EIOPA FINANCIAL STABILITY REPORT

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European Insurance and
Occupational Pensions Authority

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FOREWORD BY THE CHAIRPERSON

Geopolitical tensions have reached an intensity not seen in years. We are now facing two significant conflicts—one in Ukraine and another in the Middle East—both causing immense suffering and hampering the global economy. Geopolitical dynamics, including recent / upcoming elections in major economies, are raising concerns about the willingness to cooperate between states and the concept of globalization is more and more questioned. While market reactions have been limited so far and the inflation seems to converge to policy rates, as we look ahead, the global economic outlook is uncertain. In the euro area, economic activity stalled in the fourth quarter of 2023 and is expected to remain subdued into early 2024 due to tight financing conditions and cautious consumer spending. The outcome of the recent EU elections and their reflection at political level on Member States have reintroduced the risk of fragmentation in the sovereign debt back on the radar. However, lower inflation, though challenged by price-wage spiral, could bolster real incomes, and potentially boost consumer and investment confidence in less restrictive economic conditions. On a global scale, average GDP forecasts show a slight improvement, offering a glimmer of hope amidst these challenges.

As our aim is to foster financial stability and confidence in the insurance and pensions markets, EIOPA is closely monitoring the relevant developments and threats. The insurance and pensions sectors play a key societal role in our economy, as they provide coverage against various risks in life - from natural catastrophes to old age poverty - thus giving citizens peace of mind. The significance of these sectors is evident on multiple levels. Firstly, the sheer volume of assets available for investment is substantial: pensions manage over EUR 2.6 trillion in assets, while the insurance sector oversees around EUR 9.6 trillion, making Europe one of the largest markets globally. Secondly, these assets can be invested long-term to support the green transition. Additionally, the insurance sector plays a vital stewardship role in managing societal risks. Most importantly, insurance and pensions provide essential protection and peace of mind to consumers. This underscores the importance of trust, robustness, and stability in these sectors, while also maintaining competitiveness. EIOPA fully supports the need to enhance Europe’s open strategic autonomy by boosting its resilience, global

competitiveness, and leadership. A comprehensive and consistent regulatory and supervisory framework is crucial in achieving these goals.

In this context, EIOPA has identified several strategic priorities that are essential for making further progress. Our overarching goal is to enhance consumer protection and strengthen citizens' trust in the European Single Market. First, addressing pension gaps to ensure that everyone has access to adequate retirement savings. Second, tackling insurance protection gaps so that all individuals and businesses have the necessary coverage for damages. Third, enhancing EU insurance supervision to maintain high standards and protection in the single market. Fourth, improving data quality to ensure that decisions are based on accurate and reliable information. Lastly, strengthening consumer protection to safeguard the interests of all consumers in the market. By focusing on these areas, we aim to build a stronger, more reliable, and trustworthy European Single Market for all.

Further, in 2024 EIOPA focuses its financial stability activities on stress test and scenario analyses. In parallel with the Fit-for-55 cross financial sector climate scenario analysis, EIOPA is running its regular EU-wide insurance stress test exercise. It will test the resilience of the capital and liquidity positions for European insurers in an adverse economic scenario with higher yields and inflation. Transparency is a building block of trust and trust is a needed element to attract capital and increase competitiveness of a sector. That is why EIOPA will pursue, the publication of individual results counting on the cooperation of the industry.

The complex and volatile environment presents significant challenges for those working to mitigate risks to financial stability in the European Union. I believe two elements can assist us in addressing these challenges.

Firstly, it is vital that we continuously monitor new and emerging risks, never taking anything for granted. For instance, digitalization and cyber risks, which were at a medium level in 2023, are expected to increase according to forward-looking assessments. Supervisors view these risks as increasingly significant, with cybersecurity and hybrid geopolitical conflicts becoming primary concerns. EIOPA is committed to driving digital transformation across the insurance and pensions sectors to benefit consumers, the market, and supervisory communities. Another case is the risks associated with the greater allocation towards alternative assets that exhibit higher illiquidity and more complex

structures. Among these alternative assets, the real estate exposure stands out as a prominent allocation and with the falling prices for real estate in 2023, several concerns on financial stability implications for the near-term prospects were raised. Finally, there are geopolitical tensions which might break out at any moment in unexpected areas.

Secondly, we must adopt a comprehensive, holistic approach to assessing risks to financial stability. An example is protection gaps. Climate change could render certain risks uninsurable in a market where already 75% of the risk is not insured. In 2023, the trend of high natural disaster losses that continued due to increased event frequency and economic factors. This issue extends beyond consumer protection, potentially impacting the broader economy and financial stability if uninsured losses from natural catastrophes hinder reconstruction efforts. Another example is the issue of pension gaps. Savings products with exorbitant fees not only pose a consumer protection concern but also lead to lower wealth for future retirees. This, in turn, increases the risk of conflicts over resource distribution, contributing to societal and political instability.

To date, the insurance and pension funds sectors in the EU have demonstrated considerable robustness despite the times of change and times of transformation that we have witnessed in the recent years. Given their key role as society's risk managers and significant long-term investors, they are well-positioned to tackle sustainability-related challenges and facilitate the transition to a more sustainable and resilient economy. While we cannot predict the future with certainty, you can rest assured that we will relentlessly pursue our mission to maintain a strong insurance and pension industry for the benefit of all European citizens.

Petra Hielkema

EXECUTIVE SUMMARY

Geopolitical tensions may be exacerbating inflation and market risks, despite initial market reactions being limited. Concurrently, upcoming elections in major economies add further uncertainty to the global economic outlook. Economic activity slightly improved in the euro area in the first quarter of 2024 however is expected to remain subdued due to tight financing conditions and cautious consumer spending. However, lower inflation could bolster real incomes and potentially boost consumer and investment confidence in less restrictive economic conditions. Average GDP forecasts globally show a slight improvement.

In financial markets, swap rates remained high amid volatility, with interest rates peaking in Q3 2023 and expectations of rate cuts emerging thereafter, though the extent and timing of these cuts remain uncertain. Implied real interest rates stayed positive in the medium term, despite nominal interest rates and market-based inflation expectations slowing down. Sovereign bond yields decreased overall, while spreads narrowed unevenly, reflecting varying macroeconomic conditions. Risks persist due to high deficits, rising funding costs, and subdued expected growth, particularly given the uncertain impact of the current economic regime characterized by high interest rates and target inflation. Equity markets performed strongly, supported by robust earnings and slowly declining interest rates. However, the relationship between profit margins and wages is crucial, as it could affect inflationary uncertainty. Additionally, the concentrated performance in sectors like tech in the US was notable.

The trend of high natural disaster losses continued in 2023, with insured losses estimated at USD 95-108 bn. (≈ EUR 86.0-97.7 bn.) worldwide and overall losses ranging from USD 250-280 bn. (≈ EUR 226.3-253.4 bn.). Increased event frequency and economic factors have driven expected annual catastrophe losses upwards. Europe experienced severe thunderstorms and flooding, with insured losses reaching USD 8 bn. (≈ EUR 7.2 bn.) for windstorms. Extreme temperatures, attributed to climate change, exacerbated weather events, with hailstorms setting new benchmarks for insured losses in Italy and France. EIOPA aims to contribute to climate risk understanding and awareness through catastrophe modelling tools and data provision, emphasizing the importance of adaptation and prevention measures in addressing the climate insurance protection gap. Additionally, appropriate assessment, risk management, and treatment of sustainability risks are crucial for the viability of (re)insurers, addressed in the Solvency II review.

Digitalization and cyber risks were at a medium level in 2023, but forward-looking assessments indicate an increase. These risks are evaluated by supervisors as increasingly significant, with cybersecurity and hybrid geopolitical conflict emerging as primary concerns. EIOPA is dedicated to facilitating digital transformation across the insurance and pensions sectors, aiming to benefit consumers, the market, and supervisory communities. This commitment is supported through initiatives like Digital Operational Resilience (DORA), the Artificial Intelligence Act, and the European Single Access Point (ESAP), which aim to enhance operational resilience and cybersecurity.

EIOPA provided advice in several important policy areas, actively engaging in initiatives to advance regulatory frameworks and address emerging challenges in the insurance and pensions sectors. This includes providing technical advice for the review of the IORP directive, hosting roundtables on defined contribution pensions, and progressing towards sustainable finance implementation. EIOPA is also consulting on recalibrating natural catastrophe risks under Solvency II to reflect climate change impacts and exploring the treatment of biodiversity risks. Additionally, it is preparing for the implementation of the revised Solvency II Directive and providing technical input as needed.

The European insurance sector maintained solid capitalization in 2023, with improving median SCR ratios for life insurers and composite undertakings. Non-life insurers also showed solid SCR ratios. Profitability increased due to higher returns from investment portfolios amidst the current macroeconomic environment with higher interest rates. Gross written premiums continued to grow for the non-life sector, driven by rising claims costs and inflation adjustments. Life business saw a more moderate increase. Unit-linked business share dropped, reflecting the decreasing trend since 2022. Underwriting profitability showed mixed trends across lines of business, with slight deteriorations in some areas like assistance and medical expenses. Liquidity remained stable overall, but some insurers experienced increased lapse rates potentially due to higher interest rates.

The European reinsurance sector has performed well during 2023 on most indicators while likely benefiting from hardening market conditions. The reinsurers grew their written premiums, improved underwriting performance, and their solvency positions continued to be robust in 2023. Furthermore, 2023 witnessed the issuance of the first cyber cat bonds, with new issuances accelerating towards the end of the year and bringing the total capacity of USD 415 bn. (≈ EUR 375.6 bn.) to the market. Looking forward, cyber reinsurance is expected to play a key role in the growth of cyber insurance.

The European occupational pensions sector remains resilient, though sensitive to monetary policy shifts. In response to inflation movements and banking sector turmoil in the beginning of 2023, pension funds prioritize liquidity to hedge interest rate derivative mismatches. Positive market developments led to growth in fixed income assets and equities on pension balance sheets. On the other side of the balance sheet, the liabilities of IORPs also increased depending to a substantial extent on the characteristics of the pension scheme: defined benefit (DB), or defined contribution (DC) and the valuation method used. Concerns persist about pension savings gaps, particularly among women. EIOPA continues to advocate for national pension tracking systems and proposes enhanced data analysis on pension fund investments to address emerging risks and data gaps.

Based on a survey among National Competent Authorities, macroeconomic and market risk remained the main concerns for both insurers and IORPs despite a slight improvement in the materiality of the risks. Digitalization and cyber risks were ranked third in terms of their materiality for insurers and are expected to remain a key risk and to further increase in the future.

Insurers' portfolios remained heavily skewed towards fixed-income assets, followed by equities. Government and corporate bonds collectively represented more than half of the total investment portfolio at the end of 2023, exposing insurers to interest rate and credit risks, alongside equities. In 2023, trading activities in the fixed income segment stabilized, but there was an apparent increase

in equity share, likely driven by valuation effects. This shift contrasts with insurers' recent trend of selling equities. The asset allocations of IORPs differ from those of insurers, but also between DB and DC schemes. On aggregate, IORPs have lower exposures to fixed income assets and higher exposures to equity and property when compared to insurers. The predominant investment class for EEA IORPs are collective investments which represented more than a third of their total assets at the end of 2023.

The insurance sector maintains a significant connection with the banking sector through its investment portfolio. As of the end of 2023, investments in banks accounted for 13% of total investments at the EEA level, consistent with figures from 2022. Covered bonds no longer represent the largest portion of bank bonds held by insurers as they are now second to senior unsecured bonds, which accounted for approximately 45.3% of bank bonds at the end of 2023.

After a prolonged period of increasing real estate prices, there are clear indications of falling prices for real estate in 2023 with several risk factors for the near-term prospects. Both European insurers and IORPs allocate around 10% of their investments to real estate. The valuation of these assets poses a significant challenge, as it may not always provide an accurate reflection of the true worth of the assets. The high degree of illiquidity associated with real estate investments contributes to uncertainty related to valuation. As the recent developments in the real estate sector have been identified as vulnerability from a financial stability, supervisors are closely monitoring the developments in this area for insurers and IORPs sectors.

In response to the low interest rate environment in the past, many life insurers sought higher-yielding investments, leading to a greater allocation towards assets exhibiting higher illiquidity and more complex structures. At the end of 2023, insurers had a significant allocation to alternative assets, comprising 16% of their investments. Among these alternative assets, the real estate exposure stands out as a prominent allocation, particularly though investments funds, mortgages, and property. The proliferation of alternative assets among insurers has raised potential financial stability concerns, primarily stemming from lower credit quality and higher leverage inherent in such investments, which could exacerbate returns during downturns.

PART I

Financial Stability Report

1 KEY DEVELOPMENTS AND RISKS

Geopolitical tensions could be amplifying inflation and market risks despite limited immediate market reactions. Concurrently, upcoming elections across major economies introduce additional uncertainty to the global economic outlook. In the euro area, economic activity slightly improved in the beginning of 2024 compared to end 2023, however it is anticipated to remain subdued in the short term due to still tight financing conditions and cautious consumer spending. However, lower inflation may strengthen real incomes and, with less restrictive economic conditions, could potentially boost consumer and investment confidence. Globally, average GDP forecasts indicate a slight improvement.

In the financial markets, swap rates remained elevated amid volatility, with interest rates peaking in Q3 2023 and expectations of rate cuts emerging thereafter, though the extent and timing of these cuts remain uncertain. Implied real interest rates stayed positive from a medium-term perspective, despite nominal interest rates and market-based inflation expectations slowing down. Sovereign bond yields have decreased across the board, while spreads have narrowed, albeit not uniformly, reflecting varying macroeconomic conditions. Risks persist due to high deficits, rising funding costs, and subdued expected growth, particularly given the uncertain impact of the current economic regime characterized by high interest rates and target inflation. Equity markets had a strong performance, supported by robust earnings and the overall declining interest rates. However, the relationship between profit margins and wages is crucial, as it could impact the inflationary uncertainty. Additionally, the concentrated performance in sectors like tech in the US was notable.

The trend of high natural disaster losses continued. In 2023, natural catastrophes led to high insured losses estimated at USD 95-108 bn. (≈ EUR 86.0-97.7 bn.) worldwide, with overall losses ranging from USD 250-280 bn. (≈ EUR 226.3 -253.4 bn.). Increased event frequency and economic factors have driven expected annual catastrophe losses upwards. Europe experienced severe thunderstorms and flooding, with insured losses reaching USD 8 bn. (≈ EUR 7.2 bn.) for windstorms. Extreme temperatures, attributed to climate change, exacerbated weather events, with hailstorms setting new benchmarks for insured losses in Italy and France. EIOPA aims to contribute to climate risk understanding and awareness through catastrophe modelling tools and data provision, emphasizing the importance of adaptation and prevention measures in addressing the climate insurance protection gap. In addition, appropriate assessment, risk management and treatment of sustainability risks are key in ensuring (re)insurers' viability going forward and addressed in the Solvency II review.

Digitalisation and cyber risks were at a medium level in 2023, but forward-looking assessments point to an increase. The significance of these risks for insurance, as evaluated by supervisors, experienced a slight increase in the fourth quarter of 2023, and is projected to persistently rise, with cyber security and hybrid geopolitical conflict emerging as a primary concern. EIOPA is dedicated to facilitating digital transformation across the insurance and pensions sectors, aiming to benefit consumers, the market, and supervisory communities. This commitment is supported through

initiatives like Digital Operational Resilience (DORA), the Artificial Intelligence Act, and the European Single Access Point (ESAP), which aim to enhance operational resilience and cybersecurity.

EIOPA prepared advice in several important policy areas. EIOPA is actively engaged in various initiatives to advance regulatory frameworks and address emerging challenges in the insurance and pensions sectors. This includes providing technical advice for the review of the IORP directive, hosting roundtables on defined contribution pensions, and progressing towards sustainable finance implementation. EIOPA is also consulting on recalibrating natural catastrophe risks under Solvency II to reflect climate change impacts and exploring the treatment of biodiversity risks. Additionally, it is preparing for the implementation of the revised Solvency II Directive and providing technical input as needed.

1.1 MACRO AND MARKET RISKS

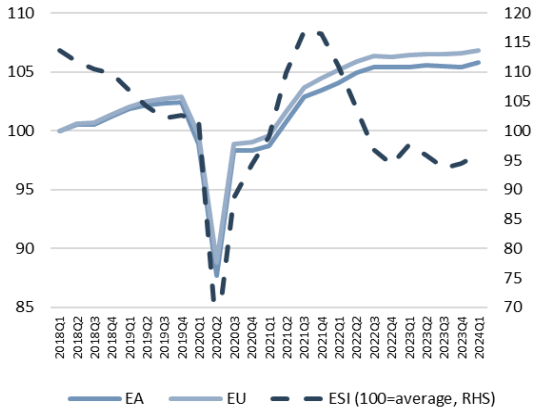
Increased uncertainty amid geopolitical tensions. The risk of a further broadening and deepening of the conflict in the Middle East or the increase in shipping costs in the wake of the Red Sea trade disruptions reinforce inflation risk and, eventually, market risk. For the time being the tensions have not resulted in significant market reactions, although they put initially some upside pressure on energy prices. In addition, over the next two years, close to three billion people will head to the electoral polls across several economies, including the EU Parliament and some EU countries, the United States, India, the United Kingdom, Mexico, and Indonesia. The process to or the aftermath of these elections creates additional uncertainty for the global economic outlook.

Economic activity came out from stagnation in the first quarter of 2024 although still expected to remain subdued in the short-term[1] (Figure 1.1). The currently tight monetary conditions and aversion in consumer spending put a constraint on the upside. However, lower inflation will effectively lead to higher real incomes, and, if accompanied by less restrictive economic conditions, could improve consumer and investment confidence. From a global perspective, average GDP forecasts have shown a slight improvement.

Low unemployment (Figure 1.2) and strong nominal wage growth allow for a catch-up of real wages, but also could contribute to the risk of reinforcing inflationary pressures. Compensation per employee grows robustly, but its growth showed some signs of deceleration towards the end of 2023 (around 4.7% annual increase as of 2023 year-end, compared to around 5.1% in Q3 2023). Higher wages support consumption capability, and eventually growth. This positive transmission, however, can be constrained due to the higher opportunity cost of consumption (e.g., interest rates offered by banking/ investment products attract money). Crucially, from an inflation perspective, the weaker wage growth towards the end of 2023 reduces the risk of second round price pressures. Overall, the net effect of the wage-price dynamics depends on the cushion that profit margins can provide, namely absorbing (at least) part of the higher wages.

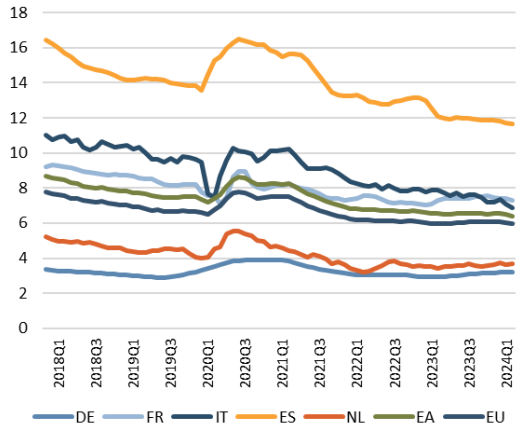
[1] Spring 2024 Economic Forecast.

Figure 1.1: Real GDP growth (2018 Q1=100) and economic sentiment.



Source: ECB, Eurostat, and European Commission. Last observation: Q1 2024.

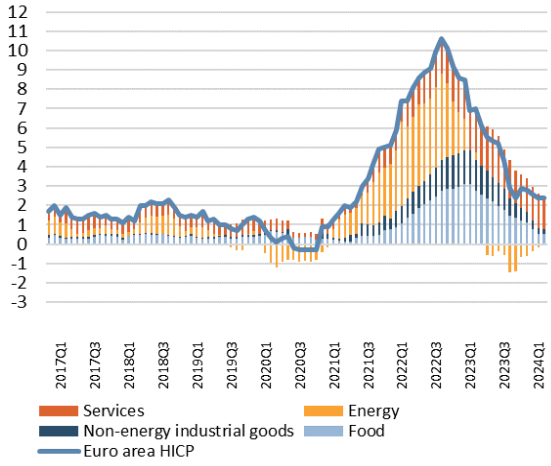
Figure 1.2: Unemployment rates (% of active population).



Source: ECB Last observation: April 2024.

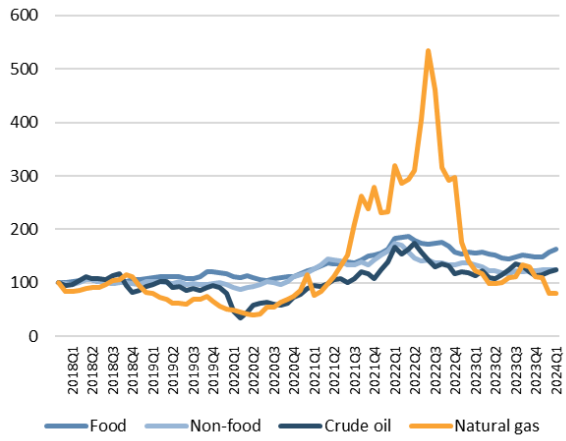
Headline HICP inflation remained at 2.4% as of April 2024 and is projected to decline during the next two years.[2] The decline was mainly facilitated by lower energy prices and weaker pressures on the non-energy industrial goods (and food). Services inflation is stickier, remaining above target. Commodity prices have declined from their peak, but recent geopolitical risks could result in upwards pressures. Yet, looking at inflation on a forward-looking basis, market-based inflation expectations have subsided somewhat from around 2.5% in the EIOPA FSR of June 2023, to almost 2.2% for the spot and just below 2.3% for the 5Y5Y forward.

Figure 1.3: HICP main components (annual % changes).



Source: ECB; Last observation: April 2024.

Figure 1.4: Commodity prices (Jan 2018=100).

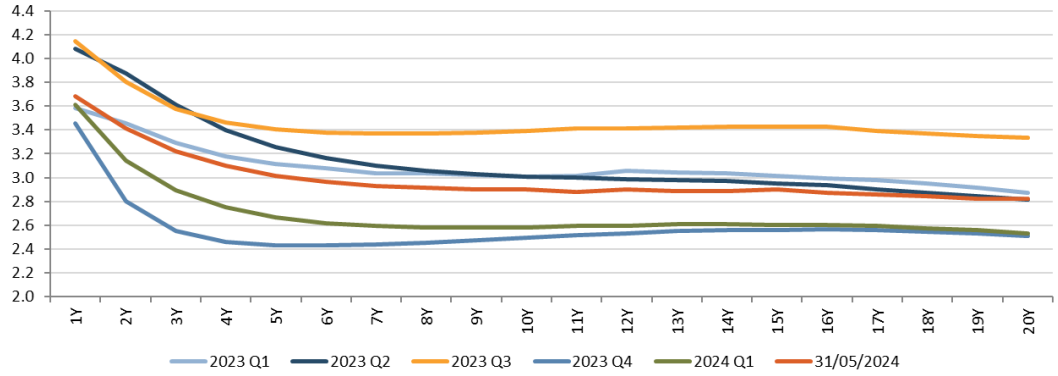


Source: ECB and World Bank. Last observation: Jan 2024. Note: Food and non-food are commodity price indices compiled by the ECB. Crude oil price displayed is Brent. Natural gas prices displayed is an index covering numerous locations provided by World Bank.

[2] Spring 2024 Economic Forecast: HICP inflation is projected to continue declining over the forecast horizon. In the EU, it is expected to decrease from 6.4% in 2023 to 2.7% in 2024 and 2.2% in 2025. In the euro area, it is expected to fall from 5.4% in 2023 to 2.5% in 2024 and 2.1% in 2025.

Swap rates keep high, although amid volatility. Interest rates have peaked at the third quarter of 2023, with expectations of rate cuts more evident in the front end of the curve thereafter. The extent and the timing of these cuts remain uncertain, moving the curve lower (year-end) or higher (31/05/2024). In any case, implied real interest rates keep positive from a medium term (5Y) perspective (real rate proxied as the difference between nominal interest rates and market based expected inflation). This means that inflation expectations are moving lower, given the current state of the monetary policy, and that robust real returns/growth are anticipated. Implied real interest rates have been positive almost for the last two years, after a decade of negative real rates, without resulting (for the time being) in the significant economic impact as was initially expected. Nevertheless, the emerging economic environment with high interest rates for longer and inflation at target constitutes a new regime, and its associated repercussions might take time to show up.

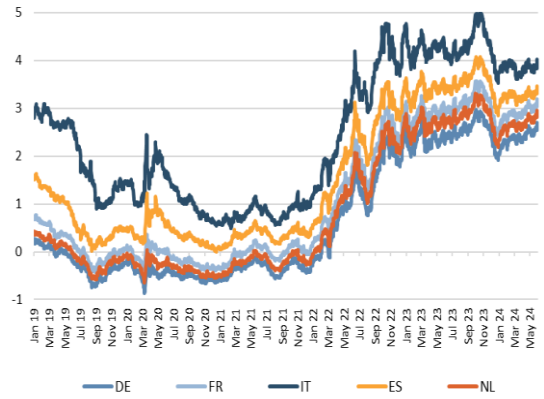
Figure 1.5: Swap curve, in %.



Source: Refinitiv. Last observation: 31/05/2024.

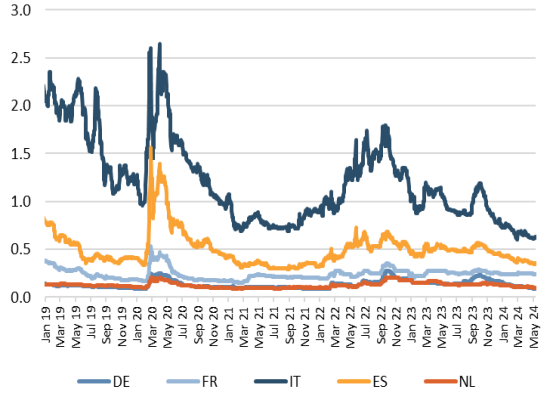
Sovereign bond yields declined across the board compared to 2023, while spreads narrowed. The dynamic of lower government bond yields can be partially attributed to recent interest rate movement. On the other hand, spreads have also declined, although not uniformly, which reflects the heterogeneity of the macroeconomic conditions across countries within the current economic context. The schedule of ECB reinvestments in its bonds' portfolio can also have an impact on the spreads. Nevertheless, the combination of high deficits and rising funding costs, as well as still relatively subdued expected growth, suggests that risks remain elevated from a forward-looking perspective.

Figure 1.6: 10y government bond yields (in %).



Source: Refinitiv. Last observation: 31/05/2024.

Figure 1.7: Sovereign Credit Default Swaps (5Y) (in %).



Source: Refinitiv. Last observation: 31/05/2024.

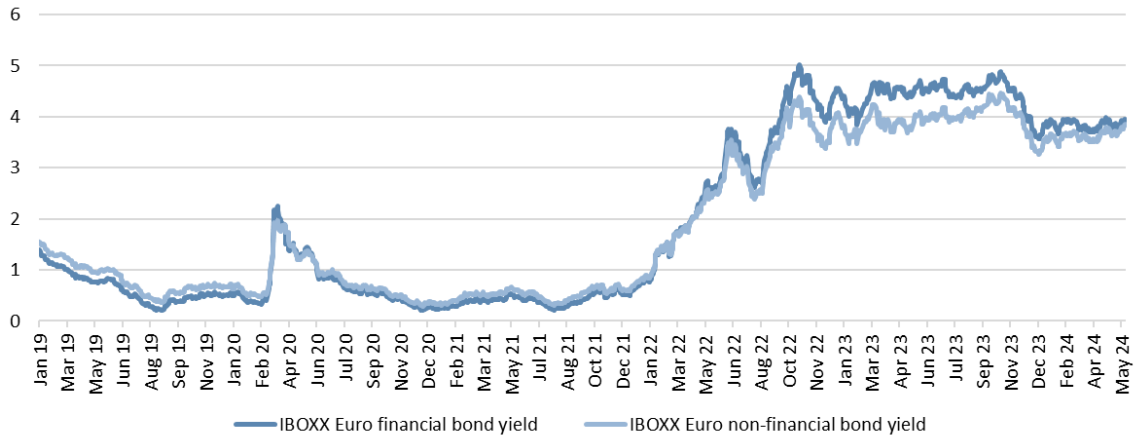
Table 1.1: Government bond yields for different maturities (in %).

		1Y	2Y	5Y	10Y	15Y	20Y
EU- euro area	Austria	3.39	3.13	2.99	3.15	3.28	3.34
	Belgium	3.46	3.16	2.95	3.16	3.43	3.62
	France	3.45	3.18	2.97	3.15	3.38	3.50
	Germany	3.36	3.04	2.67	2.67	2.84	2.87
	Ireland	3.44	3.12	2.89	3.03	3.20	3.26
	Italy	3.58	3.47	3.51	3.98	4.35	4.49
	Netherlands	3.39	3.10	2.83	2.91	3.01	3.03
	Portugal	3.50	3.12	2.83	3.22	3.53	3.66
	Spain	3.45	3.25	3.09	3.41	3.77	3.93
EEA/ EU-non euro area	Bulgaria	3.08	3.06	3.37	4.64	-	-
	Czech Republic	4.34	4.20	4.19	4.34	4.42	4.46
	Denmark	3.17	2.94	2.59	2.65	2.85	2.93
	Hungary	6.82	6.88	6.95	6.93	6.95	-
	Norway	4.24	3.96	3.65	3.72	-	-
Others	United States	5.24	4.92	4.57	4.52	4.67	4.90
	United Kingdom	4.83	4.55	4.23	4.39	4.70	4.87
	Switzerland	1.10	1.08	0.97	0.84	0.83	0.82
	Japan	0.23	0.37	0.62	1.10	1.58	1.93

Source: Refinitiv. Last observation: 31/05/2024.

Corporate bond yields decreased. The movement is similar to the one of government bonds, reflecting the underlying interest rate trend. The yield differential between financials and non-financials of 2023 has been removed, suggesting similar spread levels (hence risks) for both. In general, the corporate bond spreads keep tight, supported by the so far strong cash flows of corporates, but with negative prospects in case running yields at the time of corporate debt refinancing will be higher. Bankruptcies and solvencies are modestly increasing, without wider repercussions so far.

Figure 1.8: Corporate bond yields (in %).

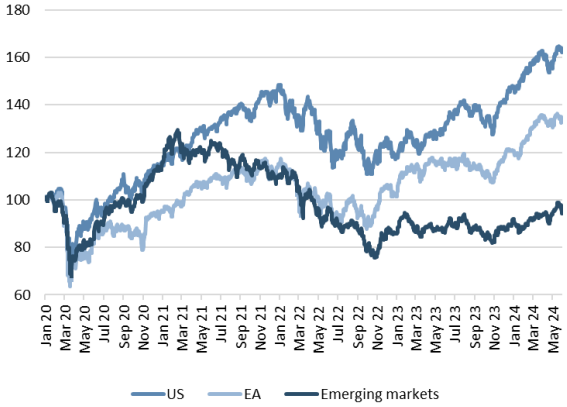


Source: Refinitiv. Last observation: 31/05/2024.

Equity markets have an impressive performance and volatility has been subdued in the recent months. Supported by robust materialised and expected earnings, equity valuations increased, but not at historical record levels, as equity prices did recently. Interest rates moving (and expected to move) lower are supportive, too. However, in this context, the interplay of profit margins and wages (as mentioned above) is important. Inflationary uncertainty could increase in case profit margins will not absorb part of higher wages, which can fundamentally change the currently expected economic landscape, and subsequently financial and equity markets. Finally, an important element

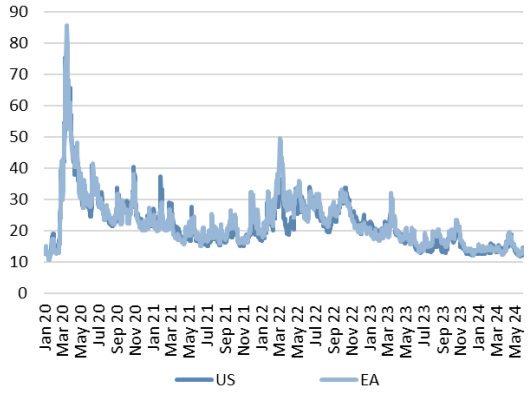
of the strong equity performance is the concentrated cause of this performance, for example in the tech sector in US.

Figure 1.9: Equity market performance (Index: 01/01/2020=100).



Source: Refinitiv. Last observation: 31/05/2024.

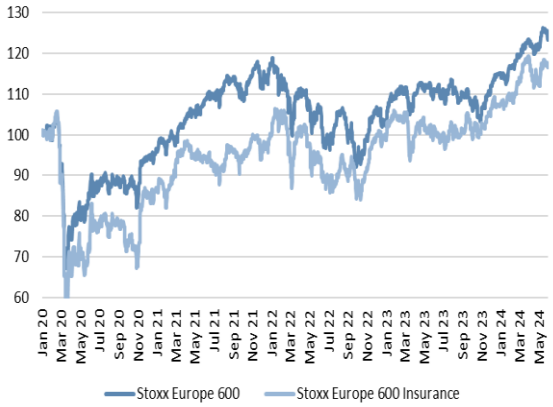
Figure 1.10: Market volatilities.



Source: Refinitiv. Last observation: 31/05/2024.

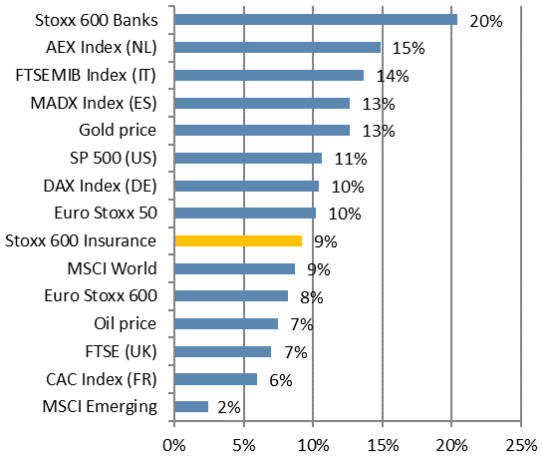
Insurers' equity prices slightly outperformed the Euro Stoxx 600 on a year-to-date basis. This reflects not only the robust earnings from 2023, but also looking ahead. Although interest rates have peaked, they are still at high levels. This dynamic, amid comfortable aggregate solvency positions, creates some interesting repercussions for the sector: the relatively lower interest rates (due to going into a cutting cycle) removed valuation pressures on insurers on an opportunity cost basis (e.g., dividend yield spread over inters rates increases, ceteris paribus) but also does not remove the forward-looking positive outlook on the investment side (due to still high-for-long expectations).

Figure 1.11: Equity performance of insurers vs. the market (01/01/2022=100).



Source: Refinitiv. Last observation: 31/05/2024.

Figure 1.12: Selected market performances (year to date).



Source: Refinitiv. Last observation: 31/05/2024.

1.2 CLIMATE RISK AND SUSTAINABLE FINANCE

2023 was another year with high insured losses from natural catastrophes, estimated at USD 95 bn.[3] to USD 108 bn.[4] worldwide (≈ EUR 86.0-97.7 bn.), while overall losses from natural catastrophes ranged from USD 250 bn. to USD 280 bn. (≈ EUR 226.3-253.4 bn.). The greatest humanitarian disaster in 2023 was the earthquake event in Turkey and Syria, where at least 58,000 people were killed, entire towns were destroyed, and infrastructure was severely damaged. The earthquake was also the largest individual loss event of the year, leading to approximately USD 50-60 bn. (≈ EUR 45.3-54.3 bn.) in damages, of which only about USD 6 bn. (≈ EUR 5.4 bn.) were insured.

Increased event frequency, as well as economic factors have recently put annual expected natural catastrophe losses on an upwards trend. Globally, expected annual catastrophe losses in the three-digit billion range, even in years without individual extreme loss events (such as Hurricane Ian in 2022) have become standard for (re)insurers. Insured losses from natural catastrophes have also increased due to the accumulation of asset values in catastrophe-prone areas, as well as increased replacement costs due to higher construction costs and inflation.

Aside from the earthquake event, the year in Europe was highlighted by severe thunderstorms, as well as torrential rainfalls and flooding. Several severe thunderstorms caused USD 10 bn. (≈ EUR 9.1 bn.) in total losses throughout the year, of which USD 8 bn. (≈ EUR 7.2 bn.) was insured, pointing to the high insurance penetration for windstorm in Europe. In May 2023, heavy rainfalls in northern Italy on three separate days within a two-week period led to severe flooding, as well as more than 400 landslides, causing 17 casualties and displacing about 50,000 people. Total economic losses associated with the event amounted to USD 10 bn. (≈ EUR 9.1 bn.), out of which only USD 1.1 bn. (≈ EUR 1.0 bn.) was insured[3]. A similar pattern of only about 10% of losses being insured could be observed for the storm Daniel that developed in September 2023 and caused severe flooding, especially in Greece, highlighting prevailing insurance protection gaps for certain regions and perils.

Extreme temperatures, with 2023 being the hottest year on record, have exacerbated weather events throughout the year and highlighted the role of climate change in natural catastrophes going forward. Scientific evidence points to climate change having a role in favouring thunderstorms and hailstorms. Severe convective storms which drove insured losses in 2023 are thus expected to become more common and might warrant to reassess expected return-period losses. In the past two years new benchmarks for hailstorm losses were set for Italy (2023, USD 5.5 bn. (≈ EUR 5.0 bn.) insured losses) and France (2022, USD 5.6 bn. (≈ EUR 5.0 bn.) insured losses), highlighting the importance of continuous risk assessments and the need for granular exposure and loss data, as well as risk models.

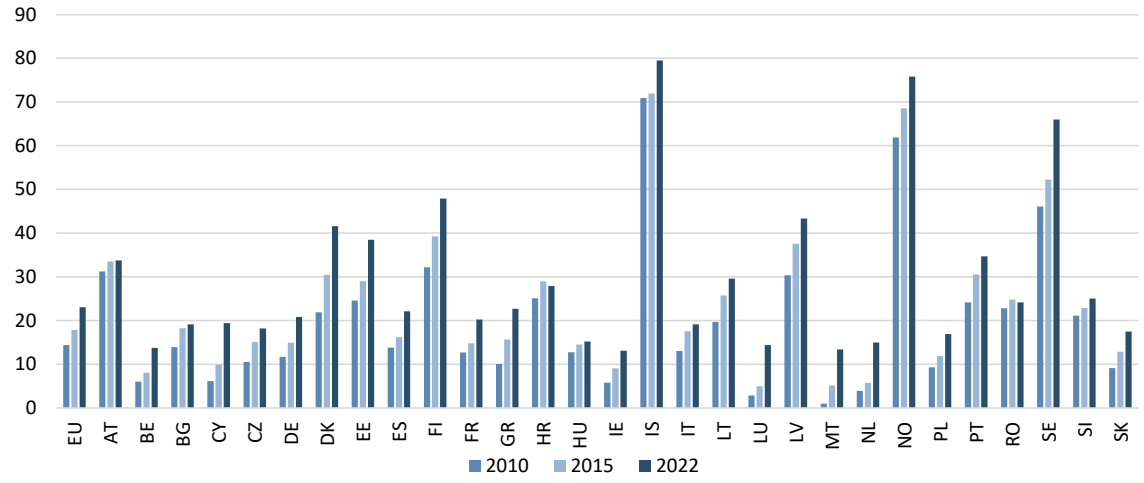
[3] Record thunderstorm losses and deadly earthquakes: the natural disasters of 2023 | Munich Re

[4] sigma 1/2024: Natural catastrophes in 2023 | Swiss Re

Understanding climate risks and preparing for its materialization is key for a resilient society, to which EIOPA seeks to contribute as a centre of excellence for catastrophe modelling and data[5]. To foster a common understanding of catastrophe risks and raise public awareness of related risks, EIOPA aims to provide tools for modelling climate change risks, such as the open-source CLIMADA-App[6], as well as data on insured exposures and losses[7]. Thereby, it might also contribute to address demand-side barriers to catastrophe insurance uptake, such as misperception of risks[8]. While progress has been made on understanding climate risks within the EU, the European Environment Agency found in its first European climate risk assessment[9] that the policy implementation was still substantially lagging behind the quickly increasing risk levels and called for urgent action. Adaptation and prevention measures are key elements of policy action, which should also be at the core of potential policy measures to be taken to reduce the climate insurance protection gap, such as possible national or EU-wide public-private partnerships to absorb higher loss layers[10].

While the green transition is underway, considerable efforts and investments are needed to reach the objectives of the EU Green Deal. With RePowerEU, the EU aims at total renewable energy generation capacity of 1,236 GW by 2030, which implies a share of 45% renewables in the energy consumed in the EU-27, which currently amounts to 23% of energy consumption (Figure 1.13). EIOPA is supporting the effort for an orderly transition through performing a one-off climate scenario analysis to assess the resilience of the EU financial system on the way to the EU targets for 2030[11] in cooperation with the other ESAs, the ECB, and the ESRB.

Figure 1.13: Share of energy from renewable sources (% of gross final energy consumption).



Source: Eurostat, table nrg_ind_ren; Last observation available: 2022.

As major long-term investors, insurers can play a significant role in putting the EU economies on a more sustainable track and in supporting the transition towards a low-carbon economy. Figure

[5] Centre of excellence for catastrophe modelling and data - European Union (europa.eu)

[6] Open-source tools for the modelling and management of climate change risks - European Union (europa.eu)

[7] Catastrophe Data Hub - European Union (europa.eu)

[8] Measures to address demand-side aspects of the NatCat protection gap (europa.eu)

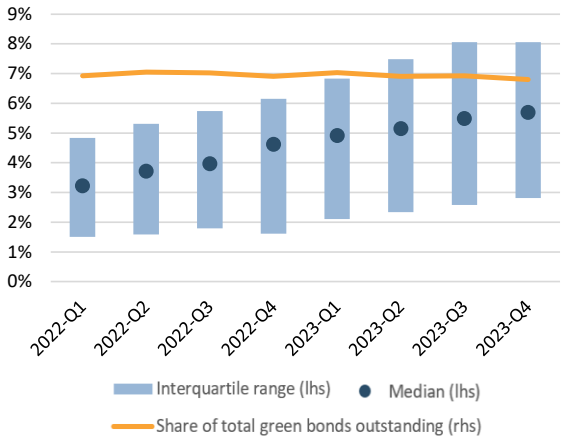
[9] Europe is not prepared for rapidly growing climate risks (europa.eu)

[10] Staff Paper on Policy options to reduce the climate insurance protection gap (europa.eu)

[11] Mandate_for_the_FF55_one-off_exercise.pdf (europa.eu)

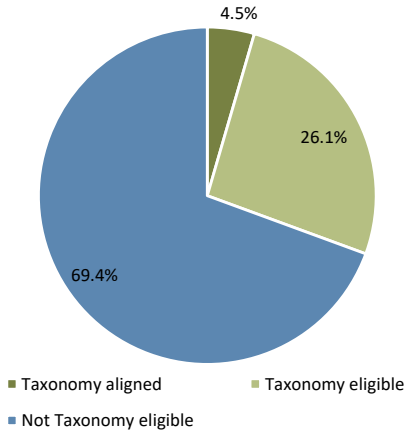
1.14 shows that the median investments in green bonds as a share of the total corporate bond portfolio had steadily increased over the past year and amounted to about 5.7% at the end of 2023. Aside from green bonds, investments in assets eligible or aligned with the EU Sustainable Finance Taxonomy can give another indication. The Taxonomy broadly follows the NACE classification of economic sectors, listing economic activities that could be considered sustainable and thus Taxonomy-eligible. Taxonomy-aligned activities constitute a subset of the Taxonomy-eligible activities that must meet a set of technical screening criteria. Currently, only a small fraction of the eligible NACE sectors is estimated to be already sustainable, i.e., aligned with the Taxonomy[12]. An analysis for IORPs finds that currently 4.5% of direct non-financial EEA-issued corporate bond and equity holdings could be considered Taxonomy-aligned, while another 26.1% are Taxonomy-eligible (Figure 1.15)[13]. For insurers, a previous study pointed to 5.7% of Taxonomy-aligned assets, with another 34.1% Taxonomy-eligible[14].

Figure 1.14: Share of investments by insurers in green bonds relative to corporate bonds.



Source: EIOPA Risk Dashboard. Refinitiv and own calculations based on SII QRT S.06.02. Note: LHS axis shows the distribution across insurers' investments in green bonds over their total corporate bond investments. RHS axis shows the share of insurers' aggregate investment in green bonds over total green bonds outstanding.

Figure 1.15: EU Taxonomy-alignment and -eligibility of equity and corporate bond holdings for IORPs.



Source: Own calculations based on IORP PF.06.02 and Alessi and Battiston (2022). *Note: As of 2023-Q3. Data only concerns EEA-issued non-financial securities.*

Parallel to the increased demand for sustainable investments, misleading sustainability claims and thus the risk of greenwashing has also increased. Consumers are increasingly concerned about the sustainability practices of companies they engage with and are directing their investments towards sustainability factors, purchasing insurance and pension products with sustainability features[15]. The exposure of consumers to products with sustainability claims through insurance-based investment products (IBIPs) in unit- or index-linked contracts is substantial, with about 55%

[12] For example, the relevant green activity is a niche activity (e.g., the low-carbon manufacture of hydrogen), but corresponds to a broader NACE sector (e.g., C 20.11 'Manufacture of industrial gases'). For more detail on the estimation of alignment of economic activities see: Alessi and Battiston (2022). *Two sides of the same coin: Green Taxonomy Alignment versus transition risk in financial portfolios*.

[13] Occupational pension funds' green investments - European Union (europa.eu)

[14] Insurers' green investments - European Union (europa.eu)

[15] Consumer Trends Report 2023 - European Union (europa.eu)

of corresponding funds disclosing under SFDR Article 8, i.e., invested in funds that promote environmental or social characteristics[16]. To address greenwashing risks, EIOPA is working on supervisory expectations of sustainability claims and guidance for sustainable product identification.

Appropriate assessment, risk management and treatment of sustainability risks are key in ensuring (re)insurers' viability going forward and addressed in the Solvency II review. EIOPA will monitor the implementation of sustainability risk assessments as part of the Own Risk and Solvency Assessment (ORSA). The integration of climate change into the standard formula and the consultation on its first (regular) recalibration[17], as well as the consultation on the prudential treatment of sustainability risks[18] further support the appropriate treatment of climate risks. Moreover, EIOPA was mandated to assess whether and how insurers assess their material exposures to biodiversity risks and how such assessments could be performed as part of the ORSAs. The work will also build on the staff paper[19] that explored how nature-related risks can affect balance sheets and business conduct of (re)insurers and what role the sector can play in the restoration and conservation of nature through investment and underwriting activities.

1.3 CYBER RISK AND THE INSURANCE SECTOR

According to the May 2024 EIOPA Risk Dashboard[20] digitalisation and cyber risks are at a medium level, but forward-looking assessments point to an increase in this risk category over the next 12 months. The significance of these risks for insurance, as evaluated by supervisors, experienced a slight increase in the fourth quarter of 2023, and is projected to persistently rise, with cyber security and hybrid geopolitical conflict emerging as a primary concern. The frequency of cyber incidents impacting all sectors of activity, as measured by the publicly available data, decreased compared to the same quarter of last year. Cyber negative sentiment indicates a bounce back to a high risk despite the diminishing threat in the first half of 2023. However, the outlook for the next 12 months shows increasing concerns regarding the materiality of these risks.

Supervisors continue to actively monitor the cyber underwriting developments and the operational risks relating to digitalisation. The results of the EIOPA Spring 2024 insurance bottom-up survey (BUS) show that the cyber underwriting has been limited in the EEA insurance sector primarily due to challenges faced with pricing and uncertainty over the nature of the risks. Nevertheless, both undertakings and NCAs recognize the potential operational risks due to an increase in digitalisation and have taken steps to be more resilient.

[16] EIOPA's Final Report and Opinion on Greenwashing - Advice to the European Commission - European Union (europa.eu)

[17] EIOPA consults on natural catastrophe risk reassessments in the standard formula - European Union (europa.eu)

[18] Prudential Treatment of Sustainability Risks (europa.eu)

[19] EIOPA Staff paper on nature-related risks and impacts for insurance (europa.eu)

[20] Insurance Risk Dashboard - European Union (europa.eu)

International Association of Insurance Supervisors (IAIS) plans to continue its work in key strategic areas including cyber risks, operational resilience and digital innovation[21]. IAIS will collect data on cyber risk as part of Global Monitoring Exercise (GME). Furthermore, IAIS plans to support supervisors in developing their approaches to operational resilience, through a set of principles-based objectives and a toolkit. FinTech Forum (FF) will continue to monitor trends in application programming interfaces (API), distributed ledger technologies (DLT) and crypto assets in the context of sharing good supervisory practises and facilitating understanding of supervisory issues.

The Financial Stability Board (FSB) notes that the cyber threat landscape is expanding with digital transformation and increased reliance on third-party service providers. Timely incident response and recovery require accurate information to ensure financial stability. The FSB issued recommendations[22] in April 2023 to enhance convergence in cyber incident reporting and is exploring the feasibility of standardizing incident reporting exchange through the FIRE (Format to Standardise Common Information Requirements for Incident Reporting Exchange) concept. Additionally, the FSB introduced a toolkit[23] in December 2023 to improve third-party risk management for financial institutions and authorities, addressing challenges in managing critical services and providers. However, complexities in certain areas and evolving industry practices necessitate further refinement of supervisory expectations and enhanced cooperation among regulators.

In 2024, the European Systemic Cyber Group (ESCG) continued its pivotal role in advancing Cyber Resilience Scenario Testing (CyRST) as a platform for knowledge exchange and collaboration. Through targeted workshops and peer-learning initiatives, ESCG will leverage insights from pilot projects to refine strategies, with a focus on documenting lessons learned in a comprehensive handbook. Notably, ESCG embarked on developing the concept of a Systemic Impact Tolerance Objective (SITO) while actively reviewing macroprudential tools to enhance cyber resilience, particularly operational policy tools. Furthermore, ESCG lent its support to the establishment of the pan-European systemic cyber incident coordination framework (EU-SCICF)[24].

In April 2024, the European Systemic Risk Board (ESRB) published a report[25] which underscores the necessity of enhancing information-sharing mechanisms and crisis management coordination at both national and EU levels to effectively respond to systemic cyber incidents, advocating for structured tools to manage and disseminate critical information across jurisdictions and sectors. Furthermore, recognizing the dynamic nature of the cyber landscape, the ESRB emphasizes the critical necessity for increased investment in cyber expertise and capability. The potential benefits of public-private partnerships and sustainable funding models are underscored as crucial elements in addressing the challenge of attracting and retaining cybersecurity professionals. Additionally, there is a suggestion to explore further tools beyond current financial and operational frameworks for a more robust response to systemic cyber crises.

[21] IAIS-Roadmap-2024.pdf (iaisweb.org)
[22] Recommendations to Achieve Greater Convergence in Cyber Incident Reporting: Final Report - Financial Stability Board (fsb.org)
[23] Enhancing Third-Party Management and Oversight: Overview of responses to the consultation (fsb.org)
[24] ESRB recommends establishing a systemic cyber incident coordination framework (europa.eu)
[25] Advancing macroprudential tools for cyber resilience – Operational policy tools (europa.eu)

The ENISA Threat Landscape 2023 report[26] highlighted a notable escalation in cybersecurity attacks during the latter part of 2022 and the initial half of 2023. The report emphasized the ongoing war in Ukraine as a significant factor in shaping the cybersecurity landscape and identifies the emergence of hacktivism and ransomware incidents as key trends. During the reporting period, various sectors faced cyber threats, with significant attention directed towards public administration (19%) and health (8%) sectors, while banking and finance experienced around 6% of the events. Ransomware emerged as a prominent threat affecting multiple sectors, including manufacturing, health, public administration, and services. Distributed Denial of Service (DDoS) attacks targeted public administration (34%), transportation (17%), and banking/finance (9%) sectors. Malware infections affected banking and finance (12%), alongside other sectors, while social engineering primarily targeted the general public (30%) and public administration (18%). A qualitative impact analysis had been conducted by ENISA to understand the consequences of cyber events, identifying digital, economic, social, reputational, physical, and psychological impacts. The digital impact, often evidenced by system downtime or data breaches, was prevalent in collected events. Approximately 19% of events were associated with an economic impact, primarily driven by ransomware and DDoS incidents targeting sectors like manufacturing and public administration. Social impact (18%) was observed when events disrupted services crucial to citizens, notably in the public administration and health sectors. Assessing reputational, psychological, and physical impacts proved challenging due to the limited information availability. Notably, the rarity of events categorized as having 'No impact' suggests a tendency to overstate the impact of cyber incidents in reporting.

EIOPA has outlined its strategic priorities for 2024-2026[27], with a significant focus on cybersecurity. Under its cyber initiatives, EIOPA aims to support consumers, the market, and the supervisory community through digital transformation. Key aspects include defining policies and implementing regulations such as the Digital Operational Resilience Act (DORA), the Artificial Intelligence Act, and the European Single Access Point (ESAP). These efforts underscore EIOPA's commitment to enhancing operational resilience and cybersecurity within the insurance and pensions sectors.

Recognizing the escalating threat of cyber incidents in an increasingly digitalized business environment, Small and Medium Enterprises (SMEs) are confronting heightened cybersecurity challenges. As SMEs embrace digital technologies such as cloud services and remote work arrangements, the need to identify and manage cyber risks becomes critical. Cyber insurance emerges as a crucial risk management tool for SMEs to mitigate potential economic downturns and disruptions to their operations. However, insurers are struggling to ensure that their coverage adequately protects them against losses caused by cyber threats. Access to insurance is vital for SMEs to absorb shocks and navigate irregular income patterns, enhancing their financial resilience. EIOPA acknowledges the lack of information on SMEs' access to cyber insurance and aims to address this gap through a comprehensive survey[28]. The survey seeks to understand the challenges SMEs face in addressing cyber risks and gauge their level of access to cyber insurance. By probing into the

[26] ENISA Threat Landscape 2023 — ENISA (europa.eu)
[27] EIOPA's Work Programme 2024-2026 – European Union
[28] EU Survey on access to cyber insurance by SMEs

availability, affordability, and comprehension of cyber insurance among SMEs, EIOPA aims to inform policymaking efforts and foster a more resilient insurance ecosystem for SMEs within the EU.

A significant advancement has been made with the release of the initial set of final draft technical standards under the Digital Operational Resilience Act (DORA)[29], jointly published by the European Supervisory Authorities (ESAs): the European Banking Authority (EBA), the European Insurance and Occupational Pensions Authority (EIOPA), and the European Securities and Markets Authority (ESMA). These standards aim to fortify the digital operational resilience of the EU financial sector by enhancing the Information and Communication Technology (ICT) and third-party risk management frameworks of financial entities. The standards include specifications for incident classification criteria, materiality thresholds, and cyber threat identification. Additionally, the ESAs have finalized regulatory technical standards (RTS) pertaining to the detailed content of policies regarding contractual arrangements with third-party ICT service providers supporting critical functions. These standards aim to ensure robust governance and oversight of such arrangements, mitigating risks associated with outsourcing critical services. Furthermore, implementing technical standards (ITS) has been developed to establish standard templates for maintaining a register of information related to all contractual arrangements with third-party ICT service providers. This comprehensive approach enhances transparency and accountability in managing third-party relationships, ultimately strengthening the overall resilience of the financial sector to cyber threats. Moving forward, the adoption and implementation of these standards represent a significant milestone in strengthening the cyber resilience of financial institutions operating within the European Union. By providing clear guidance and establishing robust frameworks for incident classification, materiality assessment, and third-party oversight, the ESAs are proactively addressing evolving cyber risks. Financial institutions must now prioritize the integration of these standards into their operational frameworks to ensure compliance and resilience in the face of increasing cyber threats. With effective implementation, these standards have the potential to enhance the stability and integrity of the financial system, fostering trust and confidence among stakeholders in the digital era. The draft RTS and ITS are currently awaiting adoption by the European Commission, with subsequent scrutiny by the European Parliament and the Council before publication in the Official Journal of the European Union. Once published, these standards will become enforceable regulations, strengthening cyber resilience across the financial sector.

1.4 REGULATORY DEVELOPMENTS

EIOPA provided its technical advice for the review of the IORP directive. Its overall theme was "embrace the future, protect the legacy". The advice for the review of the IORP directive covered new requirements for defined contribution pensions, pension benefit statements, requirements on sustainability, and on diversity and inclusion in the boards of IORPs. In addition, it made proposals on liquidity risk following events in the UK in 2022. EIOPA also successfully hosted a Defined Contribution

[29] ESAs publish first set of rules under DORA for ICT and third-party risk management and incident classification (europa.eu)

(DC) Pensions Roundtable with 264 participants. The main topics were the DC landscape in Europe, supervision of DC pensions, and increasing participation and inclusion in DC pensions.

EIOPA further progressed its transition from policy to implementation in the realm of sustainable finance. It published a consultation paper on the prudential treatment of sustainability risks[30]. Consistent with its step-by-step approach, and that the existing Solvency II framework can cater for sustainability risks, it provided evidence for a different capital treatment of equity and spread risk in respect of fossil fuel investments. It also proposed further analysis in the areas of property risk and underwriting. In relation to social risk, it proposed at this stage addressing this via qualitative tools (risk management, governance, reporting and disclosure).

EIOPA is undertaking various initiatives concerning natural catastrophes. It is consulting on the recalibration of natural catastrophe risks under Solvency II[31], in particular to reflect the impact of climate change. The greatest adjustments are proposed in the areas of flood, subsidence and hail, perils where the climate change impact is well understood by current scientific studies. In addition, EIOPA has also considered additional perils which need to be monitored and potentially added to the Solvency II standard formula in the future, such as wildfire, coastal flood, and droughts for crop insurance. Other steps in relation to natural catastrophes are publication of the CLIMADA App, an interface to allow open-source modelling of catastrophe risks and updating EIOPA's protection gap dashboard. In addition, in relation to consumer protection, EIOPA is analysing policyholder demand for natural catastrophe insurance.

EIOPA published a staff paper on biodiversity[32], noting that over half of global GDP depends on nature and the services it provides. From an insurance perspective, biodiversity presents challenges such as being harder to model than climate risk. As with that risk, the presumption is that Solvency II can provide a framework for treatment of biodiversity. EIOPA will be required to provide a report on this topic under the revised Solvency II Directive.

EIOPA is indeed preparing for the implementation of the revised Solvency II Directive. EIOPA will draw up new and revised technical standards and guidelines. When requested, EIOPA provided technical input to the political negotiations.

Internationally, EIOPA has contributed heavily towards the good progress on the finalisation of the Insurance Capital Standard. EIOPA is also engaged in the development of criteria by which to compare the ICS with the US-led Aggregation Method. EIOPA held supervisory dialogues during 2023 with the UK, US, Japan, Bermuda, and South Korea. It also participated in Commission-led regulatory dialogues. Two international conferences were held on Global Insurance Supervision and Eastern Cooperation, with over 2000 supervisors/stakeholders and representatives from 19 non-EEA countries taking part. In addition, EIOPA published a supervisory statement on third country arrangements.

[30] Consultation on the Prudential Treatment of Sustainability Risks - European Union (europa.eu)
[31] Consultation on the 2023/2024 (re)assessment of natural catastrophe risk in the standard formula - European Union (europa.eu)
[32] EIOPA Staff paper on nature-related risks and impacts for insurance - European Union (europa.eu)

2 THE EUROPEAN INSURANCE SECTOR

The European insurance sector maintained a solid capitalization throughout 2023. The median SCR ratio for life insurers continued to improve from 232% in Q4 2022 to 243% in Q4 2023. The median SCR ratio for composite undertakings also improved from 207% to 225% while the SCR ratio for non-life insurers remained solid with a stable median at 215%.

The profitability of insurers improved in 2023 given the higher returns gained in their investment portfolios. Insurers' returns increased during 2023 amidst the current macroeconomic environment with higher interest rates. The median return on assets (ROA) and the median return on excess of assets over liabilities (a proxy for return on equity) moved upwards. Looking ahead, the investment portfolio of EEA insurers could be negatively impacted via market corrections, in particular for those with higher exposure in fixed income assets and real estate.

Gross written premiums (GWP) continued to grow for the non-life sector in the EEA while the life business reported a more moderate increase in 2023. During 2023, non-life GWP continued their growth from last year, mainly explained by the raise in cost of claims since the pick-up of inflation in 2021 that forced non-life insurers to adjust their premiums. The life business in the EEA slightly increased, with heterogeneous trends across Member States.

The share of unit-linked business dropped in 2023, following the decreasing trend observed since the beginning of 2022. The share of aggregated unit-linked GWP in the total EEA life business decreased throughout 2023, standing around 34.2% at the end of the year, still above the 2020 levels. After reaching a peak in 2021 (38.7%), the share of unit-linked premiums in GWP for life business experienced a decreasing trend. There remain considerable differences in the popularity of unit-linked products across countries.

Geopolitical risks appear still at elevated levels for European insurers amid the uncertainty environment. The resurgence of geopolitical risk in Europe and in the other areas such as the Middle East could impact the current economic conditions of households and lower their demand for insurance products. A shift from the current low unemployment rate could impact the economic conditions with potential losses in the investment portfolios of insurers.

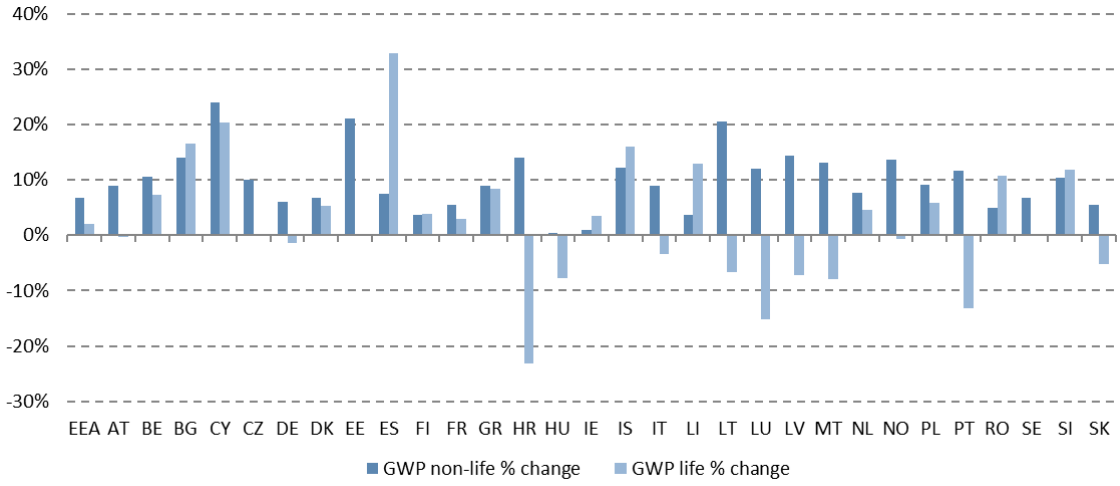
Underwriting profitability slightly deteriorated in 2023 showing diverse trends across the lines of business. The underwriting profitability for assistance and medical expenses deteriorated due to the continued increase in claims only partially compensated by higher premiums. Similarly, transport related lines of business such as motor vehicle liability as well as other motor saw a moderate decline in their underwriting profitability.

The liquidity of insurers remained stable in 2023 with some signs of vulnerabilities. On aggregate, insurers' liquid asset ratios and lapse rates remained stable. However, some members already experienced an increase in the lapse rates given the new regime with higher interest rates.

2.1 MARKET SHARE AND GROWTH

Gross written premiums (GWP) continued to grow for the non-life sector in the EEA while the life business reported a more moderate increase in 2023. Non-life GWP continued their growth from last year with an increase of 6.9% year-on-year (10.8% in 2022) for EEA, reaching 709 bn. in 2023 (Figure 2.1). The growth recorded in the last years is mainly explained by the increase in cost of claims due to high inflation that forced non-life insurers to adjust their premiums (Figure 2.2). The highest growth rates were observed in Cyprus (+24.0%), Estonia (+21.0%) and Lithuania (+20.5%). At aggregated EEA level, after the shrinking in the previous year, life business slightly increased by +2.0% in 2023 to EUR 666 bn. (Figure 2.1), with heterogeneous trends across Member States. Some countries such as Spain (+32.9%), Cyprus (+20.4%) and Bulgaria (+16.6%) experienced a large growth, while life business in others such as Croatia (-23.2%), Luxembourg (-15.2%) and Portugal (-13.2%) experienced a reduction. The growth slowdown in the last years of the premiums for life business can be explained by the lower real return of these products[33] due to inflation coupled with high interest rates and lower disposable income of consumers due to subdued growth, uncertainty, and elevated geopolitical risks. Other factors such as a shift in investment preferences can reduce the demand for life insurance coverage and can contribute to premium decreases. Further, a reduced consumer confidence can dampen the overall demand for life insurance products, potentially explaining the lower gross written premiums[34].

Figure 2.1: Total Life and Non-Life GWP growth from 2022 to 2023 (in %, year-on-year)

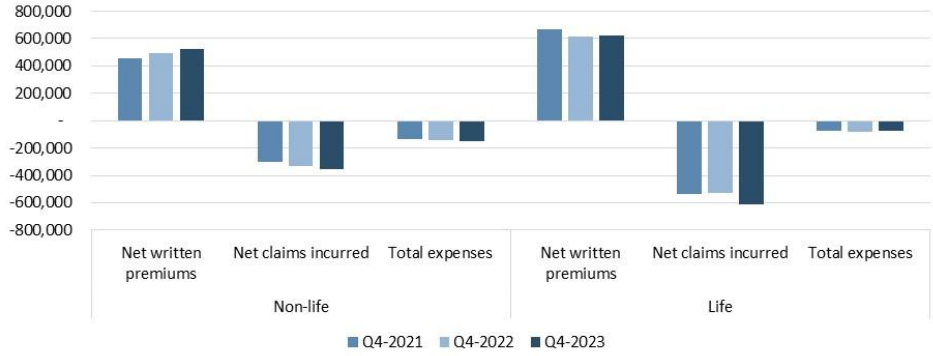


Source: EIOPA Quarterly Reporting Solo. Note: EEA weighted average. Growth rates are computed by weighting the GWP per reporting currencies.

The future costs of claims for non-life business could increase further for some specific lines of business where inflation is stickier. The current regime with higher interest rates and inflation has a direct impact on the costs insurers face when paying claims, in particular for the non-life sector. It also leads to short-term losses on interest rate sensitive investments and increases in the reserves needed for the future higher claims. Therefore, a potential consequence could be further increases in non-life premiums.

[33] See EIOPA Consumer trends report 2023
[34] See EIOPA Consumer trends report 2023

Figure 2.2: Premiums, claims and expenses (in mil. EUR) split by life and non-life business (mil. EUR).



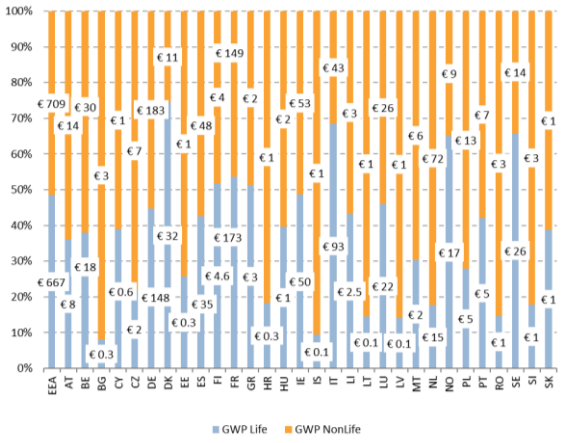
Source: EIOPA Quarterly Reporting Solo.

Insurers could opt for a conservative approach to underwriting and premium pricing given the current macroeconomic environment. High inflation and interest rates affect insurers' investment portfolios and investment income resulting in a reduction of financial flexibility and potentially leading to a conservative approach to underwriting and premium pricing.

Geopolitical risks appear still at elevated levels for European insurers amid the uncertainty environment. The resurgence of geopolitical risk in Europe and in the other areas such as the Middle East could influence insurers' risk assessment, pricing decisions, coverage offerings, and investment strategies. In addition, these tensions could cause a deterioration in the current economic conditions of households and businesses and lower the demand for insurance products. Second-round effects such as a drop in the aggregate demand and a rise in unemployment could further negatively impact the current economic conditions. This in turn could result in losses in the investment portfolios of insurers.

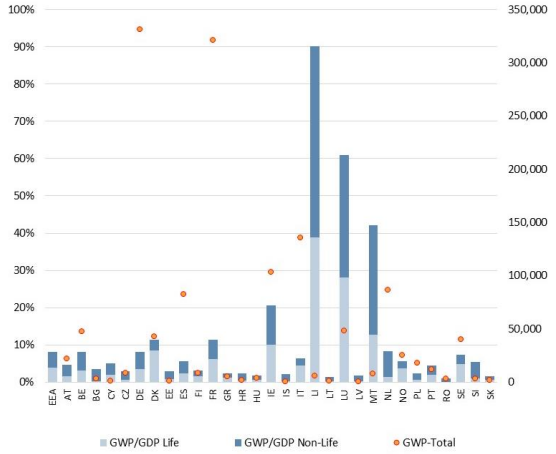
The GWP of EEA insurers as a percentage of total GDP remained stable at 8.1% in 2023. This was due to the 6.7% growth in nominal GDP partially compensated by the +3.9% increase in GWP in 2023. Total assets as a percentage of GDP slightly increased to 57.3% (56.4% in 2022) as a result of the higher pace of the increase in total assets compared to the GDP growth. Figure 2.3 and Figure 2.4 show the non-life and life GWP shares in total GWP and in GDP per countries, respectively.

Figure 2.3: GWP Non-life as a share of total GWP (in %) and GWP Life as a share of total GWP (in %), and in EUR bn. in 2023.



Source: EIOPA Quarterly Reporting Solo.

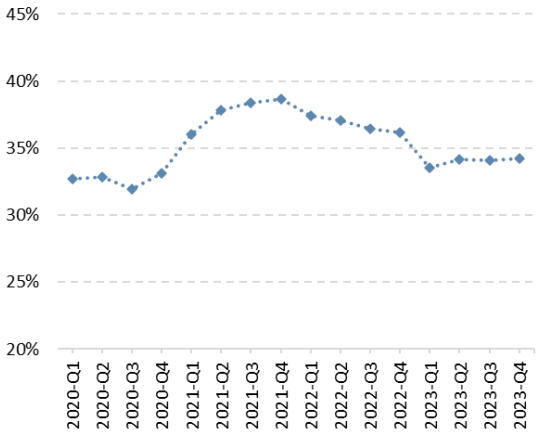
Figure: 2.4: GWP life and non-life as a share of GDP (in %) (LHS) and total GWP (in EUR mil.) (RHS) by country in Q4 2023.



Source: EIOPA Quarterly Reporting Solo and Eurostat.
Note: Figure for EEA weighted average.

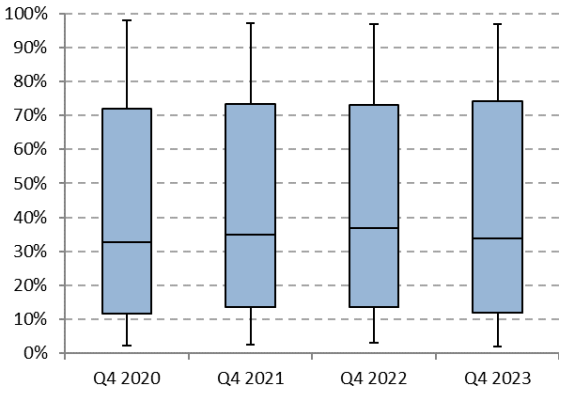
The share of GWP for unit-linked business dropped in 2023, following the decreasing trend observed since the beginning of 2022. As a percentage in the total EEA life business, aggregated unit-linked GWP decreased throughout 2023, standing around 34.2% at the end of the year, still above the 2020 levels (Figure 2.5). After reaching a peak in 2021 (38.7%), the share of unit-linked premiums in GWP for life business experienced a decreasing trend in the last years. Likewise, the median share of unit-linked premiums in GWP for life business decreased, standing at 33.7% at the end of 2023 (36.7% in Q4 2022) (Figure 2.6). There remain considerable differences in the popularity of unit-linked products across several countries (Figure 2.7). The demand for unit-linked products increased in countries such as Sweden (+13.3 pp) and Bulgaria (+28.8 pp), while it dropped the most in Portugal (-21.7 pp). In the past, the growth in the unit-linked segment was mostly the result of a shift in the product and sales strategies of insurers in response to the low interest rate environment. With the new macroeconomic regime with high interest rates, potential causes for a reversal could be the depreciation of assets' values when interest rates were increasing, the resulting poor investment outcomes, the revival of geopolitical risks and still high uncertainty. Another reason for lower demand for unit-linked products could be the slow growth that discourages risk taking.

Figure 2.5: GWP-Life business: Unit-linked share development over time (% UL in GWP life).



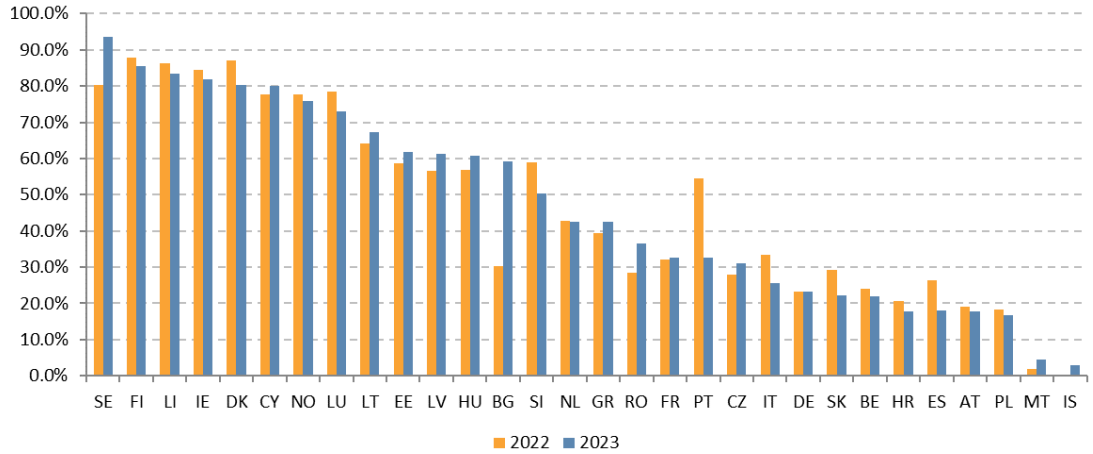
Source: EIOPA Quarterly Reporting Solo.

Figure 2.6: Unit-linked as a share of GWP-Life business (in %; median, interquartile range and 10th and 90th percentile).



Source: EIOPA Quarterly Reporting Solo. Note: The sample includes only insurance companies which have reported unit-linked business (life and life part of composite insurance companies).

Figure 2.7: Unit-linked as share of GWP-Life business across countries (in %).



Source: EIOPA Quarterly Reporting Solo. Note: Please note that undertakings without unit-linked business are excluded.

2.2 LIQUIDITY

The liquid assets ratio of insurers remains quite stable throughout the years (Figure 2.8) but varies considerably across EEA countries. The weighted median value at the end of 2023 was around 47.7%. For insurers in Iceland, Liechtenstein and France, the median of the liquid asset ratio for individual companies was well below the EEA median. In contrast, insurers in Hungary, Latvia and Romania held relatively more liquid assets with the distributions well above the EEA median (Figure 2.9).

Figure 2.8: Liquid assets ratio (in %; median, interquartile range and 10th and 90th percentile).

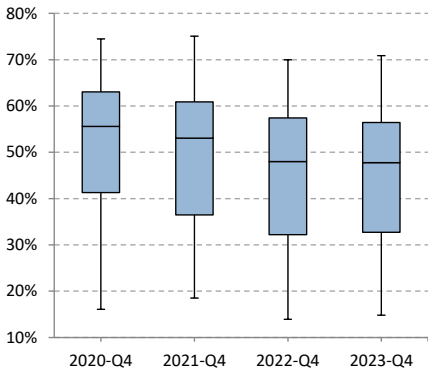
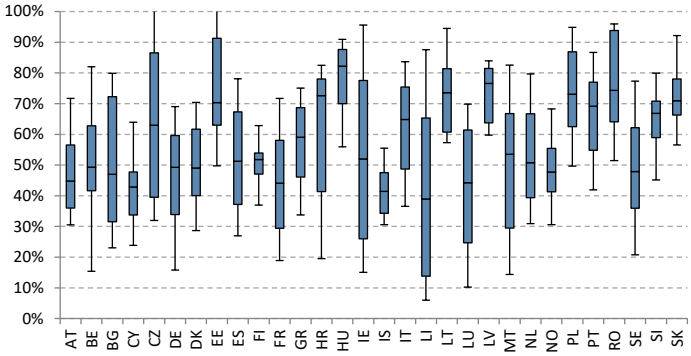


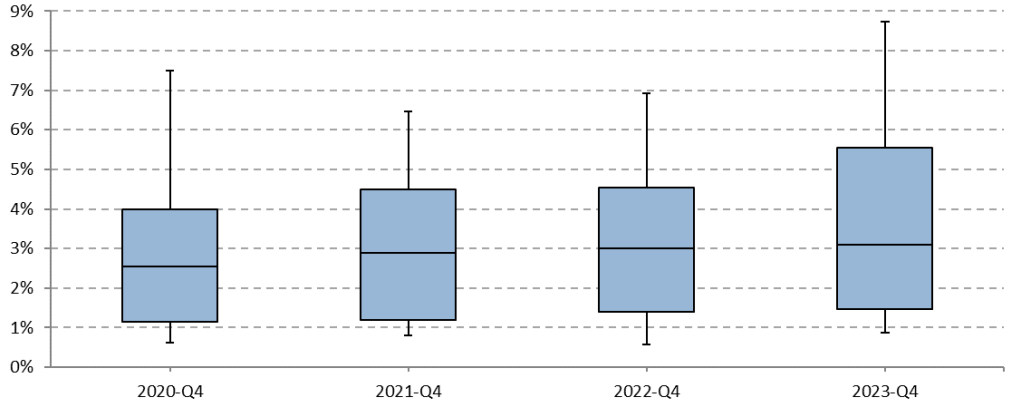
Figure 2.9: Liquid assets ratio by country (in %; median, interquartile range and 10th and 90th percentile)



Source: EIOPA Quarterly Reporting Solo. Note: The liquid assets ratio shows the proportion of liquid assets to total assets (excluding assets held for unit-linked contracts). The ratio is calculated by applying different weights (ranging from 100% for cash to 0% for intangible assets) to different assets according to their liquidity profile. The methodology has been reviewed to align with the enhancement of the liquidity risks category in the latest EIOPA Risk Dashboard (February 2024). Distributions from Figure 2.8 are weighted by total assets.

Lapse rates in the life business, on aggregate, remained stable in 2023 (Figure 2.10) with some sign of vulnerabilities as more insurers moved towards the upper tail of the distribution. The median lapse rate remained unchanged at around 3.1% in 2023 (compared to 3.0% in 2022), while the upper tail increased reaching 5.5% (4.5% in 2022). The latest data indicates that for some EEA insurers the lapse rates increased. This phenomenon can be explained by several factors. For example, increased short-term interest rates, intended to curb inflation, may incentivize policyholders to surrender their insurance savings contracts, which may not be optimal from a savings perspective. These lapses could become more prevalent, particularly as policyholders with reduced real income feel compelled to access their funds amid higher living expenses. Additionally, individuals nearing retirement age might contemplate postponing or delaying their retirement plans due to the escalating cost of living. Looking ahead, the slow growth, the elevated geopolitical turmoil and uncertainty might lead to further negative effects on the income of policyholders that could cause an increase in lapse rates.

Figure 2.10: Lapse rates (in %).



Source: EIOPA Quarterly Financial Groups.

2.3 PROFITABILITY

The profitability of insurers improved throughout 2023 given the higher returns gained in their investment portfolios. Higher interest rates and high inflation impact profitability through their effect on the value of investments and their returns. In the short term, the impact is negative mainly due to losses on interest rate sensitive investments. Some EEA insurers already experienced lower returns on their fixed-income investments, such as bonds, due to the erosion of real returns by inflation. In the long term, on the contrary, the impact on insurers' portfolio could be positive due to higher returns on new investments. In 2023, insurers experienced higher returns compensating the negative impact on insurers' portfolio due to losses on interest rate sensitive investments. The median return on assets (ROA) moved upwards to 0.5% from 0.4% in the previous year. The median return on excess of assets over liabilities (a proxy for return on equity) increased as well to 8.2% from 6.1% (Figures 2.11 and 2.12). Likewise, the upper tail of the distribution shifted upwards to 21.2% (14.0% in the previous year), indicating an improvement in the return on Excess of Assets over Liabilities for the undertakings with the highest profitability ratios.

Figure 2.11: Return on Assets (in %; median, interquartile range and 10th and 90th percentile).

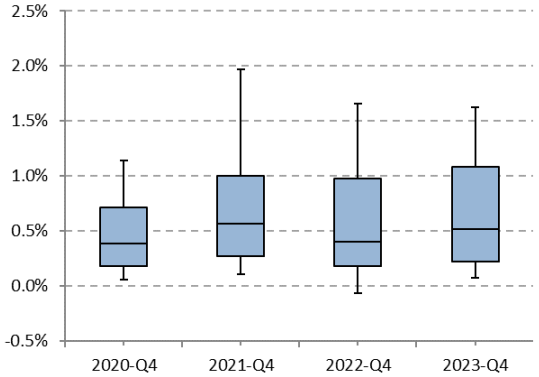
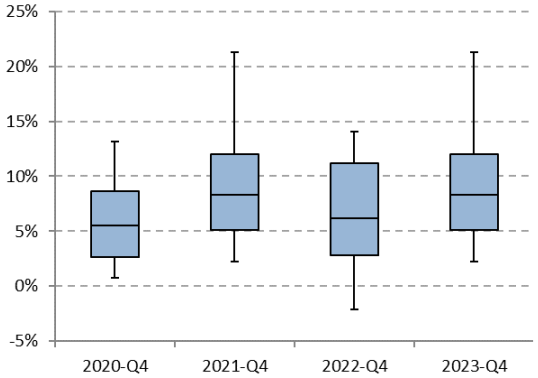


Figure 2.12: Return on Excess of Assets over Liabilities (in %; median, interquartile range and 10th and 90th percentile).

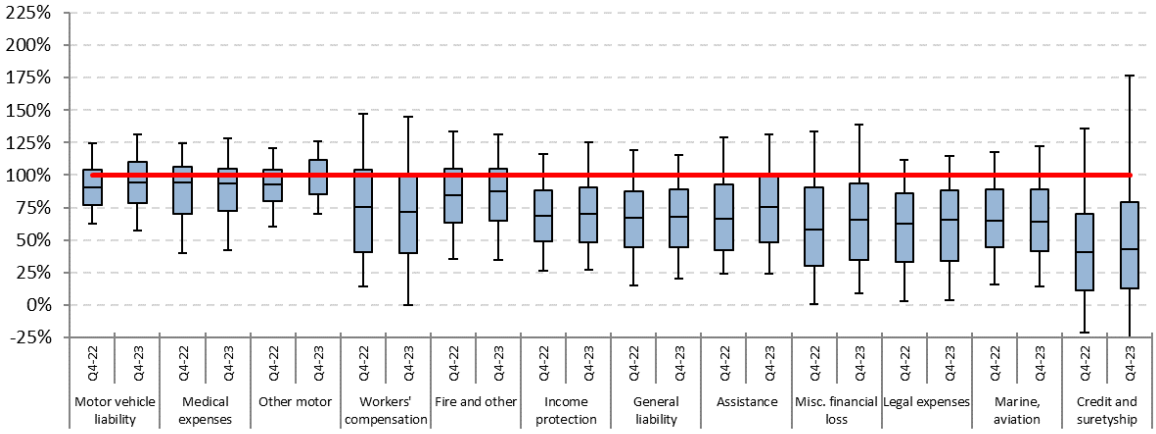


Source: EIOPA Quarterly Financial Groups (Templates S.39.01.11 and S.02.01.02).

Looking ahead, the investment portfolio of EEA insurers could be negatively impacted via market corrections in particular for those insurers with higher exposures to fixed income assets and real estate.

Underwriting profitability slightly deteriorated in 2023 with a heterogeneous trend among different lines of business. The underwriting profitability proxied by the gross combined ratio for assistance (combined ratio +5.6 pp) and medical expenses (+2.9 pp) deteriorated due to the continued increase in claims only partially compensated by the higher premiums. Transport related lines of business such as motor vehicle liability as well as other motor saw a moderate deterioration in their underwriting profitability of +2.0 pp and +4.1 pp, respectively, as the result of higher claims. The negative impact was partially offset by the raise in the premiums. On the other side, workers' compensation improved as a result of lower claims by -3.4 pp. However, it needs to be noted that a greater proportion of claims might have remained open indicating potential delays in settling claims as it was the case for fire and other damage to property line of business in 2022[35]. The median gross combined ratio for non-life business remained below 100% for all lines of business which can be seen as an indication that most EEA insurers generated positive underwriting results (Figure 2.13).

Figure 2.13: Gross Combined Ratio across lines of business (in %; median, interquartile range and 10th and 90th percentile).



Source: EIOPA Quarterly Reporting Solo

Inflation generally results in higher claims costs for non-life and health insurers[36]. Life insurers are less affected because claims and benefits are mostly defined in nominal terms. Undertakings, particularly in the non-life and health sectors, may also have to revise upwards the reserves held to meet the cost of existing claims which will negatively impact profits. The potential increase in operating costs can also reduce the profitability of products. The net effect on profitability depends on the ability to adapt premiums, which depends on the competitive situation, and on adoptions of insurers' terms and conditions as for example reducing claims costs by increasing deductibles. As inflation seems to be on a downward trend, expectations are that the underwriting profitability of non-life business will improve in the next years.

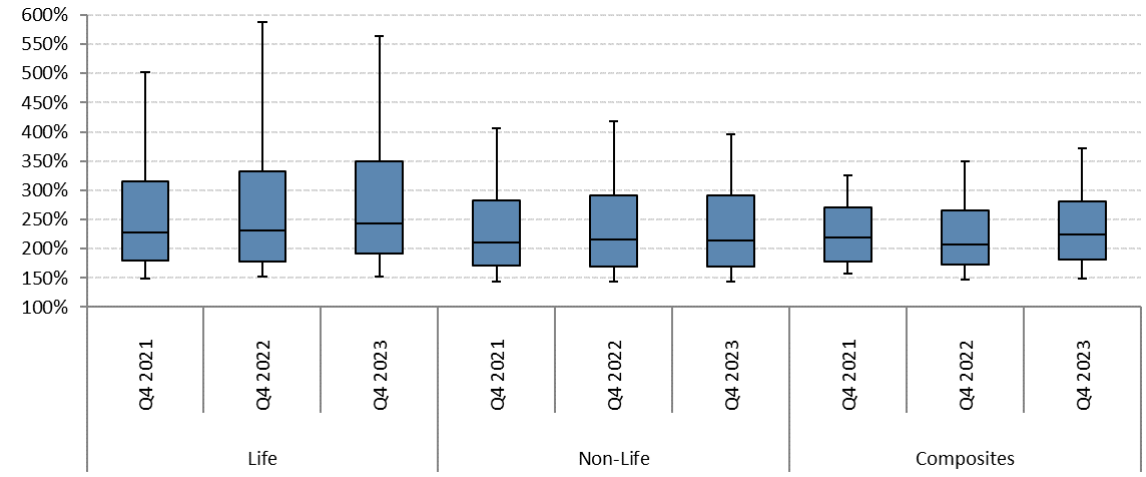
[35] See EIOPA Consumer trends report 2023

[36] See EIOPA Impact of inflation on the insurance sector 2023

2.4 SOLVENCY

The insurance sector entered 2024 with solid capital buffers for all types of business (Figure 2.14). The median SCR ratio for life insurers continued to improve from 232% in Q4 2022 to 243% one year later although interest rates slightly moved down towards at the end of 2023. This is explained by a slight decrease in the life SCR and a minor increase in the eligible own funds to meet the SCR. The median SCR ratio for composite undertakings also improved from 207% to 225%. On the other hand, the SCR ratio for non-life insurers remained solid with a stable median standing at 215%.

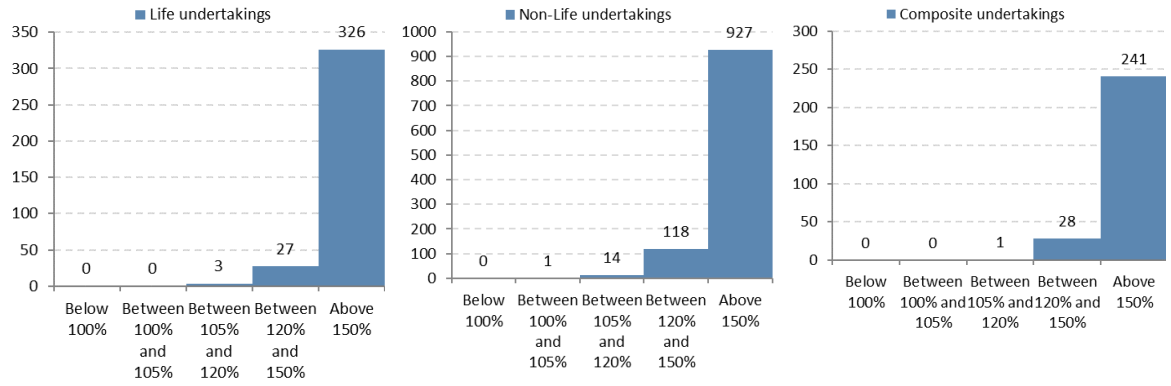
Figure 2.14: SCR ratio (in %; median, interquartile range and 10th and 90th percentile).



Source: EIOPA Quarterly Reporting Solo

At the end of 2023, no insurer reported a SCR ratio below 100%. The number of non-life undertakings with SCR ratios between 100 and 105% decreased from three to one and for composites from two to zero.

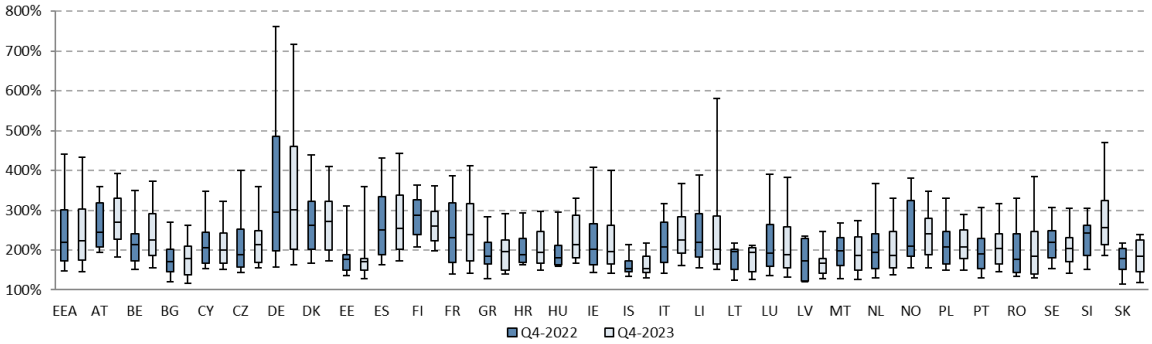
Figure 2.15: Frequencies of SCR ratios for solo undertakings as of end 2023 by type of undertaking.



Source: EIOPA Quarterly Reporting Solo

The capitalization of insurers across countries remained heterogeneous. The median SCR ratio for EEA insurers on aggregate slightly improved in 2023 (Figure 2.16), there were however significant differences across Member States. Hungary (+33.8 pp) and Norway (+31.0 pp) experienced the largest increases compared to the previous year, while the median SCR ratio dropped in Portugal (-26.4 pp) and Finland (-26.0 pp).

Figure 2.16: SCR ratio by country (in %; median, interquartile range and 10th and 90th percentile).



Source: EIOPA Quarterly Reporting Solo

3 THE EUROPEAN REINSURANCE SECTOR

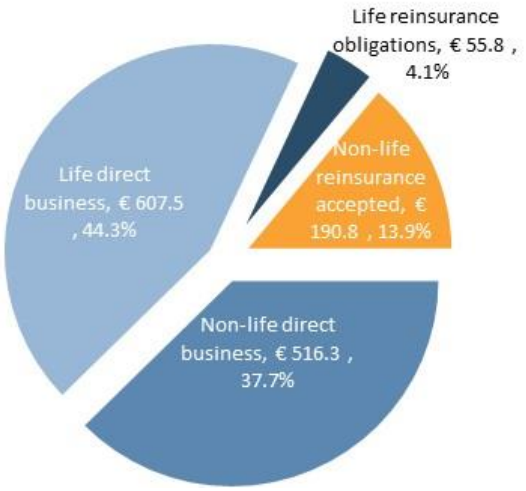
The European reinsurance sector has performed well during 2023 on most indicators likely benefiting from hardening market conditions. The reinsurers grew their written premiums, improved underwriting performance, and their solvency positions continued to be robust in 2023.

3.1 MARKET SHARE AND GROWTH

While reinsurance gross written premiums (GWP) for the non-life segment increased in 2023, a decline was registered for the life segment. Like the year before, reinsurance GWP covered 18.0% of the total GWP (Figure 3.1) in the EEA sector in 2023. Within this category, non-life reinsurance represents 13.9% of total GWP (EUR 190.8 bn.), while life reinsurance accounts for 4.1% (EUR 56 bn.). While premiums for both non-life proportional and non-proportional reinsurance sub-segments grew in 2023 (Figure 3.2), the rates of growth were lower than in 2022. The growth of 5.0% in proportional reinsurance was in line with that in direct business, which grew by 6.6%. The 13.0% growth in non-proportional reinsurance underscores the upwards pricing pressure on reinsurance of peak risks continuing in 2023.

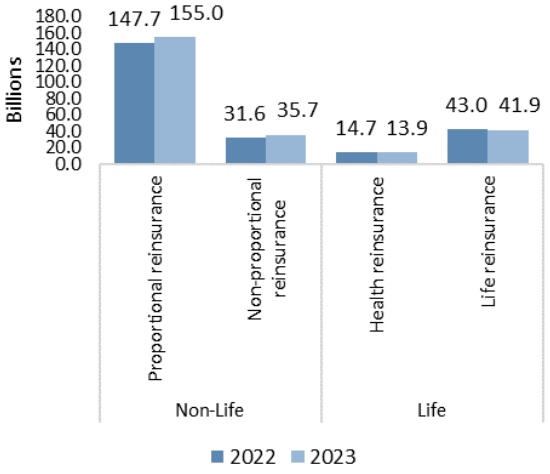
Breaking down non-life reinsurance further, just three out of the sixteen lines of business witnessed a decline in written premiums. While legal expenses and general liability lines shrank marginally, fire and motor lines continued their strong growth in 2023. Workers' compensation and assistance lines stood out with 31.4% and 19.4% growth (Figure 3.3). In non-proportional sub-segment health showed a marginal decline in written premiums. However, continued growth on an already large base in the property line (16.6%) contributed to the overall growth of 13.0% in non-proportional reinsurance (Figure 3.4).

Figure 3.1: Gross Written Premiums in the EEA in 2023 (in EUR bn. and %).



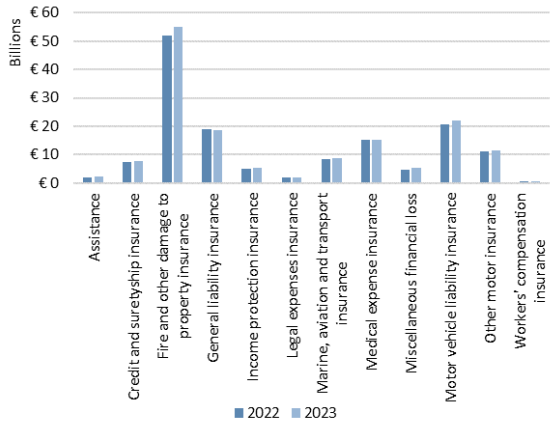
Source: EIOPA Quarterly Solo. Reference date: Q4 2023.

Figure 3.2: Reinsurance Gross Written Premiums in the EEA in 2022 and 2023 (in EUR bn.).



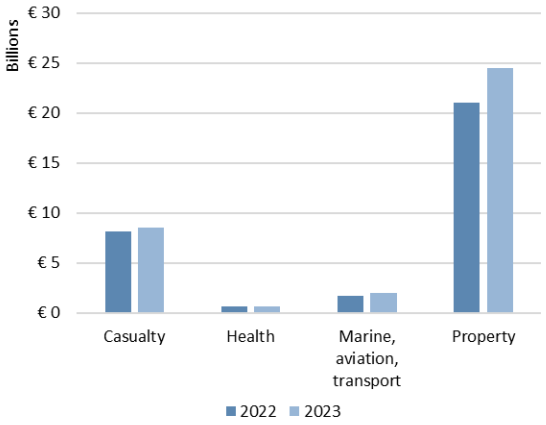
Source: EIOPA Quarterly Solo. Reference date: Q4 2023.

Figure 3.3: Gross Written Premiums for non-life proportional reinsurance by Line of Business (in EUR bn.).



Source: EIOPA Quarterly Solo. Reference date: Q4 2023.

Figure 3.4: Gross Written Premiums for non-life non-proportional reinsurance by Line of Business (in EUR bn.).



Source: EIOPA Quarterly Solo. Reference date: Q4 2023.

Global reinsurer shareholders' equity grew by USD 45 bn. (≈ EUR 40.7 bn.), to USD 635 bn (≈ EUR 574.7 bn.) in the first 9 months of 2023[37]**.** The increase was driven by higher underwriting profits, improving investment asset values and record high issuance of catastrophe bonds. The traditional reinsurance capital grew by USD 35 bn. (≈ EUR 31.7 bn.) to USD 532 bn. (≈ EUR 481.5 bn.). Although 2023 witnessed a record high issuance of approximately USD 15 bn. (≈ EUR 13.6 bn.) in cat bonds, the total alternative capital capacity stood at a similar mark to the one in 2017, i.e., around USD 100 bn. (≈ EUR 90.5 bn.)[38]. This is because the contribution of collateralized reinsurance and other forms of alternative reinsurance has declined since 2017, when the soft market in reinsurance bottomed out. It is difficult to conclude if this dynamic reflects a mere transfer of capital to cat bonds market from other forms of alternative capital rather than a secular upward trend in cat bonds. Nevertheless, cat bonds continue to be an important channel for transferring peak risks. For EU/EEA reinsurers, the total excess of assets over liabilities stood at EUR 391 bn. at end of 2023 Q4, reflecting an increase of 5.6% since 2022 Q4. This was supported by strong underwriting performance, as indicated by the movements in earned premium and incurred claims (Table 3.2). The non-life gross earned premiums and incurred claims grew by 8% and 4% respectively.

The cyber reinsurance is expected to play a key role in the growth of cyber insurance. Primary insurers ceded more than half the cyber insurance premiums to reinsurers in 2022. The global annual cyber premiums reached USD 12 bn. (≈ EUR 10.9 bn.) at year-end 2022 and are expected to reach around USD 23 bn. (≈ EUR 20.8 bn.) by 2025, implying an estimated growth rate of more than 25% per annum[39]. Box 3.1 briefly discusses a recent development in this context i.e., issuance of cyber cat bonds.

[37] AON: Reinsurance Market Dynamics January 2024 [link]
[38] Swiss Re Institute Economic Insights Issue 31/2023 [link]
[39] S&P Global Ratings [link]

BOX 3.1: HAVE CYBER CAT BONDS MADE THEIR MARK?

Annual premiums for cyber insurance stood at USD 12 bn. (≈ EUR 10.9 bn.) globally in 2022, with reinsurers receiving around 55% of the amount. According to S&P, the cyber insurance market is expected to grow more than 25% for the next few years. Furthermore, 2023 witnessed the issuance of the first cyber cat bonds, with new issuances accelerating towards the end of the year and bringing the total capacity of USD 415 bn. (≈ EUR 375.6 bn.) to the market. It warrants the question whether cyber cat bonds can be considered a reliable source of reinsurance capacity, especially given the material dependence of cyber insurance on reinsurance.

To better understand the context, it is helpful to zoom out and consider the developments in the overall cat bond market. 2023 was a record-high year for the issuance of cat bonds overall (estimated USD 15 bn. (≈ EUR 13.6 bn.) [40]), reflecting favourable market conditions. The Swiss Re Global Cat Bond Total Return Index reached a record level of 19.7% for YE 2023, the highest one-year return since 2002. Presumably the cyber cat bonds have benefited from these conditions. Despite the favourable conditions, cyber cat bonds are perceived to be riskier relative to other cat bonds by the investors. This is illustrated by the ratio of bond price at issuance to the expected loss (also referred to as the expected loss multiple). The average expected loss multiple for cyber cat bonds was 7.2 whereas it was 4.5 for all cat bonds and ILS issued in 2023[41].

Negotiations for January 2024 renewals were more orderly than a year ago. This was due to improved availability of reinsurance capacity (on the back of higher prices and better conditions for reinsurers negotiated during January 2023 renewals)[42]. In Europe, loss-free programs witnessed a risk-adjusted rate increase of up to 10% and loss-impacted programs 20% to 40%.

3.2 PROFITABILITY

In terms of monetary impact, 2023 was marked by many smaller natural catastrophe events leading to an approximate damage of around USD 250 bn. (≈ EUR 226.3 bn.)[43]. This is somewhat lower than the aggregate losses of USD 270 bn. (≈ EUR 244.4 bn.) in 2022 when Hurricane Ian in US was responsible for USD 100 bn. (≈ EUR 90.5 bn.) in losses. Unfortunately, the humanitarian impact of natural disasters was much higher in 2023 with 74,000 fatalities (annual average of last five years is around 10,000). Losses due to thunderstorms were at their highest in US and Europe. In US, the losses amounted to USD 66 bn. (≈ EUR 59.7 bn.), out of which USD 50 bn. (≈ EUR 45.3 bn.) was

[40] Swiss Re Institute Economic Insights Issue 31/2023 [link]
[41] Based on data from Catastrophe Bond & Insurance-Linked Securities Deal Directory [link] and EIOPA calculations.
[42] Gallagher Re: 1st View January 2024 [link]
[43] Record thunderstorm losses and deadly earthquakes: the natural disasters of 2023 | Munich Re

insured. In Europe, the damages were EUR 9.1 bn. (≈ EUR 8.2 bn.), out of which EUR 7.3 bn. (≈ EUR 6.6 bn.) were insured.

Table 3.1: The five largest natural catastrophes in 2023, ranked by insured losses.

Date	Country/Region	Event	Fatalities	Overall losses (USD bn)	Insured losses (USD bn)
6 Feb	Turkey, Syria	Earthquake	58000	50.0	5.5
24 Jul - 4 Aug	China, Phillipines, Taiwan, Vietnam	Typhoon Doksuri (Egay)	108	25.0	2.0
22 - 25 Oct	Mexico	Hurricane Otis	53	12.0	4.0
12 - 23 May	Italy, Bosnia and Herzegovina, Croatia, Austria	Flood, flash flood, severe storm	15	10.0	1.1
8 Sep	Morocco	Earthquake	3000	7.0	0.3

Source: Munich Re, NatCat SERVICE 2023 [link].

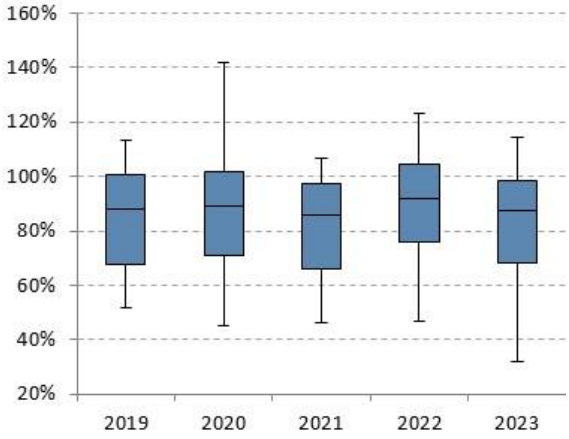
Underwriting profitability of European reinsurers varied across sub-segments in 2023. The median gross combined ratio for EEA reinsurers for non-life accepted proportional reinsurance decreased from 92.0% in 2022 to 87.5% in 2023 (Figure 3.5). However, the median gross combined ratio for accepted non-proportional reinsurance increased from 74.1% to 79.3% during the same period (Figure 3.6). This conceals the fact that on aggregate basis, the profitability of non-proportional sub-segment improved a lot more than that of proportional reinsurance - driven in large part by a drop of 4.8% in incurred claims and an increase of 16.4% in earned premium in the property line of business (Table 3.2).

Table 3.2: Gross Earned Premium and Claims incurred per line of business for EEA reinsurance undertakings.

Line of business	2022		2023	
	Gross earned premium	Gross claims incurred	Gross earned premium	Gross claims incurred
	€ bn	*€ bn*	*€ bn*	*€ bn*
Medical expense insurance	0.2	0.0	0.4	0.2
Income protection insurance	5.8	2.3	5.8	2.9
Workers' compensation insurance	38.2	27.7	41.4	27.1
Motor vehicle liability insurance	13.3	8.7	13.9	9.8
Other motor insurance	2.3	2.2	2.5	1.5
Marine, aviation and transport insurance	0.6	0.3	0.6	0.3
Fire and other damage to property insurance	5.3	4.0	5.9	3.9
General liability insurance	2.9	2.8	3.8	2.9
Credit and suretyship insurance	2.8	1.6	3.5	1.7
Legal expenses insurance	17.8	13.3	18.5	15.2
Assistance	9.4	6.7	9.8	7.5
Miscellaneous financial loss	0.5	0.3	0.5	0.4
Proportional Reinsurance - total	**99.1**	**69.8**	**106.5**	**73.4**
Health	6.6	4.6	6.8	5.7
Casualty	0.6	0.4	0.6	0.2
Marine, aviation, transport	1.5	1.3	1.7	1.0
Property	17.3	13.7	20.1	13.0
Non-Proportional Reinsurance - total	**25.9**	**20.0**	**29.1**	**19.9**
Non-Life - total	**125.0**	**89.8**	**135.6**	**93.4**
Health reinsurance	12.4	9.0	11.5	8.8
Life reinsurance	27.8	23.5	27.4	22.7
Life - total	**40.2**	**32.5**	**38.9**	**31.5**
Total	**165.2**	**122.4**	**174.5**	**124.8**

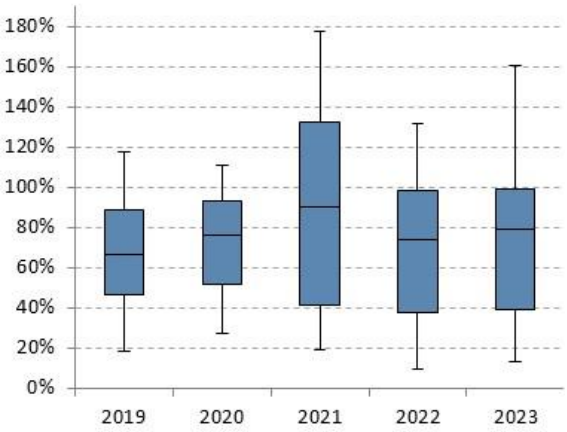
Source: EIOPA Quarterly Solo (reinsurance undertakings). Reference date: Q4 2022 and Q4 2023.

Figure 3.5: Gross Combined Ratio for non-life accepted proportional reinsurance of EEA reinsurance undertakings (in %; median, interquartile range and 10th and 90th percentile).



Source: EIOPA Quarterly Solo. Reference date: Q4 2023.

Figure 3.6: Gross Combined Ratio for accepted non-proportional reinsurance of EEA reinsurance undertakings (in %; median, interquartile range and 10th and 90th percentile).

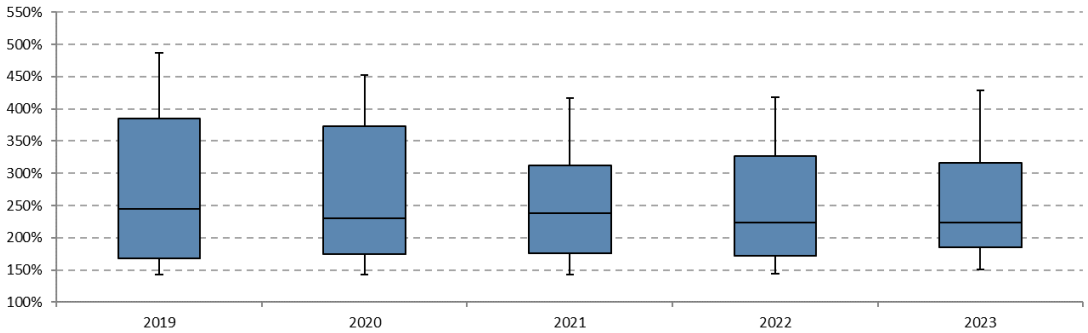


Source: EIOPA Quarterly Solo. Reference date: Q4 2023.

3.3 SOLVENCY

The solvency positions of EEA reinsurers remained stable in 2023 and broadly in-line with those in 2022. The median solvency ratio remained around the same level of 223.4% at end of 2023 (Figure 3.7). On aggregate basis, both eligible own funds and SCR grew by 5% since 2022 year-end.

Figure 3.7: Solvency ratio of EEA reinsurance undertakings (in %; median, interquartile range and 10th and 90th percentile).



Source: EIOPA Quarterly Solo. Reference date: Q4 2023.

4 THE EUROPEAN OCCUPATIONAL PENSION SECTOR

The European sector for occupational pensions stays resilient, although dependent on monetary policy developments. The original inflation movements triggered by the geopolitical events and the monetary policy decisions influenced and continue to drive IORPs attention towards holding sufficient liquidity levels. This ensures that the hedging process for the duration mismatch based on interest rate derivatives functions without disruptions. In addition, the banking sector turmoil observed at the beginning of 2023, called for additional caution regarding possible contagion mechanisms. The market developments in 2023 had been mainly positive on the IORPs balance sheets with an observed growth in terms of the fixed income assets and equities. On the other side of the balance sheet, the liabilities of IORPs also increased depending to a substantial extent on the characteristics of the pension scheme: defined benefit (DB), or defined contribution (DC) and the valuation method used.

Still high concerns on the developments observed regarding the pension gaps. Europeans are not saving enough for their retirement with the gap only growing larger year by year. In addition, women keep being in a worse position compared to men. In 2021, EIOPA advised the European Commission on best practices for establishing national pension tracking systems, which provide citizens with an overview of their pension entitlements. This initiative remains high on the agenda within the 2023-2026 Strategy and the Annual Work Programme for 2024, which highlight, among other objectives, the importance of working towards not only just managing but also closing the gap. Furthermore, EIOPA has proposed to strengthen its capacity to analyse emerging risks in the occupational pensions sector by collecting look-through data on IORPs' investments in UCITs and derivative information. This highlights the importance of filling the data gaps identified in the area of derivatives and look-through information.

4.1 FINANCIAL POSITION AND SIGNIFICANCE OF THE PENSION SECTOR[44]

The total assets of IORPs, increased by roughly EUR 221 bn. from EUR 2,452 bn. to EUR 2,673 bn. in Q4 2023 compared to Q4 2022. This was mainly driven by the increase in bonds holdings and share in the portfolios, which was reflected by a 14.4% increase in government bonds amounts. In addition, a 9.3% increase in equity and 6.3% in investment funds categories has been reported (Figure 4.1). In terms of shares in the portfolio, the split by asset categories stayed relatively stable.

Liabilities also increased in the fourth quarter of 2023 compared to the previous year. Overall, the value of total liabilities increased year-on-year from EUR 2,104 bn. to EUR 2,301 bn. For IORPs providing Defined Contribution (DC) pension schemes, the value of their liabilities increased by roughly 17.3%. For Defined Benefit (DB) IORPs the increase in liabilities is mainly explained by the liabilities' indexation to inflation and interest rates developments for IORP markets where liabilities

[44] Calculated as the ratio of assets over technical provisions

are sensible to interest rate changes (like the Dutch market), changes in volumes[45] and regulatory changes in some Member States (e.g., France). DB IORPs valuing their technical provisions using a fixed interest rate or valuing their technical provisions only annually (or less frequently),[46] reported a +9.5% change in their liabilities in Q4 2023 compared to Q4 2022 (Figure 4.2).

Figure 4.1 Breakdown of total assets (in bn. EUR).

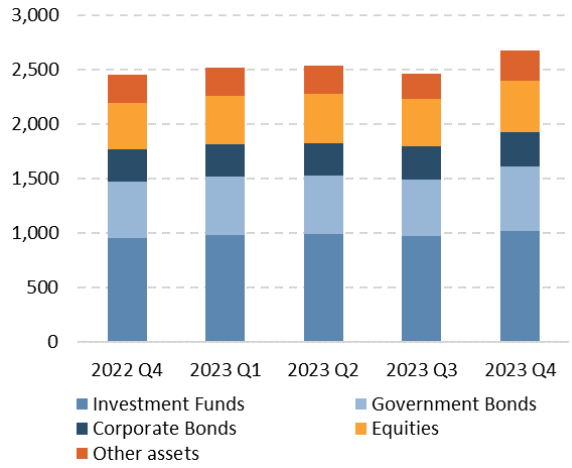
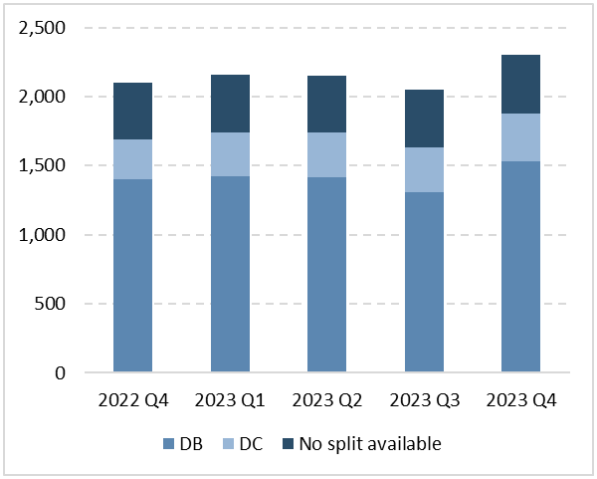


Figure 4.2 Breakdown of total liabilities by type of pension scheme (in bn. EUR).



Source: EIOPA Occupational Pensions Statistics – Balance Sheet, quarterly.

As the increase in the value of liabilities exceeded the increase in the value of assets, the financial position of IORPs in the EEA slightly deteriorated (Figure 4.3). The funding ratio moving from 120 % to 119% was mainly the result of the financial developments in the dominant Dutch IORP sector (in terms of assets - on aggregate, although both assets and technical provisions increased, the former increased less than the latter with the funding ratio moving from 116% to 115%). Due to some of its characteristics, such as indexation by inflation and the market consistent valuation of technical provisions, the increase in assets did not compensate the increase in liabilities at the end of 2023. In many other countries with DB pension schemes different rules are applied, for example a fixed discount rate to evaluate the technical provisions. When removing the Dutch figures related to Excess of Assets and Liabilities (Figure 4.4), the remaining IORP sectors in the EEA showed a slight improvement in the funding ratio.

[45] Detailed statistics for IORPs Members will be available with the 2023 Annual Reporting.

[46] For the latter category, the annual calculation of the technical provisions takes place in the first few months of the year. This means that the reported technical provisions will often be based on calculations from early 2023.

Figure 4.3 Components of the Excess of Assets over Liabilities (in bn. EUR).

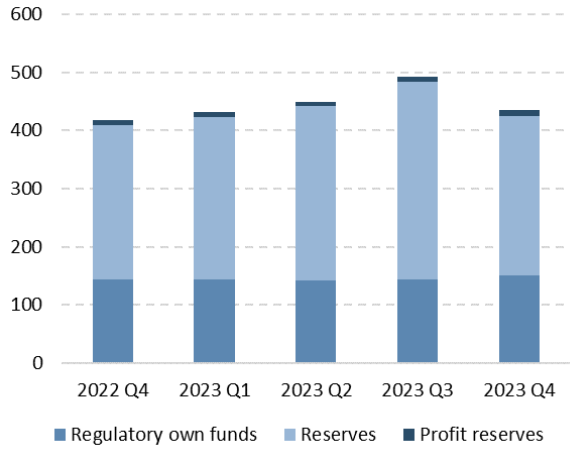
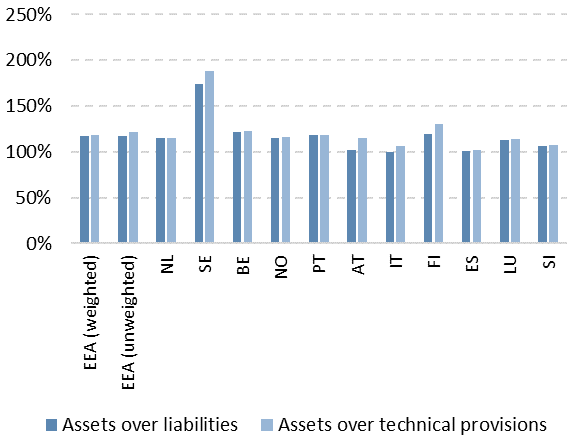


Figure 4.4 Cover ratios by EEA Member State (DB schemes).



Source: EIOPA Occupational Pensions Statistics – Balance Sheet, quarterly. Reference date: Q4 2023. Note on Figure 4.4: The weighting is based on total assets. In the case of Italy, due to discontinuation of many DB schemes, the data on technical provisions that are reported to EIOPA are set as equal to the assets held. Notice that the overall share of DB schemes in Italy is only around 2.6%. of total assets.

The structure of the pensions sector is highly heterogeneous across Member States. While the overall structure organized in three Pillars is valid in each Member State (i.e., Pillar I being a government provided old age pension, Pillar II an occupational pension and Pillar III an individual pension) the complementarity between the three pillars and the weight of each Pillar varies across Member States.

The penetration rate indicator indicates the importance of the second Pillar in a Member State. The ratio, defined as total assets of all IORPs over the Gross Domestic Product (GDP) of the country shows the size of the IORP sector relative to the size of the overall economy (Figure 4.5). The holdings of Dutch IORPs amount to nearly 155% of its annual GDP. For the other Member States, penetration rates are much lower (Sweden 47.7%, Italy 8.5%, and Norway 7.8%). Figure 4.6 shows that 63.5% of all EEA IORP assets are held by Dutch entities, followed by Sweden (10.9%), Germany (9.4%) and Italy (7.1%).

Figure 4.5 Penetration rates by EEA Member State

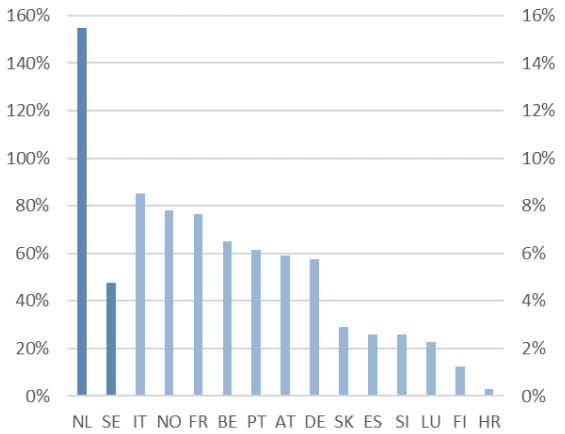
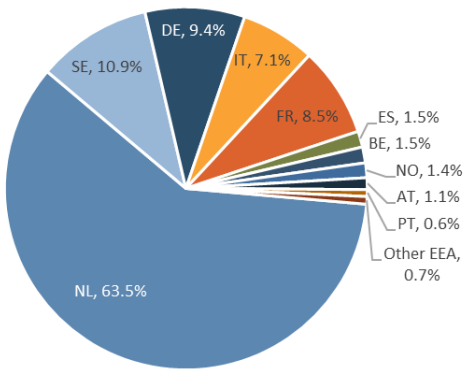


Figure 4.6 Relative size of the pension sector

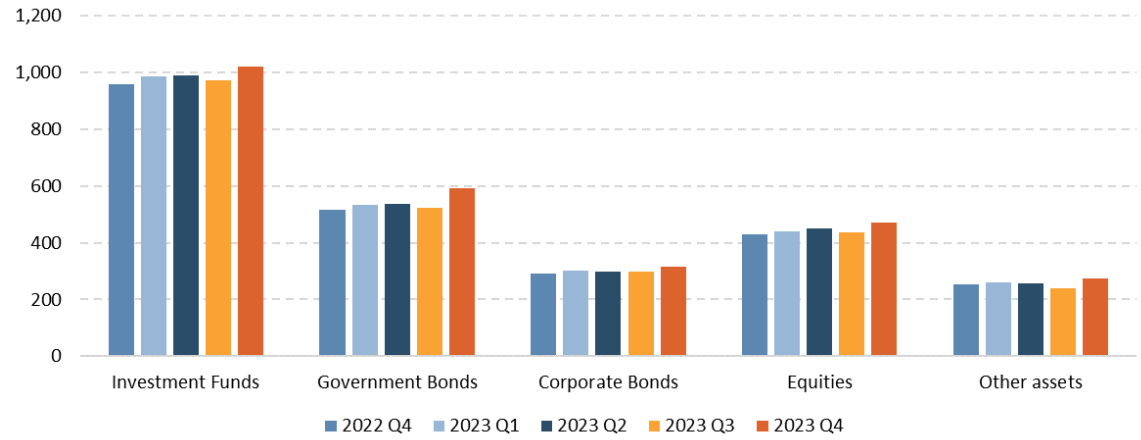


Source: EIOPA Occupational Pensions Statistics – Balance Sheet, quarterly. Reference date: Q4 2023. Relative size is determined as the ratio of total assets in the Member State to EEA total assets. Note: given the difference in scale needed to represent NL and SE data, the left axis should be used to read the penetration rate referred to NL and SE, while the right axis should be used to read the penetration rate of the other countries showed in light blue.

4.2 ASSET ALLOCATION OF IORPS

The asset allocation of IORPs changed slightly in the course of 2023. A slightly higher allocation to government bonds has been observed (from 21.1% to 22.1%), both in absolute (Figure 4.7) and relative terms potentially due to higher market values coming from lower interest rates and bond purchases. The relative share of investment funds in IORP portfolios dropped from 39.2% at year-end 2022 to 38.2% at the end of 2023 (Figure 4.8) even though it increased in absolute amounts (Figure 4.7).

Figure 4.7 Allocation to asset categories (in bn. euro).



Source: EIOPA Occupational Pensions Statistics – Balance Sheet, quarterly.

The IORPs sector is highly heterogeneous when it comes to asset allocation (Figure 4.8). The allocation at the EEA level is mainly driven by the asset allocation of the Dutch IORP sector given its size. For what concerns other countries, IORPs in AT and BE allocate most of their assets via investment funds, whereas equity exposures are material for SE and IT. The differences in asset allocation inevitably also led to observing a heterogeneous landscape in terms of investment risks to which IORPs from different countries are exposed.

The choice of investment funds varies across Member States for IORPs (Figure 4.9). In nearly all Member States, the share of equities funds held via investment funds is at least 25.4%, except for DE with 14.5%, where IORPs mainly invest in debt funds and asset allocation funds within the investment funds category.

Figure 4.8 Asset allocation by EEA Member State.

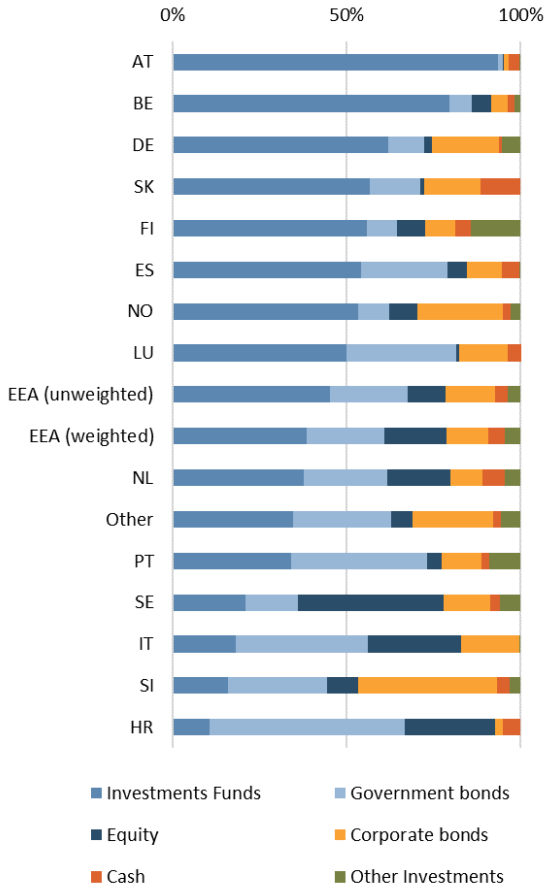
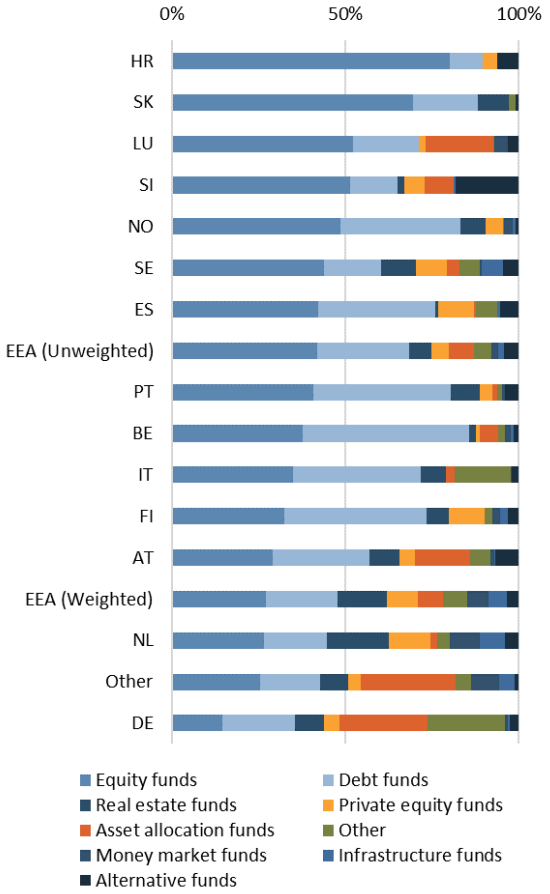


Figure 4.9 Investment funds: breakdown into subcategories by EEA Member State.



Source: EIOPA Occupational Pensions Statistics - Asset Exposure, quarterly; Reference date: Q4 2023.

There are significant differences between the asset allocation of DB and DC IORPs. On a look-through basis the former normally hold a larger proportion of their investments in less risky asset categories (Figure 4.10 and Figure 4.11). Given the attractive conditions offered by the government bonds market throughout 2023, a balanced approach to the purchase these kinds of assets can be observed as bonds represent 45.6% for DB IORPs (weighted average) and 49.5% for DC IORPs (weighted average). For equities, on the contrary, DB IORPs allocate 32.6% and DC IORPs 36.5%. DB IORPs allocate a larger share of their investments to property and other investments, which are deemed riskier than bonds. As a result, DB IORPs would be more exposed to a fall in prices of riskier assets than DC IORPs in the event of adverse financial market developments, at least in the short run.

Figure 4.10: DB schemes: Asset allocation with full look-through for investment by EEA Member State.

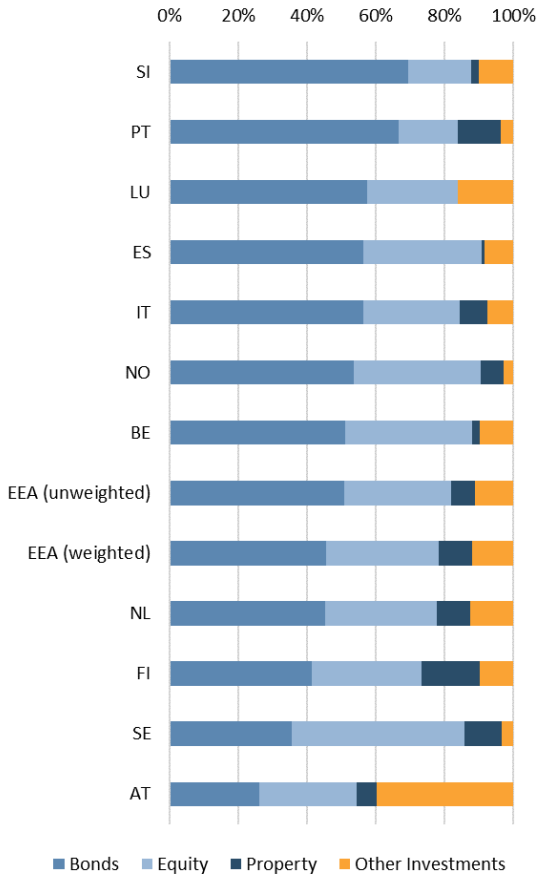
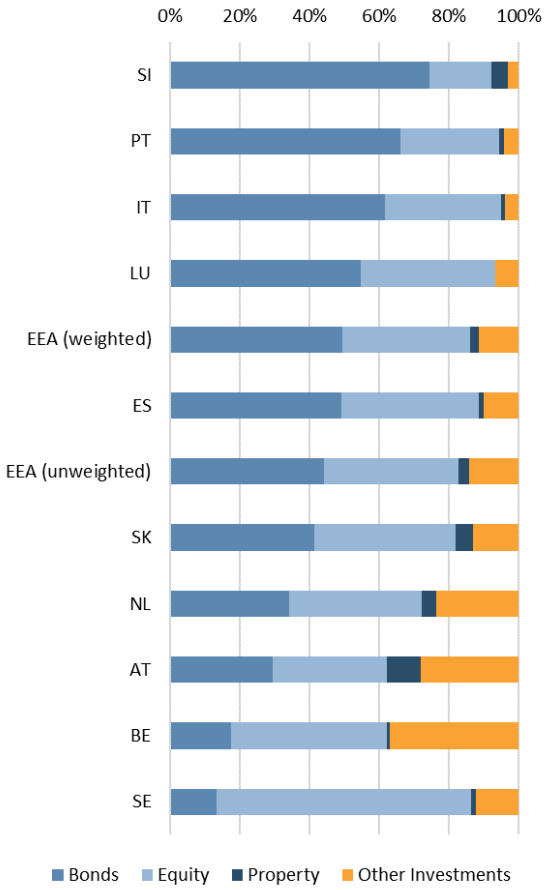


Figure 4.11: DC schemes: Asset allocation with full look-through for investments by EEA Member State.



Source: EIOPA Occupational Pensions Statistics - Asset Exposure, quarterly. Reference date: Q4 2023. Note: Bonds consist of government bonds, corporate bonds, mortgages and loans, debt funds and money market funds. Equity consists of direct equity, equity funds and private equity funds. Property consists of direct property, real estate funds and infrastructure funds and 'other' investments consists of direct other investments, asset allocation funds, alternative funds and other funds.

4.3 MEMBERS AND BENEFICIARIES

At the end of 2022 IORPs in the EEA had nearly 35 million active members (i.e., persons currently accruing rights) as shown in Figure 4.12. DB pension schemes account in the overall figure for slightly more than 9 mil., while DC pension schemes represent 14.4 mil; no split is discernible for the remaining 11.7 mil.

The number of deferred members (i.e., persons who had left service with an entitlement to future benefits) was more than 25 million (10.6 mil. in DB pension schemes and 6.3 mil. for DC schemes)[47]. The Netherlands, Germany, Italy, and Sweden are the top four EEA Member States in terms of active members and together represent more than 66.7% of all active members in the EEA (Figure 4.13).

[47]In these figures double counting can occur. For example, a person can be registered as an active member at one IORP and a deferred member at another. Similarly, one person can be registered as a beneficiary at multiple IORPs.

Figure 4.12: Breakdown of IORP Members by pension scheme.

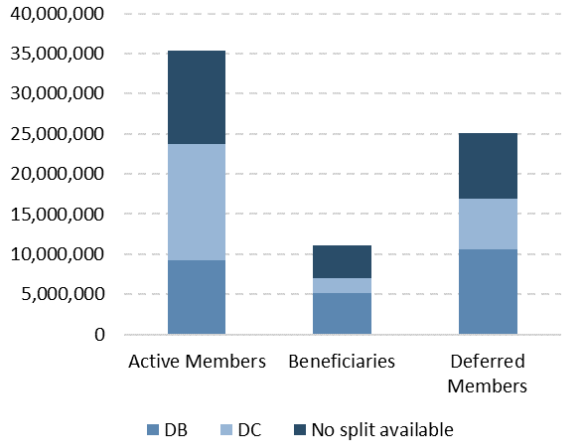
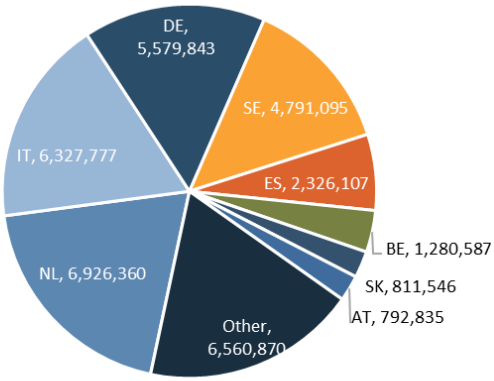


Figure 4.13: Active members.

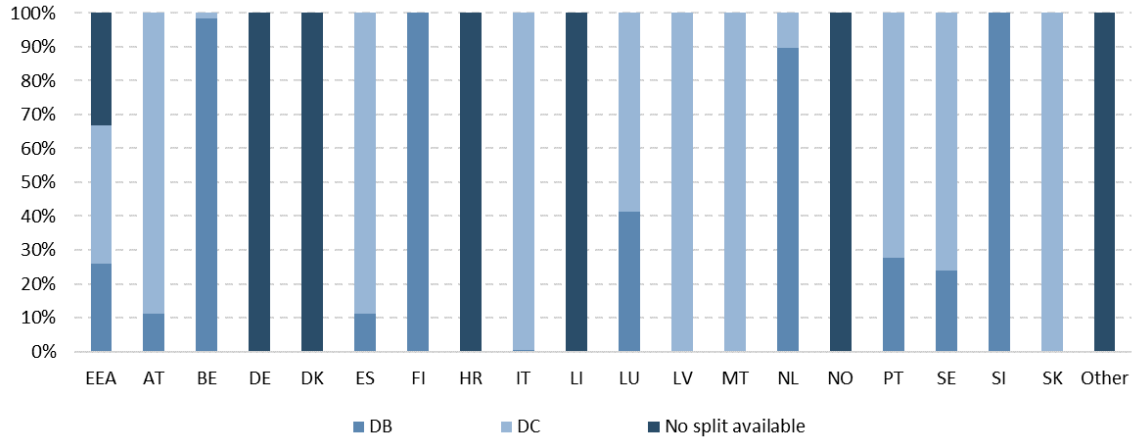


Source: EIOPA Occupational Pensions Statistics - Members. Reference date: 2022.

The relative importance of DB and DC pension schemes varies widely across Member States. Whereas for example most active members of NL IORPs are contributing to defined benefit schemes, nearly all active members of IT IORPs are enrolled in DC pension schemes[48] (Figure 4.14).

At year-end 2022, more than 11 million beneficiaries received payments from IORPs, with 47.0% of them in DB pension schemes and 16.9% in DC pension schemes.[49] In some cases, DC pension schemes do not offer a lifetime benefit, but instead provide a lump sum at retirement. In this case the accumulated savings of a person are paid out or transferred to another financial institution, for example when the retiree buys an annuity from an insurer; consequently, these cases are not included as a beneficiary in the provided statistics.

Figure 4.14 :Active IORP members by Member State, broken down by type of pension scheme.



Source: EIOPA Occupational Pensions Statistics - Members. Reference date: 2022

[48] Regarding BE, it must be noted that most DC plans are subject to a legal return guarantee and are therefore considered DB for reporting purposes.

[49] The remaining part are beneficiaries for IORPs where no split is available.

5 RISK ASSESSMENT

5.1 RESULTS OF THE SPRING SURVEY AMONG NATIONAL COMPETENT AUTHORITIES

Macroeconomic and market risk remained the main concerns for both insurers and IORPs supervisors, according to the results of the Spring qualitative survey, despite a slight improvement in the materiality of the risks (Figure 5.1 and Figure 5.2). Inflation followed a descending trend throughout 2023 and beginning of 2024 compared to the 2022 levels and was accompanied by a rise of the GDP at EEA level.[50]Nevertheless, inflation still above the 2%[51] target level continues to be challenging for some insurers and IORPs. According to the respondents, the emerging economic environment with high interest rates has already resulted in GDP contractions for some member states accompanied by a deterioration in the economic situation of households and weaker unemployment rates. Going forward, macro risks are expected to decrease further (Figures 5.6 and Figure 5.7).

Figure 5.1: Materiality of risks for the insurance sector.

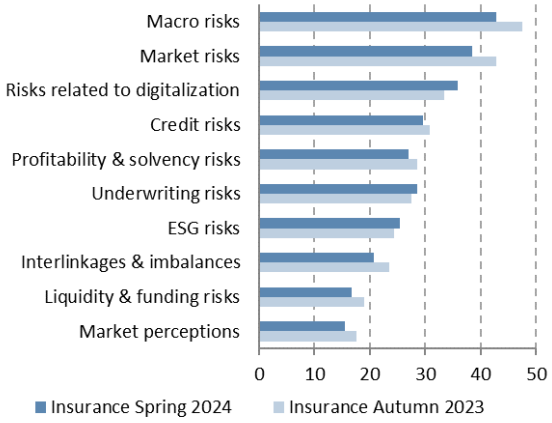
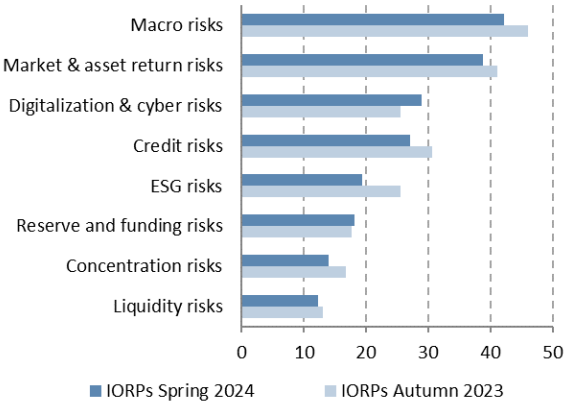


Figure 5.2: Materiality of risks for the IORP sector.



Source: EIOPA Insurance and IORPs Bottom-Up Surveys Spring 2024 compared to Bottom-Up Surveys Autumn 2023. Note: The ranking is based on the responses received. Risks are ranked according to the probability of their materialisation (from 1 indicating low probability to 4 indicating high probability) and their impact (1 indicating low impact and 4 indicating high impact). The figures show the aggregation (i.e., the product probability times impact) of the average scores assigned to each risk. The results were subsequently normalised on a scale from 0 to 100. For Figure 5.2, "Interlinkages" and "Risk related to digitalization" have been replaced by "Concentration risks" and "Digitalization & cyber risks", respectively. "Market & asset return risks" combines past risk categories "Market risks" and "Profitability/portfolio performance" in line with the new EIOPA's IORP Risk Dashboard. The materiality of the new category for Autumn 2023 was computed as a simple average of the two above-mentioned risk categories.

The geopolitical instability, which NCAs identified as the main driver for macro risks for both insurers and IORPs, introduces greater uncertainty around the outlook for inflation and growth.

[50] Please refer to Chapter 1: "Key development and risks" for additional details.

[51] See ECB: Two per cent inflation target. Available at: www.ecb.europa.eu/mopo/strategy/pricestab/html/index.en.html.

For the insurance sector, geopolitical risks were identified as the main driver for almost half of the respondents (46.4%), followed by low growth/recession (21.4%) and inflationary pressures (17.9%) (Figure 5.3). For IORPs, geopolitical risks were identified as the main concern by more than 80% of the respondents.

High inflation impacts the financial position of IORPs, especially where pension entitlements are linked to inflation or wage growth. In pension schemes without or with conditional indexation, both current and future beneficiaries may experience a decrease in their purchasing power if the increase in inflation is not fully compensated.

Market risks continue to pose challenges for the insurance and IORP sectors. For insurers, interest rate risk was identified in the survey as the main driver for market risks, reflecting their large exposure to fixed-income assets. For IORPs, the impact of higher interest rates on their liabilities is mixed and depends to a large extent on whether they offer defined benefit or defined contribution pensions.

Figure 5.3: Main drivers of macro risks for the insurance sector.

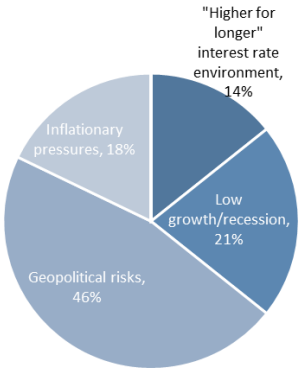


Figure 5.4: Main drivers of liquidity and funding risks for the insurance sector.

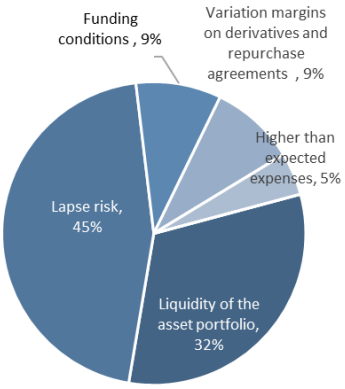
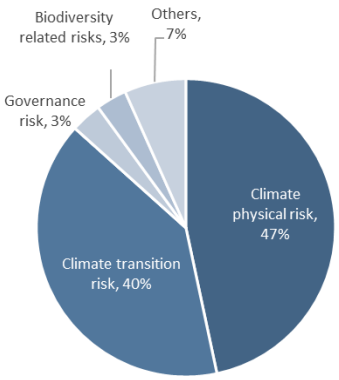


Figure 5.5: Main drivers of ESG risks for the insurance sector.



Source: EIOPA Insurance Bottom-Up Surveys Spring 2024.Note: Based on the responses received. From Spring 2024 edition, the surveys include new main drivers for the different risk categories.

Lapse rates remain the key concern of European insurers for liquidity and fundings risks (Figure 5.4). Given the switch to the new macroeconomic regime, some insurers in the EEA have already experienced an increase in lapse rates. However, as indicated by supervisors, insurers' investment portfolios remained liquid and sufficient to compensate the additional surrenders.

Looking ahead, liquidity and funding risks are expected to remain contained, with limited lapse rates and asset portfolios sufficiently liquid (Figure 5.6). Nonetheless, undertakings with significant exposures to interest rate derivatives may also face liquidity challenges during periods of financial market volatility, especially if they are subject to margin calls.

Figure 5.6: Risks with the highest expected increase in their materiality over the next 12 months for the insurance sector.

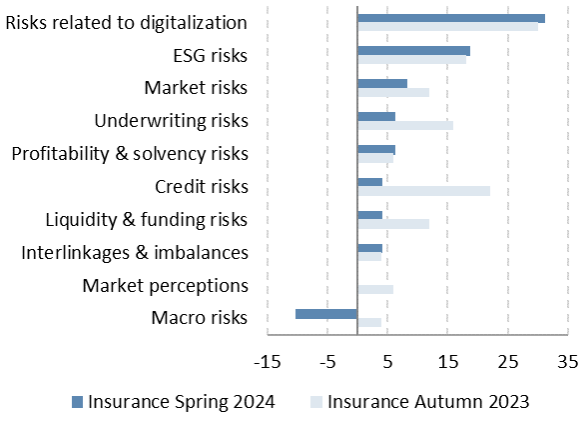
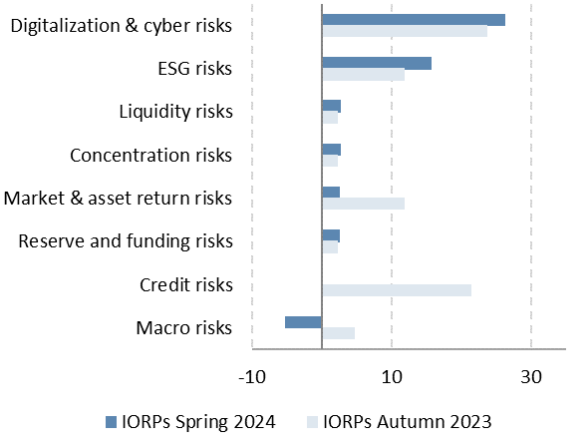


Figure 5.7: Risks with the highest expected increase in their materiality over the next 12 months for the IORP sector.



Source: EIOPA Insurance and IORPs Bottom-Up Surveys Spring 2024 compared to Bottom-Up Surveys Autumn 2023. Note: Ranking based on the responses received. Risks are ranked according to the expectation for the future change in their materiality (from -2 indicating strongly decrease to +2 indicating strongly increase). The figures show the aggregation of the average scores assigned to each risk. The results were subsequently normalised on a scale from -100 to 100.

Digitalization and cyber risks were ranked third in terms of their materiality for insurers and are expected to remain a key risk in the future (Figures 5.1 and Figure 5.6). On aggregate, the number of cyber-incidents continued to increase in most of the EEA member states. At individual level, there are some countries where only a limited increase in cyber incidents was observed. As indicated by national supervisors, insurers are adapting their business to the digital environment with new technologies in the fields of underwriting, claims and operational management. On the other hand, insurers failing to adapt their business to digital transformation face the risk of losing premium income.

Going forward, environmental, social, and governance (ESG) risks remain also a key concern for the insurance and IORP sectors. ESG risks were ranked second in terms of expected change of materiality over the next 12 months for insurers and IORPs. For the insurance sector, climate physical risk was identified as the key driver for almost half of the respondents (46.7%) given the increase in frequency and severity of extreme climate related events. Transition risk (40.0%) ranks second, followed by governance risks (3.3%) and biodiversity related risks (3.3%) (Figure 5.5).

5.2 QUANTITATIVE RISK ASSESSMENT FOR THE EUROPEAN INSURANCE AND IORPS SECTORS

This section focuses on the assessment of key risks and vulnerabilities for the European insurance and IORPs sectors that were identified as relevant in previous sections of the report. It starts with shedding light on the investment behaviour of insurers and IORPs by providing a breakdown of their investment portfolios and asset allocations with a focus on specific country and sectoral exposures, as well as home bias and trading activities. The following subsection concentrates on the vulnerabilities coming from real estate investments against a macroeconomic environment

characterised by increasing financing costs for real estate due to higher inflation and interest rates. As a zoom in, a box on real estate funds discusses trends, facts and risks concerning this kind of exposures for insurers. The next and final part examines potential financial stability issues stemming from alternative assets and provides a closer look at implications of private debt and private credit for the insurance sector.

5.2.1 INVESTMENT BEHAVIOR

5.2.1.1 Assets allocation

The investment behaviour of insurers and IORPS determines their exposures to market risks and provides insight into their reactions to macroeconomic and geopolitical developments over time. At the end of 2023, the total investment assets of EEA insurers reached a market value of approximately EUR 6.4 trillion (excluding unit-linked assets), 8% higher than in the previous year. For IORPs, total investment assets amounted to EUR 2.6 tr., EUR 221.8 bn. higher than in 2022; this increase was due to an increase in bonds (EUR 99.2 bn.), collective investments (EUR 60.6 bn.) and equity (EUR 40.3 bn.).

Figure 5.8: Split of investments by insurers at YE 2020 to 2023.

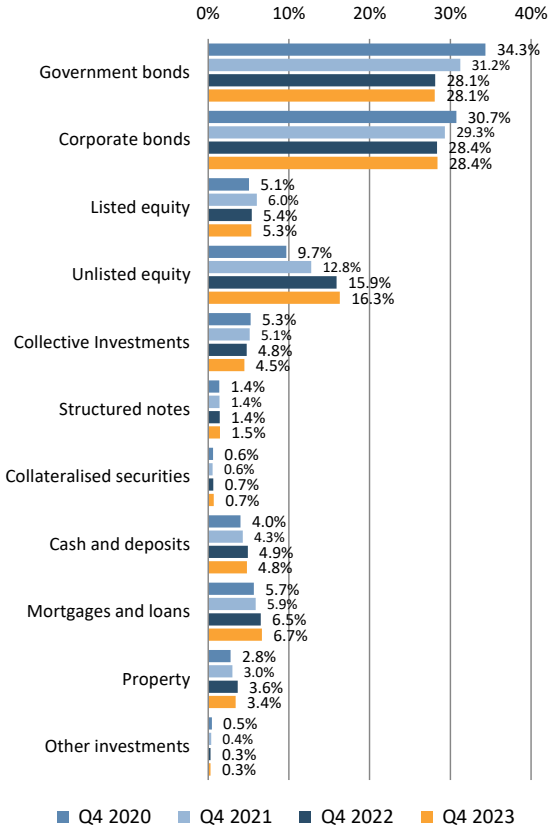
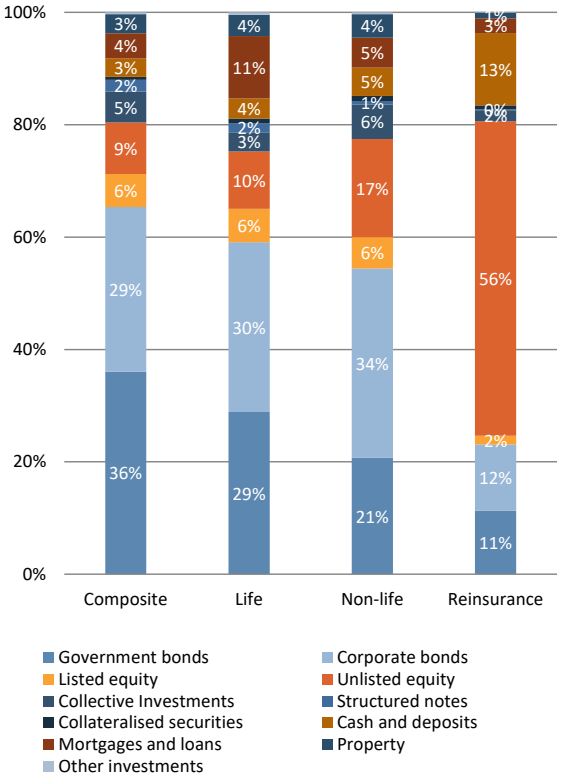


Figure 5.9: Spit of investments at YE 2023 by type of undertaking.



Source: EIOPA Quarterly Reporting Solo. Reference period: Q4 2020-2023. Note: Figures based on look-through for funds. Assets held for unit-linked business are excluded. Equities include holdings in related undertakings.

In the insurance sector, the composition of investments remained relatively stable compared to the previous year (Figure 5.8). On aggregate, government and corporate bonds continued to dominate the total investment portfolio, representing over half of the portfolio, while the share of

unlisted equity, mortgages, and loans saw slight increases relative to the total investments. Conversely, investment in property slightly decreased. The portfolio allocation is the result of specific trading dynamics of different asset classes, which are described in detail in section 5.2.1.3. Overall, it seems that in 2023 while trading activities stabilised in the fixed income segment, it is likely that the increased share in equity is resulting from valuation effects as insurers have been net sellers of equity in the recent quarters. The positive market movements witnessed in 2023 occurred alongside heightened uncertainty stemming from persistent geopolitical tensions and central banks' responses to inflation. These factors likely serve as the primary explanations for the unchanged portfolio composition during this period.

Overall, insurers' portfolios remained heavily skewed towards fixed-income assets, followed by equities. Government and corporate bonds collectively represent more than half of the total investment portfolio, exposing insurers to interest rate and credit risks, alongside equity risks.

Significant variations exist between different types of insurance undertakings. Composite and life insurers tend to have the largest proportion of government bonds in their portfolios, while non-life companies exhibit higher exposures to corporate bonds and allocate more to unlisted equities, primarily participations. Reinsurers, on the other hand, hold a substantial portion of their investment assets in unlisted equities, including holdings in related undertakings, and maintain sizable cash and deposit reserves (Figure 5.9).

The vast majority of bonds held by European insurers are investment grade, with most rated CQS 1 (AA) (Figure 5.10). Compared to the previous year, they increased their relative share to 25% of the aggregate government and corporate bond portfolio. The share of investment grade bonds with BBB, which have the highest risk of being downgraded below investment grade, has slightly decreased. Nevertheless, the risk of massive rating downgrade could significantly impact the market value of bond portfolios and, at the same time, increase the solvency capital requirement for spread risk and remains under close monitoring.

The share of insurers' exposures across rating categories differs between countries and is related to the rating of the home sovereign. In Denmark Sweden, Czechia, Germany, Malta and Netherlands more than 50% of bonds are rated CQS 0 (AAA) or CQS 1 (AA) (Figure 5.11). In other countries such as Spain, Poland, Croatia, Hungary, Romania and Iceland the share is below 10%. In Denmark, Sweden, Norway, Liechtenstein, Finland, Greece, Cyprus, Luxembourg and Iceland more than 10% of bonds are rated below investment grade or nonrated. The main reason for these cross-country differences is the rating of the home sovereign, which also influences the rating of local corporates. Insurers tend to prefer to hold domestic corporate bonds (see next subsection on home bias).

The asset allocations of IORPs differ from those of insurers, but also between DB and DC schemes. On aggregate, IORPs have lower exposures to fixed income assets and higher exposures to equity and property when compared to insurers. The predominant investment class for EEA IORPs are collective investments which represented 38.2% of total assets at the end of 2023 (see Chapter 4). The second most important asset class were bonds investments with 33.9% of total assets, followed by equity (17.6%). Within collective investments, the larger majority is represented by equity funds (10.5%), followed by debt funds (8.0%), real estate funds (5.4%) and private equity funds (3.5%).

Exposures to real estate risk represented about 9.6% of total assets at the end of Q4 2023 and took mostly the form of real estate investment funds.

Figure 5.10: Credit quality of bond portfolios for the insurance sector.

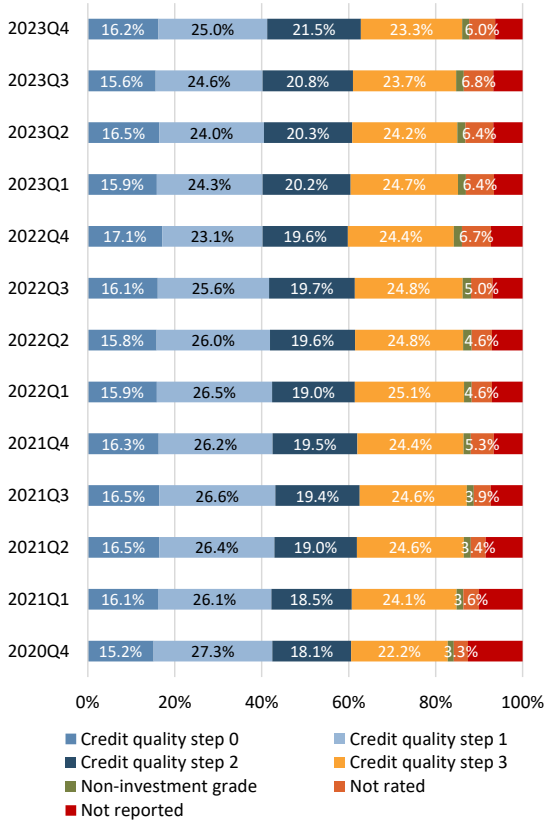
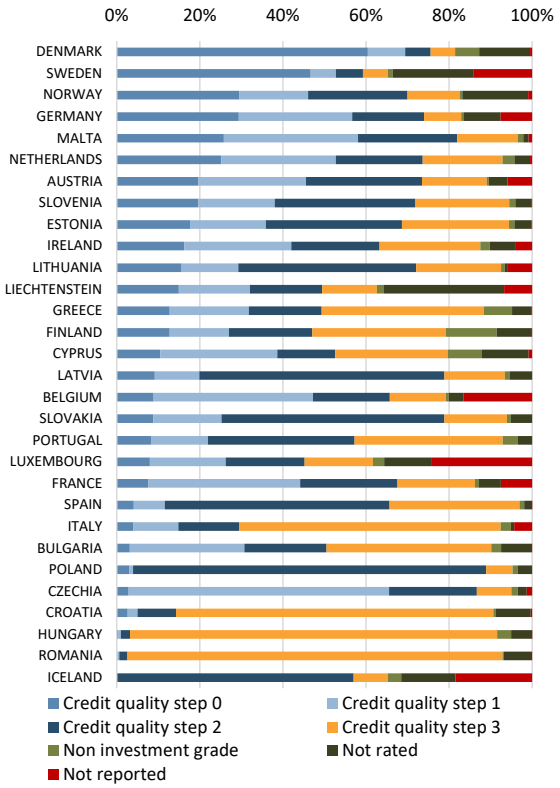


Figure 5.11: Credit quality of bond portfolios for the insurance sector across countries.



Source: EIOPA Quarterly Reporting Solo. Reference date: Q4 2023. Note: Government and corporate bond portfolios are combined. Assets held for unit-linked contracts are included. Mapping of CQS can be consulted here: JC 2021 38 (Final Report Amendment ITS ECAIs mapping CRR art 136) (europa.eu)

5.2.1.2 Home bias

Insurers hold a sizeable proportion of bonds issued by counterparties in their home country making them vulnerable to concentration risks. The holdings of government bonds by insurers continue to display significant home bias (Figure 5.12). In many countries, more than a third of the government bonds held by insurers are issued by their home sovereign. This is in particular the case for large countries with a deep sovereign bond market, but also for many smaller jurisdictions.

At the EEA aggregate level, most government bonds held by insurers are from EEA countries. The share of EAA government bonds has slightly decreased to 87.2% (Figure 5.13). US government bonds represent the largest portion among non-EAA bonds with 2.9% (a slight increase compared with 2022). The share of sovereign bonds of other advanced economies and emerging markets is still only 2.6%.

Figure 5.12: Holdings of government bonds by issuer country for the insurance sector.

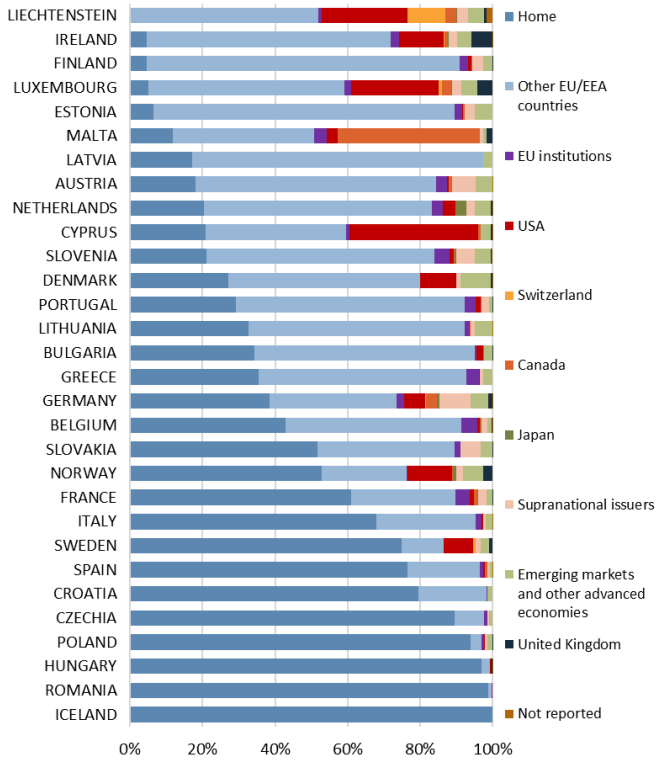
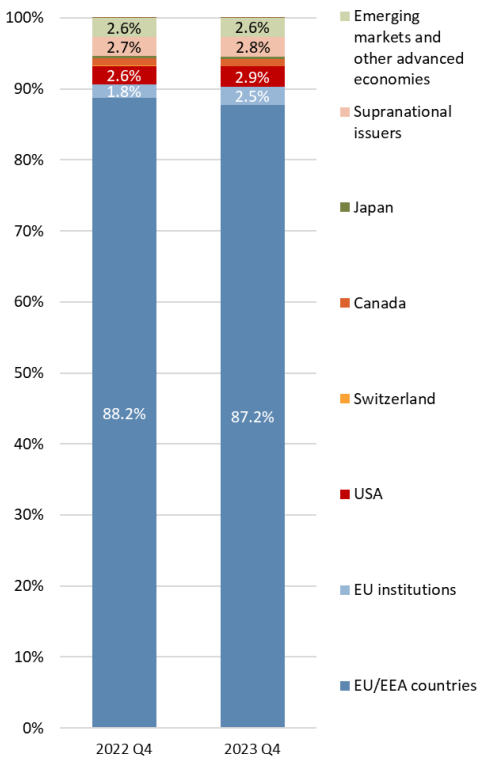


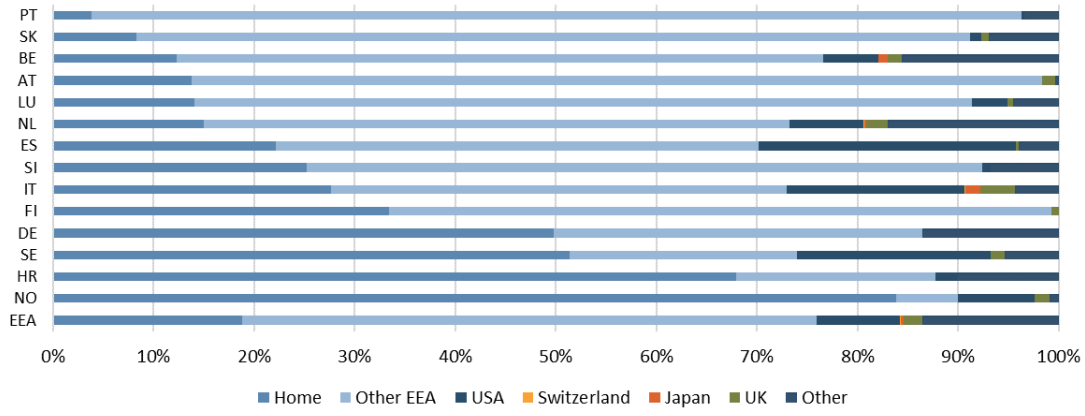
Figure 5.13: Aggregate government bonds exposures for the insurance sector.



Source: EIOPA Quarterly Reporting Solo. Reference date: Q4 2023. Note: Look-through approach is not applied. Assets held for unit-linked business are included.

For IORPs, 76% of their government bonds portfolio contains bonds issued by EEA governments (Figure 5.14). Out of the 76%, IORPs home bias regarding EEA issued government bonds is lower than insurers with only 19% issued by their home sovereign. There are relatively large fluctuations amongst the EEA Member States, with the highest home bias amongst Norwegian (84%) and Swedish (51%) IORPs and the lowest home bias for IORPs from PT and SK (in around 4% and 8%, respectively). Furthermore, approximately 8% of the portfolio consists of government bonds issued by the USA. Swedish (19%), Italian (18%) and Spanish (26%) IORPs have the highest exposures towards American government bonds.

Figure 5.14: Holdings of government bonds by issuer country for the IORPs sector.



Source: EIOPA IORPs reporting. Reference date: Q4 2023. Note: Look-through approach is not applied.

The home bias for corporate bonds is with a few exceptions generally lower than for government bonds (Figure 5.15). Insurers invest approximately 74.7% of their aggregate corporate bond portfolio in EEA countries and 12.4% in US markets, the largest and most liquid corporate bond market in the world. The share of US corporate bonds investments remained stable compared to the previous year (Figure 5.16). It is significantly higher than for government bonds. The share of corporate bonds issued by other advanced economies and emerging markets is at 3.6%.

Figure 5.15: Holdings of corporate bonds by issuer country for the insurance sector.

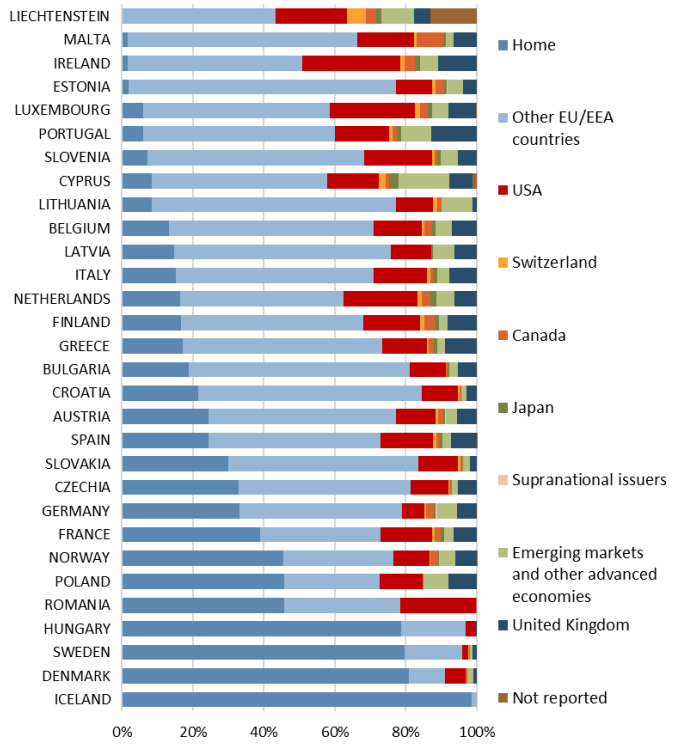
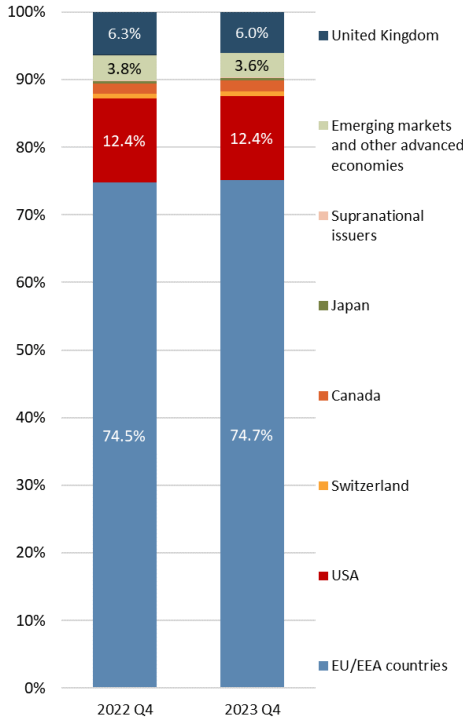


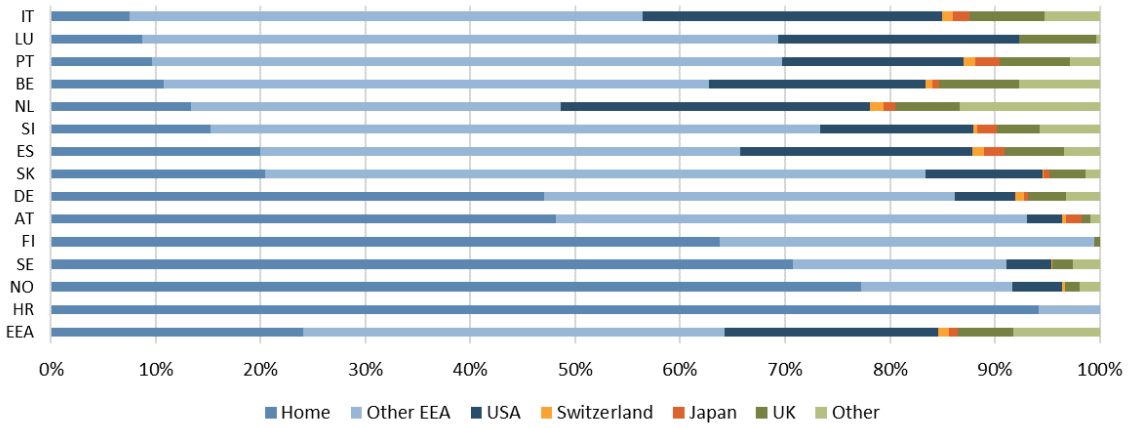
Figure 5.16: Aggregate corporate bonds exposures for the insurance sector.



Source: EIOPA Quarterly Reporting Solo. Reference date: Q4 2023. Note: Look-through approach is not applied. Assets held for unit-linked business are included.

For IORPs, 64.2% of the corporate bonds' portfolio contains bonds issued by EEA companies, of which 24.1% is invested in their own country (Figure 5.17). The percentages are lower than in the insurance sector, meaning that the IORP's portfolio of corporate bonds is geographically more diversified. The share of US corporate bonds is 20.4% while UK corporate bonds represent 5.3% for the aggregated EEA portfolio. Similarly, as for government bonds, the home bias is relatively high for IORPs from the non-euro countries such as NO and SE.

Figure 5.17: Holdings of corporate bonds by issuer country for the IORPs sector.



Source: EIOPA IORPs reporting. Reference date: Q4 2023. Note: Look-through approach is not applied.

Figure 5.18: Holdings of equity by issuer country for the insurance sector.

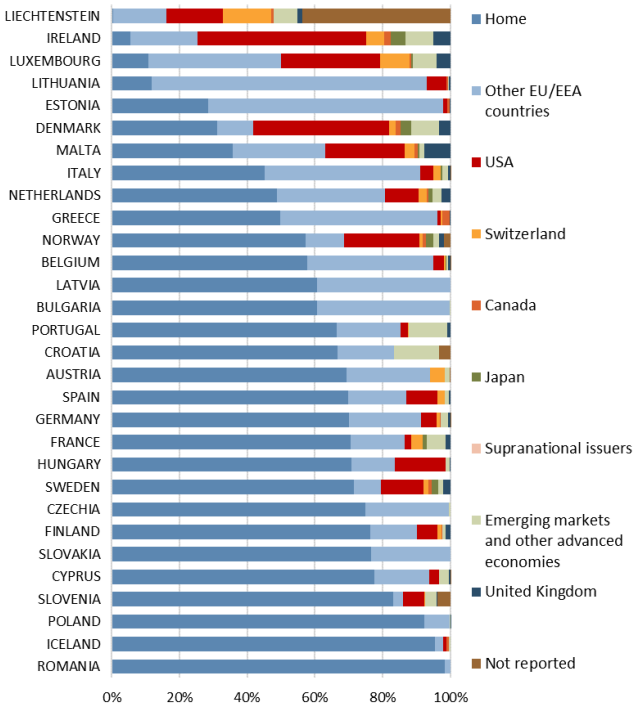
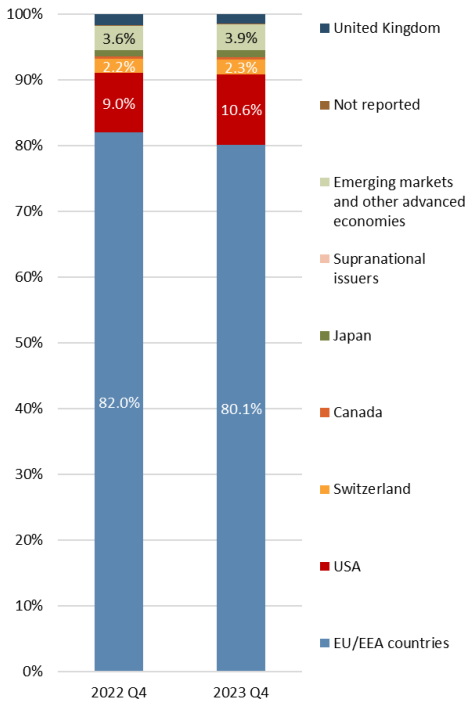


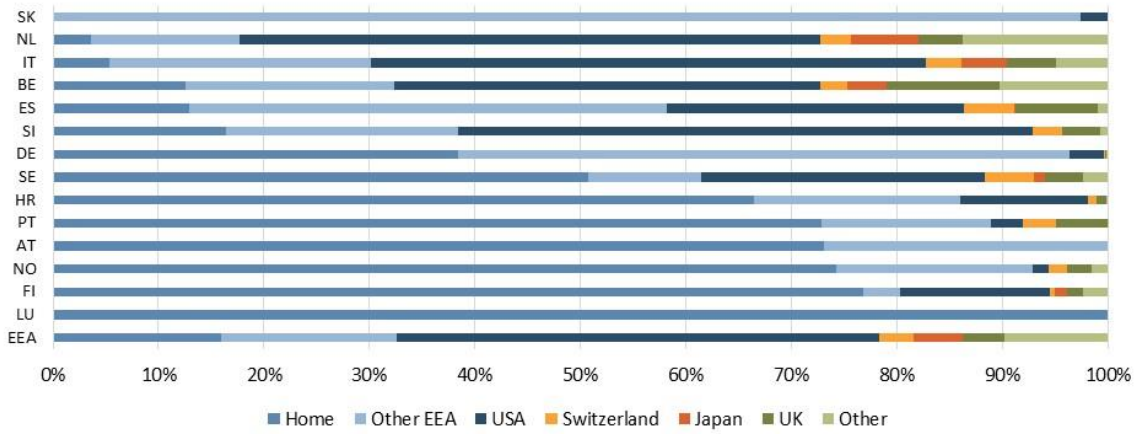
Figure 5.19: Aggregate equity exposures for the insurance sector.



Source: EIOPA Quarterly Reporting Solo. Reference date: Q4 2023. Note: Look-through approach is not applied. Assets held for unit-linked business are included.

The equity investments of insurers also show a high degree of home bias (Figure 5.18). The share of domestic investments is higher for equities than for corporate bonds. For insurers, the share of equity exposures to EEA countries decreased and to the US increased slightly in 2023 (Figure 5.19). A partial explanation could be relative slightly higher performance of the US stock market returns over this period.

Figure 5.20: Holdings of equities by issuer country for the IORPs sector.



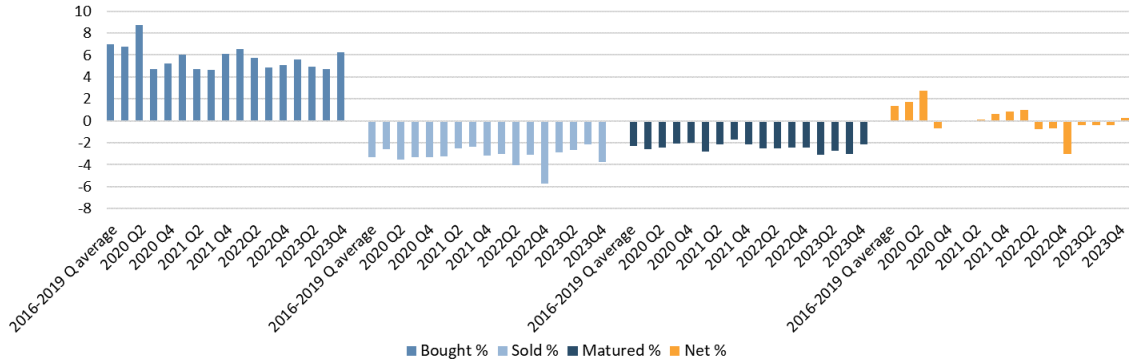
Source: EIOPA IORPs reporting. Reference date: Q4 2023. Note: Look-through approach is not applied.

For IORPs, around 46% of the equity portfolio contains US shares (Figure 5.20). In some EEA member states their IORPs invest heavily in US equity: NL, SI, BE and IT. This is probably related to the generally higher geographical diversification of IORPs investments. The equity investments of IORPs in the EEA amounts to 33%, of which 16% is allocated to their own country.

5.2.1.3 Trading activity of EEA insurers

After the peak of net selling reached in 2022 Q4, insurers' trading activity has stabilised during 2023. However, insurers withheld from increasing exposures on corporate bonds issued by non-banks (Figure 5.21). Up to Q2 2020, insurers were net buyers of non-bank issued bonds. In Q2 2020 a peak in net buying was reached, potentially explained by the record issuances of corporate bonds in that quarter followed by a significant reduction in issuances in the first three months of the year. The lower purchases from 2020 Q3 to 2022 Q1 could be a re-adjustment. Then, since Q2 2022 the trend has changed, and insurers have been net sellers of non-bank corporate bonds.

Figure 5.21: Breakdown of quarterly changes in the position of insurers in corporate non-bank bonds.



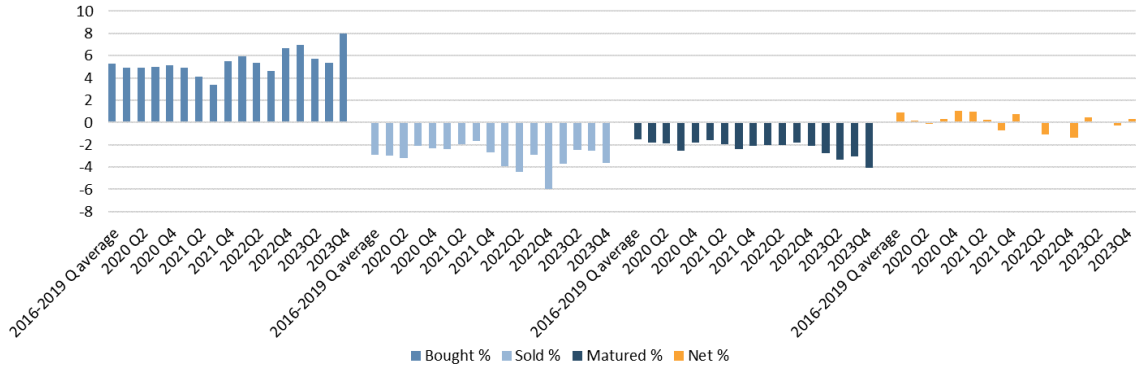
Source: EIOPA Quarterly Solo and EIOPA calculations. Reference period: 2016 to Q4 2023. Note: Figures are in % with respect to the initial quarter Solvency II market value of the positions.

With the highest level since the introduction of Solvency II reporting reached at the end of 2022, the net sales of bonds issued by non-bank corporates continued until Q3 2023; only in Q4 2023 small purchases of 0.3% can be observed again. A possible explanation is that insurers have been reducing exposures towards credit risk in reaction to the sharp increase of the risk-free interest rates

in anticipation of a potential economic slowdown and of an increase of credit risk. This might also explain why insurers withhold from significantly increasing exposures throughout 2023 even though interest rates started to decrease towards the end of the year.

Insurers slightly increased exposures to government bonds during 2023 after the peak of net selling reached in 2022 Q4. Historically insurers tended to be net buyers of government bonds (Figure 5.22) with +0.9% on a quarterly basis, however in 2022 insurers became for the first-time net sellers of government bonds on a yearly basis. In 2023, the activity stabilised and the annual average of net purchases per quarter were +0.3% of initial quarter positions. In the last couple of years insurers have not been so active in purchasing bonds, this might be related to the fact that new premium inflows in the life segment increased only very mildly and that the strong increases in non-life premiums reflected adjustments to higher claims due to inflation.

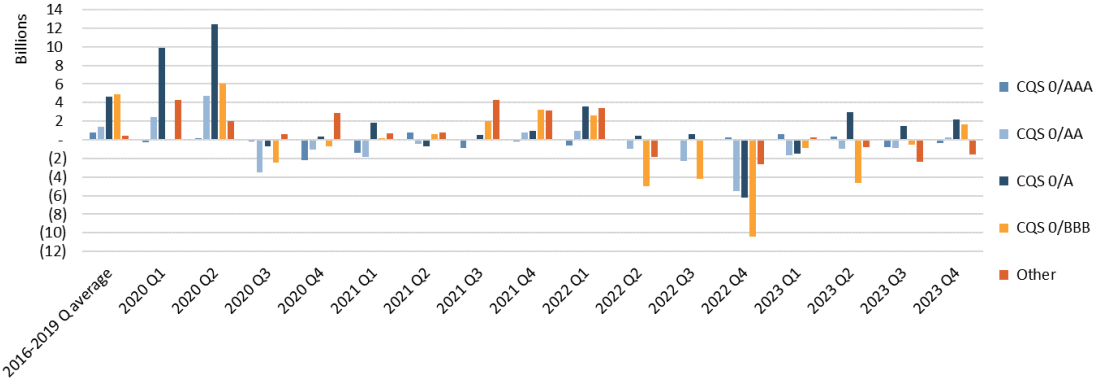
Figure 5.22: Break down of quarterly changes in the position of insurers in government bonds.



Source: EIOPA Quarterly Solo and EIOPA calculations. Reference period: 2016 to Q4 2023. Note: Figures are in % with respect to the initial quarter Solvency II market value of the positions.

In 2023 insurers did not increase exposures on corporate bonds issued by non-banks, but some rebalancing across rating categories has taken place. Except Q1 2023, insurers have been net buyers of A rated bonds and throughout the year they have been net sellers of BBB rated and below investment grade bonds. This trend has already been observed since the mid-2022. A possible explanation is that insurers have been reducing exposures towards credit risk in anticipation of a potential economic slowdown.

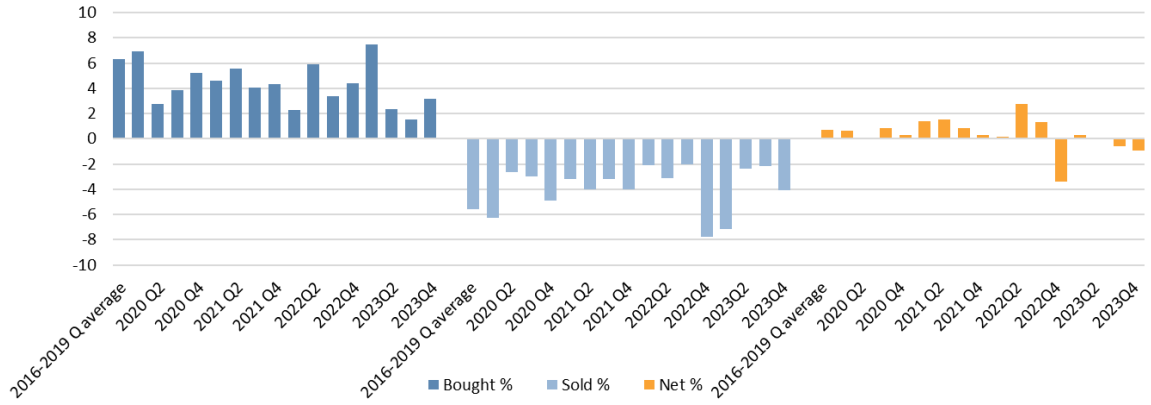
Figure 5.23: Break down of quarterly changes in the position of insurers in non-bank corporate bonds by rating (bn. EUR).



Source: EIOPA Quarterly Solo and EIOPA calculations. Reference period: 2016 to Q4 2023

During 2023 insurers have been net sellers of equities (Figure 5.24). In 2023 insurers were net sellers of equity on a yearly basis, with a peak in net sales in Q3 and Q4 2023 which cumulated (in the two quarters) to -1.5.% of the initial position. This might be explained by the fact that in 2023 insurers sold stocks to realise gains given equity markets were exceptionally strong, with valuations on the rise, though not as steep as two years prior. Even though in recent years insurers kept buying unlisted equities (which are mainly participations), in the end of 2023 their purchased amounts were lower than in the previous quarters, leading to net selling of listed equity prevailing.

Figure 5.24: Break down of quarterly changes in the position of insurers in equities.



Source: EIOPA Quarterly Solo and EIOPA calculations. Reference period: 2016 to Q4 2023. Figures are in % with respect to the initial quarter Solvency II market value of the positions.

5.2.2 EXPOSURES TOWARDS THE BANKING SECTOR

The insurance sector maintains a crucial link with the banking sector through its investment portfolio. By the conclusion of 2023, investments in banks comprised 13% of the total investments at the EEA level, mirroring the figures from 2022 (Figure 5.25). However, there exists significant divergence among countries in this regard. The exposure towards banks presents a potential conduit for the transmission of risk and contagion. Conversely, insurers could wield a stabilizing influence on the banking sector and, consequently, on financial markets overall. This stems from their typical status as long-term investors, exhibiting less propensity to trade in response to short-term market fluctuations compared to other investor types.

The exposure of the IORP sector to the banking sector is also material. At the end of 2023 exposures to banks represented approximately 6% of total investments at the EEA level (Figure 5.26). The distribution of exposures shows a heterogeneous pattern across Member States.

Figure 5.25: Exposures towards banks as a percentage of total investments at country level for the insurance sector.

Country	% Exposure to banks	Country	% Exposure to banks
EU/EEA average	**13%**	ITALY	8%
AUSTRIA	14%	LATVIA	15%
BELGIUM	8%	LIECHTENSTEIN	22%
BULGARIA	13%	LITHUANIA	14%
CROATIA	10%	LUXEMBOURG	19%
CYPRUS	17%	MALTA	33%
CZECHIA	17%	NETHERLANDS	12%
DENMARK	30%	NORWAY	21%
ESTONIA	38%	POLAND	13%
FINLAND	16%	PORTUGAL	13%
FRANCE	12%	ROMANIA	14%
GERMANY	13%	SLOVAKIA	22%
GREECE	11%	SLOVENIA	10%
HUNGARY	10%	SPAIN	12%
ICELAND	20%	SWEDEN	26%
IRELAND	17%		

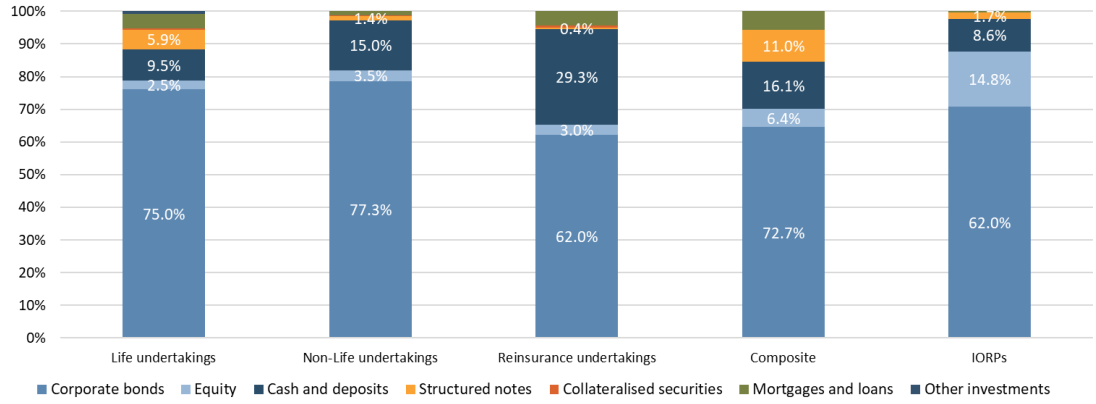
Figure 5.26: Exposures towards banks as a percentage of total investments at country level for the IORPs sector.

Country	% Exposure to banks
EEA (w)	**6%**
EEA (un-w)	**11%**
AT	3%
BE	3%
DE	13%
DK	37%
ES	8%
FI	7%
FR	8%
HR	7%
IT	6%
LI	2%
LU	5%
LV	8%
NL	4%
NO	16%
PL	20%
PT	6%
SE	12%
SI	19%
SK	18%

Source: EIOPA Quarterly Reporting Solo and IORPs. Reference date: Q4 2023. Note: "(w)" means weighted and "(un-w)" means non-weighted. Exposures to banks are defined as those where the NACE code for the issuer is K64.1.9 or K64.9.2. Assets backing unit- or index-linked contracts have been excluded. Exposures to banks include the following assets: equity, corporate bonds, cash and deposits, structured notes, collateralised securities, mortgages and loans and other investments. As it is only possible to identify exposures to banks for direct investments, indirect exposures via investment funds are not included (i.e., there is no look-through applied). The blue colour highlights the lowest exposures to banks and the red colour the highest ones. Due to reporting rules applicable to IORPs (see 1.15 of the "Decision of the board of supervisors on EIOPA's regular information requests regarding provision of occupational pensions information"), IORPs excluded by their NCAs from quarterly reporting are not captured in the figures.

Corporate bonds represent for insurers and IORPs the largest share of their exposures to banks (Figure 5.27). For insurers, cash and deposits rank second. In contrast to this, the latter accounted for IORPs for approximately 9% of their exposures to banks.

Figure 5.27: Exposures to banks by type of instruments and type of insurer and IORP.



Source: EIOPA Quarterly Reporting Solo and IORPS reporting. Reference date (insurance): Q4 2023. Due to reporting rules applicable to IORPs (see 1.15 of the "Decision of the board of supervisors on EIOPA's regular information requests regarding provision of occupational pensions information"), IORPs excluded by their NCAs from quarterly reporting are not captured in the figures.

The risk associated with the various types of bank bonds differs widely. Covered bonds (i.e., secured bonds) with their typically low risk represent no longer the largest portion of bank bonds held by insurers as their share continued to decrease from approx. 43% in 2022 to 35.9% in 2023 (Figure 5.28). The most junior bonds are the first to suffer losses when creditors are "bailed in". Junior bonds include subordinated bonds, hybrid bonds and convertible bonds, which represent 7.8% of bank bonds. A different and potentially material exposure results from derivatives with banks as counterparties where the value of the contract from the perspective of the insurer is positive (i.e., where the bank owes the insurer). But the collateralisation of these positions removes most of the counterparty risk to the bank.

Large allocations to subordinated bank bonds could amplify the negative effects from distress in the banking sector. The breakdown of the insurers bond portfolios by country shows that subordinated bonds represent in some cases a meaningful proportion (Figure 5.29). This could be a potential risk transmission channel if the banking sector for certain countries faced severe challenges.

Figure 5.28: Breakdown of exposures to bank corporate bonds for the insurance sector.

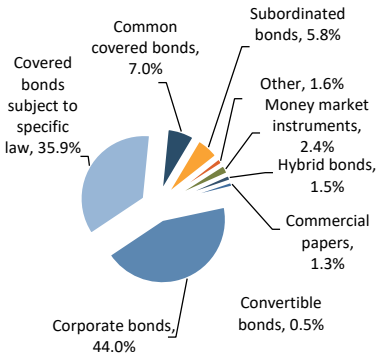
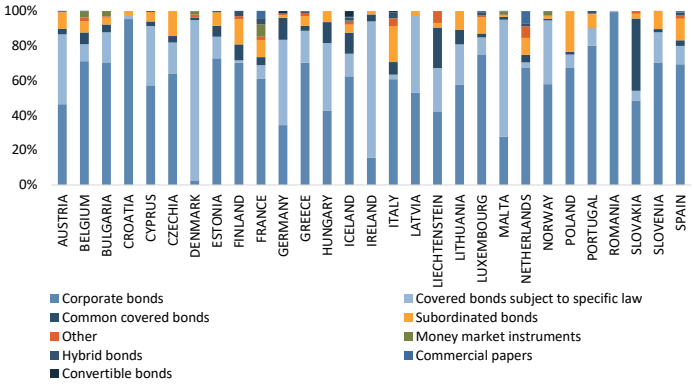


Figure 5.29: Breakdown of exposures to bank corporate bonds by country for the insurance sector.



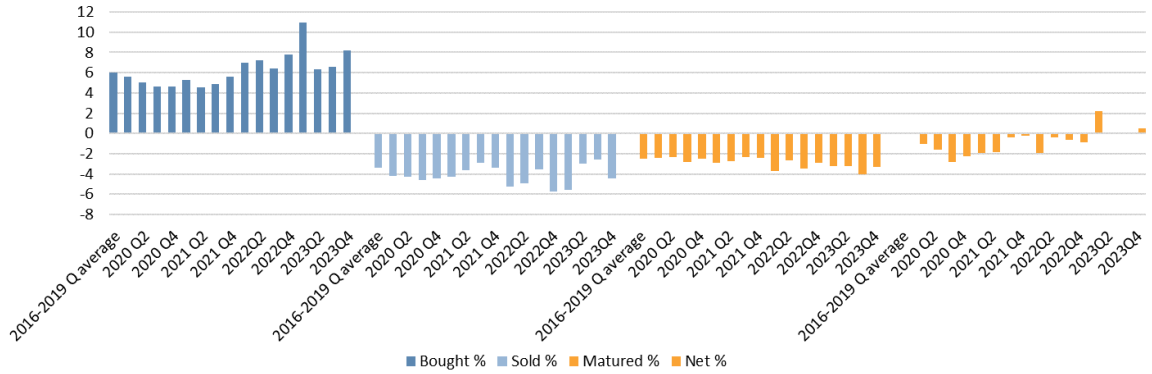
Source: EIOPA Quarterly Reporting Solo. Reference date: Q4 2023. Note: The subcategory corporate bonds, i.e., CIC 21, includes both preferred and non-preferred senior unsecured bonds as the Solvency II reporting does not allow to distinguish them.

Following a decrease in their allocation to bank bonds portfolios in previous years, insurers began to increase it once again in 2023. (Figure 5.30). The reducing trend started in the second quarter of 2019, reversing the pattern from 2016 to the first quarter of 2019 when European insurer were net buyers of bank bonds (albeit only to a small extent), gained momentum in 2020 and continued in 2021 and 2022. The reduction in the holdings of bank bonds from 2020 to 2022 could reflect a higher perceived risk of the banking sector. The financial turmoil at the beginning of 2020 highlighted the vulnerabilities of the banking sector in particular compared to sectors less affected by the pandemic. This might have induced insurers to shift their allocation to sectors with lower perceived risk. The supply side might provide another explanation. There were record issuances of non-financial corporate bonds in 2021 while there was no comparable surge for bank bonds.[52] The trend for lower allocations to bank bonds, most likely due to the negative developments in the US banking sector, continued also in 2022. 2023 Q1 reversed again the sign with a material net purchase of +2% with initial quarter position, and then activity stabilised during the following quarters. In 2023 the net

[52] ECB Statistical Data Warehouse, Net issues of debt securities by euro area non-financial corporations vs. Net issues of debt securities by euro area MFIs.

purchases per quarter were on average +0.7% of their initial holdings. The corresponding figures for 2021 and 2022 were –1.1% and -0.96% of initial holdings respectively. The net buys were the result of both reduced selling and increased buying, with a peak of purchased in 2023 Q1. During 2022 there has been a material repricing in bonds as global central banks coordinated their fight against inflation. The repricing resulted in extreme bond volatility and low issuance of new debt, but 2023 saw a new phase of adjustment for the yield curve, where bonds have started to be back in focus because of falling inflation. So, the peak in 2023 Q1 insurers purchases might be explained by a peak in the issuance pattern of bonds after a period during which the issuance pattern paused (i.e., 2021-2022).

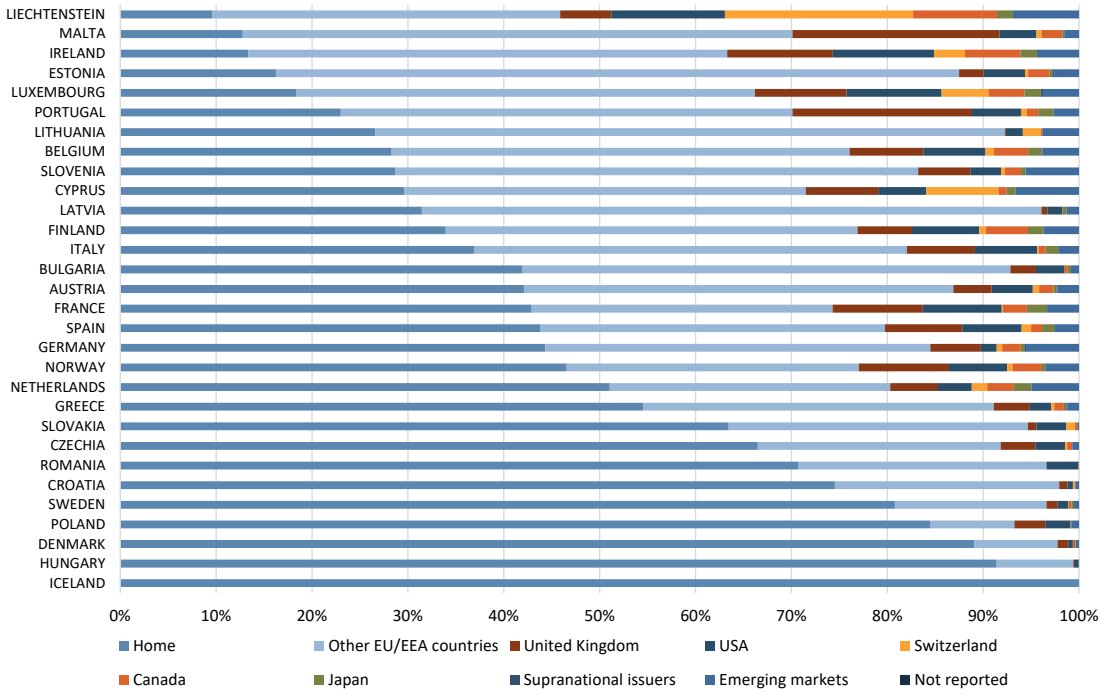
Figure 5.30: Break down of quarterly changes in the position of insurers in corporate bonds issued by banks.



Source: EIOPA Quarterly Solo and EIOPA calculations. Reference period: 2016 to Q4 2023. Note: Figures are in % with respect to the initial quarter Solvency II market value of the positions. All numbers are neither unit-linked nor index-linked and excluding the United Kingdom. In the analysis of trading activity, no-look-through is applied and only direct holdings are considered because only for these purchased and sold quantities can be calculated using item-by-item Solvency II reporting data.

Insurers tend to have meaningful investments in their domestic banking sector. The share of the exposures towards domestic banking sector differs considerably across countries (Figure 5.31).

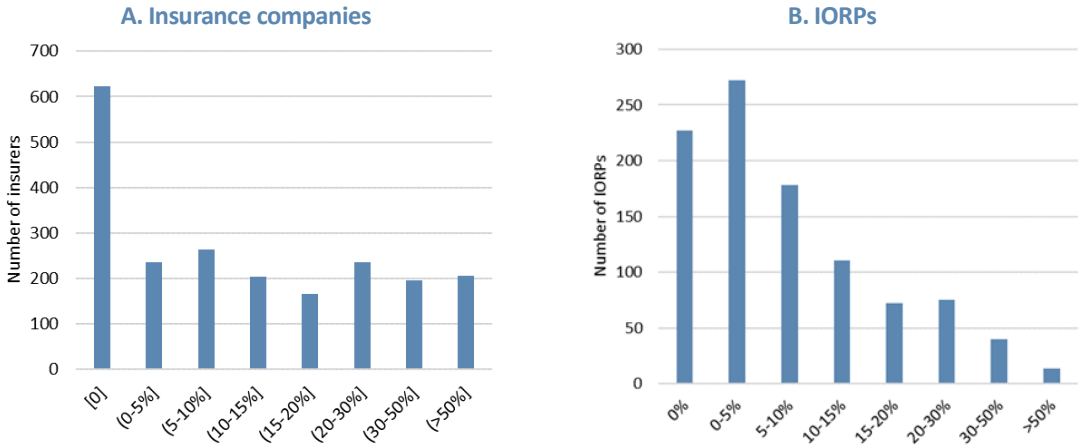
Figure 5.31: Exposure towards the banking sector, domestic versus cross-border in % for the insurance sector.



Source: EIOPA Quarterly Reporting Solo. Reference date: Q4 2023. Note: See methodological explanations for Figures 5.25 and 5.26.

Figure 5.32 shows how the proportion of investments in the banking sector to total assets is distributed across insurers and IORPs. While more than 600 insurers have no exposure to the banking sector, there are also more than 200 undertakings where it exceeds 50% of their assets. These are small non-life undertakings which hold as part of their business model a large share of their investments in cash. Approximately 230 IORPs have no investments in banks while very few pension funds are heavily exposed to the banking sector with a ratio of bank exposures to total assets higher than 50%.

Figure. 5.32: Number of entities by proportion of exposures to banks to total assets



Source: EIOPA Quarterly Reporting Solo. Reference date: Q4 2023. Note: See methodological explanations for Figures 5.25 and 5.26. Due to reporting rules applicable to IORPs (see 1.15 of the "Decision of the board of supervisors on EIOPA's regular information requests regarding provision of occupational pensions information"), IORPs excluded by their NCAs from quarterly reporting are not captured in the figures.

5.2.3 VULNERABILITIES FROM REAL ESTATE INVESTMENTS[53]

The real estate market is important for financial stability as insurance companies hold investments in real estate assets as part of their investment portfolios. These investments can include commercial properties, residential developments, and real estate investment funds. Fluctuations in the real estate market can directly impact the value of these investments, influencing the financial health and solvency of insurance companies.

Moreover, the interconnectedness between the real estate market and the broader financial system underscores the importance of its stability. Real estate market downturns can trigger broader economic crises, impacting financial markets, credit availability, and economic growth. Such systemic risks can have cascading effects on insurance companies' investments, liabilities, and overall stability.

In the light of these considerations, it is important for regulators to closely monitor the real estate market's developments to assess potential risks to insurers' financial stability and solvency. By proactively identifying and addressing vulnerabilities in real estate investments and related risks, regulators aim to safeguard the stability of the insurance sector and mitigate the potential systemic implications of real estate market fluctuations.

Data indicates an overall decline of real estate prices from 2023. Commercial real estate prices dropped by 8.9% from Q4-2022 to Q4-2023 [54]. However, there is noticeable heterogeneity for real

[53] Criteria to identify real estate related investments in SII data and the definition of CRE versus RRE can be found at FAQ insurance statistics (europa.eu).

[54] Commercial property prices | ECB Data Portal (europa.eu)

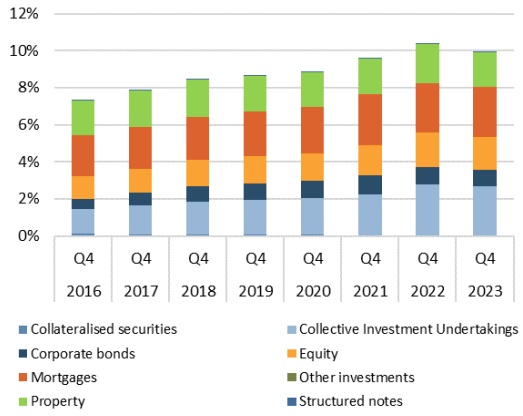
estate prices across European countries. On average, residential real estate prices were broadly stable in Europe in Q4 2023, compared to the previous year, while for euro area countries prices decreased slightly[55]. While higher financing costs after a long RRE boom are putting cyclical downward pressure on overvalued house prices, structural and supply-related factors continue to support prices in housing markets. [56]

Risks in real estate remain under scrutiny by the ESRB. In addition to the 2023 report[57] where the ESRB identified several vulnerabilities in the commercial real estate sector, in their 2024 report[58], the ESRB focused on residential real estate related risks. It identifies that forward-looking risk assessments remain scenario-dependent, with uncertainties prevailing, and potential risks resurfacing over the medium term due to expected economic growth and inflation moderation. Several countries have been implementing macroprudential policies since 2021 to mitigate risks related to residential real estate (RRE) markets, with some adjustments noted in the policy assessment, indicating continued vigilance and necessary policy adjustments. This underscores the ESRB's commitment to macroprudential oversight and issuing warnings or recommendations as necessary to address systemic risks to financial stability.

Insurers are directly exposed to real estate markets through their investments. From the introduction of Solvency II to the third quarter of 2023, the exposures to real estate related investments have increased from 7.3% to 10.3% of total investments (Fig. 5.33), with approximately EUR 660 bn. allocated to such investments as of 2023's third quarter. While in the last quarter of 2023 real estate exposures dropped to 9.9% of total investments, mostly due to real estate's equity and property declines in valuations. Notably, unit linked (UL) real estate investments amount to around EUR 86.3 bn., constituting merely 13% of total real estate investments in Q4-2023.

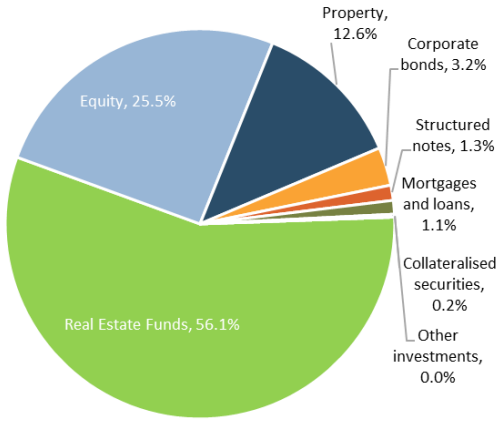
Real estate related investments are diversified across various categories (Figure 5.33 and Figure 5.34). Within the UL portfolio breakdown, real estate funds dominate at 56.1%, equity is at 25.5%, property at 12.6% and a smaller portion of 6% distributed among other investment categories.

Figure 5.33: Real estate related investments of EEA insurers relative to total investments



Source: EIOPA Insurance Statistics. Unit-linked excluded.

Figure 5.34: Unit-linked real estate related investments of EEA insurers, by asset category (in Q4 2023)



Source: EIOPA Insurance Statistics. Unit-linked.

[55] Residential property prices | ECB Data Portal (europa.eu)

[56] Real estate markets in an environment of high financing costs (europa.eu)

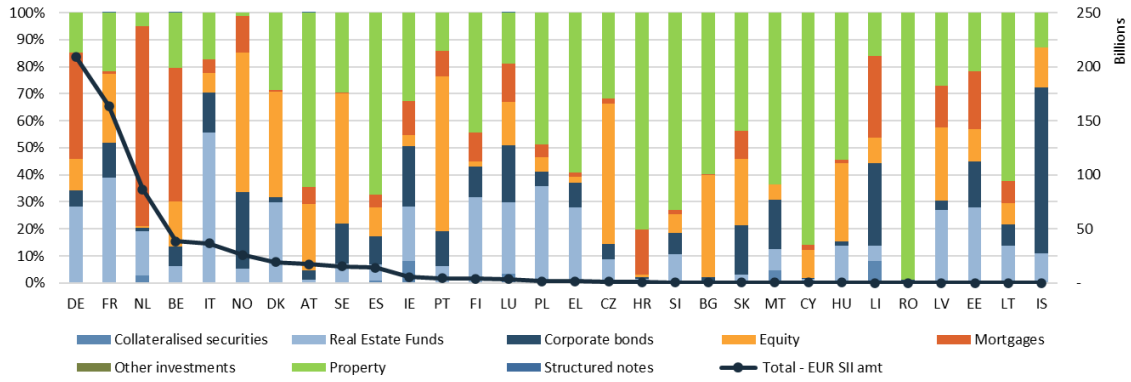
[57] Recommendation of the European Systemic Risk Board of 1 December 2022 on vulnerabilities in the commercial real estate sector in the European Economic Area (ESRB/2022/9) (europa.eu)

[58] Follow-up report on vulnerabilities in the residential real estate sectors of the EEA countries (europa.eu)

Real estate investments in the insurance sector are concentrated in specific countries, with significant diversity in the asset classes each country favours (see Figure 5.35). Germany, France, Belgium, the Netherlands and Italy have the largest positions in Europe. France and Italy primarily invest in real estate funds, while Belgium mainly focuses on mortgages.

Based on the information from the EIOPA Spring 2024 Supervisory Survey, across different regions, supervisors observed different dynamics related to the real estate sector. In various jurisdictions, insurers maintain stable and diversified exposures to real estate assets, with a focus on both residential and commercial properties. Regulators oversee these investments, ensuring prudent management and monitoring market developments closely. While in some member states insurers primarily invest in commercial real estate for their headquarters, others rely more on indirect investments through real estate funds. In some jurisdictions, despite fluctuations in the real estate market, insurers benefit from high hidden reserves and manageable credit risks, thanks to collateralization of loans and well-diversified portfolios. In one jurisdiction, it was signalled that legal discussions about rental increases may indirectly affect investors in specific areas, prompting cautious monitoring. Regulatory approaches vary, with some supervisors focusing on monitoring rather than immediate regulatory action due to the low risk profile associated with real estate investments.

Figure 5.35: Types of real estate related investments of insurers by country (EUR bn. in Q4 2023)



Source: EIOPA Quarterly Reporting Solo. Reference date: Q4 2023.

Real estate related investments entail inherent risks that investors must navigate carefully, starting from valuation. Firstly, the valuation of assets poses a significant challenge, as valuation methodologies may not always provide an accurate reflection of the true worth of the assets, especially in the light of changing market conditions. This discrepancy can be exacerbated by time lags, subjectivity and susceptibility to model risk in asset valuations. Additionally, the high degree of illiquidity associated with real estate investments further complicates valuation, making it difficult to sell assets during normal market conditions and causing market freezes during periods of stress, thus impacting asset pricing and investment decisions.

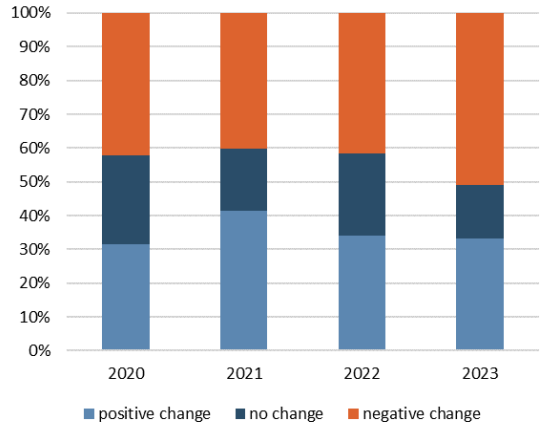
Secondly, interest rate risk and credit risk are significant concerns for investments in real estate affecting property, mortgage, and bond valuations. The dynamics of interest rates play a crucial role in determining the value of real estate assets, and fluctuations in rates can significantly impact investment returns and asset values. Moreover, credit risk adds another layer of complexity, as predicting the impact of the business and credit cycle on real estate investments, such as defaults on mortgages presents considerable challenges for investors. Managing these risks effectively

requires a thorough understanding of market dynamics, robust risk management strategies, and careful monitoring of economic and financial indicators.

In order to analyse valuation dynamics, a balanced panel of property items was constructed to disentangle valuation change from volume change (property sold or purchased). Tracking the Solvency II valuations property-by-property over time makes it possible to gain insights into the frequency with which insurers revalue their direct property holdings. The analysis focuses on the four largest holder countries. The sample includes all office and commercial, residential, own use and other properties.

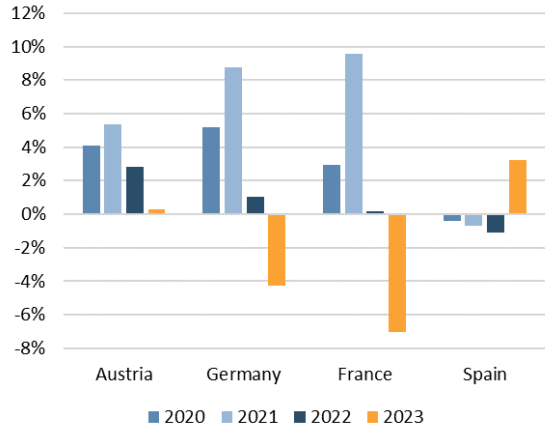
Over the past year, property valuations in the balance sheets of insurers in the sample have decreased (Figure 5.36). In the last year, in Germany, overall property valuation decreased by 4.3%, in France by 7.1% while in Austria and Spain increased by 1% and 3.3% respectively (Figure 5.37).

Figure 5.36: Share of direct property by type of revaluation



Source: EIOPA Quarterly Solo, QRT 06.02; Note: Investments covering unit- or index linked contracts excluded; SII valuation based on balanced panel of property items held from Q1 2018 to Q4 2023 only for AT, DE, FR and ES

Figure 5.37: Price changes (in %) on property by country



Source: EIOPA Quarterly Solo, QRT 06.02. Note: See methodological note for Figure 5.35.

Finally, as commercial real estate tends to be more responsive than residential real estate (RRE) to the economic cycles, pandemics and shifts in work patterns, such as the rise of remote work, insurers exposure to this category is closely monitored. Commercial real estate (CRE) investments are prominent, making up a significant portion of the portfolio. Analysis reveals that CRE represents substantial shares within the property categories (74%), and that it is less significant for mortgages (32%). While specific identification for other investment categories is unavailable, it is plausible to conjecture that equity and corporate bonds could also be classified under CRE. This means that CRE investments collectively constitute approximately 78% of the total real estate investments, underlining the dominance of CRE within the real estate investment landscape.

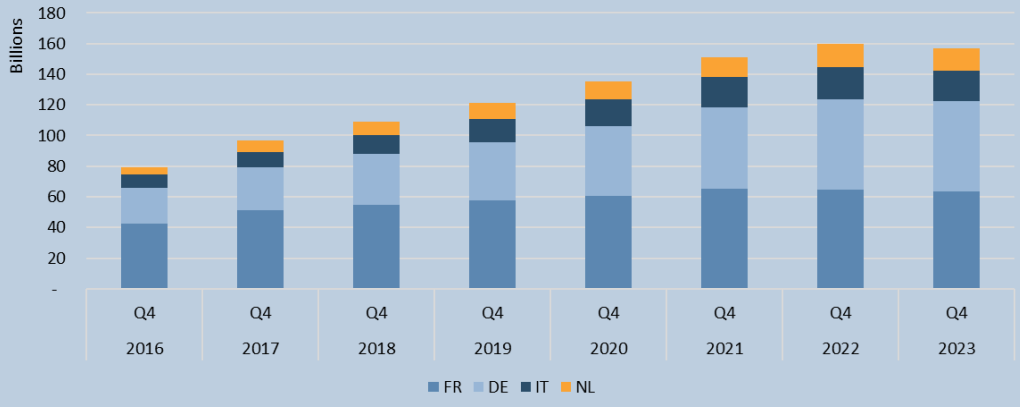
BOX 5.1: INSURERS EXPOSURES TOWARDS REAL ESTATE FUNDS: TRENDS, FACTS AND RISKS

Since the introduction of Solvency II in 2016, real estate related investments increased from 7.3% of total investments (excluding unit-linked business) to 10.3% in Q3 2023 and then slightly dropped to 9.9% at the end of 2023. The initial increase has been largely driven by the low yield environment. In fact, real estate investments are quite illiquid and have therefore the potential to offer higher returns. The decline at the end of 2023, instead, reflects the deterioration of valuations of property and equity of real estate corporations.

Among all types of real estate related investments held by insurers, the real estate fund category is the one that increased the most. Starting from EUR 87 bn., insurers holdings have increased by around 100% since 2016 bringing the share to total investments from 1.3% to 2.6% in the end of 2023.

Insurers' holdings of real estate funds are concentrated mainly in four countries. FR, DE, IT and NL hold respectively EUR 63 bn., 59 bn., 20 bn. and 14 bn. as of Q4 2023 and make up for 90% of the total amount of real estate funds held by EEA insurers. The real estate funds in these four countries exhibited similar growth patterns.

Figure B.5.1. Evolution of real estate funds: EUR SII amount (in bn), by country. Four largest country-exposures.

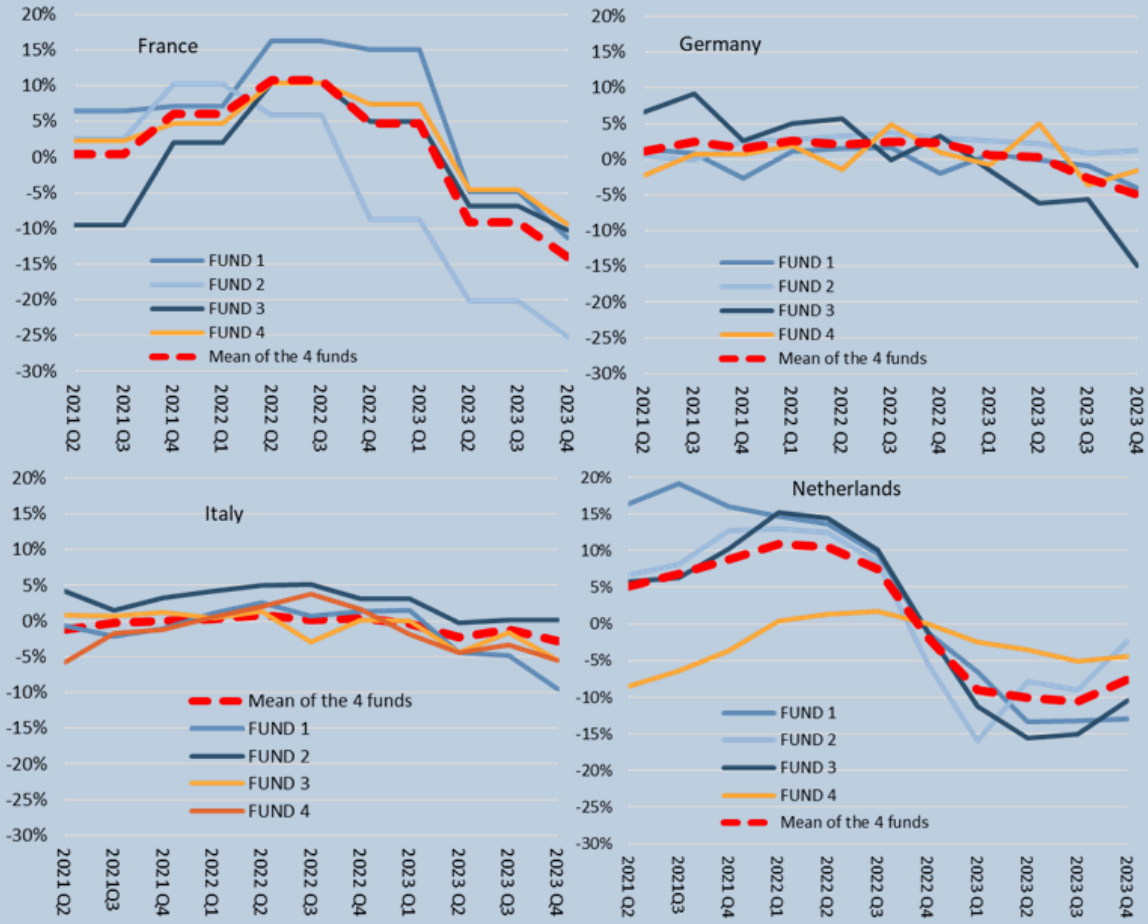


Source. EIOPA SII data, Quarterly reporting Solo. List of assets S.06.02. Real estate funds - CIC 4.5.

Investments in property are highly illiquid but are suitable to insurers because they offer long duration and stable and attractive cash-inflows via rents. Both life and non-life insurers hold a material share of their investments in real estate related assets i.e., respectively 9.3% (approx. EUR 206 bn.), and 8.6% (EUR 100 bn.). Non-life insurers invest relatively more in real estate funds and direct holdings of property, 40% and 30%. Instead,

for life insurers, real estate funds represent a smaller but still material share of 35%. Other material shares of 20% and 18% are covered by respectively equity and mortgages.

Figure B.5.2. Four quarters cumulative returns (% price changes) of selected real estate funds (for insurers located in FR, DE, IT and NL).



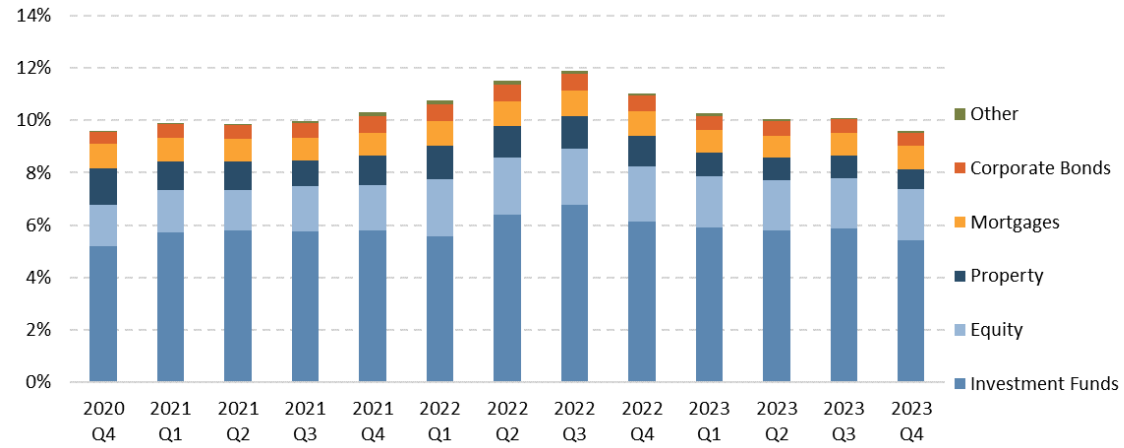
Note. EIOPA SII data. Quarterly reporting Solo. List of assets S.06.02. Real Estate funds - CIC 4.5. Insurers for the countries holding real estate funds (DE, FR, IT and NL) and selected four most representative funds per country. The price dynamics (Solvency II unit price) of real estate funds held by insurers is as reported by insurers on a quarterly basis in the item-by-item "list of assets". The focus, in the chart, is restricted to the main four countries (covering 90%) and to the most representative funds, which are held by several insurers.

Returns of real estate funds held by insurers have slightly different dynamics but are highly correlated and declined persistently during 2023 with prices declines ranging from -5 to -20%. Funds held by NL insurers declined from mid-2022, while those held by FR insurers from mid-2023, both performed more negatively than funds held by IT and DE insurers.

In the context of IORPs, real estate risk-related investments represent almost 10% of total assets allocation. The total value of the investments of IORPs in the EEA per 2023 Q4 is roughly EUR 2.643

bn. Their exposure towards real estate amounts to EUR 254 bn., equivalent to 9.6% of their total portfolio.

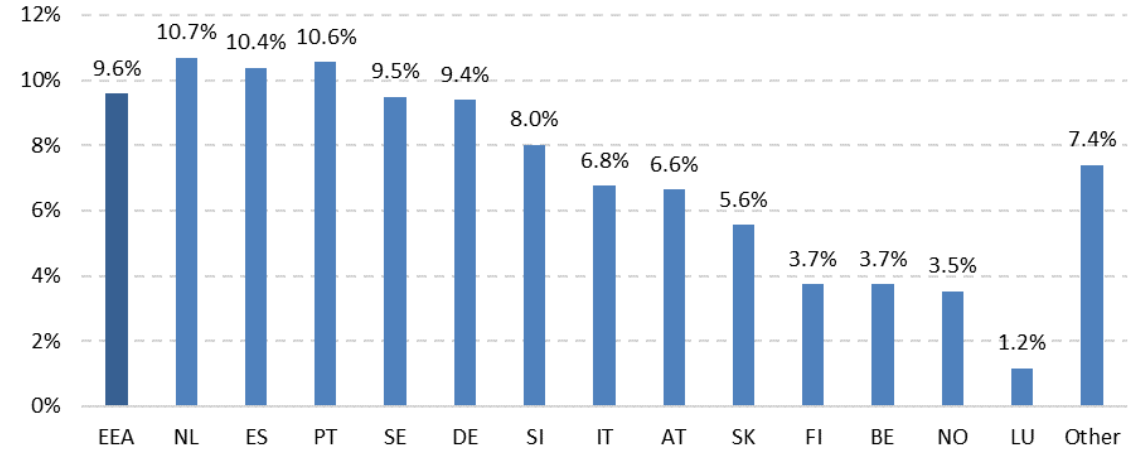
Figure 5.38: Real Estate Exposure of IORPs



Source: EIOPA Occupational Pensions Statistics – Balance Sheet, quarterly.

Most of real estate risk exposure comes from real estate funds held in collective investments (Figure 5.38). IORPs allocate their investments towards real estate via different asset categories. The lion's share of (56%) occurs via collective investments (real estate funds). Other investment categories through which IORPs create real estate exposure are equity (21%), property (8%), mortgages (9%) and corporate bonds (5%).

Figure 5.39: Real estate exposure per EEA Member State (Q4 2023)

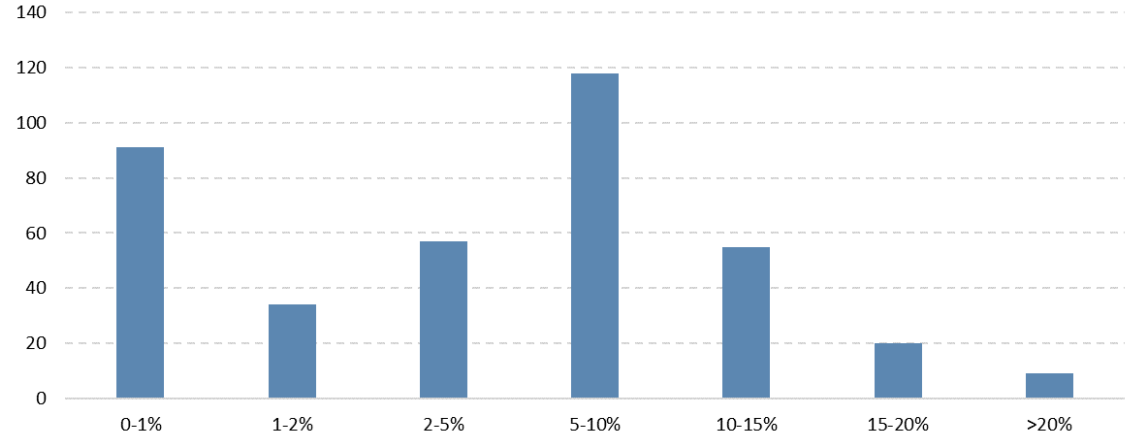


Source: EIOPA Occupational Pensions Statistics – Balance Sheet, quarterly.

Real estate risk-related investments allocation shows a heterogeneous distribution across countries (Figure 5.39). The real estate exposure differs somewhat per EEA Member State. The exposures tend to be higher for member states with a relatively large IORP sector (e.g., NL and SE) than for countries with a smaller IORP sector. Q4 2023 data show that 384 IORPs out of 602 (64%) have exposures towards real estate. Those 384 IORPs manage 94% of the total assets of the entire IORP sector. Q4 2023 data show that 118 IORPs have a real estate exposure between 5% and 10% (Figure 5.40). 91 IORPs have a nearly negligible exposure towards real estate (1% at most), while 34

IORPs expose between 1% and 2% of their investments towards real estate. On the other end of the spectrum, 9 IORPs have an exposure of more than 20%, of which 54.3% is the highest figure.

Figure 5.40: Number of IORPs by Real Estate Exposure Range



Source: EIOPA Occupational Pensions Statistics – Balance Sheet, quarterly.

There are also several supervisory concerns characterising real estate investments by insurers and IORPs. First, valuation of these assets is to a large extent discretionary (i.e., requires a subjective assessment), then methodologies applied may not accurately reflect economic fundamentals and current market conditions. There can be time lags, subjectivity, and susceptibility to model risk in valuations. Second, the high degree of illiquidity makes valuation highly uncertain. Real estate assets are difficult to sell during normal market conditions and market freezes during stress periods. Third, these investments are highly subject to interest rate risk as property, mortgage and bond valuation are highly depended on the dynamics of interest rates. Fourth, credit risk is non-trivial. There are challenges in predicting the impact of the business and credit cycle on real estate (e.g., default on mortgages etc).

Both insurance undertakings and IORPs are also directly and indirectly exposed to negative changes in the real estate market. These might be generated through multiple channels, such as the increase in interest rates or even as a consequence of exogenous events such as the pandemic (which ultimately triggered a shift in the demand for real estate). Diversification embodies the most effective strategy to be able to avoid excessive risk concentrations. In particular, in the real estate context, real estate assets in specific locations or sectors can expose insurers and IORPs to localized economic or market risks; indeed, investments such as directly held property tends to be entirely within country. On the other side, the reliance on real estate funds, notwithstanding the high degree of diversification, could potentially spread risks with cross-country impacts. Given the relatively illiquid nature of this asset class, the rebalancing options might be limited, and this could put IORPs in a difficult position, taking into account the need to use assets to cover liabilities and the structural duration mismatch between the two.

The portfolio shift towards real estate funds might raise financial stability concerns. In particular, the shift may increase insurers' and IORPs credit and liquidity risks and contribute to wider financial sector exuberance in some parts of the real economy as well as amplify market shocks in the event

of severe corrections. With this respect, funds are potentially easier to sell-off then insurers' direct property holdings. In any case, for insurers, an analysis of "quantities" of real estate funds held, shows no evidence of selloffs by the end of 2023. For all these reasons, insurers' and IORPs exposures towards real estate must be closely monitored by regulators and supervisors.

5.2.4 ALTERNATIVE ASSETS

In response to a prolonged low interest rate environment, many life insurers sought higher-yielding investments, leading to a greater allocation towards assets exhibiting higher illiquidity and more complex structures. Termed as "alternative assets" or "alternative investments," these assets lack a globally recognized definition but generally serve as alternatives to traditional investments like stocks, bonds, real estate, and mortgages. With different supervisors holding varying perspectives, alternative assets often feature intricate structures and cater to a more limited investor base, resulting in reduced liquidity. However, as interest rates stabilize, the fervent "search for yield" behaviour among insurers may diminish, potentially prompting a rebalancing towards more traditional investments like government and corporate bonds, and a reduced reliance on riskier alternative asset classes.

The future trajectory remains uncertain following the stabilization of interest rates. Analysis reveals a continued trend of increased investment in alternative assets among insurers until 2022[59]. However, insurers may need to reassess their investment strategies, balancing the allure of higher yields with the risks associated with illiquid and complex alternative assets. As supervisors monitor these developments, insurers must prioritize prudent risk management practices and align investment strategies with long-term financial sustainability goals.

The term "alternative assets" lacks a universally accepted definition, with jurisdictions often defining them by exclusion—assets not included in traditional listings, such as corporate bonds, sovereigns, or certain mortgages. While some jurisdictions classify equity funds or real estate as non-traditional assets, there is no uniformity across all asset classes. Consequently, specific rules or guidelines for alternative assets are lacking in most jurisdictions, although overall disclosure and management requirements for factors like illiquidity and duration management still apply.

The International Association of Insurance Supervisors (IAIS) proposed defining alternative assets based on risk-based characteristics, emphasizing substance over form[60]. These characteristics include illiquidity, difficulty in valuation, and complex structures. Accordingly, asset categories such as private equity, private debt, real estate, and infrastructure investments could be classified as alternative investments in Solvency II balance sheets, as outlined in the Solvency CIC mapping of categories and subcategories.

[59] Financial Stability Report December 2023 - European Union (europa.eu)
[60] Global-Insurance-Market-Report-2023.pdf (iaisweb.org) at page 25.

Figure 5.41: Traditional versus alternative assets by type of business

	Composite Insurer	Life Insurer	Non-Life Insurer	Reinsurer	Unit-Linked	Total
NOT ALTERNATIVE ASSET	84.7%	76.4%	81.7%	93.0%	89.2%	84.0%
Traditional	78.7%	70.4%	66.2%	38.4%	88.9%	74.0%
Equity participations	6.0%	6.0%	15.5%	54.7%	0.3%	10.0%
ALTERNATIVE ASSET	15.3%	23.6%	18.3%	7.0%	10.8%	16.0%
Real estate	**5.2%**	**10.5%**	**6.5%**	**0.9%**	**2.7%**	**5.7%**
real estate funds	2.4%	3.1%	3.3%	0.3%	2.0%	2.4%
mortgages	1.0%	5.9%	1.6%	0.1%	0.1%	2.1%
property	1.8%	1.4%	1.5%	0.4%	0.5%	1.2%
collat sec real estate risk	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%
struct notes real estaterisk	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Others	**4.1%**	**3.8%**	**1.9%**	**1.5%**	**5.5%**	**3.8%**
struct notes	2.0%	1.6%	0.6%	0.2%	3.7%	2.0%
alternative funds	0.5%	0.5%	0.5%	0.1%	1.3%	0.7%
collat sec	0.3%	0.5%	0.3%	0.6%	0.2%	0.3%
mortg and loans other	0.3%	0.5%	0.4%	0.5%	0.1%	0.3%
loans collat sec	0.5%	0.2%	0.1%	0.0%	0.1%	0.3%
loans policies	0.2%	0.1%	0.0%	0.0%	0.0%	0.1%
other collat loans	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%
other investments	0.0%	0.3%	0.0%	0.0%	0.1%	0.1%
Private debt	**1.9%**	**3.7%**	**5.2%**	**3.5%**	**0.3%**	**2.6%**
private corporate debt	0.6%	2.1%	3.4%	1.9%	0.3%	1.4%
loans	1.3%	1.7%	1.8%	1.6%	0.1%	1.2%
Infrastructure investment	**1.9%**	**3.3%**	**2.8%**	**0.5%**	**0.6%**	**2.0%**
infrastructure direct investment	0.7%	2.1%	2.2%	0.4%	0.2%	1.1%
infrastructure funds	1.2%	1.2%	0.6%	0.1%	0.4%	0.8%
Private equity	**2.2%**	**2.3%**	**1.9%**	**0.5%**	**1.6%**	**1.9%**
private equity funds	1.7%	1.8%	1.0%	0.3%	1.1%	1.4%
unlisted equity	0.5%	0.5%	0.9%	0.3%	0.5%	0.5%
Total in EUR	**2,461,176,499,111**	**2,225,152,298,670**	**1,170,423,907,041**	**729,641,322,095**	**2,146,842,827,115**	**8,733,236,854,031**

Source: EIOPA Quarterly Solo, QRT 06.02. Note: Private equity is a) non listed equity (CIC XL3 and XT3 but not participations) b) private equity funds [CIC 47 but not infrastructure]; PRIVATE DEBT is a) non listed corporate debt [CIC XT21 and XL21 but not infrastructure] and b) loans [CIC81 but not infrastructure]; REAL ESTATE is a) Property [CIC 91, 92 and 94 but not infrastructure] b) Mortgages [CIC 84 but not infrastructure] c) Real estate funds [CIC 45 but not infrastructure] d) Equity of real estate corps [CIC 32 but not infrastructure] e) Structured notes real estate [CIC 55 but not infrastructure] f) Collateralised sec real estate [CIC 65 but not infrastructure]; INFRASTRUCTURE is a) Infrastructure funds [CIC 48] b) Infrastructure-direct-investments (i.e. all CIC excl. CIC48) with flag infrastructure investment]. OTHERS is a) Alternative funds [CIC 46 but not infrastructure] b) Loans collateralised securities [CIC 82 but not infrastructure] c) Other collateralised loans [CIC 85 but not infrastructure] d) Loans on policies [CIC 86 but not infrastructure] e) Collateralised securities [CIC 61-69 but nor CIC 65 real estate but not infrastructure] f) Structured notes [CIC 51-59 but nor CIC 55 real estate but not infrastructure] g) Loans and mortgages others [CIC 89 but not infrastructure] h) Other investments [CIC 09 but not infrastructure].

In Q4-2023, insurers demonstrate still a significant allocation to alternative assets, comprising 16.0% of their investments (Figure 5.41). Among these alternative assets, the real estate exposure (5.7%) stands out as a prominent allocation, particularly though investments funds (2.4%), mortgages (2.1%) and property (1.2%), as well as and other types of investments (3.8%), with a notable emphasis on structured notes.

Life insurers are relatively more exposed to alternative assets (23.6% of their total investments), compared to other type of businesses. In particular, life insurers have relatively higher exposure to real estate, especially via mortgages. Overall unit-linked portfolios exhibit also a high concentration of alternative assets, especially in the form of structured notes and alternative and real estate funds.

The proliferation of alternative assets among insurers has raised potential financial stability concerns, primarily stemming from lower credit quality and higher leverage inherent in such

investments, which could exacerbate returns during downturns. Despite insurers typically adopting a "buy and hold" strategy, the illiquid nature of alternative assets poses challenges, especially in severe stress scenarios where insurers may seek to liquidate these holdings. This difficulty in divestment is compounded by the complexity and opacity of certain alternative instruments, such as alternative and private equity funds, as well as structured products, making effective risk management a daunting task for insurers.

Based on the information from the Spring 2024 Supervisory Survey, across different countries, insurers adopt various investment strategies and exhibit distinct exposures to alternative and illiquid assets. In certain jurisdictions, insurers allocate substantial portions of their investment portfolios to alternative assets, with a notable emphasis on real estate ventures. This strategic approach often reflects a desire for enhanced diversification and potentially higher returns. Conversely, in other countries, insurers maintain conservative investment strategies, primarily focusing on government bonds and displaying minimal involvement in alternative investments. The preference for such conservative approaches may stem from risk aversion or regulatory requirements. However, regardless of the chosen investment strategy, insurers face common challenges associated with alternative and illiquid assets. These challenges include concerns about liquidity, as these assets cannot be easily converted into cash without significant value impact. Additionally, valuation uncertainties pose ongoing complexities, especially during market volatility or economic downturns. Supervisory bodies closely monitor these risks to ensure financial stability within the insurance sector.

The International Monetary Fund (IMF) has sounded the alarm over the potential contagion risks originating from the surge in private capital within the life insurance sector. This shift has led to a significant increase in illiquid assets held by insurers and a rapid expansion of offshore operations. These developments highlight the need for enhanced oversight and risk management frameworks to safeguard financial stability and ensure the resilience of the insurance industry against systemic shocks.

BOX 5.2: INSURERS EXPOSURES TOWARDS PRIVATE CREDIT/DEBT: TRENDS, FACTS AND RISKS

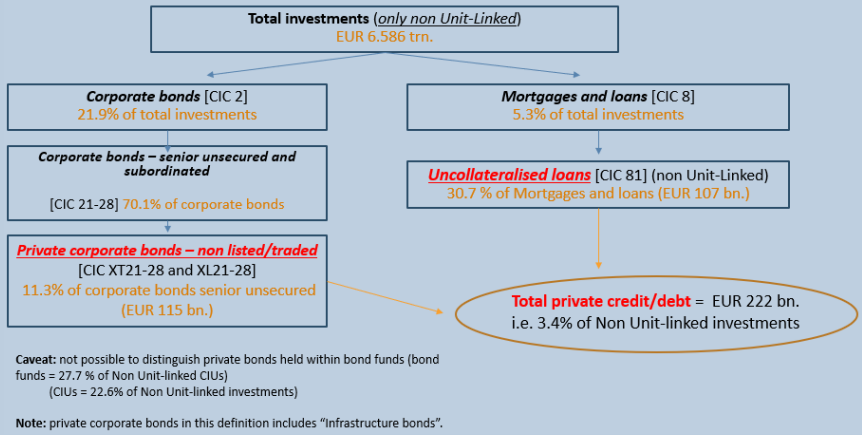
Insurance companies have been turning increasingly to alternative investments looking for higher investment returns. It is especially US life insurers, that have invested more in private debt/credit. This has increased risks, too, market observers warned in the end of 2023.

This box discusses European insurers exposures towards private debt/credit, defined as the sum of corporate bonds and subordinated bonds (CIC XT21-28 and XL21-28 in Solvency II reporting) that are non-traded/non-listed and uncollateralised loans (CIC 8.1)[61]. Here some more detailed data facts: roughly half of the insurance companies invest in private credit/debt but these insurers cover 90% of total investments. Private credit/debt represents a share of 3.4% of total investments as of Q4 2023. But among the 200 largest insurers, 15 hold shares of private

[61] Please note that private corporate bonds in this definition includes “Infrastructure bonds”. Also, the definition of private credit adopted is quite wide as e.g., it includes “Schuldscheindarlehen”).

debt/credit to total investments between 10% and 20%. Non-life insurers hold a slightly higher share of private credit to total investments that life insurers: 5.2% versus 3.7%.

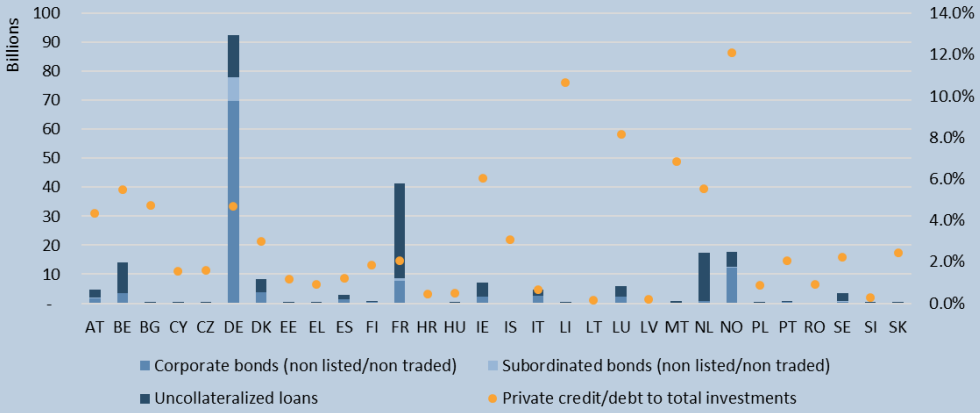
Figure B.5.3. Private credit/debt to total investment breakdown.



Note. SII reporting quarterly Solo 2023:Q4. List-of-assets S.06.02.

Private credit/debt, obtained as the sum of private (i.e., non-listed/non-traded) corporate and subordinated bonds and uncollateralised loans, makes up 3.4% of total investments[62]. As shown in Figure B.5.3, corporate bonds represent a share of 21.9% (CIC 2) of total investments. Senior and subordinated corporate bonds (CIC 21 and 28) represent a share of 70.1% of corporate bonds (CIC 2). And senior and subordinated corporate bonds that are non-listed/non-traded (CIC XT21-28 and XL21-28) are 11.3% of the total senior unsecured and subordinated bonds. Mortgages and loans (CIC 8) represent a share of 5.3% of total investments and uncollateralised loans are 30.7% of the broader mortgages and loan category.

Figure B.5.4. Breakdown of private credit/debt by private bonds and uncollateralised loans and share of private credit/debt to total investments by country.



Source: SII reporting quarterly Solo Q4 2023. List-of-assets S.06.02. Note: The breakdown of private credit/debt by private refers to non-listed/non-traded bonds [CIC XT21-28 and XL21-28] and uncollateralised loans to CIC 81

[62] Note that it is not possible to distinguish private bonds held within bond funds. Bond funds represent 27.7 % of non-Unit-linked CIUs which in turn represent 22.6% of non-Unit-linked investments.

Insurers in DE and FR are the largest holders of private debt. DE and NO insurers hold predominantly bonds while FR and NL insurers hold predominantly uncollateralised loans.

In relative terms, NO is characterized by the largest exposure of 11.8% to total investments. While countries such as BE, FR, LU, and NO exhibited the largest increase in the share to initial values of approximately 100% since 2016.

There are also several supervisory concerns characterising alternative investments and in particular private debt/credit. First, valuation of these assets is to a large extent discretionary (i.e., requires subjective assessment); methodologies applied may not accurately reflect fundamentals and current market conditions. There can be time lags, subjectivity, and susceptibility to model risk in valuations. Second, the high degree of illiquidity makes valuation highly uncertain. Third, the performance of these investments is highly sensitive to the interest rate environment. Fourth, credit risk is non-trivial to understand as there are challenges in predicting the impact of the business and credit cycle on private credit/debt.

For all these reasons, insurers' exposures towards private credit/debt must be closely monitored by regulators and supervisors.

PART II

Thematic Articles

1 THE IMPACT OF SOCIAL AND BEHAVIOURAL ASPECTS ON THE GENDER PENSION GAP IN EUROPE

Marie Scholer[63] and Lucian Pătulea[64] [65]

Abstract

The gender gap in pensions in the EU is substantially higher at 29% on average compared to the gender pay gap at 13% on average. Mostly, this is because, on top of often having worked in lower paid jobs, women are more likely to have worked part-time and to have had longer career breaks. Since pension benefits are often earnings-related, these differences in career profiles between men and women can lead to large gender disparities in pension payments. Our analysis does not identify high difference in hourly wages to be systematically associated with high gender pension gap. However, our results clearly show that the gender pension gap is higher in countries where high percentage of women work part-time. In addition, behavioural and social factors appear to also have an important contribution to the accumulation and perpetuation of the gender pension gap, by influencing financial planning and retirement related investment decisions. Addressing the gender pension gap is not a simple task, and this issue is part of a wider array of pension gaps that stem from the shifting demographical context that proves more and more incompatible from a financial and fiscal points of view with the current pension systems' designs. Efforts have been made and proposed to keep these gaps on a steady decreasing trend within the EU by encouraging the adaptation of pensions systems and increasing transparency to members and beneficiaries (pension benefit statements, pension tracking systems), as well as to policy makers (pension dashboards). However, adapting the pension systems in place is not always sufficient, as other aspects need to be considered when developing policies aimed at successfully mitigating the gender pensions gap, such as repositioning social views on gender roles, and proposing sufficient childcare availability etc. Even so, if the right steps are taken in the direction of mitigating these fundamental factors, it would take generational time until they will be properly reflected in the pension gap itself.

Keywords: gender gap, pension gaps, pay gap, career gaps, motherhood penalty, behavioural finance, investment analysis, stereotyping, part-time work

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[65] The views expressed in this paper are those of the authors and not necessarily those of the European Insurance and Occupational Pensions Authority.

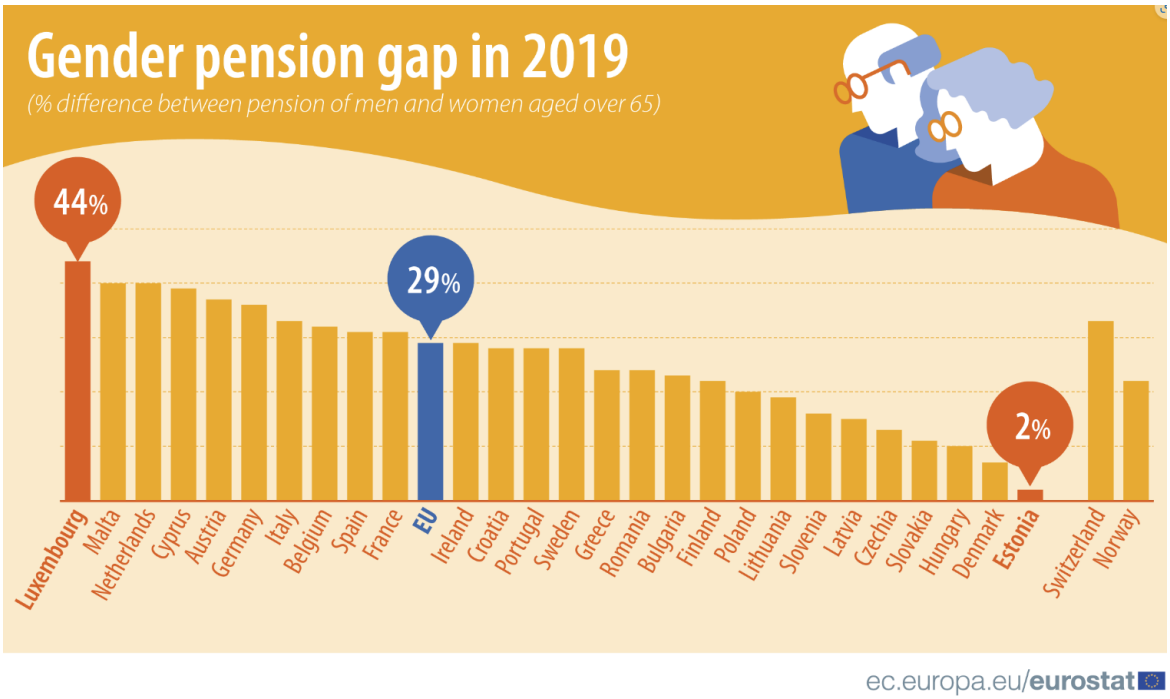
1.1 THE STATISTICAL GENDER PENSION GAP IN THE EU

The demographic context in the EU is a reality that persistently points towards an increasingly aging population and an increasing life expectancy. This is expected to amount to a significant pressure on existing pension systems to provide an adequate income to a larger population and for a longer term. Moreover, as shown in the European Commission 2024 Ageing Report, not only will it be expected that the population distribution over the age of 65 will grow substantially, but naturally women are expected to represent a considerably bigger part of it as age progresses (especially after the age of 75)[66].

As shown by Eurostat, in 2019, women in the EU aged over 65 received a pension that was on average 29% lower than that of men. Over time the gender pension gap[67] has been on a decreasing trend by reaching a level of 5 percentage points (pp) lower compared with 2010 (34%)[68].

Women received lower pensions in all EU Member States (MS), however the extent of the gap varies widely by country (see Figure 1). The largest difference was observed in Luxembourg, where women aged over 65 received 44% less pension than men. Luxembourg was closely followed by Malta and the Netherlands (both 40%), Cyprus (39%), Austria (37%) and Germany (36%). On the other hand, the smallest difference in pension income between women and men was recorded in Estonia (2%), followed by Denmark (7%), Hungary (10%), Slovakia (11%) and Czechia (13%).

Figure 1: Gender pension gap by country in 2019.



Source: Eurostat, dataset: ilc_pnp13

[66] Graph 2, pg. 3 of 2024 Ageing Report

[67] EUROSTAT definition: "The gender pension gap shows the percentage by which women's average pension income is higher or lower compared with men. Pension income includes old age benefits, survivors' benefits as well as regular pensions from individual private plans.

[68] Closing the gender pension gap? - Products Eurostat News - Eurostat (europa.eu)

The reasons for the gender pension gap are manifold. In this article, we will consider three key elements: the part-time employment rate, the gender pay gap[69] and the gender investment gap, the latter driving focus on the gender private pension gap.

1.2 A FOCUS ON THE STRUCTURE OF THE LABOUR MARKET AND THE GENDER PAY GAP

For most pension schemes in place, the pensions' annuities are determined by the amount of the contribution accumulated during the work life. This depends on the number of hours worked and by the hourly wage. Being both subject to gender gaps they both concur to the pension gap. Indeed, women tend to generate less income than men over time due to the part-time work and gender pay gap, which would automatically lead to lower wealth levels in retirement.

Part-time employment rate

In the EU, the main reason for women to work part-time is nurturing for family members, respectively looking after children or incapacitated adults[70]. Data shows that in the third quarter of 2022 the share of female part-time workers in total female-employed people aged 15-64[71] was higher (28%) than the share of men (8%).

Women recorded the higher share of part-time workers in total employed people aged 15-64 in all EU countries, with the exception of Romania where the share of men was higher (approximately 4% for men, compared to approximately 3% for women) and of Bulgaria, where the shares of women and men part-time workers were very similar (at approximately 2%). The Netherlands recorded the highest share of women working part-time and the largest difference between women and men (approximately 40 pp). The other EU countries that recorded large differences between women and men were Austria (approximately 39 pp) and Germany (approximately 37 pp)[72].

Figure 2 below shows the gender pension gap versus the percentage of women working part-time per country. With a few exceptions, the trend shows that the more women work part-time, the higher the gender pension gap is. For example, the Netherlands, Austria and Germany have one of the highest gender pension gaps, but also the highest percentage of women working part-time. This confirms a study for Germany that identified the gender-specific full-time/part-time difference as the main driver of the gender pension gap in Germany[73]. In a study for European countries, the theoretical elimination of differences in work time was simulated, which reduced the gender pension gap by seven percent[74].

[69] The gender difference in hourly wages

[70] Why do people work part-time? - Products Eurostat News - Eurostat (europa.eu)

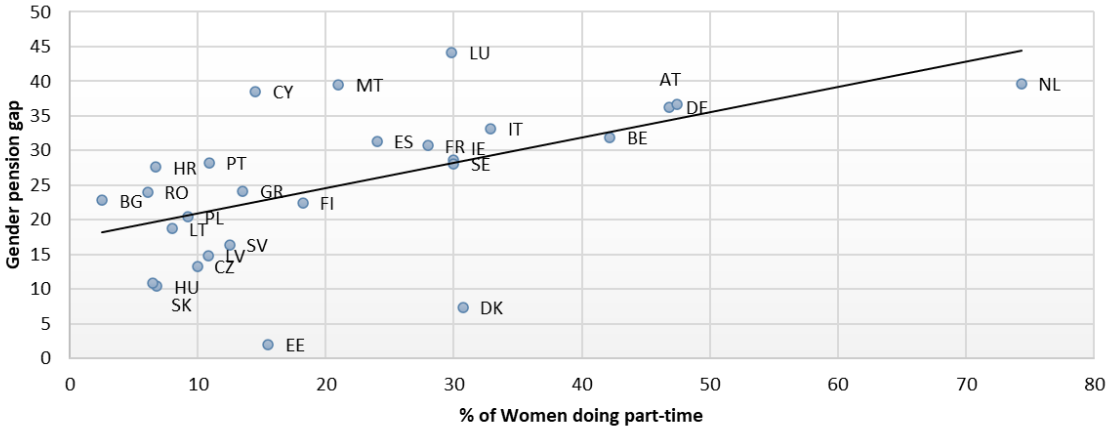
[71] Share of women working part-time higher than men - Eurostat (europa.eu)

[72] Data source: Statistics | Eurostat (europa.eu) as of 2022.

[73] Frommert, D. and Strauss, S. (2013) Biographical influences on the Gender Pension Gap. J Labour Market Res 46, 145–166 (2013). https://doi.org/10.1007/s12651-012-0125-7

[74] Lis, M. and Bonthuis, B. (2019). Drivers of the Gender Gap in Pensions: Evidence from EU-SILC and the OECD Pension Model, Social Protection & Jobs Discussion Paper, no. 1917.

Figure 2: Own analysis – Correlation between gender pension gap and % of women doing part-time



Source: Statistics | Eurostat (europa.eu) and Statistics | Eurostat (europa.eu), data as of 2019[75]

The motherhood penalty - an example from Germany [Niessen-Ruenzi and Schneider, 2020]

In Germany, mothers more often than fathers decide to switch from a formerly full-time position to a part-time job. In 2019, the part-time rate of women with minor children in the household was over 66% percent, while only about 6% of men with minor children held part-time jobs. One reason for the choice to switch from full-time to part-time employment is that in Germany, the traditional extended-family model, according to which multiple generations are living in the same house or at least close by and grandparents are strongly involved in raising children, has become less common. The basic care for young children on a day-to-day basis is usually either provided by one of the parents (mostly the mother) or by a childcare facility. However, childcare facilities often do not have sufficient places for all children or do not offer full-day care for young children either, which poses a challenge to both parents working full-time. In addition, strong social norms, particularly in West Germany, according to which a child is better off if the mother stays at home and takes care of the family, put a constraint on mothers' employment choices. These norms are not only shared by the older generation. According to the 18th Shell Youth Study of 2019, 65% of women between 12 and 25 years of age would like to work part-time at most – and 68% of young men would like the same of their partner – if they started a family and had to care for a child. That is, even among young people there still is a strong opinion that in a relationship with a small child, the woman, not the man, should scale back her job and that the man should provide for the family. 10% of survey respondents even prefer the full male breadwinner model, i.e., that the husband solely provides for the family and the wife stays completely at home with the child.

In addition to gender norms as an explanation for increased part-time rates among mothers compared to fathers, it is of course important to note that men, on average, earn higher wages than

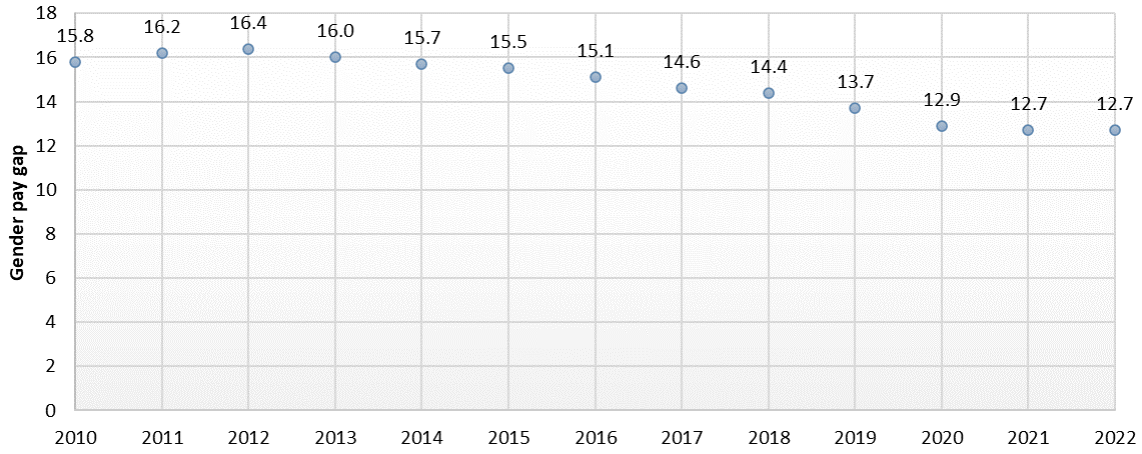
[75] Note that the gender pension gap is compared to part-time data from 2019 for consistency as no more recent gender pension gap data are available.

women. Thus, in an effort to maximize household income, more mothers choose part-time employment compared to fathers. The reduction in working hours of new mothers is of course accompanied by a reduction in wages, even if hourly based wages are completely comparable to men, and thus automatically transfer to a reduced entitlement to pension payments. The literature has used the term "motherhood penalty" to describe the drastic changes regarding women's wages and career development after giving birth. Relative to non-mothers and men, they suffer a penalty in the form of lower perceived competence and commitment, higher professional expectations, lower likelihood of hiring and promotion, and lower recommended salaries increases (Correll et al. 2007). Studies have also shown that mothers experience a 60% drop in earnings compared to fathers in the decade following the birth of a first child, and women have lower pension balances at the end of their working lives[76]. These changes contribute directly to the gender pension gap.

The gender pay gap

The most recent available data on Eurostat shows that the gender pay gap in the EU stands at 12.7%[77] in 2022 and it has had a decreasing trend over the last decade. It means that women earn 13% on average less per hour than men. Since 2010 the gender pay gap has decreased by approximately 24% from 15.8% to 12.7% in the European Union (27 countries from 2020) (see also Figure 3).

Figure 3: The evolution of the gender pay gap in unadjusted form[78] in the European Union (27 countries from 2020)



Source: Statistics | Eurostat (europa.eu)

However, there are considerable differences between the EU countries. The gender pay gap ranges widely from one country which shows a negative share (Luxembourg), to a low level of less than 5%

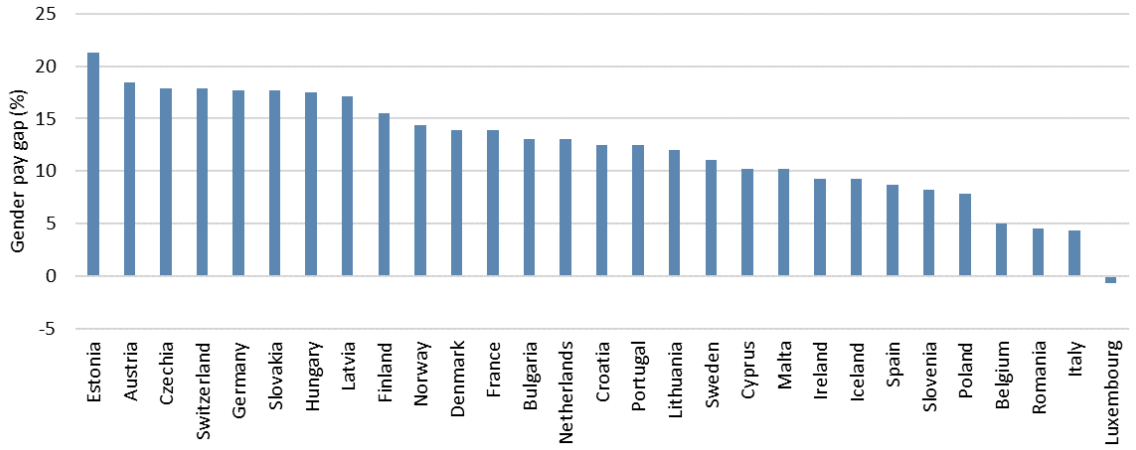
[76] The 'motherhood penalty' is widening the pay gap (pwc.com).

[77] The indicator measures the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees. The indicator has been defined as unadjusted, because it gives an overall picture of gender inequalities in terms of pay and measures a concept which is broader than the concept of equal pay for equal work. All employees working in firms with ten or more employees, without restrictions for age and hours worked, are included.

[78] The unadjusted gender pay gap represents the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees.

(Romania, Belgium and Italy) and up to more than 17% (Latvia, Hungary, Slovakia, Czechia, Germany, Austria and Estonia) (see Figure 4).

Figure 4: The gender pay gap in unadjusted form by country in 2022.



Source: Statistics | Eurostat (europa.eu).

The gender pay gap measures and reflects a broader concept than just pay discrimination and comprehends a large number of inequalities women face in access to work, progression and rewards. The main reasons for the gender pay gap are[79]:

- **Occupational segregation**: Occupational segregation can widen the gender pay gap, as women-dominated occupations tend to be lower paid than those dominated by men and there is generally a higher proportion of men in senior positions. In the EU, around 24% of the gender pay gap is related to the overrepresentation of women in relatively low-paying sectors, such as care, health and education. Highly feminised jobs tend to be systematically undervalued.
- **Unpaid and caring work:** Women and men have different patterns of participation in the paid workforce, principally because women spend a greater proportion of their time on unpaid and caring work than men do. Furthermore, when women return to the paid workforce from career breaks, they often have trouble getting their careers back on track. Although unpaid work makes an important contribution to the economy and plays a pivotal role in society, to individuals and to communities, it is not as visible, widely understood, or recognised, as 'real' work. Hence it is also often not officially remunerated. All of this has a significant impact on women's lifetime earnings and financial security and contributes to the gender pay gap widening.
- **The glass ceiling:** The position in the hierarchy influences the level of pay - less than one in ten of top companies' CEOs are women. Nevertheless, the profession with the largest differences in hourly earnings in the EU were managers: 23% lower earnings for women than for men.

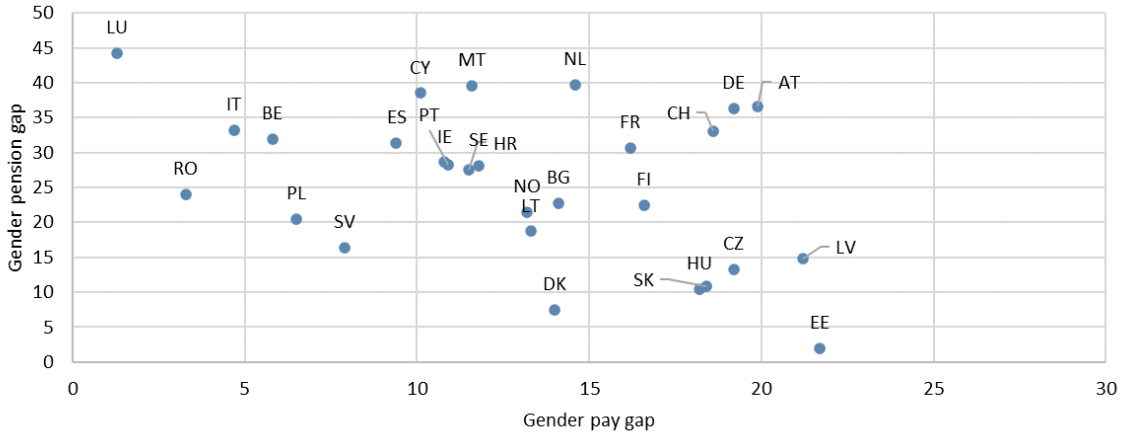
[79] Gender pay gap in the EU down to 13.0% - Products Eurostat News - Eurostat (europa.eu)

- **Pay discrimination:** In some cases, unfortunately women still earn less than men for doing equal work or work of equal value, even if the principle of equal pay is enshrined in the European Treaties (article 157 TFEU) since 1957.

However, in line to what was observed in the paper from Bettio and co. [2013][80] and Hammerschmid and Rowold [2019][81], and consistent to visible data miscorrelations in specific EU countries, the gender pay gap and the gender pension gap are not as clearly associated. Using data as of 2022, Figure 5 shows that there is no simple relationship between the gender pension gap and the gender pay gap. Estonia, which has the lowest pension gap, also has the highest pay gap. This kind of combination is quite common in Eastern Europe. In some cases, pensions may reduce pre-existing inequality; in others they may also widen it, sometimes as an unwanted side-effect of pension features [Bettio and co., 2013]. The redistributive patterns of the pension systems and their overall design can cushion the direct impact of gender-specific wage differences on the pension gap [Hammerschmid and Rowold, 2019]. In Estonia, for example, women benefit more than men from the redistribution in the pension system. This is one possible explanation for the high gender pay gap in Estonia not being reflected in the gender pension gap.

It must also be noted that today's pay gap and today's pension gaps refer to different groups of people. If evaluated today, pension gaps average income sources of a different generation than the one currently earning income in the labour market. For Luxembourg for example, the gender pay gap has significantly decrease in the last 10 years (~11% in 2006 and negative share today), this can explain why we see for Luxembourg a high gender pension gap (as of 2022 but resulting from a gender pay before 2022) associated with a very low gender pay gap (as of 2022).

Figure 5: Own analysis - Gender pay gap versus gender pension gap by country in 2022.



Source: *Statistics | Eurostat (europa.eu).*

Nevertheless, there are numerous examples of countries with substantial pay and substantial associated pension gaps, such as Austria, Germany, France, and the Netherlands. A simulation study

[80] Francesca Bettio, Platon Tinios, Gianni Bett (2013). The gender gap in pensions in the EU.

[81] Hammerschmid, A. and Rowold, C. (2019). Gender pension gaps in Europe are more explicitly associated with labour markets than with pension systems

for European countries also showed that the (simulated) gender pension gap is reduced by nine percentage points on average when the gender pay gap is artificially set to zero[82].

Based on the evidence provided in this section, the pension gap has a direct correlation to the work condition rather than the gender pay gap. In its initiatives and policy making, The EU has persistently promoted measures to soften and mitigate gender gaps, via channels of empowering women in the labour market (such as the Directive on pay transparency and the Directive on Work-life balance, but also the End Gender Stereotypes campaign and the Care Strategy and Recommendations on long-term care and on early childhood education and care improving accessible and quality childcare) or by promoting women in the decision-making (such as the Directive on Gender balance on company boards)[83]. Behavioural aspects and stereotypes are at root cause of many of the gender gaps through a more or less direct connection. Still, in the EU 44% of the population believes that the most important role of a woman is to take care of her family and only 8% of CEOs positions are actually occupied by women[84]. Taking into account the recent developments in demographics and society, parents and people with caring responsibilities need to better balance their work and family lives, while there is also a need of encouragement of a better sharing of caring responsibilities between women and men[85]. In the following section we will continue to discuss social pressures, stereotyping and expectations, but also focus more on the behaviour aspect of women in their investment choices, which contribute mostly to the private pension gender gap.

1.3 THE GENDER INVESTMENT GAP AND THE PRIVATE PENSION GENDER GAP – BEHAVIOURAL AND SOCIAL ASPECTS

The previous section focused on the connection between the gender pension gap and the gender pay gap and labour market considerations. As shown above, this connection does seem to stem from the fact that women invest less time in their paid work (they resort to part-time jobs, career breaks) and focus more on their nurturing role within their family context (unpaid work). The source of this phenomena may be found both within behavioural traits of men and women, as well as in the structured expectations of society. In this section, the focus will lie on behavioural and social factors that appear to have an important contribution to the accumulation and perpetuation of the gender pension gap, by influencing financial planning and retirement related investment decisions. As such, even if women had the same amount of money as men to build up wealth for retirement, they show different investment patterns and behaviour, which may lead to building additional obstacles for them to generate the same level of wealth for retirement as men do.

[82] Even, W. and Macpherson, D. (2004). When Will the Gender Gap in Retirement Income Narrow? Southern Economic Journal 71(1) (2004): 182–200.
[83] Championing Gender Equality in the EU and beyond.
[84] End Gender Stereotypes - European Union (europa.eu).
[85] Work-life balance - Employment, Social Affairs & Inclusion - European Commission (europa.eu).

Risk aversion and the gender investment gap

Members of pension schemes, as all investors that do not have specific financial knowledge, have difficulties to understand and apply, in most cases, the principles of traditional finance, like being able to: fully identify their goals and needs, fully assess their resources and capabilities, and make the optimal financial decisions regarding asset allocation in their investment portfolio. Behavioural economics indicates that members strive to make decisions heavily based on mental shortcuts with very little financial grounding[86].

One constantly occurring behavioural aspect exhibited in financial literature[87] is that women tend to be significantly more risk averse then men and this in its turn has several implications. Increased risk aversion of women seeps into investment practice by generating and contributing to the gender investment gap:

- First, by being more risk averse, women tend to exhibit a more consistently conservative approach to building or choosing their investment portfolios and that inherently leads to a more secure but lower return. Moreover, financial advisors often rely on stereotyping of gender preferences, and end up suggesting investment portfolios that are over-exposed to risk for men and too conservative for women.
- Second, women tend to exhibit avoidance of gambling or speculation. This trait also results in more stable investment portfolios for women than those of men, less risk, less frequent reallocations, and less active management. However, this behaviour emphasizes the possibility of losing potential investment opportunities.
- Third, risk aversion in the financial context is strongly linked to income (in)stability and wealth, aspects to which women behaviourally tend to be more sensitive to, compared to men. Exhibiting more short-termism when dealing with prioritising needs, women will tend to focus on priorities for children and household, family immediate needs and even social requirements (such as gifts), compared to a long-term future goal such as retirement income. From this point of view, marital status may have a positive contribution, while married women (or part of a couple) having a better perception of their financial stability and strength than single women do. However, marital status could be a doubled edged sord since it may traditionally shift the decision on investment prioritisation from women towards their spouses.

Risk aversion is a behavioural aspect that is most simply put in general terms as fear or avoidance of uncertainty. However, the most important element that nourishes fear is lack of knowledge (stepping into the unknown). Consequently, the obvious immediate connection is that one generating factor of risk aversion is a lower level of financial literacy. Unfortunately, this aspect is still persistent at a worldwide level, although in a much smoother version in the EU. Women tend to exhibit a lower degree of financial literacy[88]. Even so, an important aspect that one can distinguish

[86] EIOPA developed more on behavioural aspects manifested in the investment process in its *Report on Investment options for occupational DC scheme members*.

[87] Section *2.1. Gender differences in risk aversion* - Towards Improved Retirement Savings Outcomes for Women: OECD 10 Mar 2021 - https://doi.org/10.1787/f7b48808-en.

[88] Eurobarometer survey reveals low levels of financial literacy across the EU - European Commission (europa.eu).

in this scenario is the difference between actual and believed financial literacy, which from a behavioural aspect do not seem often to match[89] (women may erroneously believe that they are less educated than men in this domain). Another is that some women end up purposely not choosing the path of increasing their level of financial education believing it is not a feminine domain.

Stereotyping[90] could be a key reasoning. It has a gyrating role, exhibiting financially related domains as more masculine, which leads to over-appreciation of men's abilities and under-appreciation of women's, or leads to girls avoiding this trajectory in their educational careers. As previously mentioned, stereotyping also leads to external bias, such as from financial advisors, on which's services' women tend to relay more than men do. A lower level of perceived or actual financial literacy not only increases risk aversion, but limits considerably the ability and willingness of women to engage in financial planning. In turn, this builds to fewer resources being allocated to the purpose of retirement, that further feeds the investment and private pension gaps. Stereotyping gender roles and their abilities takes an accentuated perspective in case of change in marital status. The husband's role is transferred through generations as being the lead on financial responsibilities, as the wife's is in nurturing. As with all aspects of financial behavioural heuristics, education or nudging in a different direction can loosen their impact.

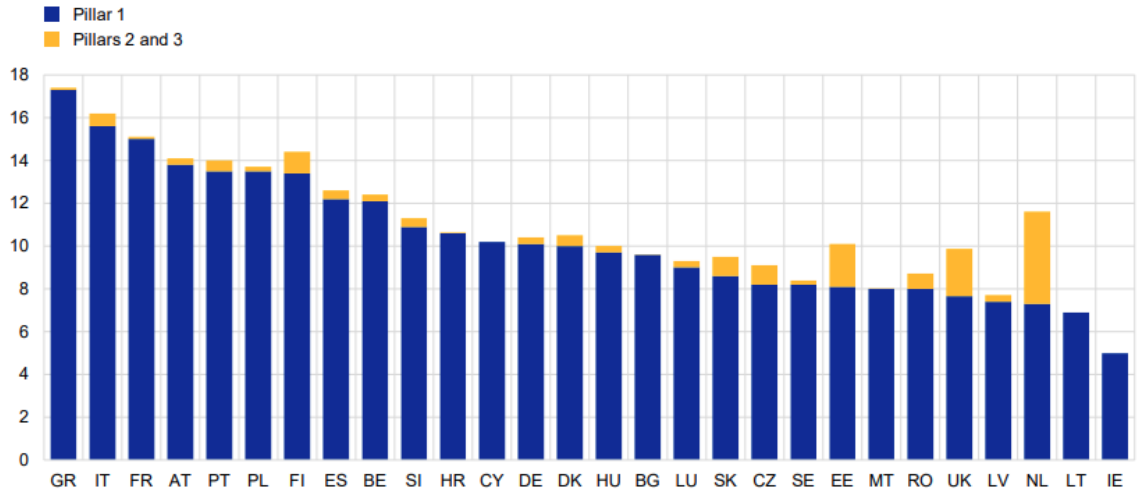
The link between the gender investment gap and the gender pension gap is distinguishable in the case of supplementary funded pensions (respectively the gender private pension gap). Most reforms initiated to mitigate gender pension gaps have been focusing on the statutory or public pensions, and this also led to slightly higher and more persistent private pensions gender gaps than the general gender pensions ones.

The private pensions gender gap

As shown in the figure below, contributions to the supplementary pension systems are significantly lower than those to the statutory pillar, however private pensions are expected to become an increasingly important way to decrease the pressure from the public fiscal system and continue to contribute at providing an adequate level of retirement income for future pensioneers[91].

[89] Section *2.2. Gender differences in financial literacy* - Towards Improved Retirement Savings Outcomes for Women: OECD 10 Mar 2021 - https://doi.org/10.1787/f7b48808-en.
[90] Section *2.4. Gender stereotyping* - Towards Improved Retirement Savings Outcomes for Women: OECD 10 Mar 2021 - https://doi.org/10.1787/f7b48808-en.
[91] ESRB Occasional Paper Series from July 2020;

Figure 6: Size of contributions to Pillars , 2 and 3



Sources: European Commission (2018), OECD, EIOPA, Eurostat and authors' calculations.
Notes: Data on Pillar 1 are as at end-2016 and refer to gross public sector expenditure as a percentage of GDP, as disclosed in the 2018 Ageing Report (table III.1.66). Data on Pillars 2 and 3 are based on contributions of autonomous pension funds as reported to the OECD, with a reference date of end-2016, except for France, Germany and the United Kingdom (end-2015), and Greece (end-2014). Data for Bulgaria, Croatia, Malta, Romania and Sweden are taken from EIOPA (total gross contributions receivable) and corresponding GDP from Eurostat, as at end-2015. No data on Pillar 2 and Pillar 3 schemes are available for Ireland, Cyprus and Lithuania. For Sweden, pension scheme contributions to life insurers (accounting for an additional 2% of GDP) are not shown.

Source: ESRB Occasional Paper Series, July 2020, Pension schemes in the European Union: challenges and implications from macroeconomic and financial stability perspectives (europa.eu)

The investment gap transmitting in the private pensions sectors is also more importantly manifesting in DC (defined contributions) pension systems rather than the DB (defined benefits) ones since there is no guarantee of the benefits level. In a DC context, all investment risk and all retirement income risk are directly borne by members and beneficiaries. The transmission of risks from sponsors and IORPs (institutions for occupational retirement provision) towards the members and beneficiaries, in a context where more and more pension systems form as DC or shift from DB to DC, is an important aspect mentioned in EIOPA's technical advice for the European Commission in regard to the review of the IORP II Directive[92].

The Occupational Pensions Stakeholder Group (OPSG) also draws attention to the fact that the higher coverage of occupational pensions corresponds to a higher gender pension gap due to the fact that occupational pensions are closely linked to the labour market. This occurs with women being less active on the labour market, more likely to work part-time, or disappearing altogether from the labour market due to caring responsibilities (career breaks), as well as being paid less[93]. As such, one of the most important issues when it comes to the private pensions gender gap is participation. Many behavioural and social aspects, including risk aversion, income uncertainty, and short-termism in financial allocation, all direct women in opting out of participating in private pensions savings, which are mostly voluntary. Even in European countries where supplementary

[92] Technical advice for the review of the IORP II Directive - European Union (europa.eu);
[93] OPSG Advice for gender pension gap and occupational pension sector – February 2024.

pensions are in a quite developed stage, persistently women tend to have less access to supplementary pensions than men, and highly feminine labour sectors tend to offer less opportunities to contribute to these types of schemes[94]. In the effort of mitigating the contributing factors to the increase of the gender private pension gap, one can draw attention to the aspects of the design of the pension schemes and plans themselves, as well as to the information provision.

Table 1: Coverage of supplementary pensions by type 2016, % of population aged 15 - 64

MS	Occupational pensions	Personal pensions
Austria	15	23.8
Belgium	59.6	38
Bulgaria	0.2	12.9
Croatia	1.1	9.3
Cyprus	39.1	..
Czech Republic	n/a	52.6
Denmark	63.4	18
Estonia	n/a	12.3
Finland	6.6	19
France	24.5	5.7
Germany	57	33.8
Greece	1.3	..
Hungary	..	18.4
Ireland	35	12
Italy	9.2	11.5
Latvia	1	17.1
Lithuania	..	2.8
Luxembourg	5.1	..
Malta	..	..
Netherlands	88.0	28.3
Poland	1.6	~10
Portugal	3.7	4.5
Romania	n/a	3.3
Slovakia	n/a	26.3
Slovenia	36.5	1.4
Spain	3.3	15.7
Sweden	~70	24

Source: EU Pension Adequacy Report 2018, The 2018 pension adequacy report - Publications Office of the EU (europa.eu)

1.4 HOW TO ADDRESS THE GENDER PENSION GAP?

The gender pension gap is not a simple issue to tackle with, as it has many facets and many underlying and contributing factors with several ramifications. As such, when developing pension policies aimed at successfully mitigating these gaps, policies need to be specifically targeted on a particular issue at a time: financial education for women, marketing campaigns for women, financial advice, portfolio management, participation in different pension systems, increasing contributions to the pension systems for women, ensuring an adequate income level and strategy diversification, tackling with stereotyping and repositioning social views on gender roles etc. Often,

[94] Final report of the high-level group of experts on pensions – December 2019.

the design of the pension system itself cannot address directly all the generating factors of the gender pension gap, such as the workings of the labour market (career gaps, childcare availability, the gender segregation in some industries or the percentage of women in leadership positions) or deep social misconceptions. However, even if the right steps are taken in the direction of mitigating these fundamental factors, it takes generational time until it will be properly reflected in the pension gap.

Addressing the issues of employment market and childcare availability

The employment market can both facilitate options for a more flexible career path, discouraging the need for taking actual career breaks, as well as contribute to options of addressing the underlying issues that lead to such a need.

With possible actions that can stem from both legislative measures, as well as from company level policies, jobs may become more flexible and catch-up provisions can be implemented to fill the impact of career gaps. From another point of view, the attention must fall on one of the main reasons behind the alteration of career paths for women (part-time employment, career breaks) and that is by addressing the motherhood penalty. Both local authorities, as well as private institutions or companies, should strive to better provide for appropriate childcare options. This entails not only availability of quality childcare, but also appropriate costs for these options, since often these costs are borne directly by women themselves[95]. In this respect, attention regarding remuneration and compensation can be paid to sectors with lower income roles, or positions that habitually are filled by women.

Adapting the pension system design

Some countries have opted to address the issue of participation (like IT or UK), that solves an important aspect for both genders. The most useful method in this case is to tap into behavioural aspects such as procrastination and inertia or status quo bias, by introducing a measure such as auto-enrolment. It does not stripe members of the voluntary character of (mostly supplementary) pension systems, but it connects it with the need of active engagement, which usually is not the case for members and potential members. This is however also linked to the fact that were-ever members are registered in a pensions scheme, they remain in the so-called default investment strategy, the strategy where usually all potential members are allocated if they do not make an active choice.

This raises concerns regarding if the strategy is specifically suitable for members, and in this particular case, for women. In its Opinion on the supervision of long-term risk assessment by IORPs providing defined contribution schemes[96], EIOPA states that, when building its investment strategy and asset allocation, IORPs should consider the risks from the perspective of members and beneficiaries. This is particularly relevant in case of the default investment strategy where members do not actually make an active choice. From a more general approach, a conservative default investment strategy (as in many cases they are) would not do much in properly contributing

[95] How to fix the gender pension gap | World Economic Forum (weforum.org).
[96] Opinion on the supervision of long-term risk assessment by IORPs providing defined contribution schemes - European Union (europa.eu).

to the mitigation of the gender pension gap. In such a context, a life-cycling strategy, a properly diversified investment portfolio, or a designated investment strategy for the women of the target market may prove more useful. In some cases, due to stereotyping factors that apply to some industries or sectors, pensions funds' members do comprise mostly of women.

Also, regarding participation, elimination or flexibilization of specific eligibility criteria would mitigate the gender bias. In what concerns decumulation, since women tend to live longer than men and may often retire earlier, they need a level of retirement income for longer. One common measure to diminish the gender pension gap is including unisex mortality tables for calculating annuities. This issue is easier to be addressed in a statutory pension system, however it is more difficult to apply in supplementary pension systems, where gender pension gaps appear larger. Another is the possibility to benefit of survivor pension.

In an increasingly DC pension landscape, where risk and decisions shift from the industry towards members and beneficiaries themselves, information becomes crucial. The most common form of informing members through the pension benefit statement holds still an important role, but in an increasingly digital context, and when appropriate decisions can be most efficiently taken when confronting comprehensive and complete information about retirement prospects, a pension tracking system proves superior in meeting its purpose. Moreover, information about the effectiveness of the pensions system in its adequacy and sustainability of meeting its retirement objectives, including a status on the gender pension gaps, becomes of outmost importance for policy makers. One form of conveying such information would be a pension system dashboard.

Several other more technical elements that regard the pension system design can help mitigate the gender pension gap, and many such concepts and reforms have been implemented[97]. For example, a measure mostly applied in the public pension systems (pillar 1) has been the redistributive or solidarity mechanisms applicable in case of career breaks for childcare. As such, in order to address the periods of contribution suspension that takes place during parental leave or the general lower level of contributions for women, useful measures could be contributing to a spouse's pension plan, allowing the spouse to contribute to others' pension plan (even with possible financial incentives), the possibility to pay higher contributions on behalf of parents to account for leaves and for women for a greater life expectancy, or direct governmental subsidies and fiscal incentives for women or that are especially relevant for women.

Nordic countries have been among the most progressive in introducing mechanisms of diminishing pension gender gaps in occupational/statutory pensions by addressing the lack or dip in contributions during parental leave[98]: in Sweden, in the occupational ITP pension plans contributions are paid by the pension provider during parental leave or the time off taken for child care, for a maximum of 13 months, while in Denmark during maternity, paternity and parental leave contributions are no longer paid to the private occupational pensions but are replaced by a doubling of the contributions made to the ATP (a statutory, fully funded, collective DC scheme).

[97] Section *4. Gender implications of the design of retirement saving plans* - Towards Improved Retirement Savings Outcomes for Women: OECD 10 Mar 2021 - https://doi.org/10.1787/f7b48808-en.
[98] Final report of the high-level group of experts on pensions, 2019.

The Norwegian example of facilitating participation and promoting savings for women in the statutory pension pillar: In EIOPA's DC pensions Roundtable from April 2023[99], the representative of the Norwegian Ministry of Labour and Social Inclusion has presented the main steps in the reforms taken by Norway to diminish the gender statutory pension gap. From the point of view of average individual pension benefits over retirement phase the internal simulation resulted in a decrease from an approximative baseline of 43% to about 7%. Among the measures taken in account, the following have been mentioned: utilising a gender-neutral annuity divisor, a social security ceiling, introduction of child credits, inherited benefits, undifferentiated guarantee pension, higher benefits guarantee for singles and adjusted income taxes.

Societal and investment behaviour

Some countries have decided to directly tackle the difficult issue of financial education that is specifically gender focused (like in Australia, the United States or Singapore[100]). Research has shown that including financial education in the formal school curriculum is one of the most efficient and fair ways to reach a whole generation on a broad scale. In addition, since the curriculum spans several years and can start as early as kindergarten, it is a unique means to nurture a sound financial culture and behaviours amongst future adults. Moreover, young people are potentially good disseminators of new habits in the rest of the population[101].

Marketing campaigns and targeted information provision for women can also address specific pension related needs such as participation, level of contributions or level of accumulated assets (for example in connection to targeted information about divorce rights or couples benefits and possible solutions). Some studies have gone as far as proving that simple campaigns of financial education may not be as successful on women for improving financial planning and investment behaviour, compared to men, if not taking in consideration additional and specific aspects and information such as, for example, objective survival expectations (women tend to underestimate their survival expectations, leading to lower risk taking behaviour)[102]. Such information campaigns and occasions for drawing awareness on financial issues targeting women do not necessarily need to be part of a national or governmental plan but can be carried out by the industry itself in its quest of improving participation and increasing contributions to retirement related products (e.g., Volksbank Ladies Night - offering financial advice to women within the setting of a social event[103]).

Specific measures have been independently taken by some companies from the private sector from Belgium and France, which have introduced mechanisms to mutualise parental leave within their occupational pension schemes, a form of redistribution covering some non-contributory

[99] Roundtable on Defined Contributions Pensions - European Union (europa.eu).

[100] Section *4. Addressing women's financial education needs through policies and dedicated programmes* - Women and Financial Education: OECD 2013 - https://doi.org/10.1787/9789264202733-en.

[101] Financial education for youth and in schools, 2013.

[102] A Leveraged Gender Gap: The Combined Effect of Longevity Risk (Mis)-Perception and Financial Risk-Taking - Swiss Finance Institute Research Paper Series N°23-09: SSRN-id4350916.pdf.

[103] 05.10.2010: Ladies-Night in Oberhausen - Volksbank Lahr eG (volksbank-lahr.de).

periods. They set up a so-called "solidarity fund", funded by an annual percentage of the rates of return that pays out the premiums during employees' parental leave[104].

Nevertheless, a general aspect that can address the gender pay gap and the gender pension gap is the gradual shift in social beliefs and biases and the reduction of stereotyping. For example, by law, in some countries, men can share family and childcare burden in an almost equal manner to women. However, in practice this needs to become more accepted and actually applied. Having (legal) options is only a first step, while educating, nudging, and encouraging action is the following necessary one. On the one hand strong embedded preconceptions about gender roles in family dynamics can be softened and readjusted, while, on the other hand, perception of career importance and continuity, and financial planning and retirement concerns can be strengthened for women. Role-models and a corresponding corporate culture are some ways to promote a more balanced gender role perception. Furthermore, society is undergoing changes on family dynamics that need reflecting in financial advice (an increase in divorces, separations, and fewer children in an aging society), raising awareness, and educating on optimising financial planning[105].

As previously mentioned, the approach needs to shift at the level of society as whole, that is including more specifically the industry level (corporate culture and practice), with a stronger accent on diversity & inclusion aspects. For example, a greater gender balance in boards and a more active involvement of investors would encourage most likely the set-up of new employment and pension solutions. In its technical advice to the European Commission for the review of the IORP II Directive[106], with the view of amending the Directive's provisions, EIOPA advises both that diversity and inclusion should be one of the criteria for the composition of management bodies and, with a more general approach, that diversity and inclusion should also be addressed in IORPs' recruitment policy. EIOPA believes that there are other areas where improvements in relation to diversity and inclusion are possible, as for example, investment decisions can not only have an impact on the environment but also on socio-economic factors, like diversity and inclusion. In this sense, gender lens investing[107] can help promote companies and their activities where women have an important role in management and governance, where workplace equality is encouraged, or where they focus on improving lives of women and young girls. All these processes would contribute to the mitigation of several gender gaps.

1.5 CONCLUSION

The gender pension gap is not an easy beast to tame, however efforts have been made to keep it on a steady decreasing trend within the EU, and if continuing to address it and adopting mitigating techniques, it is expected that this trend will continue. The European Commission is monitoring the gender pension gap and reflects it in its publications, such as the pension adequacy report[108].

[104] Final report of the high-level group of experts on pensions,2019.
[105] Advice for gender pension gap and occupational pension sector – OPSG, February 2024.
[106] Technical advice for the review of the IORP II Directive - European Union (europa.eu).
[107] CFA Institute: *Closing the Gap: Gender Lens Investing and the Future of Finance* - 21.04.2022.
[108] 2021 pension adequacy report - Publications Office of the EU (europa.eu).

One source for the gender pension gap may very well be the gender pay gap. However, it appears from our analysis that a significant factor that leads to the persisting gender pay gap and inherently to the gender pension gap is actually the fact that women invest less time in their paid work (part-time jobs, career breaks) and focus more on their nurturing role within their family context (unpaid work). These findings emphasize the necessity of strengthening female working lives and careers to further reduce the gender pension gap, whether through providing children related benefits, adequate childcare support or adapting the options available in the pension scheme design to let their partners take over some of the burden of pension responsibilities. Consequently, one important aspect that connects to both the pension gender gap, as well as the general pension gap in an increasingly aging population, is the need to mitigate the so called "motherhood penalty".

Increasing financial literacy and improving financial advice and marketing may also help women address their behavioural inclinations and social constraints in order to diminish the gender investment gap and the corresponding private pensions gender gap. Some other important measures can take shape in further adapting the pension system design, like promoting women participation through auto-enrolment or introducing gender neutral discount factors for pension payments. Also offering opportunities to change public social beliefs could prove constructive, such as allowing and encouraging male partners participation in childcare or promoting diversity and inclusion in corporate culture.

In its advice to the European Commission for the revision of the IORP II Directive, EIOPA suggests that the gender pension gap might be reduced, for instance, by enhancing the awareness of women of the pension implications of their career steps. Moreover, governments have the possibility to implement appropriate reforms to adapt the pension systems and address persisting pension gaps by supplementing the public pay-as-you-go schemes with private pension plans or improving transparency both for policymakers and citizens (including women), thus stimulating market participants to take measures to mitigate these gaps themselves. Therefore, the pension dashboards and the pension tracking systems are fundamental tools to tackle these challenges by identifying emerging and persisting gaps through better and more comprehensive disposable information. In this context, in 2021, EIOPA has issued the technical advice on the development of pension dashboards and the collection of pensions data[109] and the technical advice on the development of pension tracking systems[110], both representing important transparency tools for pensions at macro and micro level, that would facilitate both identifying and tackling pension (gender) gaps, as well as facilitating individual financial planning for retirement, for women included.

[109] Technical advice on pensions dashboard (europa.eu).

[110] Technical advice on the development of pension tracking systems - European Union (europa.eu).

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2 KEY TRENDS IN CRYPTO ASSETS, DISTRIBUTED LEDGER TECHNOLOGIES, AND DECENTRALISED FINANCE

Elena Garro[111]

Abstract

Crypto assets, Decentralised Finance (DeFi) and Distributed Ledger Technology (DLT) are transforming the traditional financial system through technological innovations. While the use cases observed in the insurance sector appear to be limited so far, they deserve attention as new challenges are emerging alongside traditional risks. The recently approved MiCA Regulation is the first regulatory response to the use of crypto assets and crypto assets service providers in the EU. Nevertheless, "fully" Decentralised Finance is "out of scope" and the peculiarities and complexity of this ecosystem make it difficult to capture the phenomenon within the perimeter of the existing regulations. While DeFi activities are mostly unregulated at present, various international bodies undertook initiatives to identify risks and vulnerabilities of DeFi, use cases and potential policy options. This thematic article provides an overview of the recent regulatory developments and the potential and some already observed applications of crypto-assets, DLTs and DeFi in insurance, as a result of a survey conducted across insurance undertakings in Europe. It highlights, in addition, the specific characteristics of crypto-assets, DLTs and DeFi and the relevant risk categories.

Keywords: Crypto-assets, Decentralised finance, Distributed Ledger Technology, use cases in insurance.

2.1 INTRODUCTION

In general, innovation comes with opportunities and challenges. On the one hand, it may improve financial inclusion by facilitating the access to financial products or services or exploring more tailored solutions. It can bring new financial products to meet traditional or emerging customers' needs and facilitate more efficient and less costly processes. On the other hand, the use of new technologies adds to the traditional risks of the financial system, new challenges from a regulatory and supervisory perspective. Challenges brought by the peculiarities and complexity of the innovative solutions behind the use of new technologies and products make it difficult to assess and monitor such risks and, in some cases, to provide the adequate regulatory and supervisory response.

The aim of this thematic article is to provide an overview of the theoretical and practical (i.e., already applied) use of crypto assets and embedded technologies in the insurance industry. The focus is on

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the application of Distributed Ledger Technologies (DLTs) and Decentralised Finance (DeFi), and on the challenges, risks and concerns also from a policy and supervisory perspective therein.

As of now, the insurance industry deployed a limited number of crypto assets use cases and DeFi-based applications. While the number and materiality of the documented cases do not require yet dedicated oversight actions, the quick evolution of the market and of the technology suggests a continuous monitoring to identify potential emerging risks stemming from their application in the insurance value chain.

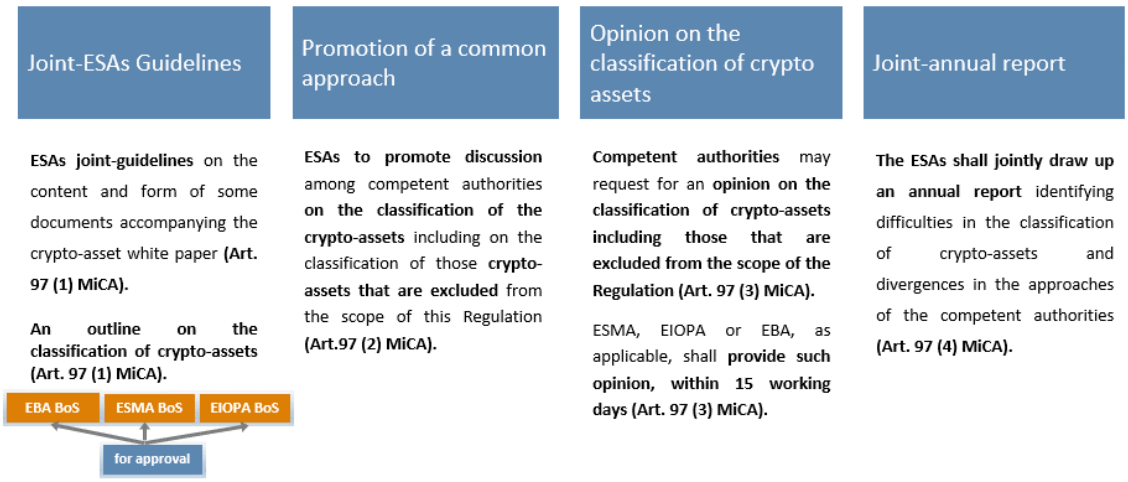
The article has the objective to help readers to navigate across the characteristics of the crypto ecosystem, highlighting which of these deserve attention from a consumer protection perspective or which ones are relevant for operational and technology risks as well as risks arising from illicit activities. Similarly, it provides an overview of already observed cases in insurance and potential applications and of the new initiatives to monitor and develop a regulatory framework applicable to the changing crypto and DeFi ecosystem.

2.2 CRYPTO ASSETS, DLTS AND DECENTRALISED FINANCE: MAIN CHARACTERISTICS

It is worth mentioning some definitions regarding crypto-assets, DLTs and DeFi to help framing the crypto ecosystem.

Crypto assets are native and pure digital assets. In short, crypto assets can be defined as a digital representation of a value or a right (digital assets) which may be transferred and stored electronically, using distributed ledger technology or similar technology (Art.3(5) of MiCA Regulation[112], published in EU Official Journal in June 2023).

Figure 1: An overview of MiCAR Mandates



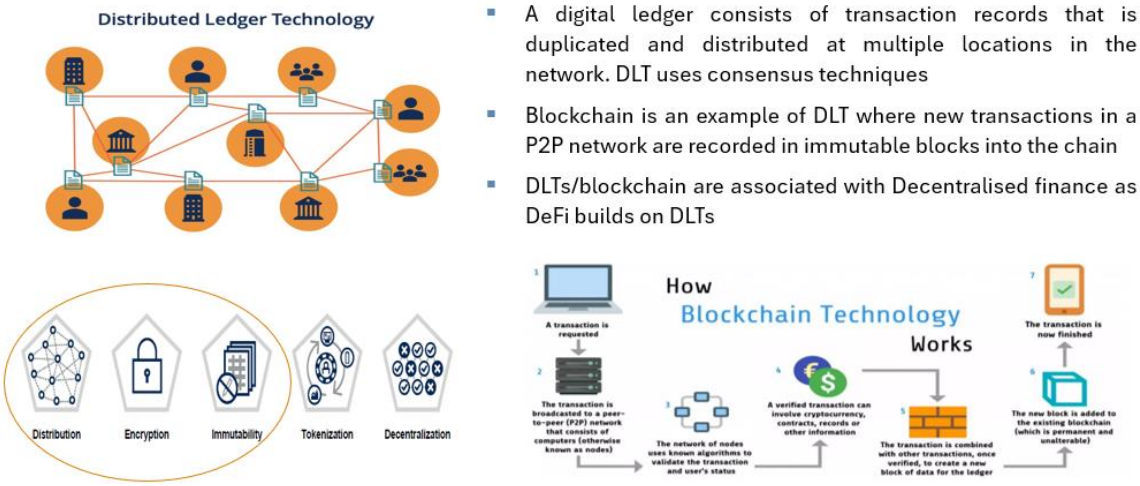
Source: Elaboration based on MiCA Regulation (Art.97)

Since the definition is broad and the crypto-assets market continues to evolve rapidly, the exact nature of crypto assets comes up with a common approach which could help to qualify crypto assets

[112] MiCA Regulation

in scope of the MiCA Regulation. This is the overall objective of the mandate to the three ESAs (EBA, EIOPA and ESMA) to issue joint Guidelines on the classification of crypto assets, in connection with some documents accompanying the "white paper"[113]. The mandate encompasses, in addition, the issuance of opinions and the draft of a report on the classification of crypto assets.

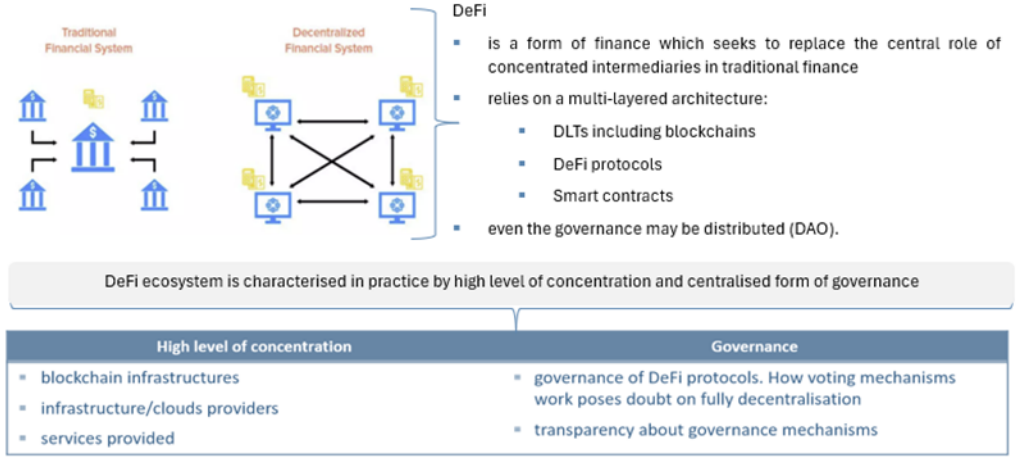
Figure 2: Main features of Distributed Ledger Technologies (DLTs)



Source: Elaboration based on articles and publications by Corporate Finance Institute, Medium, Quantifi and Gartner

Distributed Ledger Technology is a digital record of information that is shared instantaneously across a network of participants. It is distributed because the record is held by each of the users (or nodes) on the network and each copy is updated with new information simultaneously. DLT uses a consensus technique to ensure that every node agrees on the record, with different distributed ledger technologies using different consensus methods[114]. One example is blockchain where the information is distributed across blocks. Every time a new transaction is agreed by participants a new and immutable block is created. In the easiest form a DLT is a database (information shared storage); in its evolution DLT pertains to Decentralised Finance.

Figure 3: Main features of Decentralised Finance (DeFi)



Source: Elaboration based on articles and publications by "decentrapress", World Economic Forum, OECD, BIS, FSB, ESMA.

[113] The three ESAs are currently working on the joint guidelines which are expected to be issued by the end of 2024.
[114] International Swap and Derivatives Association (ISDA). Smart Contracts and Distributed Ledger – A Legal Perspective.

Decentralised finance is a multi-layered technology which relies on distributed ledger technologies (DLT) including blockchain and automated digital (smart) contracts115 to provide financial services without the presence of an intermediary. DeFi seeks to replace the central role of concentrated intermediaries in traditional finance. A typical feature of DeFi is the decentralised governance structure meaning that control and power over the protocol, such as how decisions on changes to the protocol are made, are decentralised. In the purest form this is called decentralised autonomous organisations (DAOs) where it is entirely governed by its community and voting power is represented by governance tokens that may be acquired virtually by anyone[116]. In practice however, even DAOs may involve some form of centralisation, e.g., because of concentrations of governance token holders or influence by the "miners" and initial investors.

There are some characteristics identified in DeFi ecosystem which deserve attention:

a) the **concentration of the infrastructure** behind the blockchain and the central role played by the **"oracles[117]"**, the cloud providers of data to the blockchain, pose operational resilience concern for DeFi applications as oracle dependent DeFi protocols are vulnerable to attacks. While the infrastructure is responsible for maintaining the integrity of the data, verifying transactions, and securing the network from attacks, the oracles play a key role being essential for the blockchain to function as they provide external data to smart contracts. Oracles pose the potential risk that data on which DeFi contracts rely is inaccurate or has been manipulated. Data management and quality assurance coupled with remuneration mechanisms have to be set up effectively to ensure accurate information.

b) Regarding the **governance of DeFi,** it seems that many protocols are not decentralised (see for example the ACPR consultation paper on DeFi and the European Commission study on Decentralised Finance[118]) as the concentration of the majority of governance tokens is in the hands of a few players, the retention of administrator keys, or the existence of other privileges which may influence the voting mechanisms.

c) Regarding **smart contracts,** it is doubtful whether they can be deemed contracts and whether they are enforceable, in addition to how to make them more secure.

2.3 KEY DEVELOPMENTS AND RISKS

DeFi ecosystem has experienced a remarkable growth between early 2020 and late 2021. The Total Value Locked (TVL)[119] raised from approximately USD 600 million in January 2020 to a peak of around $USD 82 billion in December 2021, before dropping significantly to around USD 39 billion at the end

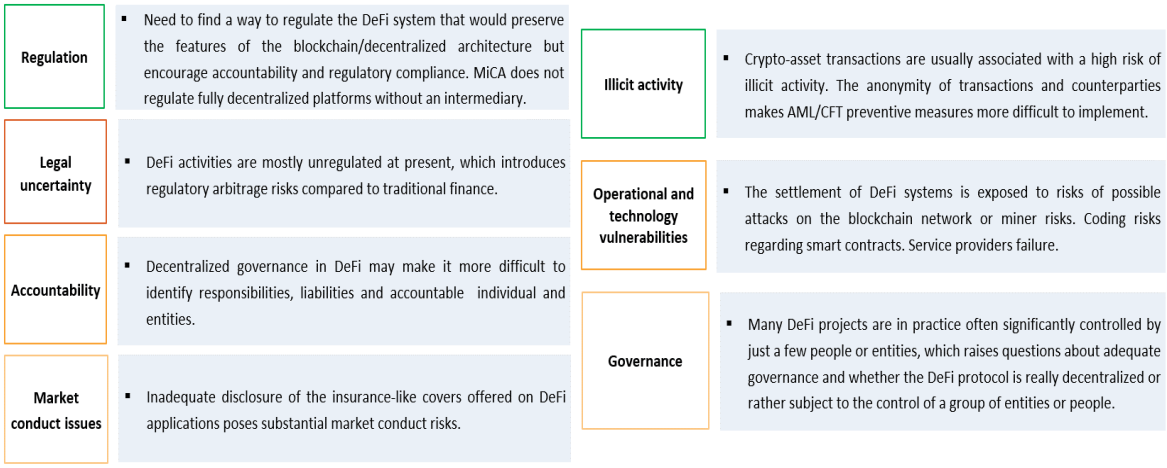
[115] Smart contracts are self-executing code deployed on a blockchain that fulfils the terms and conditions of a transaction in an automated manner (FSB, 2023. The Financial Stability Risks of Decentralised Finance).
[116] As reported by ESMA in Decentralised Finance in the EU: Developments and risks.
[117] Oracles are systems that connect data from the outside world with the blockchain. IAIS, 2021. Report on FinTech developments in the insurance sector.
[118] ACPR Consultation Paper. EC Study on Decentralized Finance. European Commission. Decentralized Finance: information frictions and public policies.
[119] The key metric to measure the evolution of this space is the Total value locked (TVL) which represents the liquidity locked in the smart contracts.

of August 2023 and then turned again to USD 95 billion at the end of March 2024[120], influenced by the overall dynamics of the cryptocurrency market (e.g. Bitcoin owners in the last months have moved their holdings through staking and lending to earn yield; the advent of bitcoin exchange-traded funds has driven higher demand for the cryptocurrency), resilience of leading protocols (e.g. Ethereum), growing interest in DeFi protocols (e.g. because they enable to increase the speed of transactions by combining off chain and on chain transactions) and innovation in the DeFi sphere (e.g. through the integration of artificial intelligence in the DeFi platforms).

While DeFi presents the benefits of new technologies and is relatively small, the **activities underpinning DeFi are mostly unregulated** at present, introducing additional **consumer protection and regulatory arbitrage risks** compared to traditional finance.

Operational and technology risks and illicit activities, to a certain extent, may rise due to the decentralised nature and particular technical features of the DeFi architecture paired with **data protection issues.**

Figure 4: Key risks and challenges



Source: Elaboration based on articles and publications by BIS, EC (DG-FISMA), OECD, World Economic Forum, IMF, FSB, ESMA, EUROFI.

Furthermore, most fully decentralised platforms exhibit features of **concentration** (e.g., by the mean of concentration of voting rights, golden tokens or control by developer teams[121]), which raise doubts about the adequate governance and whether the DeFi protocol is really decentralised or rather subject to the control of a group of entities or people.

Accordingly, it is difficult to determine in practice whether a service is **partially or fully decentralised** and this can reduce the assessment and enforcement ability of supervisors. In this regard, MiCA Regulation while excludes from its scope the decentralised platforms without an intermediary, does not provide any **definition of "fully" decentralisation**.

[120] DefiLlama - DeFi Dashboard

[121] As reported by a study Requested by the ECON Committee published in May 2023 (link), the FSB in "The Financial Stability Risks of Decentralised" and the EC - DG-FISMA in "Decentralized Finance: information frictions and public policies".

In addition, **inadequate disclosure and aggressive promotion of crypto assets** and related services (also on DeFi) can harm consumers' ability to take informed investment decisions[122]. The complexity of protocols makes difficult for customers to navigate across new services.

Due to the **complexity and specificities of the crypto market and DeFi ecosystem**, often involving technicalities difficult to perceive, the question arises, as to whether and to which extent **supervisors have the capacity and the competencies** to identify and distinguish the potential risks and issues of these new business models.

From a **supervisory perspective**, in addition to technological know-how, paired with legal and economic expertise essential to understand protocols and smart contracts, the global and decentralised nature of transactions in **DeFi poses challenges related to territoriality** and eventual supervisory enforcement paired with the **difficulties to identify and assess the actors** behind transactions.

Insurance-related DeFi applications represents only a small portion of the TVL as their adoption in the insurance industry is still at an early stage. As of March 2024, the decentralised insurance sector in DeFi had a total of USD 386.22 million in TVL.

The DeFi insurance sector is dominated by one protocol: Nexus Mutual, the pioneer in the sector since 2018 (76.73% market share as of end-March 2024). The rest of the market remains fragmented, with Unslashed holding a 16% market share and Ease.org, 3F Mutual and InsurAce and few others jointly holding around 6% market share[123].

On the insurance sector side, the targeted insurance products relate mainly to the safe custody of crypto wallets and protection against the failure of smart contracts and technolgies. In this respect, **difficulties in measuring the risks related to the new tecnlogies and crypto assets** as well as the lack of resources with specialized know-how, may lead to **uncertainty regarding the risk assessment and the corresponding coverage of the insurance products**.

Considering the above challenges, it worth highlighting that the **majority of crypto use cases in the insurance sector**, by the mean of smart contracts (typical of DeFi) for the autonomous/automatic execution of underwriting, issuance, claims, verification, and settlement processes, **pertain to DeFi**, as better illustrated in the following paragraph.

2.4 CRYPTO, DLTS/DEFI: CASES IN INSURANCE

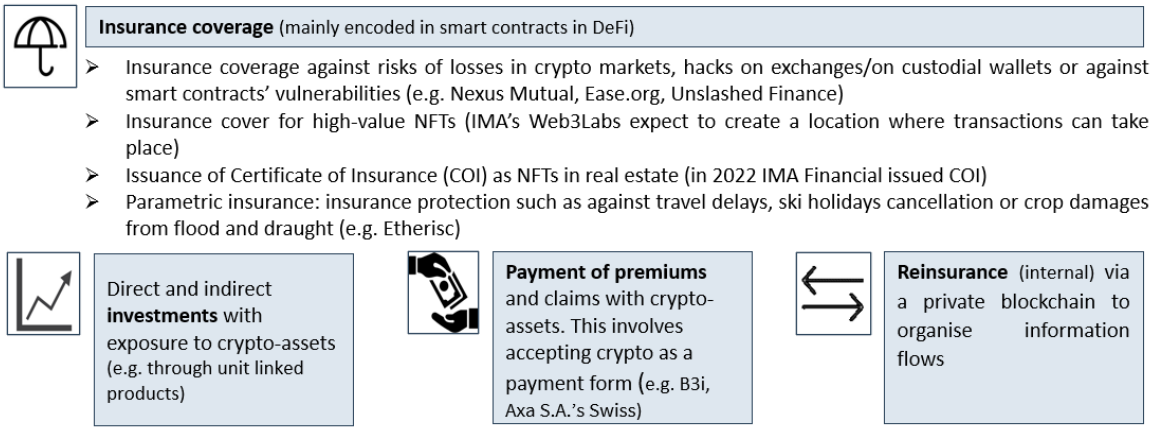
DLT /DeFi can be potentially applied to all activities of the insurance value chain. What is worth highlighting is that for now, DeFi remains marginal in the financial system and the uses cases of crypto assets, DLTs and DeFi observed in the insurance sector are limited[124].

Figure 5: Main use cases in the insurance value chain

[122] ESAs warning on crypto assets

[123] Elaboration based on DefiLlama - DeFi Dashboard

[124] Nexus Mutal. Etherisc. Easy org. Unslashed. B3i. IMA.



Source: Elaboration based on Geneva Association Report, Cornell University Paper, Gartner research and providers' website.

While the DeFi applications evolve rapidly, the **use cases in insurance observed so far pertain to the coverage for investors against risks of losses in crypto markets** (e.g., against fraud/hacks, "depegging" in value of crypto assets, stolen funds held by custodians/exchanges, oracle manipulations or failure or against smart contract errors). The leading protocol in this space is Nexus Mutual.

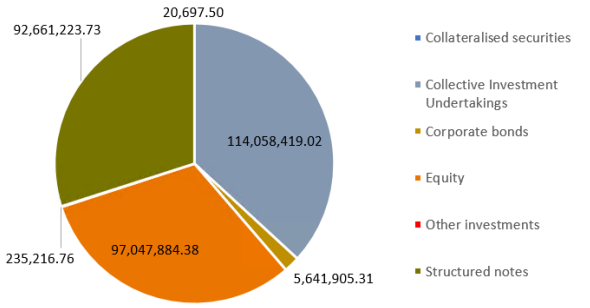
Other use cases are the **parametric products**, also referred to as index insurance, which are contracts where a claim is linked to an index, when certain levels of that index are breached the claim is automatically triggered. This index insurance tends to cover losses arising from weather and catastrophic events, but they also concern flight delays and ski holiday cancellation. A player in the sector is Etherisc.

Another recent case is the use of DeFi in the **real estate sector** where the property rights (ownership) are distributed by the means of non-fungible tokens (NFTs) and in parallel an insurance coverage is offered on these high value tokens and certificates of insurance are issued. The developer creates tokens which are distributed to the pool of investors. A corporate offering of this type of insurance is IMA. The certificate of insurance is important to transfer the credentials of the NFT.

Crypto assets can represent a form of direct investment by insurance undertakings or offered as a form of indirect investment to customers via unit-linked products. In addition, policyholders can be also offered crypto assets as a **form of payment of premiums and claims** on traditional insurance policies. DLTs can be used as a platform to facilitate and make more efficient sharing data and information across insurance undertakings, for example in the case of **reinsurance**.

Figure 6: Direct exposures to crypto assets

Quarter/year	Q3 2021	Q4 2021	Q1 2022	Q2 2021	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023
(Eur/million)	538	605	567	221	261	193	291	320	310



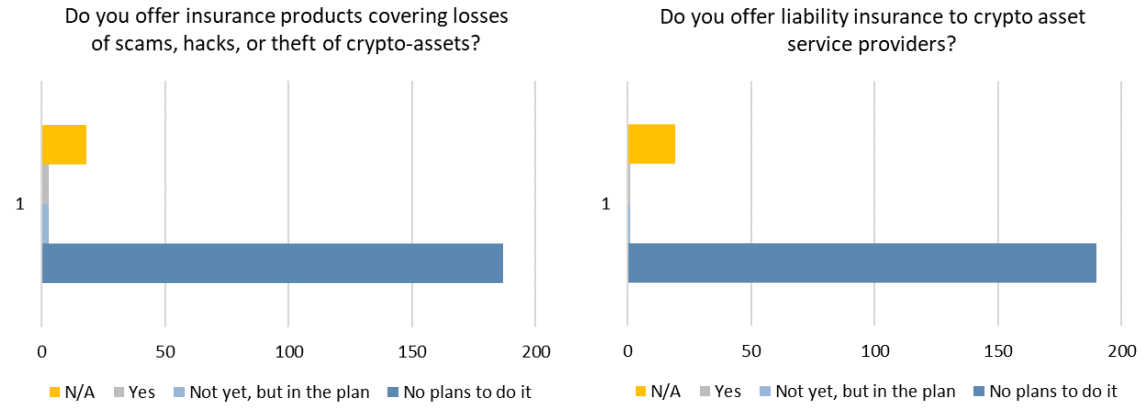
Source: Solvency II supervisory reporting, Q3 2023
** The figures include all crypto-assets, i.e. no differentiation between Bitcoin, Ether etc.*
*** Disclaimer: EIOPA has sought to identify this exposure by assessing the name of the asset, the issuer of the asset, and the list of funds provided by ESMA and by one NCA. It is important to note that the identification method used is not comprehensive and does not ensure the detection of all investments in crypto-assets. For a complete analysis it would be necessary to request undertakings to identify this type of investments (this information will become available when the amendments to ITS on supervisory reporting will be applied).*

- Following the **sharp rise in 2020**, the value of crypto-asset investments remained relatively **stable** in 2021, and then **decreased** in 2022. In 2023 the value **increased again** but a slower pace compared to 2021.
- **Materiality is still low**: the total crypto-asset investments represent 0.02% of total assets under management (AuM) of all insurers concerned
- Equity investments (e.g., Bitcoin Group SE, Hive Blockchain Technologies Ltd, Riot Blockchain inc) and structured notes* account for the highest share of crypto-asset investments
- The materiality of cash and deposits, corporate bonds and other types of investments is low/not existent at all
- Collective Investment Undertakings play an increasingly important role since 2021.

The exposures to crypto assets are negligible in the insurance sector as they represent 0.02% of total assets under management (AUM) of undertakings investing in crypto, as of September 2023. Nevertheless, new initiatives to adapt the prudential regime applicable to insurance and reinsurance undertakings to consider crypto assets' risks are being launched in the context of the Solvency II 2020 review.

The appetite for business development through crypto assets seems to be limited and there are currently not many examples in the market for insurance products that could qualify/be considered crypto assets, as identified in the Digitalisation Market Monitoring Survey conducted by EIOPA across the NCAs[125].

Figure 7: Coverage against losses of scams, hacks, or theft of crypto-assets and liability insurance to crypto asset service providers.

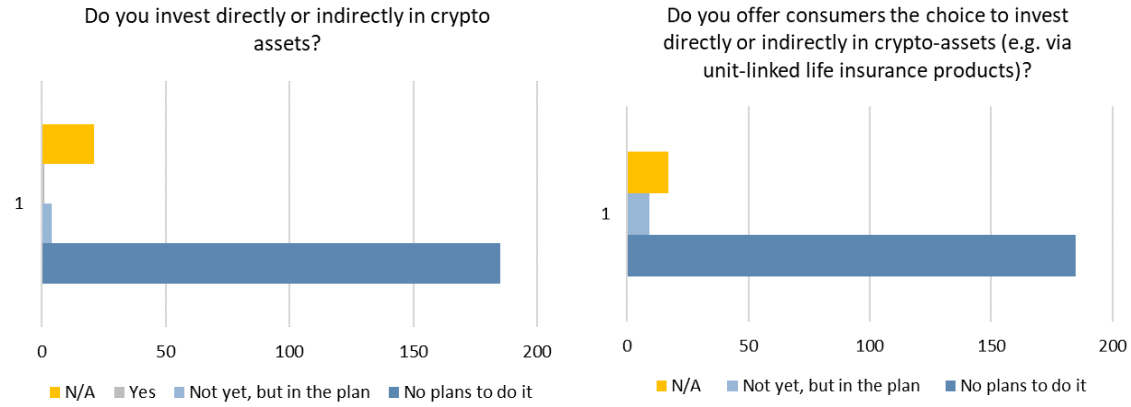


Source: Digitalisation Market Monitoring Survey

[125] Digitalisation Market Monitoring Survey

More specifically, **a few respondents** reported in the survey having already provided **coverage against losses of scams, hacks, or theft of crypto-assets and liability insurance** to crypto asset service providers. Also, the possibility to pay **insurance premiums and claims with crypto assets appears to be very limited** across Member States.

Figure 8: Direct and indirect investments in crypto assets

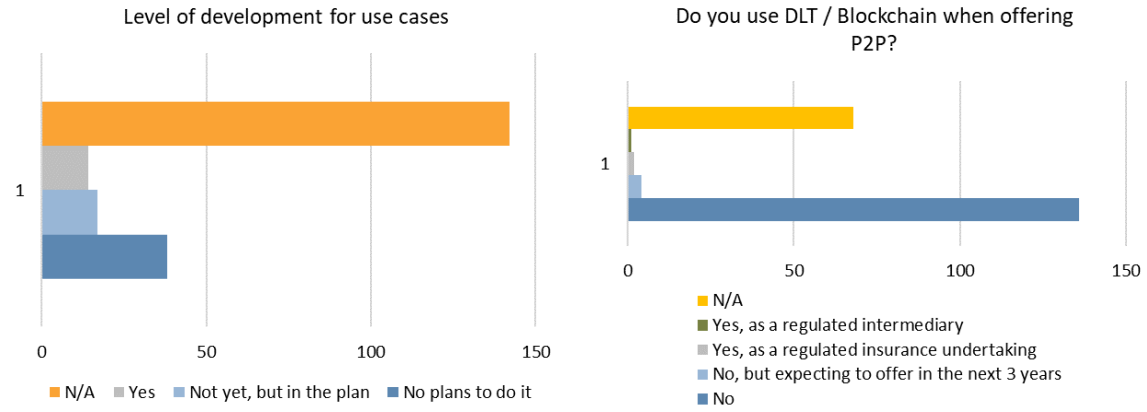


Source: Digitalisation Market Monitoring Survey

In addition, **the direct exposures to crypto assets emerged being negligible** since most of the respondents reported that they do not invest directly or indirectly in crypto assets and do not offer the possibility to customers to undertake such investments (e.g., through Unit-linked products).

Regarding the intention to offer such forms of coverage, **invest directly in crypto assets and to offer the possibility to customers to undertake investments** in crypto assets over medium-term horizon, most of the responses indicated that so far **insurance undertakings do not have plans on implementing crypto solutions** in the near future. Very few "yes" answers were received on the intention to provide "crypto" solutions on a time-horizon of three years.

Figure 9: Development in the use of Distributed Ledger Technologies



Source: Digitalisation Market Monitoring Survey

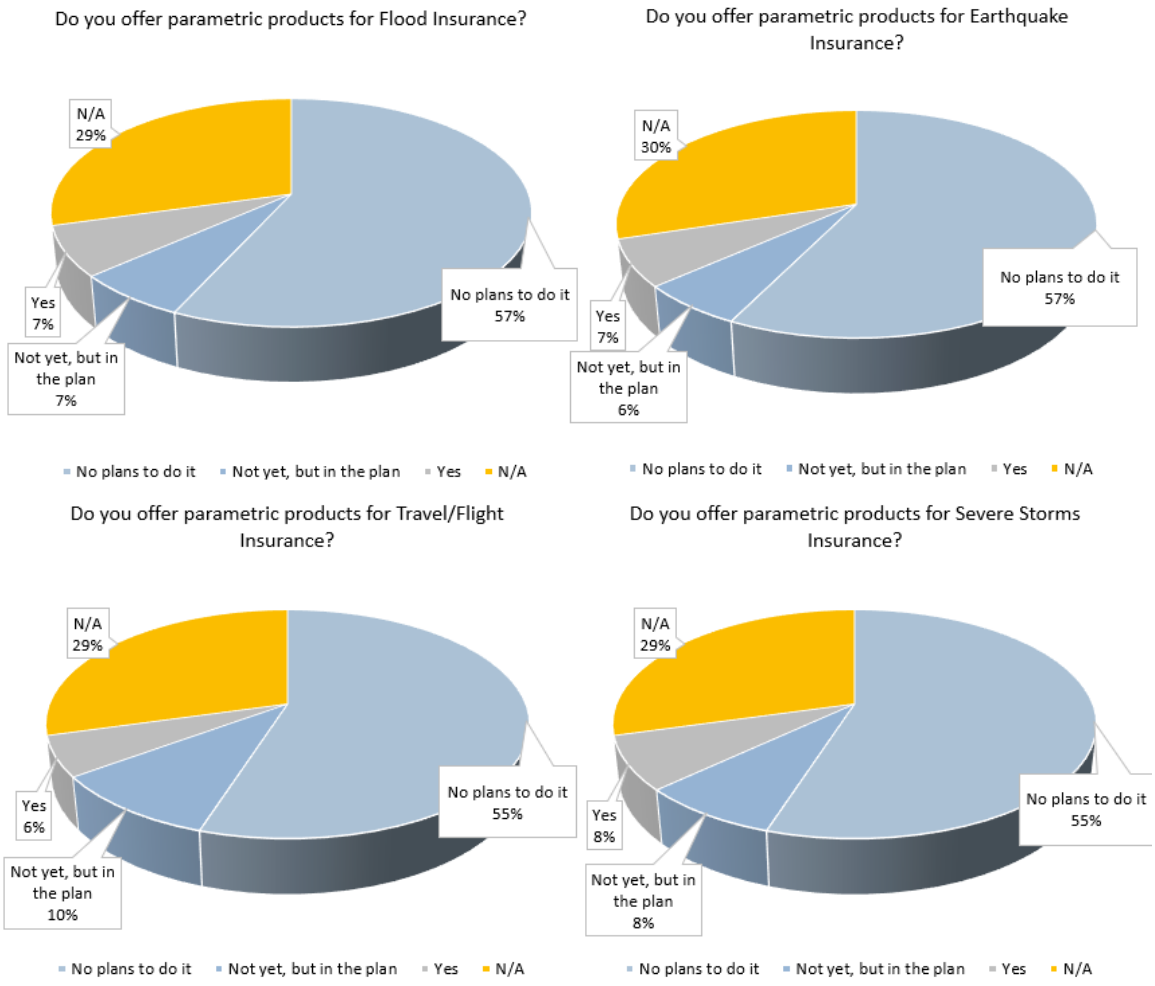
Regarding the use of **Distributed Ledger Technologies**, the survey showed that, overall, the **investment in such business model is still a niche in the insurance sector but the interest is increasing** as some of the respondents expect to develop it in the next 3 years. Some undertakings are in the testing phase for the application of a DLT technology in claims settlement, travel

insurance, home insurance coverages linked to mortgages and parametric insurance. A few projects are already into production, and they relate to home insurance and parametric insurance.

Few declared having already explored the application of DLTs to insurance value chain, but the **projects failed due to the challenges encountered in sharing sensitive information or lack of positive effects and difficulties in the maintenance of the infrastructure**. While the size of undertakings measured in GWP seems not being an obstacle to undertake investments in DL technologies, the majority of "yes" answers were provided by undertakings located in big countries.

The offer of **peer-to-peer (P2P) contracts using DLTs appears to be negligible**, based on the outcomes of the survey and they are offered in a "centralised manner" (i.e. as an insurance risk carrier or an intermediary). Decentralised platforms can facilitate this community-based approach to share similar risks and provide a collective coverage for each other, but the few "yes" answers provided to the survey have shown that so far, they are offered by authorized entities, denoting that these systems cannot be considered fully decentralised and deserve scrutiny in the implementation and application of the MiCA Regulation.

Figure 10: Development of parametric insurance contracts



Source: Digitalisation Market Monitoring Survey

Parametric insurance contracts emerged being the most used applications of DLTs/DeFi protocols in insurance as around 8% of respondents reported they are already offering parametric products for Flood Insurance, for Earthquake Insurance, Travel/Flight Insurance and for Severe Storms Insurance. While, as explained before, these products are completely automatised and encrypted, **the payment of claims could be in Euros and in the cases reported not always a DLT is the technological solution adopted**. These index-insurance products will likely further be developed in the near future as undertakings reported they expect a moderate increase over the next three years.

Against this background, **key trends in crypto and DeFi today suggest an increasing need for risk transfer** because after experiences of difficulties, also from recent failures in the crypto space, more stakeholders are engaging in crypto transactions or offering crypto related services, e.g., custody of crypto assets. Accordingly, **the demand for insurance products is expected to rise**. The range of focused insurance products will range as follow:

- **Insurance against loss of private keys or unauthorized physical access or theft of crypto assets**;
- **Insurance of loss of assets due to operating or technical error or fraud**;
- **Insurance of loss of funds due to the failure or malfunctioning of the protocol or smart contracts code**.

As said, the solutions offered in the crypto insurance market is still a niche and the development of products is ongoing or still in the analysis stage as the risks assessment and risks dimension is somewhat challenging to perform and measure.

2.5 REGULATORY ENVIRONMENT AND POLICY DEVELOPMENTS

While still a niche in comparison with traditional finance, **the new technologies related to the use of crypto assets, the adoption of DLTs and the development of DeFi protocols and smart contracts, may pose risks that regulators might need to consider.** The regulatory responses, being technological neutral, should be substantially risk-based, as summarized by the principles of "same activities, same risks, same rules".

The Markets in Crypto-Assets Regulation (MiCAR), published in the Official Journal of the EU on 9 June 2023, establishes a uniform framework of rules across the European Union for specific types of crypto-assets and crypto-assets service providers not regulated by pre-existing EU sectoral legislation[126].

The new legislative framework for crypto assets has been proposed by the European Commission as part of the **Digital Finance Package (DFP)**[127], and aims at supporting the potential of digital finance in terms of innovation and competition while mitigating risks for investors. This new legislative framework was released together with Regulation 2022/858 on a pilot regime for market

[126] Provisions set out in the Regulation will apply 18 months from the publication in the Official Journal (June 2023), exception made for the provisions regarding asset-reference and e-money tokens, which will apply 12 months after the publication.
[127] Digital finance package (europa.eu)

infrastructures based on distributed ledger technology (DLT) ("the DLT Pilot")[128], published in the Official Journal of the EU in June 2022 and the Digital Operational Resilience Act ("DORA")[129], published in December 2022.

Similarly, new initiatives to adapt the prudential regime applicable to insurance and reinsurance undertakings to consider crypto assets' risks are being launched in the context of the Solvency II 2020 review. This runs in parallel with the initiatives on the banking sector meant to regulate the prudential treatment of exposures to crypto assets of banks[130].

In line with the principles "of 'same activities, same risks, same rules' and of technology neutrality" (Recital (9)), MiCA Regulation should apply only to crypto assets that are not covered by existing sectoral EU legislations (Recital (9)). The art. 2(4) provides a list of excluded financial products encompassing financial instruments under MiFID and insurance and pension products.

MiCAR provides licensing requirements for crypto asset service providers (CASPs) as well as providers of Asset-Reference Tokens (ARTs)[131]. This licensing scheme is coupled with operational and conduct of business rules. Conversely, for cryptos classified as E-Money Tokens (EMTs) and "other than" EMT and ARTs", MiCAR envisages notification requirements. MiCAR, in addition, introduces the so-called 'white paper' containing, inter alia, a description of the underlying technology and risks of the crypto-asset[132]. Furthermore, MiCAR addresses financial stability risks which may arise from the use of stablecoins by imposing reserve requirements and other operational requirements.

Relevant in this context, is the mandate to the three ESAs to issue joint Guidelines on the classification of crypto assets to help frame crypto-asset classifications. Whereas most of the mandates laid out in the Regulation relate to EBA/ESMA remit only, MiCAR also includes one joint ESAs mandate to issue Guidelines based on the requirements set out in Art. 97 (1) to (4) of MiCA Regulation regarding the "*Promotion of convergence on the classification of crypto assets*". Such Guidelines should be issued within 18 months from the entry into force of the Regulation (i.e., by 30 December 2024) and should cover the content and form of some documents accompanying the white paper of crypto-assets, including a "standardized test" on the classification of crypto-assets to help NCAs and markets' participants to delineate between the different crypto-assets in scope of MiCAR and crypto-assets excluded.

[128] EUR-Lex - 32022R0858 - EN - EUR-Lex (europa.eu)

[129] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0596

[130] BCBS issued a standard on capital requirements for banks' direct exposures to crypto assets. The standard is not yet legally binding and needs to be transposed into EU law by 1 January 2025, but there are already expectations on banks to take it into account in their business and capital planning.

[131] Which are not credit institutions.

[132] MiCAR distinguishes between three types of crypto assets:

- E-Money Tokens (EMTs): A type of crypto-asset that purports to maintain a stable value by referencing to the value of an official currency of a country
- Asset-Referenced Tokens (ARTs): A type of crypto-asset that purports to maintain a stable value by referencing to the value of an official currency of a country
- Other than EMTs and ARTs.

The first two types are commonly referred to as "stablecoins", given their objective to maintain a stable value vis-à-vis an underlying reference asset. The third classification includes the so-called "utility tokens", which are a type of crypto asset only intended to provide access to a good or a service supplied by the issuer of that token.

The mandate also includes the promotion of convergence across NCAs on the definition and classification of crypto assets, the drafting of a report and the issuance of opinions by the relevant ESAs when receiving a request from an NCA.

Although MiCA Regulation will strengthen the supervision system for intermediaries facilitating access to crypto-asset services, **MiCAR addresses only partially the main challenges relating to the decentralised provision of crypto services as crypto assets services provided in a fully decentralised manner should not be considered in its scope**, according to recital (22) of MiCAR, while partially decentralised services should be considered in scope[133].

Nonetheless, **MiCAR does not provide a definition of "decentralisation" or "decentralised manner", leaving uncertainty regarding the boundary between "partially decentralised" services and "fully decentralised services without an intermediary"**, and in practice about the exact scope of exclusion of fully decentralised platforms from MiCAR application.

Given the peculiarities of the DeFi ecosystem and the lack of certainty regarding its definition, a regulatory framework and/or policy responses become crucial to tackle the evolving DeFi ecosystem and the risks which it poses.

Policymakers are facing several challenges in adapting to the rapidly changing DeFi environment. The majority relate to the lack of intermediaries, with consequent lack of accountability, and reporting and territoriality issues.

Some initiatives on Decentralised Finance have been developed by international bodies to identify risks and vulnerabilities of DeFi, use cases and potential policy options. Standard-setting bodies are also actively monitoring DeFi developments.

In this regard, under the Article 142 MiCAR, **the Commission is mandated to present a report**, due on 30 December 2024, to the European Parliament and the Council, after consulting EBA and ESMA, containing "an assessment of the development of decentralised finance in markets in crypto-assets and of the appropriate regulatory treatment of decentralised crypto-asset systems without an issuer of crypto-asset service provider, including an assessment of the necessity and feasibility of regulating decentralised finance".

In addition, **the Commission is mandated to present two reports**, respectively due in June 2025 and June 2027, which, among other things, should assess "the development of decentralised finance in markets in crypto-assets and of the appropriate regulatory treatment of decentralised crypto-asset systems (Article 140 of MiCAR)".

Several reports on DeFi have been already published, from several institutions, OECD (Organisation for Economic Co-operation and Development), IOSCO (International Organization of Securities Commissions), ACPR (Autorité de contrôle prudentiel et de résolution), FSB (Financial Stability

[133] Recital 22 of MiCA provides that it "*should apply to natural and legal persons and certain other undertakings and to the crypto-asset services and activities performed, provided or controlled, directly or indirectly, by them, including when part of such activities or services is performed in a decentralised manner. Where crypto-asset services are provided in a fully decentralised manner without any intermediary, they should not fall within the scope of this Regulation.*"

Board) and ESMA (European Securities and Markets Authority), but a targeted regulatory framework has not yet developed.

Table 1: Reports on DeFi

Name of the institution	Main content
OECD Reports	On January 2022, the OECD published a Report which provides a description of DeFi and its applications. The report assesses the benefits and risks of DeFi and the DeFi/CeFi linkage and put forward some policy considerations. On May 2022, the OECD published a Report on the institutions participating in markets for digital assets, including crypto-assets and DeFi, providing analyses on the DeFi-TradFi interconnectedness, their linkages and potential risks, and proposing policy recommendations on how to address those risks.
BIS Papers	On May 2022, the Bank for International Settlement (BIS) published a working paper on "embedded supervision. The paper provides an overview of cryptocurrencies and decentralised finance, potential benefits and challenges of the new system and a comparison to the traditional system of financial intermediation. It highlights ways to regulate the DeFi system which would preserve a majority of benefits of the underlying blockchain architecture but support accountability and regulatory compliance. On January 2023, the BIS published a research paper on the technical functioning and design of DeFi, providing a deep dive into the overall architecture and financial functionalities of DeFi protocols. The paper analyses potential sources of systemic risks that may emerge from DeFi, providing pointers for future research. On September 2023, the BIS published a paper on the oracles' problems in DeFi, highlighting the role of trust and governance.
European Commission Report on DeFi: information frictions and public policies	On June 2022, the EC published a Report on the DeFi ecosystem, highlighting key differences between traditional financial markets and DeFi. The study highlights conditions under which specific public initiatives may be warranted from a welfare perspective and feasible from a technological perspective. The report considers different policy approaches to foster economic growth and financial stability for DeFi systems as well as promoting complementarities between DeFi and the economy.
FSB Report on the financial stability risks of DeFi	On February 2023, the FSB published a Report on the financial stability risks of DeFi, providing considerations on vulnerabilities of DeFi, identifying the main transmission channels of financial stability risks between DeFi and the financial system, and drawing some policy implications.
ACPR Discussion Paper on DeFi	On April 2023, the ACPR published a Discussion paper on "Decentralised or disintermediated finance: what regulatory response?". The paper provides an overview of the DeFi ecosystem and of the risks that are specific to DeFi. The ACPR puts forward a number of regulatory options, in areas such as how to strengthen the security of blockchain infrastructures used in DeFi, how to strengthen the security of smart contracts (using a certification mechanism), or how to regulate the provision of DeFi services and user access to them. The ACPR published a summary of responses received from stakeholders, who also provided useful recommendations on how to regulate DeFi.
ESMA TRV Risk Analysis paper on DeFi in the EU: developments and risks	On October 2023, the ESMA published a paper on DeFi in the EU. ESMA's paper considers DeFi's innovative features, its potential benefits and specific risks.
IOSCO Report with policy recommendations for DeFi	In December 2023, the IOSCO published its Final Report with policy recommendations to address market integrity and investor protection issues in decentralised finance

It is worth also mentioning the **initiative of DG FISMA to launch a study on "Embedded supervision of Decentralised Finance"** which is a pilot project to develop, deploy and test a technological

solution for embedded supervision of decentralised finance (DeFi) activity. Its main focus is on automated supervisory data gathering directly from the blockchain to test the technological capabilities for supervisory monitoring of real-time DeFi activity.

2.6 CONCLUSION

Crypto assets, DLTs and DeFi are at early stage of adoption in insurance. The development of new business models driven by the new technologies is hard to predict and currently insurance undertakings are mainly exploring new solutions. Nevertheless, investing in crypto and DLTs/DeFi will likely transform the traditional insurance business model leading to the disintermediation of the insurance services.

There is also the need for regulators to provide a dedicated regulatory framework, given that some aspects are incompatible or not covered by existing regulations, to strike a balance between innovation, consumer protection and financial stability and to give legal certainty to smart contracts, while covering risks related to data privacy, cybersecurity and money laundering.

To this end several international bodies and supervisors have published reports and studies to monitor and highlight emerging risks and explore potential regulatory and policy implications. Nevertheless, as of now the DeFi ecosystem is mostly unregulated and MiCAR addresses the supervision of particular types of crypto assets while DeFi is not in scope.

These themes are expected to be in the agenda of regulators and supervisors for the time to come.

Acknowledgment

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