.7
H51	-14.2
H52-H53	-10.8
L68	-12.0
Other	-14.3

Corporate credit spreads bps change	
NACE Sector code	
A01	143
A02-A03	146
B05-B09	467
C10-C12	152
C13-C18	134
C19	397
C20	157
C21-C22	137
C23	252
C24-C25	189
C26-C28	138
C29-C30	139
C31-C33	121
D35	284
E36-E39	162
F41-F43	143
G45-G47	165
H49	279
H50	157
H51	176
H52-H53	133
L68	148
Other	177

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