IAIS International Association of Insurance Supervisors

Global Insurance Market Report (GIMAR)

December 2022

About the IAIS

The International Association of Insurance Supervisors (IAIS) is a voluntary membership organisation of insurance supervisors and regulators from more than 200 jurisdictions. The mission of the IAIS is to promote effective and globally consistent supervision of the insurance industry in order to develop and maintain fair, safe and stable insurance markets for the benefit and protection of policyholders, and to contribute to global financial stability.

Established in 1994, the IAIS is the international standard-setting body responsible for developing principles, standards and other supporting material for the supervision of the insurance sector and assisting in their implementation. The IAIS also provides a forum for members to share their experiences and understanding of insurance supervision and insurance markets.

The IAIS coordinates its work with other international financial policymakers and associations of supervisors or regulators, and assists in shaping financial systems globally. In particular, the IAIS is a member of the Financial Stability Board (FSB), a member of the Standards Advisory Council of the International Accounting Standards Board (IASB), and a partner in the Access to Insurance Initiative (A2ii). In recognition of its collective expertise, the IAIS also is routinely called upon by the G20 leaders and other international standard-setting bodies for input on insurance issues as well as on issues related to the regulation and supervision of the global financial sector.

For more information, please visit www.iaisweb.org
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About the GIMAR

This is the tenth issue of the Global Insurance Market Report (GIMAR). The GIMAR reports on the outcomes of the IAIS' Global Monitoring Exercise (GME). The GME is the IAIS' framework for monitoring risks and trends in the global insurance sector and assessing the possible build-up of systemic risk.

This document is available on the IAIS website (www.iaisweb.org).

Acronyms and abbreviations

A2ii	Access to Insurance Initiative
ACI	Alternative capital instrument
ARV	Absolute reference value
BCBS	Basel Committee on Banking Supervision
Cat	Catastrophe (bond)
CBES	Climate Biennial Exploratory Scenario
CDS	Credit default swap
ComFrame	Common Framework for the Supervision of Internationally Active Insurance Groups
CO2	Carbon dioxide
CPRS	Climate Policy Relevant Sectors
GA	General account
GDP	Gross domestic product
GIMAR	Global Insurance Market Report
GME	Global Monitoring Exercise
GRMS	Global Reinsurance Market Survey
IAIS	International Association of Insurance Supervisors
IASB	International Accounting Standards Board
ICP	Insurance Core Principle
IFRS	International Financial Reporting Standards
IIM	Individual insurer monitoring
IMF	International Monetary Fund
L&M	Loans and mortgages
LDI	Liability-driven investment
M&A	Mergers and acquisitions
NACE	Nomenclature of Economic Activities
NatCat	Natural catastrophe
ND-GAIN	Notre Dame Global Adaptation Initiative
PE	Private equity
SWM	Sector-wide monitoring
TCDC	Targeted Climate Data Collection
UK	United Kingdom
UN	United Nations
US	United States

Contents

Executive summary

The 2022 Global Insurance Market Report (GIMAR) shares the outcome of the 2022 Global Monitoring Exercise (GME), the International Association of Insurance Supervisors' (IAIS') risk assessment framework to monitor key risks and trends and detect the potential build-up of systemic risk in the global insurance sector.

Section 1 introduces the GME and its data collections. The GME builds on individual insurer monitoring (IIM) data collected from approximately 60 of the largest international insurance groups, as well as aggregate data from sector-wide monitoring (SWM) from supervisors across the globe, covering over 90% of global written premiums. The analysis covers year-end 2021 data, updated with more recent financial market data where available.

Section 2 outlines global insurance market developments in 2021 in terms of assets, liabilities, solvency, profitability and liquidity. On aggregate, in all regions, solvency and profitability positions improved in 2021, supported by strong performance in financial markets. Total assets, as reported in the SWM, rose by 4.9% to $44 trillion, whereas total liabilities increased by 4.3% to $38 trillion. The vast majority of insurance sector assets are composed of corporate debt, sovereign debt and equities. The overall credit quality of assets is high, with a limited share of below-investment-grade assets (3% at the global level at year-end 2021); however, this marked an increase from 2.4% at year-end 2020 and 1.9% at year-end 2019.

Heightened supervisory attention to insurers' solvency, profitability and liquidity in response to the Covid-19 pandemic continued in some jurisdictions over 2021 – for instance, through increased solvency and liquidity reporting requirements and stress tests. In terms of measures taken by insurers, several insurers continued to buy back shares and/or redeem subordinated debt. Others issued capital and/or subordinated debt to strengthen capital and liquidity positions. Measures taken by insurers to preserve or improve profitability in 2021 included optimising capital allocation and asset-liability management, realising gains on investments, digital transformation, diversifying product offerings and revenue sources, and optimising underwriting and pricing policies.

In terms of outlook, insurers and supervisors noted that potential positive effects on the insurance sector in the period ahead include a continued recovery from the Covid-19 pandemic, gradually rising interest rates and recovering financial markets. However, several macroprudential factors create uncertainty around the insurance sector's solvency, profitability and liquidity position for 2023. Geopolitical

conflicts, inflation, tightening monetary policy and the deteriorating economic outlook increase market, credit and liquidity risks going forward.

There are three macroprudential themes identified in this year's GME: (1) lower macroeconomic outlook, high inflation and rising interest rates; (2) structural shifts in the life insurance sector, including the involvement of private equity (PE); and (3) climate-related risks.

Section 3 focuses on the first two, while the third is outlined in section 4 and includes the follow-up analysis of the 2021 GIMAR special topic edition on climate.

1. The first theme focuses on the impact of higher inflation and tightening monetary policy, in addition to the slowdown (or downturn) in the global economy and increased risks in financial markets.

   For life insurers, the primary impact has come from higher interest rates. This has been positive for capital resources and the profitability of certain life products, with the potential to reduce the risk of reserve deficiencies. Higher interest rates are positive for longer-term earnings due to higher interest rate income, although this effect builds slowly over time as life insurers' portfolios roll over. However, in many jurisdictions, rising interest rates also expose insurers to a repricing of fixed-income securities and a rebalancing of interest rate hedges, taking into consideration concerns over increased hedging costs due to higher volatility levels.

   For non-life insurers, the main impact comes from higher inflation, in the form of increased expenses and claims severity, in addition to revaluations of reserves. On the asset side, fixed-income portfolios have fallen in value due to higher interest rates, especially for longer-dated securities. However, on average, non-life insurers have shorter duration in fixed income portfolios, which lowers the negative impact of higher interest rates on the value of their asset holdings and hence their solvency positions, and allows more immediate increases in income from higher interest rates.

   Equity markets recorded substantial losses in 2022, but supervisors note that the impact on insurers' solvency positions was relatively limited in general due to most insurers having a relatively small equity allocation. However, falling equity markets reduce unit-linked fee income. In addition, increased liabilities on equity-linked products with guarantees could put pressure on solvency positions, although this may be somewhat mitigated by higher bond yields. From a financial stability point of view, supervisors note that these risks will be closely monitored and analysed for potential liquidity and profitability strains, taking into account the interplay between these risks and the rest of the financial sector and real economy. Globally, supervisors have increased their monitoring and surveillance of the risks to the insurance sector arising from the current environment and are planning further interventions to reinforce their monitoring and analytical processes for identifying systemic risks in the insurance sector.

2. The second theme looks at growing trends in the life insurance sector related to certain activities, often but not exclusively associated with growing PE ownership of insurers. PE firms' involvement in the insurance sector through investing, acquisitions, partnerships, reinsurance and other arrangements is a continuing trend that is generally consistent with the transformation of the life insurance sector. In certain jurisdictions, insurers involved with PE firms have been associated with higher involvement in specific activities such as cross-border reinsurance, asset allocation to complex and illiquid assets, and complex, less transparent business practices. Analysis of this theme has, however, found that these activities are not new or exclusive to PE-involved insurers.

The IAIS will, in addition to the enhanced monitoring of alternative investments and private placements, refine the GME to better capture transfers of life insurance portfolios (including through reinsurance).

Section 4 of this report covers climate-related risks to the insurance sector. The lack of progress in reducing global fossil fuel emissions may lead to delayed and divergent transition across countries. It is critical for insurance supervisors to strengthen their understanding of the type and magnitude of climate-related exposures in the insurance industry to inform effective supervisory responses. In support of these efforts, this section provides a follow-up of the climate data analysis published in the 2021 GIMAR special topic edition on climate. Given the improvements in the data collected, both in terms of coverage and quality, this year's analysis provides a better indication of the industry's investment exposure to climate-relevant assets. The analysis of the impact of climate change on insurer liabilities focuses on protection gaps. Gaps in protection against climate-related risks are in many cases significant and supervisors anticipate that they will continue to increase, so this will be a continued area of focus for the IAIS going forward. Supervisors expect the impact of climate change to widen and materially affect insurers' assets, risk management and product development. Looking ahead, the IAIS will consider refinement of the asset and liability data collected to better capture these risks.

Section 5 outlines aggregate results from the 2022 IIM. Cross-sectoral analysis shows that total systemic risk scores for insurers are still significantly lower than those for banks. However, insurers' scores trended upwards from year-end 2016 to year-end 2021, whereas banks' scores trended slightly downwards. The increase in insurance sector systemic risk scores is primarily driven by the interconnectedness and asset liquidation categories. This accounts for most of the total systemic risk score. The total scores for these categories have risen by 21% and 44%, respectively. At the level of individual systemic risk indicators, the largest growth was in the indicators for level 3 assets (which are illiquid, difficult-to-value assets), intra-financial assets, derivatives, short-term funding and intra-financial liabilities.

Finally, **section 6** focuses on the global reinsurance market. The analysis is based on reinsurance data collected from 22 jurisdictions through the SWM reinsurance component. The size of the global gross reinsurance market (in terms of gross written premiums) covered by the SWM is approximately $588 billion in 2021, with approximately 55% located in the Americas. Non-life premiums accounted for more than 60% of this total. The share of life reinsurance premiums based on the SWM has been stable over the last three years. Key reinsurance asset classes are equities and corporate bonds in all regions. On aggregate, reinsurers hold a slightly higher relative share of equities than insurers and a lower relative share of sovereign debt and mortgage loans. Reinsurance solvency positions have improved compared to year-end 2020, with increases in paid-up capital being the main driver of the increase. Combined ratios remain below 100%, indicating profitable underwriting. Regarding the impact of natural catastrophes, the largest losses in 2021 were attributed to Hurricane Ida in North America in August and Storm Bernd in Europe in July.

1. Introduction

This report is based on the outcome of the GME, which is the IAIS' framework for monitoring key risks and trends in the insurance sector and assessing the build-up of any potential systemic risk in the global insurance sector.

1.1 DATA COLLECTION

The GME consists of two confidential data collections covering year-end 2021 data:

- **Individual insurer monitoring** (IIM) applicable to insurance groups meeting the Insurer Pool criteria,[1] consisting of approximately 60 of the largest international insurance groups from 18 jurisdictions; and
- **Sector-wide monitoring** (SWM) data collection covering aggregate insurance market data collected from IAIS members from 27 jurisdictions, comprising more than 90% of global gross written premiums. These jurisdictions meet the criteria as outlined in the GME document. The criteria are designed to allow for broad coverage in terms of global participation. In addition, jurisdictions not meeting the criteria may volunteer to participate in the SWM data collection.

A total of 45 jurisdictions participated in at least one of the components of the SWM 2022 data collection.[2] They are highlighted in blue on Map 1.[3]

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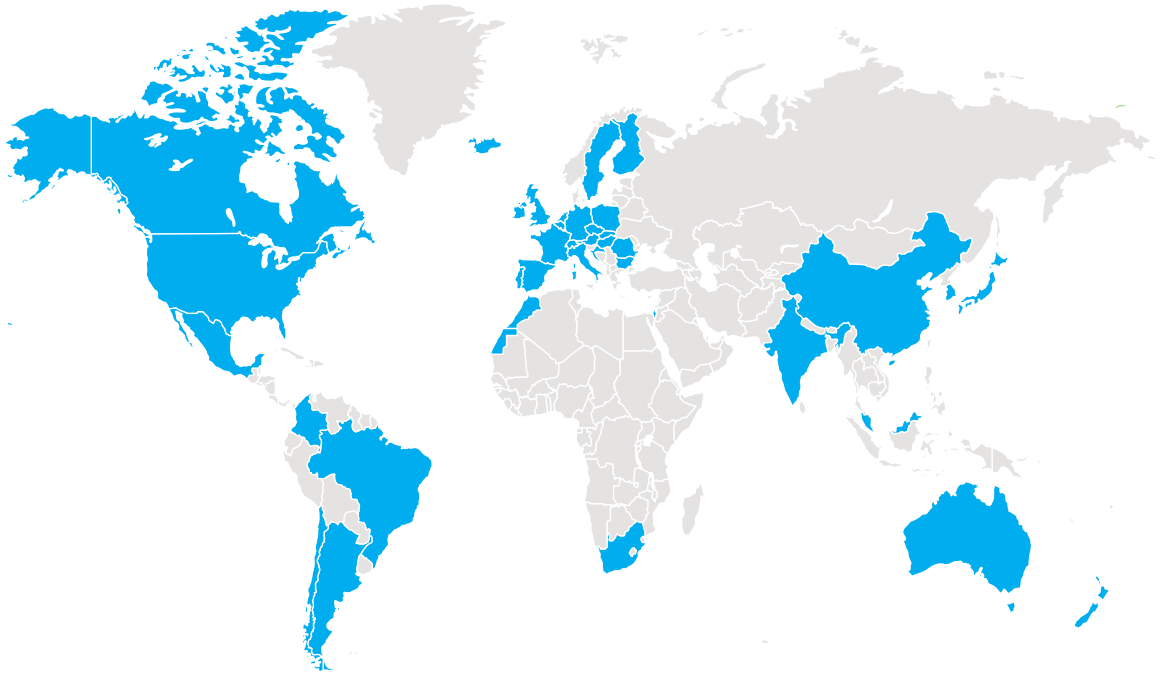
1 The Insurer Pool criteria are outlined in the GME document: Total assets of more than $60 billion and a ratio of premiums from jurisdictions outside the home jurisdiction to total premiums of 5% or more, or total assets of more than $200 billion and a ratio of premiums from jurisdictions outside the home jurisdiction to total premiums greater than 0%, or jurisdictional discretion.

2 The SWM 2022 data collection consisted of a qualitative, quantitative, climate and reinsurance component.

3 SWM 2022 participating jurisdictions are Argentina; Australia; Austria; Belgium; Bulgaria; Belize; Bermuda; Brazil; Canada; Chile; China; China, Hong Kong; Chinese Taipei; Colombia; Croatia; Czechia; Finland; France; Germany; Hungary; Iceland; India; Ireland; Israel; Italy; Japan; Korea; Luxembourg; Malta; Malaysia; Mexico; Morocco; the Netherlands; New Zealand; Poland; Portugal; Romania; Singapore; Slovakia; South Africa; Spain; Sweden; Switzerland; the United Kingdom and the United States of America.

MAP 1: JURISDICTIONS THAT PARTICIPATED IN THE SWM DATA COLLECTION (IN BLUE)



Source: IAIS SWM 2022

The GME consists of two confidential data collections covering more than

90%

of global gross written premiums.

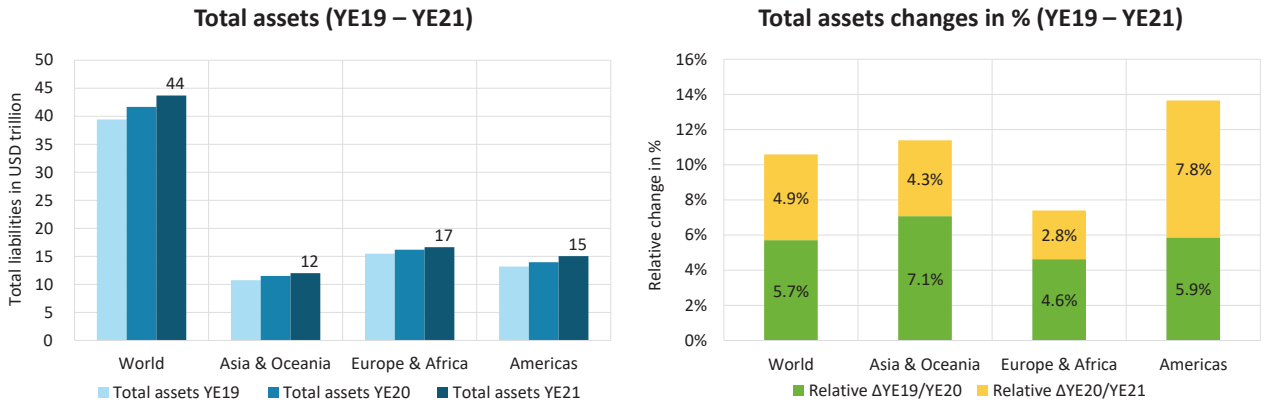
2. Global insurance market developments

This section outlines the key global insurance market developments, covering assets and liabilities, solvency, profitability and liquidity.

2.1 ASSETS AND LIABILITIES

Figures 1 and 2 show that total assets as reported in the SWM rose by 4.9% to $44 trillion at year-end 2021, whereas total liabilities have increased by 4.3% to $38 trillion.[4] In the Asia and Oceania region, liabilities (+6.5%) increased more than assets (+4.3%) in 2021, explaining the decrease in the excess of assets over liabilities, as reported in Figure 9 below.

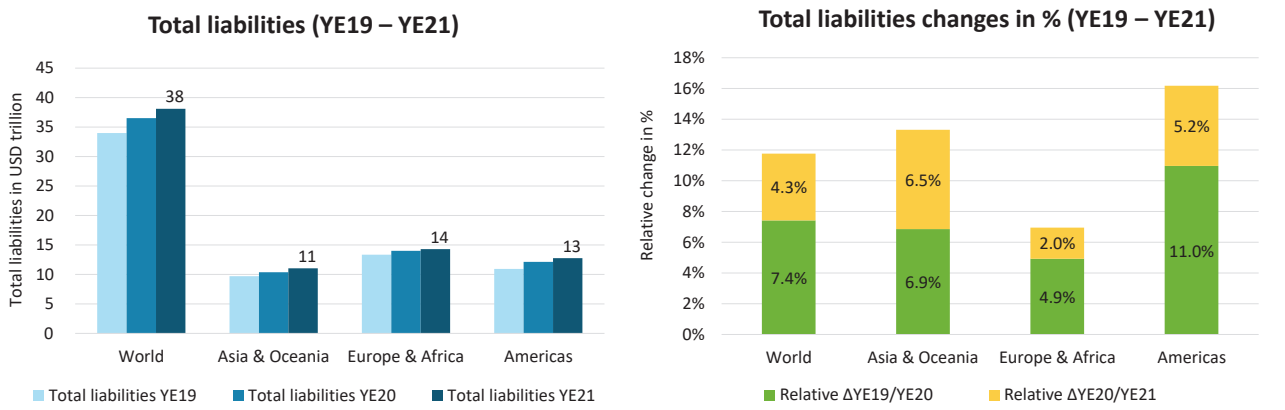
FIGURE 1



Source: IAIS SWM 2022

[4] Note that some of the year-on-year changes are also driven by improvements in the data completeness over time.

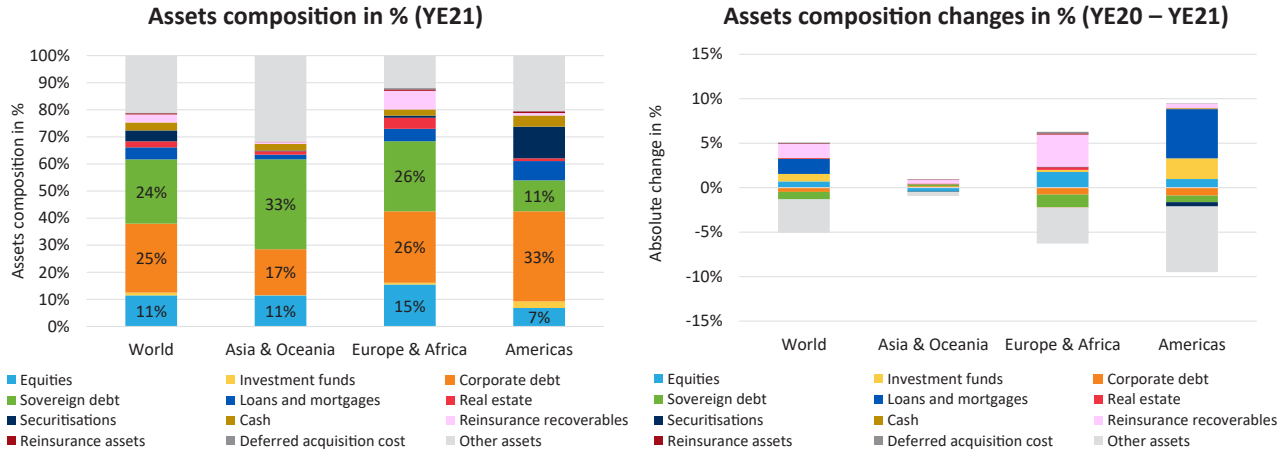
FIGURE 2



Source: IAIS SWM 2022

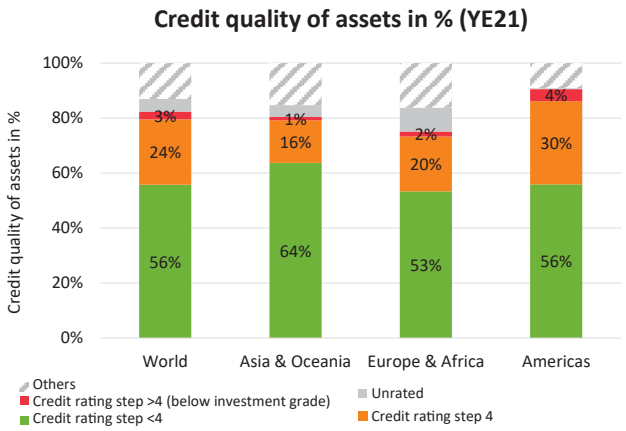
The vast majority of assets is still composed of corporate debt, sovereign debt and equities (Figure 3). A combination of asset reallocations and improvements in the granularity of SWM reporting led to a decrease in the "other assets" category over 2021.

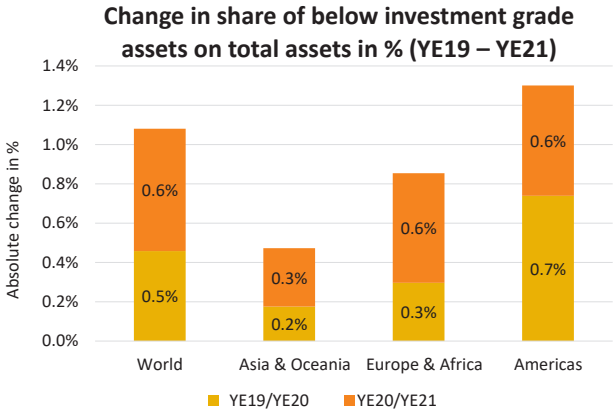
FIGURE 3



Source: IAIS SWM 2022

FIGURE 4

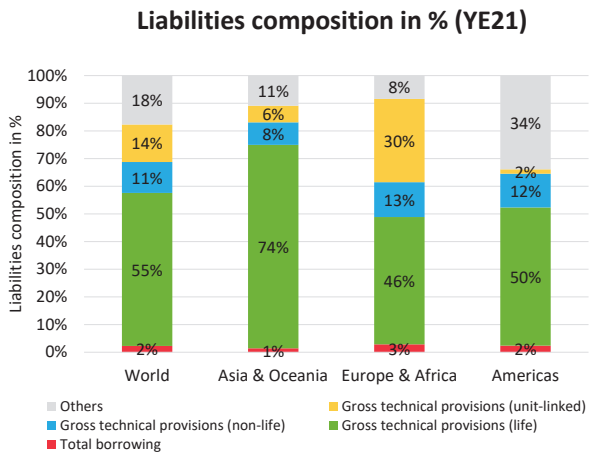


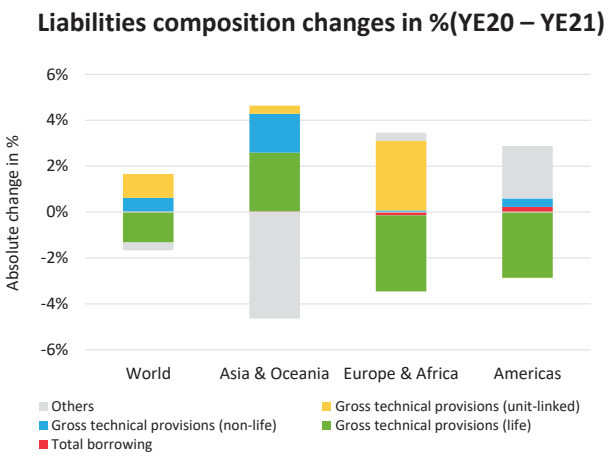


Source: IAIS SWM 2022

The overall credit quality of assets depicted in Figure 4 held by insurers remained high in 2021. On aggregate, 80% of insurer assets were of either investment grade (credit rating step 4) or above (credit rating step <4). The share of below-investment-grade assets reported in the SWM remained limited at 3% at the global level at year-end 2021. Nonetheless, this was an increase from 2.4% at year-end 2020 and 1.9% at year-end 2019.

FIGURE 5

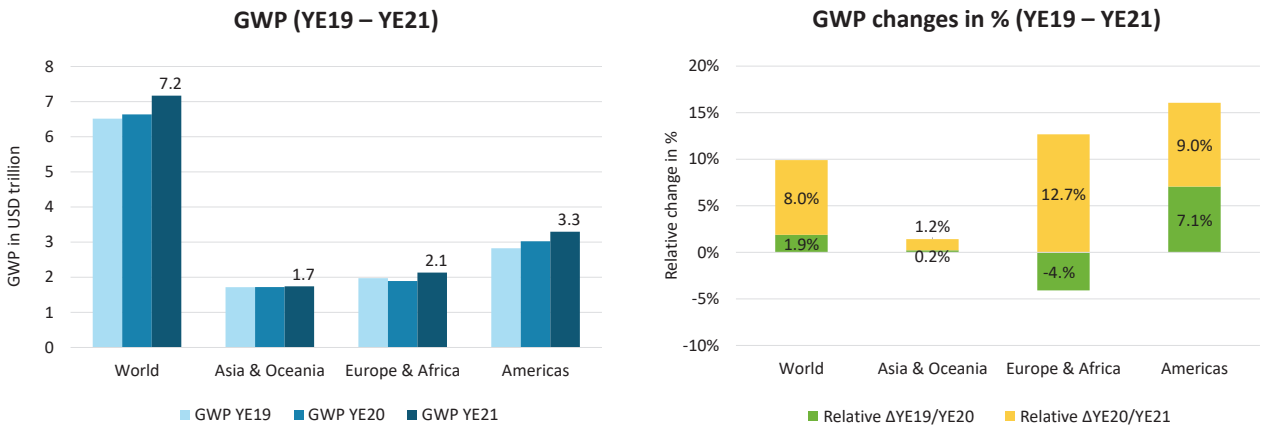




Source: IAIS SWM 2022

Turning to the composition of liabilities in Figure 5, on aggregate, liabilities at year-end 2021 were mostly composed of gross technical provisions for life insurance (55%), gross technical provisions for unit-linked insurance (14%) and gross technical provisions for non-life insurance (11%). The overall amount of borrowing remained limited at 2%, showing no change compared to last year.

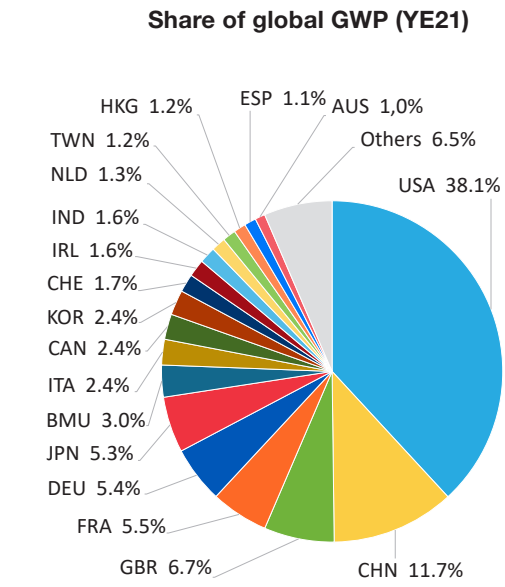
FIGURE 6



Source: IAIS SWM 2022

Figure 6 shows that overall, gross written premiums covered by the SWM increased by 8% at year-end 2021 compared to year-end 2020, which is significantly higher than the increase of 1.9% when year-end 2020 is compared to year-end 2019.

FIGURE 7



Source: IAIS SWM 2022

In terms of geographic distribution of gross written premiums, Figure 7 shows that according to the SWM data, most premiums at year-end 2021 were underwritten in the United States (US) (38.1%), followed by China (11.7%), the United Kingdom (UK) (6.7%), France (5.5%), Germany (5.4%) and Japan (5.3%).

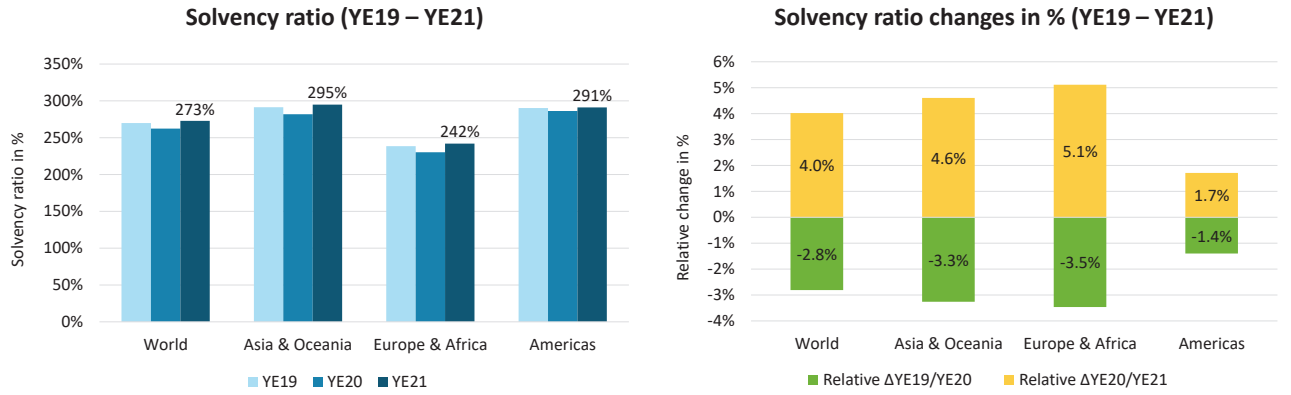
Overall, the increase in interest rates and the strong performance of financial markets in 2021 contributed to an improvement in insurers' solvency.

2.2 SOLVENCY

2.2.1 Developments

As shown in Figure 8, in all regions solvency ratios improved again in 2021, after a slight decrease in 2020. In many jurisdictions, a slightly higher aggregate solvency level can be observed compared with 2019. No jurisdiction in the SWM reported any major concerns with their local aggregate solvency requirements in 2021. Overall, the increase in interest rates and the strong performance of financial markets in 2021 contributed to an improvement in insurers' solvency.

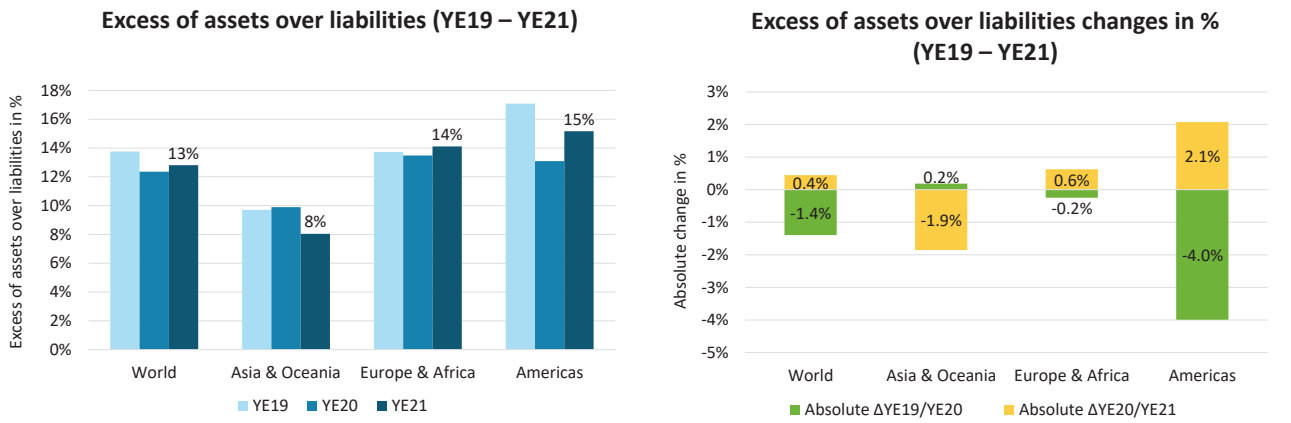
FIGURE 8



Source: IAIS SWM 2022

At the global level, the excess of assets over liabilities reported in the SWM (Figure 9), was broadly stable (slight increase of 0.4% at year-end 2021 compared to year-end 2020). In the Asia and Oceania region, a slight decrease in excess of assets over liabilities can be observed, as liabilities rose more than assets in 2021, as shown in section 2.1.

FIGURE 9



Source: IAIS SWM 2022

2.2.2 Measures taken by supervisors and insurers

Most supervisors increased solvency reporting requirements during the Covid-19 crisis to cover additional details, a higher reporting frequency or a combination of both. This heightened supervisory attention to solvency continued in 2021 in many jurisdictions.

In some jurisdictions there was a change to the solvency regime in recent years, or else such a change is planned for the near future. Depending on the jurisdiction, transitional measures were also put in place. In addition, the introduction of International Financial Reporting Standards (IFRS) 9 and IFRS 17 is expected to influence the solvency calculation in several jurisdictions.

Measures taken by insurers in 2021 were mainly guided by individual situations rather than by global market developments. In terms of capital management, different types of measures were taken, with several insurers proceeding with share buybacks or redemptions of subordinated debt. In contrast, some insurers continued to issue subordinated debt to strengthen solvency positions or to optimise their capital structures.

Similarly, in terms of asset allocation, different paths were taken by insurers depending on their individual situation. Some increased the risk profile of their investment portfolios while others sold equity and invested in long-term bonds to limit the share of market risks in their capital requirement. Risk mitigation techniques such as reinsurance and dynamic hedging strategies were also used in 2021 to manage capital positions.

2.2.3 Outlook

Based on the qualitative component of the SWM, potential positive effects on insurer solvency in the period ahead include a continued recovery after Covid-19, gradually rising interest rates and growth opportunities. Nevertheless, supervisors remain cautious amid worries about the impact of the war in Ukraine, risks of a renewed spread of Covid-19, higher inflation and volatility in financial markets, and a worse macroeconomic outlook, which may increase credit risks going forward. Also, depending on the business model of insurers, the negative effect of rising interest rates on asset valuations may surpass the positive effect for reinvestments and new business. More details on the impact of increasing interest rates on the insurance sector are outlined in section 3.1.

Overall, insurers intend to continue monitoring their capital structure, adjusting, for instance leverage or investments of excess capital, where this is deemed warranted. Some insurers note that changes in prudential regulation may lead to changes in their solvency positions going forward.

2.3 PROFITABILITY

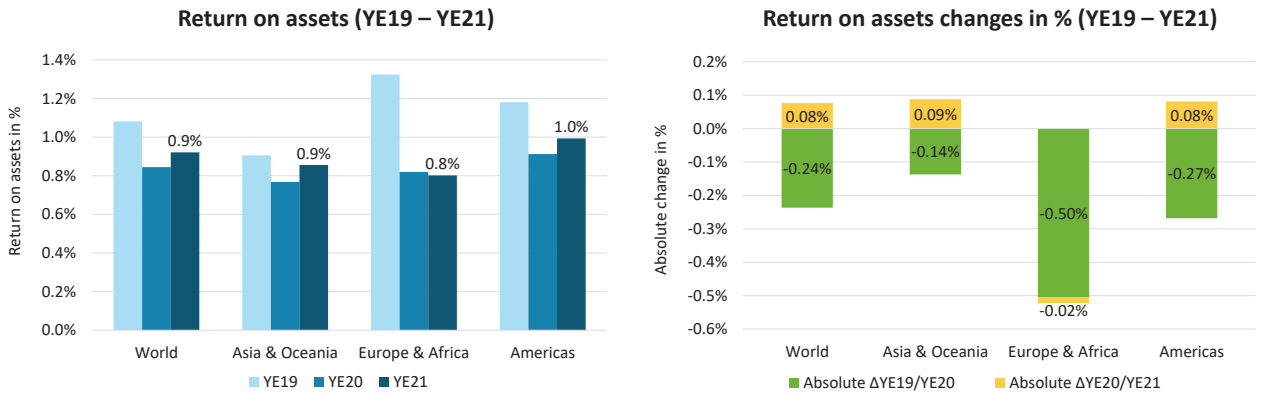
2.3.1 Developments

The vast majority of insurers reported stable or improved profitability in 2021 relative to 2020. As illustrated by the increasing return on assets in Figure 10, improved profitability numbers are driven by a favourable comparison basis at year-end 2020 and strong financial market performances. Insurers also noted that digital transformation helped to maintain operational efficiency and/or improve profitability.[5]

Several insurers continued to buy back shares and/or redeem subordinated debt. Others issued capital and/or subordinated debt to strengthen capital and liquidity positions.

[5] Note that the data represented in Figures 10 and 11 for Europe and Africa are affected by incomplete data in the SWM 2022 data collection for this region.

FIGURE 10



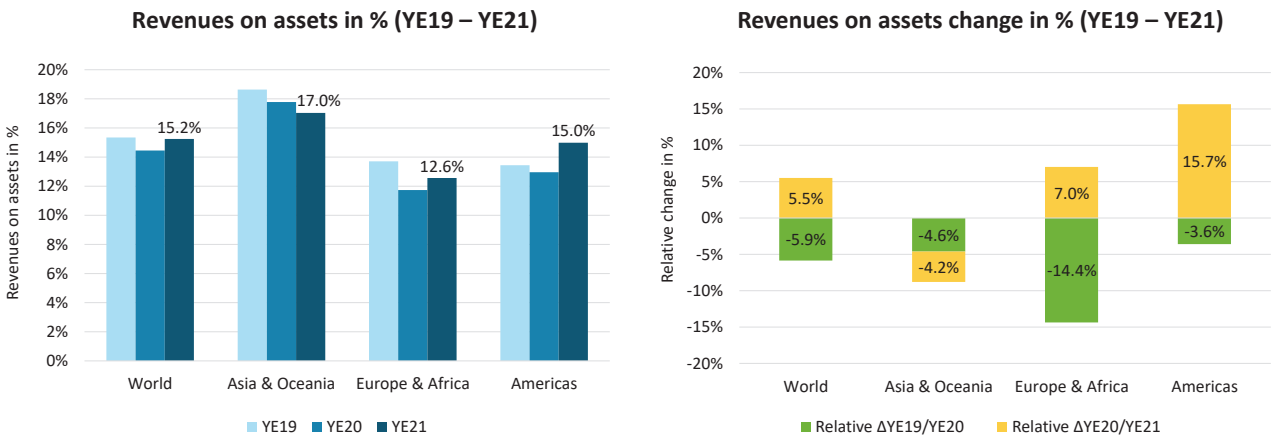
Source: IAIS SWM 2022

As can be seen in Figure 11, the ratio of revenues over assets increased at year-end 2021 at the global level.

For life insurance, profitability increased in some jurisdictions due to increases in sales and investment income. Other jurisdictions noted profitability was negatively impacted by increased mortality rates due to Covid-19 or (unrealised) investment losses driven by rising interest rates.

For non-life business, rising claims ratios and decreasing profit margins were observed across several jurisdictions, often attributed to increasing inflation and natural catastrophes (more details on natural catastrophes are provided in section 6.7). On the other hand, improved business activity and higher pricing led to increasing revenues and, in some cases, greater profitability.

FIGURE 11



Source: IAIS SWM 2022

2.3.2 Measures taken by supervisors and insurers

In 2020, some jurisdictions introduced temporary facilitative measures for insurers to ensure operational continuity during the Covid-19 pandemic, as reported in the 2020 GIMAR and 2021 GIMAR. In 2021, with the Covid-19 pandemic moderating in many jurisdictions, supervisors noted that the need for such measures decreased.

Measures taken by insurers to preserve or improve profitability in 2021 included optimising capital allocation, such as the reduction of exposure to underperforming business (through sales and reinsurance transactions) and the asset-liability management (ALM), realising gains on investments, undertaking digital transformation, diversifying product offerings and revenue sources, and optimising underwriting and pricing policies.

2.3.3 Outlook

Adverse factors that may weigh on the future profitability of the insurance sector include geopolitical tensions, the worse macroeconomic outlook, rising inflation, tightening of central banks' monetary policies, increased credit risks and uncertainty over future developments in the Covid-19 pandemic. The implementation of IFRS 17 may also impact profitability accounting going forward.

Gradually rising interest rates are expected to positively influence profitability in the insurance sector, especially for life insurance (see section 3.1). Rising inflation and a general slowdown in economic activity are, however, expected to negatively affect all business models. Insurers and supervisors note that the trend towards digitalisation, in some cases driven by practices implemented during the Covid-19 pandemic, can help improve profitability going forward.

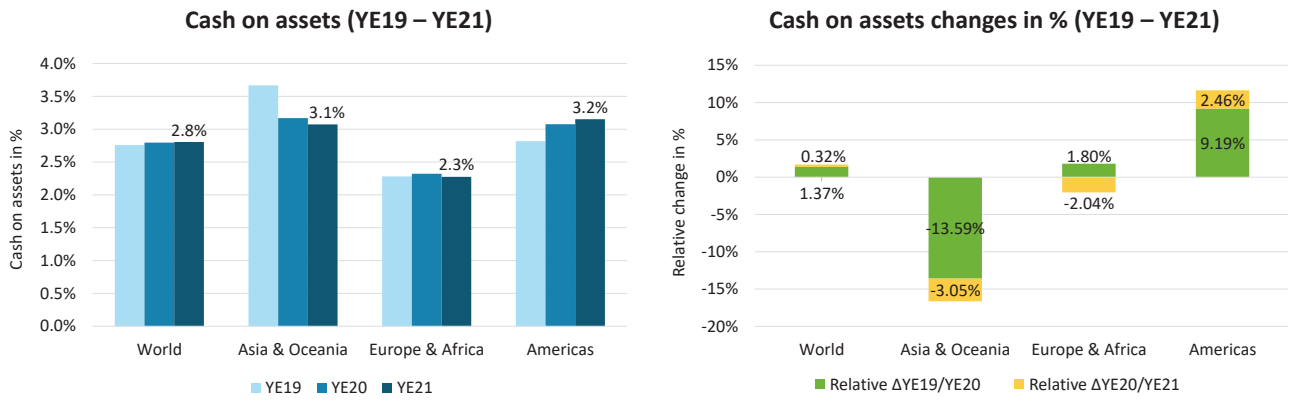
2.4 LIQUIDITY

2.4.1 Developments

In general, insurers' reported liquidity positions remained stable at year-end 2021 compared to year-end 2020. In some cases, a slight decrease in liquid assets was noted in the search for yield, which led to increased investment allocations to less liquid assets. Other insurers reported a strong increase in their liquidity positions, for example due to substantial increases in free cashflows.

As can be seen in Figure 12, overall cash positions remained stable. Some insurers reported a decrease in cash buffers that were built up in 2020 by increasing investments in financial markets, in the context of the 2021 financial markets recovery.

FIGURE 12



Source: IAIS SWM 2022

In November 2022, the IAIS finalised the development of the liquidity metrics that will be used as ancillary indicators in the IIM going forward.[6] The insights from these metrics will be reported from next year's GIMAR onwards.

2.4.2 Measures taken by supervisors and insurers

Similar to the increased solvency reporting requirements, several supervisors also increased liquidity reporting requirements during the Covid-19 crisis by requiring additional details, a higher reporting frequency or a combination of both. This heightened supervisory attention on liquidity risk continued in 2021 for many jurisdictions. In some jurisdictions, in-depth stress testing was carried out to further analyse the liquidity positions of insurers.

In some jurisdictions, regulation with respect to liquidity risk was changed in recent years. These changes often coincided with changes to the solvency regimes.

Insurers continued to monitor and manage their liquidity risk through risk management, ALM, stress testing and liquidity contingency planning. Some insurers increased their liquidity positions over 2021 either through the issuance of capital or debt, or through the negotiation of short-term lending facilities with banks.

2.4.3 Outlook

Several macroprudential factors create uncertainty around the liquidity situation of the insurance sector for 2022 and 2023. Geopolitical conflicts, particularly the war in Ukraine, create major uncertainty. Rising interest rates in response to higher inflation are expected to impact the liquidity of certain insurers, for instance through increased derivative margin calls in those cases where hedges were put in place to mitigate the impact of decreasing rather than increasing interest rates, warranting increased attention. Some insurers anticipate further decreases in their liquidity positions as a result of a shift in asset allocation from cash to financial market instruments in order to increase financial revenue.

Rising interest rates may impact the liquidity of certain insurers, for instance through increased derivative margin calls.

[6] IAIS finalises liquidity metrics as an ancillary indicator for its Global Monitoring Exercise.

3. Macroprudential themes

In this year's GME, the IAIS identified three macroprudential themes based on supervisory priorities identified by the annual SWM: (1) lower macroeconomic outlook, high inflation and rising interest rates, (2) structural shifts in the life insurance sector, including the involvement of PE and (3) climate-related risks.

The highlights of the first two macroprudential themes are included in this section and are structured as follows: (1) theme description, (2) risk assessment, (3) supervisory measures and (4) next steps. Theme 3 on climate-related risks is outlined in the next section and includes the follow-up analysis of the 2021 GIMAR special topic edition on climate change.

The past year has seen major changes in the global economy, with rapid rises in inflation and interest rates and sharply higher bond yields.

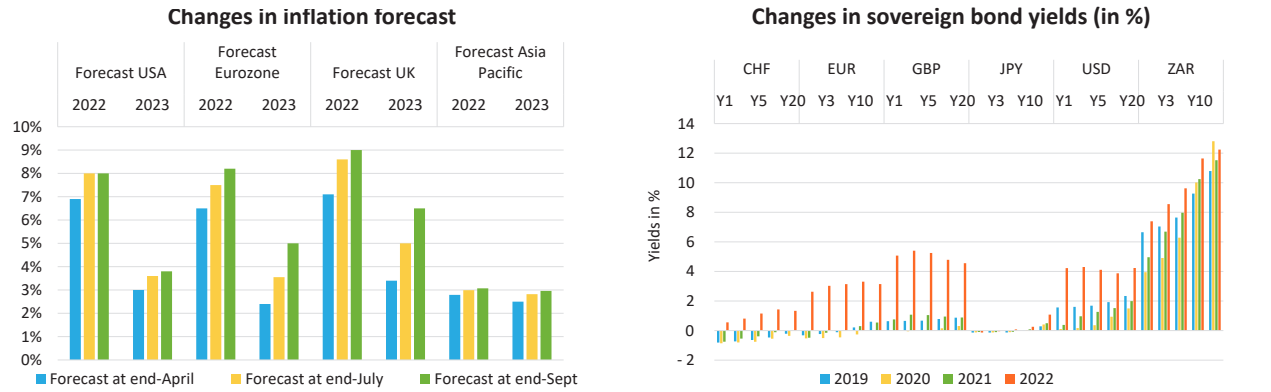
3.1 LOWER MACROECONOMIC OUTLOOK, HIGH INFLATION AND RISING INTEREST RATES

3.1.1 Theme description

The past year 2022 has seen major changes in the global economy, with rapid rises in inflation and interest rates and sharply higher bond yields. The International Monetary Fund (IMF) has revised its global growth forecast downwards for 2023 and cautioned that macro-financial conditions could deteriorate significantly.[7] Continued supply-related shocks to food and energy prices from the war in Ukraine could result in persistent increases in headline inflation and could pass through to core inflation, triggering further tightening in monetary policy. This contrasts with the situation just one and a half years ago, when economies were contending with low inflation, lower-for-longer interest rates and ultra-low bond yields, which created risks of a different nature. Recent developments are a stark reminder of how quicky financial conditions can change, presenting new challenges for financial institutions.

[7] International Monetary Fund. World Economic Outlook. October 2022.

FIGURE 13



Source: Bloomberg

Although macro-financial conditions have worsened since the IIM data submission[8] in May 2022 and the supervisory feedback loop in August 2022 (see Figure 13), the responses to the surveys provide a comprehensive overview of the initial impact on the insurance industry. Steep increases in prices are likely to continue to strain living standards worldwide and affect business and household finances, which will negatively affect their ability to buy insurance coverage. A study[9] has indicated that the global insurance protection gap for health, mortality and natural catastrophe (NatCat) risks reached a new peak of $1.42 trillion in 2021 and could widen further in 2022 as higher interest rates and inflation tend to disproportionately affect the lowest-income households.

3.1.2 Risk assessment

A feedback loop process on this theme was launched with supervisors in July 2022, focusing on collecting additional information in the following areas:

- The impact of changes in inflation, tighter monetary policy (in response to higher inflation), changes in risks in financial markets and credit risks on insurers' assets, liabilities and business models; and
- Executed and planned supervisory responses thereto.

Supervisors were requested to provide responses on impacts that had already materialised and those expected over the next one to three years.

For life insurers, supervisors indicated that the main impact has come from the rise in interest rates. This has been positive for capital resources and led to higher profitability on life products, with potential to reduce the risk of reserve deficiencies. However, in many jurisdictions, higher interest rates expose insurers to a repricing of fixed-income securities and a rebalancing of interest rate hedges.

[8] IIM data collection also contains a qualitative component that seeks insurers' input on the most recent information available at that time (April-May 2022).

[9] Sigma Resilience Index 2022: risks to resilience on the rise again after a year of respite, Swiss Re Institute, 30 June 2022.

Supervisors expressed concerns over increased hedging costs due to higher volatility in financial markets. Insurers that hedge against a low interest rate environment may also be exposed to large margin calls in the event of sharp upward movements in interest rates.[10] Furthermore, some supervisors noted that higher discount rates and lower technical provisions are resulting in higher solvency ratios, with the latter dependent on the applicable accounting and regulatory framework. In addition, for jurisdictions with market value-based solvency regimes, rising interest rates translate into bond value reductions from mark-to-market losses, which could trigger company de-leveraging actions if leverage ratios approach rating agency thresholds.[11]

Non-life insurers have been affected by inflationary pressures through increases in expenses, higher claims severity and a revaluation of reserves, which can create challenges for insurers.[12] This could result in compressed margins as the ability to pass these extra costs onto policyholders might be limited by market structure, competition and regulation. Higher inflation has also led to a reassessment of existing technical provisions, with more negative consequences for longer-tail business lines[13] such as certain lines of health, general liability and workers compensation.[14] Interest rate changes are having a more modest impact on non-life insurers, as non-life insurers' liabilities are less dependent on interest rates, plus an average shorter duration of liabilities and the low duration mismatch between assets and liabilities in some jurisdictions.

Life insurers expect premiums to rise in 2022 and 2023 according to responses collected in mid-2022 as part of the 2022 IIM. In contrast, a later survey (Swiss Re Institute's 4/2022 Sigma study) found that global life premiums are expected to decrease marginally in real terms in 2022 and increase by just below 2% in 2023. The results from the IAIS supervisor feedback loop conducted in July 2022 noted that a limited effect on earnings had materialised but some supervisors expressed concerns about future profitability. In the event that portfolios are gradually re-invested at higher returns, it is still likely that there will be continued pressure on costs, particularly for unit-linked products where cost increases might be difficult to pass on to policyholders. Some supervisors pointed to the risk of increased lapses as other financial products (such as savings products) reflect changes in interest rates more quickly; however, this could be mitigated by tax and surrender penalties for early withdrawals in certain jurisdictions.

Non-life insurers also indicated expectations of premium increases in 2022 and 2023 as part of their IIM submissions in mid-2022; however, more recent data indicates that premium growth is under pressure as the economic slowdown and a multi-year inflation high has reduced premium income in real terms. For example, Swiss Re expects 2022 inflation-adjusted non-life premia to grow by only 0.8% and 2.2% in 2022 and 2023, respectively.[15] Additionally, supervisors noted that there have been some increases in loss costs and this trend is expected to continue if inflation remains high.

In terms of insurers' assets, current inflation and interest rate conditions have negatively affected insurers' asset portfolios. In jurisdictions where bonds are held at fair value, supervisors noted reduced bond values with the largest impact on longer duration bonds. Equity markets recorded substantial losses in the first half

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10 Financial Stability Report, June 2022, European Insurance and Occupational Pensions Authority.
11 UBS Global Research and Evidence Lab, June 13, 2022.
12 Lloyds of London, Insurance Times, March 2022.
13 Long-tail liabilities are liabilities that carry a long claims settlement period.
14 Supervisory feedback loop responses.
15 Sigma Resilience Index 2022: risks to resilience on the rise again after a year of respite, Swiss Re Institute, 30 June 2022.

of 2022 (20% decline in the MSCI All-Country World Index[16]). However, the sharp decline in equity prices has had a relatively limited impact on insurance capital, due to insurers' relatively small equity allocations. Qualitative responses to the IIM exercise in April 2022 indicate a reallocation of assets from public fixed-income portfolios and traditional listed equities towards alternative assets (such as infrastructure, private debt, private equity, hedge funds and real estate), with some responses citing an illiquidity premium and inflation protection as motivation.

Potential impact on financial stability

In the current context, the IAIS is of the view that financial stability risks in the insurance sector are increasing as expectations of a global economic recession set in and there appears to be limited reprieve in inflation and interest rate conditions. At this stage, while the risks to the insurance sector from macroeconomic conditions have increased, the financial stability risks from the insurance sector towards the rest of the financial system and the real economy are less pronounced.

Sovereign credit rating downgrades due to recent crisis episodes have resulted in credit rating downgrades for some insurers.

Sovereign credit rating downgrades due to recent crisis episodes have resulted in credit rating downgrades for some insurers.[17] The Russian invasion of Ukraine has also had some impact, albeit relatively limited at this stage, on the insurance sector via increased claims in certain lines of business (eg aviation, trade credit insurance) and indirect exposures (eg volatility of financial markets and increasing credit risks). The appreciation of the US dollar has likely had an impact on international insurers with exposures to the US market. However, overall, the financial stability impact of the war in Ukraine has been somewhat limited thus far. But this scenario could change rapidly in the event of continued global unrest, heightened credit risks, continued increases in inflation or a rapid increase in interest rates, all of which would affect financial stability through liquidity, macro exposures, counterparty risk and substitutability channels.

Recently, there have been cases of higher margin calls, which can force asset sales to raise cash and (in combination with fears of a recession and excessive financial uncertainty) have a knock-on effect on asset prices. A continued deterioration in macroeconomic conditions could trigger large volumes of margin calls, which in turn could have major implications for the liquidity management and funding needs of counterparties – and possibly even affect insurers' solvency positions in a scenario where liquidity stresses would trigger forced sales of assets. Additionally, higher interest rates could result in increased surrenders on certain products with guarantees, as the rise in guarantees tends to be outpaced by rising interest rates, potentially rendering guaranteed products less competitive. From a financial stability point of view, these risks will need to be closely monitored and analysed for potential liquidity and profitability strains. The interplay between these risks, the rest of the financial sector and the real economy will also need to be considered.

[16] This MSCI index is a global equity index representing large and mid-cap stocks across 23 developed and 24 emerging markets.

[17] S&P World Exploration Trend, April 2022.

BOX 1: UK LIABILITY-DRIVEN INVESTMENT EXPERIENCE, SEPTEMBER-OCTOBER 2022

In the UK, investing in liability-driven investment (LDI) strategies enables defined benefit pension schemes to use leverage to increase their exposure to long-term gilts. This allows them to hedge interest rate and inflation-linked liabilities while at the same time invest in higher-yielding "growth" assets, such as equities, to boost returns and reduce their deficits.

The sharp rise in yields in late September 2022 impacted pension funds and asset managers and was particularly acute for pooled LDI funds. These funds, which make up 10% to 15% of UK pension funds' LDI exposures, manage assets for a large number of pension clients with limited liability in the face of losses. The move in yields created the need to deleverage to reduce the risk of funds' insolvency and meet margin calls, both of which can be achieved by selling gilts or requesting capital injections from participating pension schemes.

The speed and scale of the yield movements far outpaced the ability of smaller investors in pooled LDI funds to provide collateral, with only one or two weeks to rebalance their positions. As a result, funds became forced sellers of gilts in a market with reducing liquidity. This generated further losses on their gilt portfolios as market yields increased, which required additional deleveraging in the form of further gilt sales and potentially sales of other assets. In support of its financial stability objective, the Bank of England intervened to end the self-reinforcing falls in asset prices and resulting "fire sale" dynamics that would otherwise have caused severe disruption to core gilt market functioning, and in turn could have led to an excessive and sudden tightening in financing conditions for the UK real economy.

The issues outlined above were concentrated among pooled LDI funds due to specific structural features of these funds (ie use of gilt repurchase agreements to increase leverage, limited liability, strict negative asset value limits and restrictive collateral agreements). LDI managers are also regulated by the Financial Conduct Authority, whereas pension schemes are regulated by the Pensions Regulator.

Life insurers can be exposed to marginal liquidity risk from derivative exposures if gilt yields shift in the same direction. In particular, where there is material use of interest rate swaps for hedging purposes, large market shocks can require material collateral postings that need to be sourced from liquidity pools. UK insurers remained resilient by taking appropriate measures for such an eventuality, due to previous liquidity stress testing for severe simultaneous market shifts.

From a supervisory perspective, regulators could consider how they are challenging firms to enhance liquidity risk management. They could also work more closely with other regulators, domestically and internationally, to share good practices and be aware of the extent of aggregate liquidity risks, some of which could lie outside their jurisdiction or regulatory oversight.

3.1.3 Supervisory measures

Globally, supervisors have increased their monitoring and surveillance of risks in the insurance sector pertaining to the impact of inflation and higher interest rates, as well as potential economic recessionary pressures on insurers' solvency and profitability. Examples include additional analysis targeted at specific risks such as hedging-related risks, assessment of the suitability of existing supervisory stress tests and implementation of best practice guidelines. Supervisors have collected additional information via questionnaires, data submissions and/or surveys. Data gathering is aimed at obtaining a better understanding of the impact on key indicators (cost of claims, cancellations, non-payments, growth expectations, capital requirements, liquidity and risk management) of insurers' performance. There have also been revisions to existing supervisory frameworks, eg potential risks from rising inflation and higher interest rates have been incorporated into ongoing internal model assessments, planned pricing work and reviews of actuarial opinions, as well as existing risk questionnaires and supervisory models.

Globally, supervisors have increased their monitoring pertaining to the impact of inflation and higher interest rates, as well as potential economic recessionary pressures on insurers' solvency and profitability.

3.1.4 Next steps

Looking ahead, supervisors are planning to further reinforce their monitoring and analysis of related risks in the insurance sector. Planned measures include conducting more robust quantitative analysis and stress-testing exercises (including sensitivity analysis) of high inflation and interest rate scenarios, in-depth analysis of specific risks and more regular prudential engagements with executives and senior management.

The IAIS plans to continue its risk assessments linked to the rapidly changing macro-financial environment by leveraging the GME and supervisory exchanges at its committees and working groups, including discussions on potential supervisory responses at a micro- and/or macroprudential level.

3.2 STRUCTURAL SHIFTS IN THE LIFE INSURANCE SECTOR, INCLUDING THE INVOLVEMENT OF PRIVATE EQUITY

3.2.1 Theme description

In the 2021 GIMAR, the IAIS reported on the low interest rate environment and PE ownership. A key observed trend was that insurers were changing business models. In particular, it was noted that insurers implemented changes in their product mix, shifting towards more capital-light products such as biometric risk and unit-linked business. Supervisors observed that insurers had considerably reduced the range of products with interest rate guarantees. In certain regions, insurers discontinued underwriting long-term products such as annuity plans and guaranteed rates lines of business, putting existing business in liquidation (run-off).

In 2022, the IAIS decided to revisit the topic of shifts in the life insurance sector, including the involvement of PE, to gain a more in-depth understanding of the issues. The IAIS has further explored this topic through member questionnaires, dialogue and additional industry engagement.

The involvement of PE firms and other alternative asset managers (through investments, acquisitions, partnerships, reinsurance and other arrangements), predominantly in life insurance, is a continuing trend that is generally consistent with the broader life insurance sector transformation. Capturing the total impact of PE involvement on the business of insurance is, however, challenging due to several factors, including the lack of a consistent definition of PE, the variety of strategies PE firms employ when engaging with insurance (eg asset management agreements), and the lack of consistent and comparable data across jurisdictions. Analysis of this theme has found that the original framing of this issue as referring solely to PE ownership, influence or backing of insurers may not capture the full scope of interactions between PE firms and insurers. In addition, limiting the scope to only consider activities where PE firms are involved may miss broader structural shifts and related risks.

Private equity involvement in the insurance sector

The trend of PE firms' involvement in the business of life insurance dates back to the global financial crisis of 2008-2009, when several PE firms first bought discounted blocks of businesses from legacy US carriers. The low interest rate environment is generally considered to be one of the factors incentivising life insurers to sell or reinsure blocks of businesses to improve their organisations' profitability and to optimise their capital management. In the past few years, PE involvement in the insurance sector has significantly increased in terms of the number and size of deals and reinsurance transactions, assets under management and the scope of the approaches utilised for this involvement. Supervisors anticipate this trend will continue regardless of interest rate levels due to ongoing restructuring in the sector and increased competition. PE firms have applied new and existing strategies, often in concert with these businesses to make them more profitable, achieve economies of scale through consolidation and generate new, stable sources of cash inflows (eg fees associated with asset management, consulting and mergers and acquisitions (M&A)).

Over the last several years, PE firms have become an additional and significant source of capital and reinsurance capacity. PE firms may bring to the insurance sector their expertise in asset allocation in new, resource-intensive and growing asset classes and markets. PE involvement in insurance activities is not limited to outright ownership. Generally, the engagement strategies utilised by PE firms can be divided into three categories: balance sheet intensive,[18] balance sheet light[19] and partnerships/outsourcing agreements.[20] Insurers where PE firms take an ownership stake can generally be divided into liability originators[21] and liability consolidators.[22]

[18] Balance sheet intensive strategies position a PE firm to have more influence over the acquired entity and transfers a greater portion of the risk/return from the business to the acquiring firm.

[19] Balance sheet light strategies limit a PE firm's direct exposure to a life insurance entity by utilising an M&A strategy that targets a minority stake in the acquired business.

[20] Through partnership/outsourcing agreements, a third-party asset manager manages an insurer's investment portfolio on its behalf.

[21] A liability origination platform is directly consumer-facing and creates liabilities by underwriting and selling new business.

[22] A liability consolidation platform focuses on managing segments of insurance businesses/blocks that become available in the marketplace. Liability consolidators utilise M&A or reinsurance risk transfer transactions to obtain control of the businesses/blocks.

Footprint and trend

In the US, PE involvement in the insurance industry via ownership, third-party asset management responsibilities and asset origination capabilities has grown rapidly. In 2021, PE-owned life insurers' admitted assets increased significantly from the prior year to roughly $800 billion, constituting about 10% of the US life insurance industry's total (including separate accounts).[23] Recent estimates by other market observers have put PE-owned life insurers' share of US life assets at similar levels, noting that this has been increasing over time.[24] In response, US regulators have acknowledged the increased activity as well as the questions associated with the activity, and are considering developing enhanced supervisory measures to address these activities.

Outside the US, some supervisors have reported an increase in PE involvement in their corresponding insurance markets but, at this time, detailed data is limited. Industry observer Milliman reported that in 2021, PE firms continued to be a significant player in the UK and European life and health insurance M&A with expected future interest by PE for open and closed blocks to be considerable. Milliman also found that PE firms' interest in Asian life and health insurance increased in 2021.[25]

Transaction rationale

The combination of low investment returns, increased volatility and high capital requirements have made certain interest rate-sensitive or capital-intensive segments of life and retirement businesses less attractive for traditional carriers. As a result, insurers have looked to divest these portfolios in order to, among other reasons, release capital or reduce the burden of guaranteed rates and make their business model more sustainable. In addition, the macroeconomic environment over the last decade with lower interest rates has challenged life insurers to generate returns in excess of their cost of capital. This has provided an opportunity for PE firms to partner with life insurers and drive greater returns through their investment expertise and by providing insurers with a broader range of investments. Insurers involved with PE firms typically use a variety of approaches to optimise returns on these businesses:

Asset allocation: PE-involved insurers often utilise investment strategies designed to capture excess yield from illiquid, complex and/or potentially volatile assets (eg private credit). As a result, their aggregate portfolio mix can differ to some extent from that of the overall life insurance sector. Investment strategies for most insurers involved with PE firms focus on corporate bonds complemented by opportunities in structured credit, such as asset-backed securities and collateralised loan obligations that are being increasingly sourced by internal asset origination platforms.

PE firms' involvement in the insurance sector through investments, acquisitions, partnerships, reinsurance and other arrangements is a continuing trend that is generally consistent with the transformation of the life insurance sector.

[23] See AM Best: Private Equity Continues to Make Inroads in Life/Annuity Segment (2022).

[24] In 2021, private investors announced deals to acquire or reinsure more than $200 billion of liabilities in the US. Such investors now own over $900 billion of life and annuity assets in western Europe and North America. See McKinsey & Company: Why private equity sees life and annuities as an enticing form of permanent capital (2022).

[25] See Milliman: Life and Health Insurance M&A (2022).

Reinsurance: Third-party reinsurance can be an effective risk mitigation tool that, through the transfer of specified risk, may be used by life insurers to mitigate the financial implications of new business, manage capital requirements and solvency ratios, accelerate the realisation of future profits and influence potential tax obligation. As is generally the case with reinsurance, such transactions may create the potential for increased counterparty risk through higher credit exposure to reinsurers. For reinsurers, third-party reinsurance transactions can be viewed as a means to acquire exposure to features, portions or entire blocks of a specific insurance business – in some cases, these transactions can be viewed as nearly equivalent to M&A. In the case of unaffiliated reinsurance transactions, this exposes the ceding insurer to recapture risk. Affiliated reinsurance provides insurance groups many of the same benefits as third-party reinsurance; however, some dimensions of its risk mitigating capacity are reduced, while the transaction's corresponding increase in counterparty risk is often considered negligible. Like many affiliated transactions, affiliated reinsurance transactions are often viewed more critically by supervisory authorities due to concerns with misuse. PE also uses types of co-investment reinsurance vehicles (sidecars) designed to raise third-party "on-demand" capital for M&A purposes and to enhance group capital efficiencies. Another type of reinsurance observed with PE-involved insurers is unaffiliated modified co-insurance, which reduces counterparty exposure by retaining the assets as collateral with the ceding insurer.

Outsourcing and operational efficiency: Outsourcing of asset management activities could lead to a sustainable decrease in expenses due to efficiency gains and economies of scale. This decrease could impact technical provisions due to a decrease in projected expenses. Efficiencies can also be gained by focusing on singular or complementary product lines and outsourcing product administration.

Cashflows and assets: Life insurance business is also often an important part of PE firms' strategies. Insurance assets under management can provide PE firms with increased scale, higher management fee growth and income stability. The life insurance vehicle plays a pivotal economic role in the operations of a private credit fund by providing a large pool of assets that can be quickly deployed and managed over an extended term; this enables PE managers to scale a credit fund quickly. In some circumstances, the process involves PE investment managers rotating the assets of the owned insurance entity into various in-house credit strategies. In return, the insurer is provided unique, and in many cases, originated assets that back liabilities that may have little redemption risk. Lastly, insurance assets under management is a significant source of fee-related earnings that are more stable and more resilient to market fluctuations.

3.2.2 Risk assessment

Some of the observed business strategies applied by PE-involved insurers have been identified as generating additional micro- and/or macroprudential concerns in some jurisdictions. These insurers may be more exposed to assets with greater complexity and lower liquidity as they are following a strategic asset allocation that emphasises earning additional yield from an illiquidity premium and requires more sophisticated investment analysis. These investments may be originated or sourced by the PE firms. There may also be risks related to the lack of transparency in the influence/control that a PE firm may have over an insurer, especially as it pertains to investment strategies.

The current macroeconomic outlook is marked by geopolitical instability, inflationary pressures and economic slowdown, which fuel uncertainty and could amplify risks. This, in turn, could raise concerns about the sustainability of this business model and its resilience under adverse conditions. While this may lead to lower growth potential for PE-involved insurers and changes to

the business model, there are no signs to date of a trend reversal. The upward trend in cross-border reinsurance of life insurance liabilities (by both PE-involved insurers and traditional insurers) is an activity that the IAIS believes should be better understood and monitored.

Reinsurance

The assessment of risks related to the use of reinsurance by PE-involved insurers and reinsurers covers a variety of matters including risks related to the reinsurance contractual arrangements, risks for the ceding insurer, risks for the assuming reinsurer or retrocessionaire, risks related to the domestic or cross-border nature of reinsurance, and risks related to affiliated and unaffiliated reinsurance transactions. The utilisation of PE-involved cross-border reinsurance vehicles that engage in affiliated and unaffiliated cross-border reinsurance transactions with insurers operating in the US, Europe and Asia is increasing rapidly, leading to concentrations in certain jurisdictions. The utilisation of a cross-border reinsurance vehicle is a key element of the PE-involved insurance business strategy that has enabled companies to grow rapidly, scale their platforms and optimise capital.

The IAIS will continue to monitor potential risks emanating from this significant increase in cross-border reinsurance activities and the corresponding reinsurance concentration of some PE-affiliated reinsurers.

BOX 2: US STATUTORY DATA ON PE-INVOLVED INSURERS

US statutory data shows PE-involved insurers have ceded more than 75% of their premiums to affiliates since 2018, and nearly 80% of those premiums are ceded to cross-border affiliates.[26] A number of the captive and unaffiliated PE-owned reinsurer counterparties are domiciled or conduct business in insurance jurisdictions located in the Caribbean and the Atlantic. In 2021, PE-owned insurers ceded $75 billion in premiums (mostly annuity) to reinsurers in Bermuda, accounting for 72% of all total life and annuity business ceded to non-US reinsurers, up from approximately one-third of all premiums five years ago. The utilisation of reinsurance by certain PE-involved insurers vastly exceeds what traditional insurers typically use when conducting business.[27] These deals, along with a new business generation, are also used in conjunction with affiliated cross-border transactions. The increased use of affiliated reinsurance transactions can lead to more complex insurance group structures and could potentially reduce transparency.[28] Also, intra-group reinsurance (whereby the vast majority of premiums ceded involve an affiliate rather than an independent insurer) may diminish the inherent "checks and balances" that would normally be associated with unaffiliated reinsurance. PE-involved reinsurers were also active in M&A and risk transfer transactions with cross-border unaffiliated traditional insurers.

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[26] See AM Best: Private Equity Continues to Make Inroads in Life/Annuity Segment (2022).

[27] In 2021, the ratio of ceded premiums (non-US reinsurers) to gross premiums for the top PE-owned annuity writers averaged 70% against 47% for the life sector.

[28] Koijen, R. S. and Yogo, M. (2016). Shadow insurance. Econometrica, 84(3), 1265-1287.

Asset allocation

Insurers identified as PE-involved have been broadly observed as having higher exposures than traditional insurers to more illiquid, less transparent and more complex assets (structured securities). Other PE-involved insurers have demonstrated an increased asset allocation towards infrastructure and loan and mortgages as well as derivatives. PE-involved insurers often leverage in-house origination expertise in private markets. A higher allocation to investments originated or sourced by PE firms has also been observed in regulatory filings.

The greater exposure to illiquid and volatile assets in insurers' portfolios could contribute to higher market and credit risk. If a balanced and measured approach with appropriate risk management is taken, these investment activities could help to diversify insurer portfolios and improve internal rates of return. However, a greater concentration of such assets on insurers' balance sheets also increases potential liquidity spirals (eg margin calls that lead to forced sales in an illiquid market), especially in a situation of economic uncertainty where fungibility and transferability of assets decrease. The lack of transparency and complex structure also poses challenges in terms of credit assessment and consequently for the accurate calculation of prudential requirements.

Herding and industry behaviour

As more insurers enter product market areas where PE-involved insurers had previously benefited from wider margins – such as liability transfers or private asset markets – potential profit may be compressed, putting pressure on participants to take additional risks. The perceived success of strategies adopted by PE-involved insurers, including shifting asset allocation strategies and usage of cross-border reinsurance, can motivate other insurers to try to adopt the same strategies in an attempt to retain competitiveness. While reinsurance is not considered a systemic activity per se, it could result in concentration risk depending on the level of interconnectedness and scale. Traditional insurers that lack investment resources could also sacrifice credit quality in return for yield. Additionally, traditional insurers could compete on price, raising the potential for mispricing error. Finally, later adopters may not have the same expertise or experience in the strategies employed, and therefore may face higher strategy execution risk or may mismanage prospective market risk, impacting these strategies.

Transparency

The structure by which PE-involved firms own and influence insurers tends to exhibit complexity and opacity, which makes both the identification and monitoring of key risks more difficult. In terms of structuring a legal entity, PE-involved insurers typically make significant use of cross-border affiliates, complex group structures and bespoke agreements between participating investors in the PE fund. This is amplified by the observed opaque power structures, which may involve the PE firm having "reserved matter" clauses (ie areas where the board has to consult shareholders for permission), veto rights on capital structure or complex outsourcing arrangements to a related party of the PE firm, and/or dual-class voting shares – all of which may not be adequately covered in some regulatory frameworks and may be difficult to identify as part of the supervisory review process. These structures can also distort the decision-making processes of the insurer's board or management. While supervisory concerns with these structures have to date had a microprudential focus, there is a growing recognition of the need to consider any macroprudential effects of these structures.

Conflicts of interest

Issues related to conflicting interests between PE firms involved in insurance and an insurer's stakeholders (eg supervisors, policyholders and long-term investors) can materialise in multiple instances. PE-involved insurers may be incentivised to promote short-term strategies

that could reduce or reallocate assets held to back longer-term insurance liabilities to riskier investments and/or affiliated investments that generate greater fees, particularly when the ownership of an insurer is held in a fund rather than the PE firm's own balance sheet. The origination and management of assets can generate significant fee income via asset management agreements for asset managers affiliated with the PE firm that are based on the performance or complexity of assets. Affiliated PE asset managers may also be incentivised to source in-house originated assets for the PE-involved insurer, which may not always be appropriate for the insurer's business. Increased fees related to asset management or other agreements may lead to additional concerns related to potential capital extraction and short-termism. Similar to the transparency concerns mentioned above, this issue in isolation is not macroprudential in nature, but if herding activities continue on a large scale, then under-reserving or solvency concerns could potentially develop.

3.2.3 Supervisory measures

Supervisory collaboration aimed at transparency and exchange of information is critical in the supervision of PE-involved (re)insurers with cross-border transactions. This can be achieved through mechanisms such as group-wide supervision, which includes hosting of supervisory colleges where joint risk assessments are conducted and work plans are formulated. In addition, written regulator-to-regulator enquiries, ongoing day-to-day supervisor-to-supervisor discussions, and exchange of information and bilateral meetings between the supervisors of the ceding and reinsuring jurisdictions are avenues for discussing and resolving any concerns that may arise.

In general, supervision of PE-involved insurers is tailored to activities around understanding and addressing: (1) what motivates PE firms' investment in insurers, and (2) the risk-taking behaviours created by these motivations. Concrete examples include:

- Capital add-ons where the risk inherent in the business model, including but not limited to complex investment strategies, materially deviates from assumptions underlying the standard capital framework. Regulators have also imposed higher solvency ratios to serve as a buffer for unexpected losses.

- Mandatory bespoke regulatory stress tests to facilitate supervisory understanding of risk mitigation across a range of severe stress scenarios. Where necessary, supervisors have required adequate liquidity facilities and legally enforceable capital maintenance agreements from credible counterparties to support contingency capital plans.

- Restrictions on dividend extraction to mitigate the risk of potential misalignment between short-term interests and the long-term commitment necessary for policyholder protection. In this regard, supervisors are aware that value might be extracted in other ways, including fees, so supervisory oversight is being extended to the full range of mechanisms that could be used to extract value from the insurer, directly or indirectly.

- Requirements for insurers to establish and implement effective corporate governance frameworks and internal controls to address PE-specific risks, such as the heightened potential for conflicts of interest and interconnectedness.

- Supervisors are continuing to assess the adequacy of existing regulatory tools, including the level of disclosures and transparency regarding risks. Enhanced investment disclosures have been implemented in certain jurisdictions. Supervisors have also enhanced their scrutiny of the operations of PE-involved insurers, including requiring independent assessment of key areas such as investments, reserves and governance.

In jurisdictions with observed PE involvement, and in response to concerns, supervisors have typically implemented heightened monitoring of related activities. Some of those jurisdictions have advanced to considering and exploring appropriate supervisory measures, while others are already in the process of implementing them.

3.2.4 Next steps

The IAIS will broaden the evaluation of the impacts of PE-involved insurers to activities that have been highlighted by the information gathered on this subject. These activities include: (1) investment allocations to more illiquid investments, including private placements (eg direct lending), private asset-backed securities/ collateralised loan obligations and alternative asset classes, (2) use of cross-border reinsurance and (3) potential for herding and higher concentration risk.

The IAIS will also continue to examine those risks that may be more specific to PE ownership of insurers. Areas of focus will include possible conflicts of interest and transparency related to ownership and control.

The IAIS plans to divide this future work between identifying and assessing any potential macroprudential risks, and identifying supervisory responses and strategies to address both supervisory and potential data gaps. This will include reviewing information and data previously reported to the IAIS as part of the GME and addressing any data gaps to allow for better tracking and analysis of these identified activities. Any identified supervisory-related items will be assigned to, and addressed in, the appropriate IAIS working groups.

The IAIS will, in addition to the enhanced monitoring of alternative investments and private placements, refine the GME to better capture acquisition of life insurance portfolios (including through reinsurance). Potential regulatory arbitrage strategies and concentration risks in certain jurisdictions will be assessed, alongside the supervisory/regulatory toolkit to address these.

The IAIS will refine the GME to enhance the monitoring of alternative investments and private placements and to better capture transfers of life insurance portfolios, including through reinsurance.

4. Climate-related risks in the insurance sector

As outlined in the 2021 special topic edition of the GIMAR (Climate GIMAR),[29] climate change is an overarching global threat and a source of financial risk. In a recent report, the United Nations (UN) World Meteorological Organization stated that greenhouse gas concentrations continue to rise and fossil fuel emissions are now above pre-pandemic levels.

The UN report also stressed that mitigation pledges are insufficient to achieve the Paris Agreement and that global warming during the 21st century is estimated at 2.8°C, assuming a continuation of current policies, or 2.5°C even if new or updated pledges are fully implemented.[30] Enhanced action is needed to prevent the continued warming that is increasing the likelihood of irreversible changes to the climate system. The UN Environment Programme Emissions Gap Report 2022 states that in order to limit global warming to 1.5°C, current greenhouse gas emissions will need to be cut by 45% by 2030. However, the near-term supply-side energy shortage is causing many countries to continue with or revert to fossil fuel sources, thereby making it more challenging to meet net zero targets. The UN World Meteorological Organization report also states that climate science is increasingly able to show that many extreme weather events have become more likely and more intense due to human-induced climate change.

These developments may lead to delayed and divergent transitions across jurisdictions. This in turn may have considerable impacts on the insurance industry by increasing physical, transition, liability and reputational risks as well as widening the protection gap. Therefore, it is critical for insurance supervisors to strengthen their understanding of the type and magnitude of climate-related exposures of the insurance industry, in order to effectively identify, monitor and reflect climate change risks in their supervisory responsibilities. This chapter aims to support these efforts by providing a follow-up to the Climate GIMAR published last year.

It is critical for insurance supervisors to strengthen their understanding of the type and magnitude of climate-related exposures in the insurance industry in order to inform effective supervisory responses.

[29] Available at www.iaisweb.org/uploads/2022/01/210930-GIMAR-special-topic-edition-climate-change.pdf.
[30] UN World Meteorological Organization. United in Science 2022 (2022).

4.1 CLIMATE-RELATED RISKS TO INSURERS' INVESTMENTS

4.1.1 Data collection, improvements and limitations

To support this chapter, the IAIS collected quantitative and qualitative information from jurisdictions as part of the regular GME process in the SWM 2022 data collection. The SWM data is reported as of year-end 2021. The analysis on assets focuses solely on the insurance sector investments in the general account (GA); unit-linked products or separate accounts were excluded from this analysis as their risks are borne by policyholders.

A total of 34 jurisdictions,[31] representing around 88% of the global insurance market, provided climate data in the SWM 2022 (compared to 75% as part of the Targeted Climate Data Collection (TCDC) which was used for last year's Climate GIMAR). Twenty-nine jurisdictions also shared asset splits for equities, corporate bonds, loans and mortgages (L&M), and securitisations. Data quality and completeness have improved relative to the TCDC:

- Several jurisdictions were able to improve their data collection response to better capture climate-related data (eg Belgium, Canada, Switzerland and the UK). The enhancements were related to either improved granularity of climate-related data or to an increased scope of their jurisdictional climate submissions (eg by moving from a sample approach covering only a few large insurers to a population approach capturing the entire insurance market). Other jurisdictions announced plans to improve their supervisory reporting frameworks with regard to climate data in the near future.[32]
- In this year's SWM, the IAIS also collected additional and new data on various asset classes (eg on reinsurance recoverables, reinsurance assets or deferred tax assets), allowing for a more precise estimate of assets that are "climate relevant" versus other assets. In total, the collected asset classes cover approximately 80% of all insurance sector GA assets. In line with the findings in section 2, the main asset classes held in insurers' balance sheets were equities, corporate debt, sovereign debt, and loan and mortgages. Therefore, the climate risk analysis in this chapter focuses on those asset classes.

The improvement in climate-related data collection this year compared to last year is noteworthy, and the additional contributions and effort put in by relevant jurisdictions are welcome. The IAIS also monitored changes in asset allocation since the TCDC. These changes were rather limited, affecting less than 5% of total assets globally in the last two years. The majority of changes were caused by enhanced granularity of the IAIS data template and the above-mentioned introduction of new asset classes.[33] This complicates the comparison of changes from year-end 2019 to year-end 2021 data.

Despite the improvements in data coverage and quality, the quantitative analysis presented in this chapter should be interpreted with some caution, given the best effort nature of the data collection and the fact that the climate data collection was conducted only for the second time. The climate data collection will be continually refined over time. In addition, the quantitative analysis provides only a partial and indicative insight into the climate-related risks that the insurance sector faces. It is partial

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[31] Asia and Oceania: Australia; China; China, Hong Kong; Chinese Taipei; Japan; Malaysia and Singapore; Europe and Africa: Austria, Belgium, Bulgaria, Croatia, Czechia, France, Germany, Iceland, Ireland, Italy, Morocco, the Netherlands, Poland, Portugal, Slovakia, Spain, South Africa, Sweden, Switzerland and the United Kingdom; and from the Americas: Bermuda, Brazil, Canada, Chile, Colombia, Mexico and the United States.

[32] For example, in Germany data on the sectoral-split of assets is not available for year-end 2021 because, at this stage, undertakings do not consistently report on the requested mapping to the Nomenclature of Economic Activities (NACE) codes. Assets are reported to a large extent on for example a single letter basis only, "considered as green" cannot be answered with Solvency II data and currently the look-through cannot be applied. This means that the values may structurally underestimate the real exposures. However, the German Federal Financial Supervisory Authority is currently carrying out a project on asset data with the aim of implementing the look-through approach for investment funds and a mapping of NACE codes.

[33] In many instances, new asset classes replaced a category of assets for which no information about allocation had been previously available.

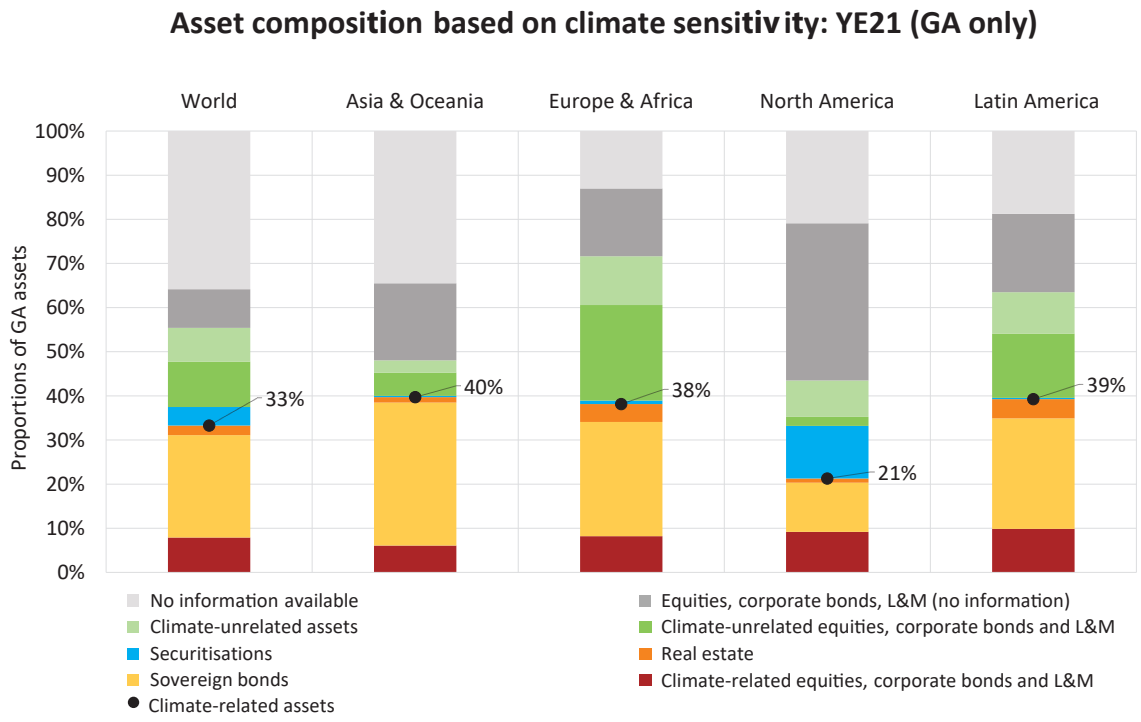
as it focuses only on investments and does not examine the quantitative impact on liabilities (underwriting), which is expected to be significant, especially for the non-life insurance sector. It is indicative given the limitations on data availability, the top-down nature of the analysis and the relative infancy of available analytical tools.

4.1.2 Quantitative findings on climate-related exposures

One of the main objectives of this chapter is to provide an update on the proportions of different types of climate-related assets held by the insurance sector. The exposures presented in this section are based on the SWM 2022 data described above, complemented when necessary by other data and/or assumptions, as specified in the corresponding subsections (eg various climate-related indices used in the analysis). The analysis performed is aligned with the approach and methodologies undertaken for the 2021 Climate GIMAR to ensure consistency.

Figure 14 presents the asset mix of climate-related and climate-unrelated assets for the full data sample, consisting of 34 jurisdictions that provided at least some quantitative climate information to the IAIS. The overall mix by asset class is complemented by a split of equity, corporate bonds, and L&M in climate-related sectors, providing a comprehensive overview of the asset mix by region with emphasis on their relationship to climate change. The approach used to consider the relevance of climate change to different asset classes is similar to that used in the Climate GIMAR.

FIGURE 14



Source: IAIS SWM 2022

The assets in Figure 14 may be divided into three broad categories:

- Climate-related assets including sovereign debt instruments, real estate[34] and equities, corporate debt instruments, and L&M belonging to six climate-related sectors: agriculture, energy-intensive, fossil fuel, housing, transport and utilities (labelled with variants of red);
- Climate-unrelated assets including reinsurance recoverables, reinsurance assets, cash and cash equivalents, deferred acquisition costs and equities, corporate debt instruments, and L&M not belonging to the six climate-related sectors (labelled with variants of green); and
- Assets without any information regarding their allocation or sectoral split – this category includes equities, corporate debt instruments, and loans and mortgages without any information about their sector, as well as securitisations and assets without information about their asset class (labelled with variants of grey and orange).

The shares of climate-related assets (approximately 33% to 40% of all GA total assets) are comparable in Asia and Oceania, Europe and Africa, and Latin America. North America reported lower holdings of climate-related assets (around 21%), but this may be driven by the fact that there is no information about climate relevance for a little over half of the assets in this region.

In comparison with the Climate GIMAR, material decreases were found in the shares of climate-related assets. These decreases were driven mainly by improved granularity of reported asset splits and sample changes.

Equity, corporate bonds, and loans and mortgages

For equities, corporate bonds, and L&M, the choice of climate-related sectors is based on Climate Policy Relevant Sectors (CPRS), a classification of economic activities to assess transition risk,[35] which was developed by Battiston et al. (2017)[36] and refined over the years. The CPRS classification was also used in the 2021 Climate GIMAR (see pages 15 and 16). It provides a standardised and actionable classification of activities for which revenues could be negatively affected in a disorderly low-carbon transition scenario.

One weakness of the CPRS classification is that the climate-related utility sector includes all electricity-generation activities, regardless of the energy source used. This lack of granularity means that renewable-energy assets are unfairly considered as being climate-related. In line with the Climate GIMAR, a haircut was therefore applied to all amounts reported in the utility sector on a jurisdictional basis. The size of the haircut was determined by the proportion of renewable power generation in the region of each jurisdiction, as published in the International Renewable Energy Agency regional factsheets.[37]

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[34] Sovereign debt instruments and real estate are classified as "climate-related assets", in line with the Climate GIMAR. However, they represent heterogenous asset classes with various levels of climate sensitivity (eg countries are exposed to different levels of physical and transition risks). More insights on the climate sensitivity of sovereign debt holdings can be seen in Figure 17.

[35] The mapping used to identify climate-relevant assets tends to change according to the region of the respondent. In particular, almost all respondents from Europe and South Africa used the mapping based on NACE codes. Most respondents used one of the three mappings provided by the IAIS for the purpose of collecting data. A few of them, however, referred to the Global Industry Classification Standard (GICS) or used either a combination of classifications or their own national classification.

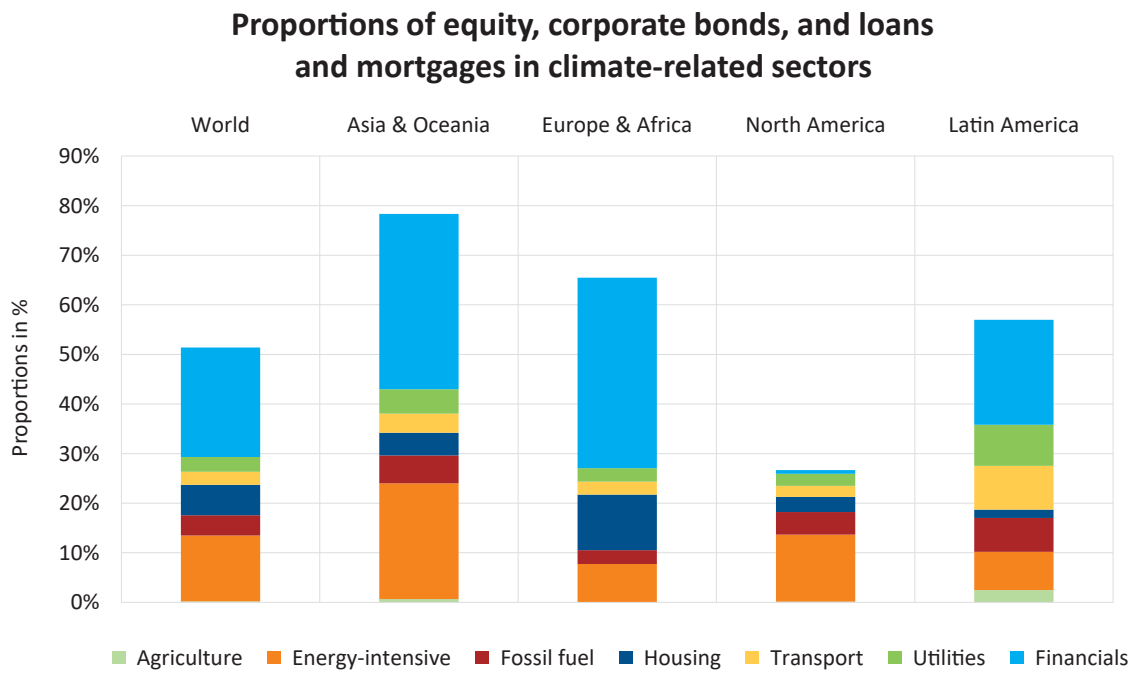
[36] Battiston, S., et al. (2017): A climate stress-test of the financial system. Nature Climate Change, 7: 283–288.

[37] www.irena.org/statistics

Another limitation of the data is with respect to the treatment of exposure to the financial sector. Financial sector assets, which for some jurisdictions represent a relatively high proportion of their total reported assets, include participations in other insurers' or banks' equity (which may be part of the same group) and holdings of investment funds, which are not looked through. In practice, indirect exposure to climate-related risks through the financial sector may vary considerably depending on the counterparty type (such as bank, insurer or asset manager), its direct exposure to climate risk, and its financial and operational leverage that may amplify any climate-related impact. Since the financial sector has not been explicitly classified as climate-related, the absence of look-through of investment funds, as well as the participation in financial entities that are parts of the same group, may result in a significant underestimation of the actual proportion of climate-related assets. To avoid this underestimation, the same data adjustment was applied as described in the Climate GIMAR (see page 22).[38]

Figure 15 presents the total proportions of equity, corporate bonds, and L&M for each region in the six climate-related sectors. Depending on the region, climate-related sectors represent between 26% (North America) and 43% (Asia) of these asset classes.

FIGURE 15

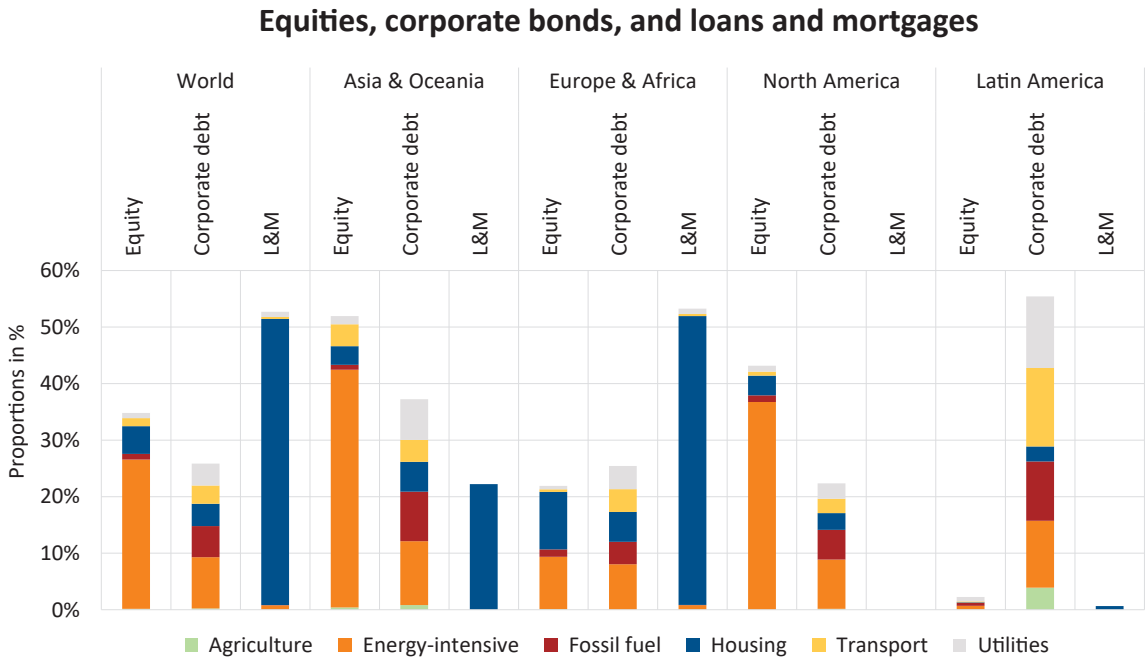


Source: IAIS SWM 2022

[38] To approximate the exposures that would result from a look-through approach, it was assumed that entities or funds classified in the financial sector include climate-relevant assets in a similar proportion to that of assets directly held by insurers.

Similar to last year's analysis, the energy-intensive sector, which is quite broad and encompasses most of the manufacturing industry, remains globally dominant among climate-related equities, while the picture is more balanced for corporate bonds, as can be seen in Figure 16. Climate-related L&M are primarily associated with the housing sector (due to high investments in mortgages in various jurisdictions). Climate-related sector proportions are comparable for all three types of assets, ranging between 26% (for corporate bonds) to 52% (for L&M). Figure 16 shows a more detailed view on sectoral splits per region and by type of asset class. The remaining proportions either belong to climate-unrelated assets or no information is available for them. The sectoral charts include only countries that provided asset splits used in the climate analysis.

FIGURE 16



Source: IAIS SWM 2022

In comparison to the Climate GIMAR, changes were identified in the shares of climate-related sectors in equities, corporate bonds, and L&M. These changes were driven mainly by improved granularity of reported asset splits and sample changes.

Sovereign bonds

Sovereign bonds are a significant asset class within the average insurance investment mix; however, there is not yet a universally accepted metric to assess climate-related risks for these bonds. Similar to the Climate GIMAR, the IAIS used the Notre Dame Global Adaptation Initiative (ND-GAIN) Country Index to analyse the exposure of sovereign debt instruments to climate-related risks.[39] To examine the relative exposure, a "weighted ND-GAIN index"

[39] ND-GAIN Country Index.

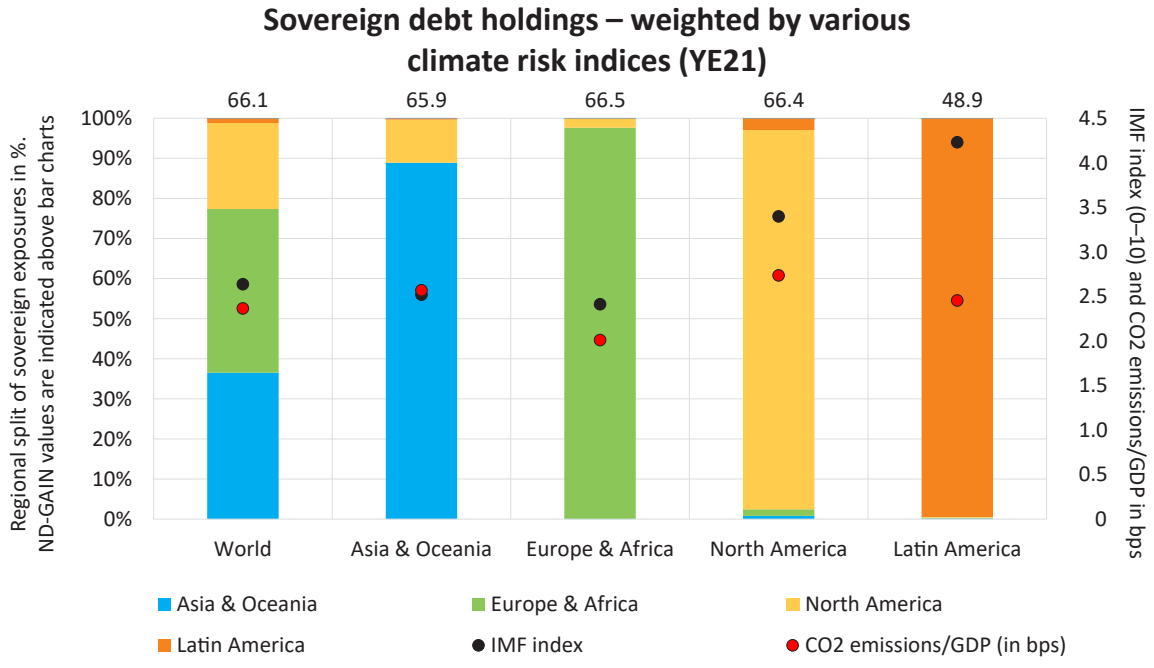
was calculated, reflecting the weighted average ND-GAIN Country Index of the sovereign bond portfolio of the insurance sector in a particular market, based on the top five largest sovereign counterparties where this information was available (values between 0 and 100, where higher score means lower risk).

For this year's exercise, this was complemented with two additional metrics for illustrative purposes:

- IMF climate-driven INFORM Risk Index, which may give an indication of physical risk; [40]
- Carbon dioxide (CO2) emissions standardised by gross domestic product (GDP), as reported by the Organisation for Economic Co-operation and Development (OECD), provide an indication of possible transition risk. These standardised emissions are shown (in basis points) in Figure 17.

For both of these metrics, a higher score represents a higher risk. These new metrics were added to provide greater insights specific to physical risk and transition risk and to mitigate limitations of the ND-GAIN index (such as limited differentiation between physical and transition risks and high correlation with countries' economic wealth).

FIGURE 17



Source: IAIS SWM 2022

[40] The IMF Climate-driven INFORM Risk Index is a global, open-source risk assessment for crises and disasters. The Climate-driven INFORM Risk is an adaptation of the INFORM Risk Index, adjusted by IMF staff to focus on climate-driven risks. It has three dimensions: climate-driven hazard and exposure, vulnerability, and lack of coping capacity. See https://climatedata.imf.org/pages/fi-indicators.

The coloured bars show the distribution of the sovereign bond portfolio by geographic region. A majority of sovereign debt instruments are intra-regional investments. The weighted ND-GAIN index outcomes can be found in Figure 17 on top of each bar. The INFORM- and CO2-related indices are shown via dots (on the right-hand axis). None of these metrics is able to capture the true extent of climate-related risks in isolation; however, they provide a relative indication of the risks. The IAIS will continue to refine these metrics. While the ND-GAIN index and INFORM Risk Index suggest that Latin America has higher physical risk relative to other regions (ie lower ND-GAIN score and higher IMF index), Latin America's transition risk (measured by CO2 emissions/GDP) appears to be relatively comparable with other regions and the world.

4.2 SUPERVISORY MEASURES AND IMPACT ASSESSMENT

Given the importance of risks related to climate change, the topic was included as an overarching theme in the GME this year. The aim was to discuss the views of supervisors on the impact of climate change on the insurance sector and on ensuing protection gaps, as well as the measures taken by supervisors to address these risks.

A majority of supervisors consider that the main impact of climate change has been on increasing NatCat claims. Going forward, supervisors expect the impact to increase and materially affect insurers' assets, risk management considerations, new product development and pricing. They also expect a widening of the protection gap, as a knock-on effect of increasing NatCat claims.

Supervisors are continuing efforts to better assess the impact of climate change on insurers, while recognising the difficulty of performing a complete assessment (see Box 3).

In addition, supervisors are undertaking significant work to introduce climate change-related supervisory requirements; more than 80% of them have already taken some action. This includes wide ranging requirements for governance, risk management, disclosure and climate stress testing. Some supervisors have considered more limited actions, typically focused on reporting and undertaking surveys to understand industry preparedness. Only 20% of respondents indicated that they have not undertaken any steps or are in the very early stages of developing their thinking in this area. See Box 4 for actions that the IAIS is taking to support supervisors in their efforts.

Also, many supervisors have observed that insurers are considering wide-ranging actions and incorporating climate change in various activities and functions, including in investments, underwriting/pricing, risk management, reporting and new product development.

In terms of how climate-related risks in the insurance sector can impact the broader financial system and economy, 60% of supervisors expect that the main impact will come through increased insurance premiums and reduced insurability. In particular, this could lead to a systemic impact in the event of a major natural catastrophe, causing significant uninsured losses to corporates and real estate assets and resulting in losses to the financial assets associated with them. In addition, there could be contagion to the banking sector, which will amplify financial stability concerns. Alongside reduced insurability, 40% of supervisors expect that the insurance sector could impact the financial system through its role as an investor. In particular, this could be triggered by a sell-off of high carbon assets by insurers, depressing the value of such assets. At the same time, some supervisors recognise that insurers' proactive role as an investor in net-zero aligned investments could help to reduce climate-related risks in the financial system.

BOX 3: THE BANK OF ENGLAND'S OBSERVATIONS ON QUANTIFYING THE IMPACT OF CLIMATE CHANGE

The Bank of England carried out a scenario analysis exercise (the Climate Biennial Exploratory Scenario or CBES) to explore the possible impacts of climate change on some of the banks and insurers that it regulates. The stylised scenarios used in the exercise illustrated possible paths, not forecasts, for climate policy and global warming. Projections of climate losses are uncertain; scenario analysis is still in its infancy and there are several notable data gaps (eg non-financial corporates' current emissions and future transition plans). But the CBES has already helped drive improvements in these areas in the UK.

There is also substantial uncertainty around the true magnitude of climate risks that were assessed as part of the CBES. Climate risks outside the scope of the CBES, such as mortality risk for life insurers, could also be material. One recurrent theme across participants' submissions was a lack of data on many key factors that participants need to understand in order to manage climate risks. Another was the wide range in the quality of different approaches taken across organisations to the assessment and modelling of these risks.

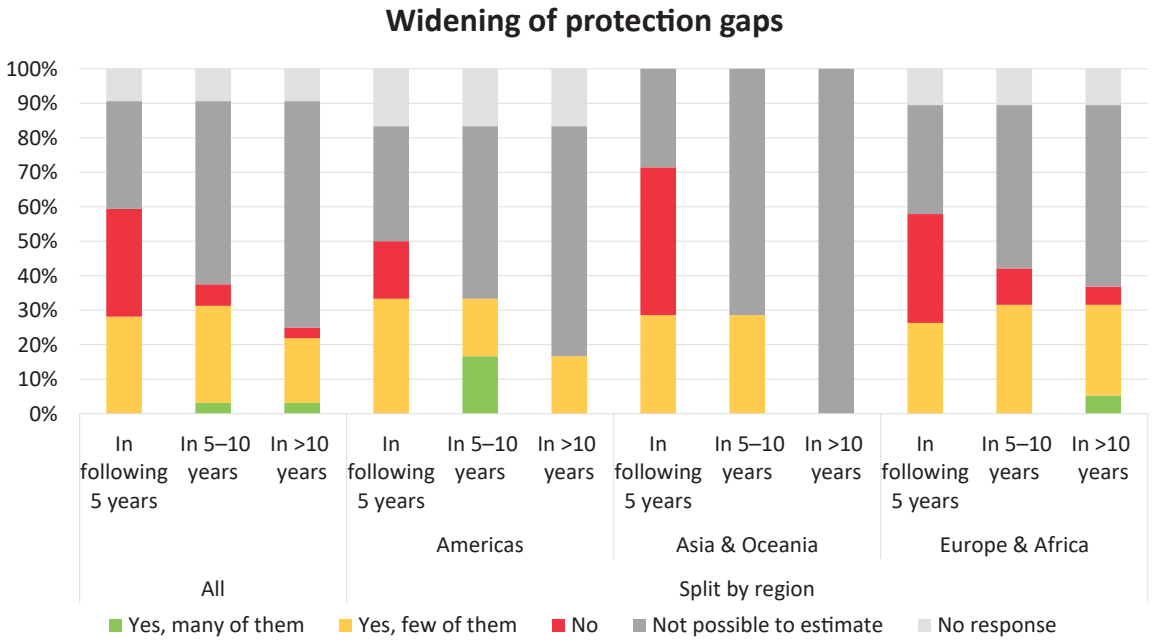
4.2.1 Protection gaps

Climate-related risks could have a significant impact on the creation and/or widening of existing (insurance) protection gaps. Some jurisdictions indicated that insurance gaps are expected to widen (across all of the timeframes, but mostly within the next 10 years). It should be noted though that many supervisors are not able to estimate the impact at this time and these assessments are mostly still under development. It was highlighted that the main concerns will probably be around affordability and awareness levels, rather than products not being available. Fifty percent of supervisors indicated a medium to high impact on the pricing of insurance products. The increase in pricing will predominantly be driven by an increase in severity and frequency of natural disasters.

The strengthening of supervisory tools to assess and monitor the availability and affordability of insurance products could play a key role in addressing some of the insurance gap concerns. Supervisors indicated that public-private partnerships, public protection schemes and reinsurance pools could play an important role in finding solutions. However, these measures would have to be decided at the political level.

Gaps in protection against climate-related risks are in many cases significant and supervisors anticipate that they will continue to increase.

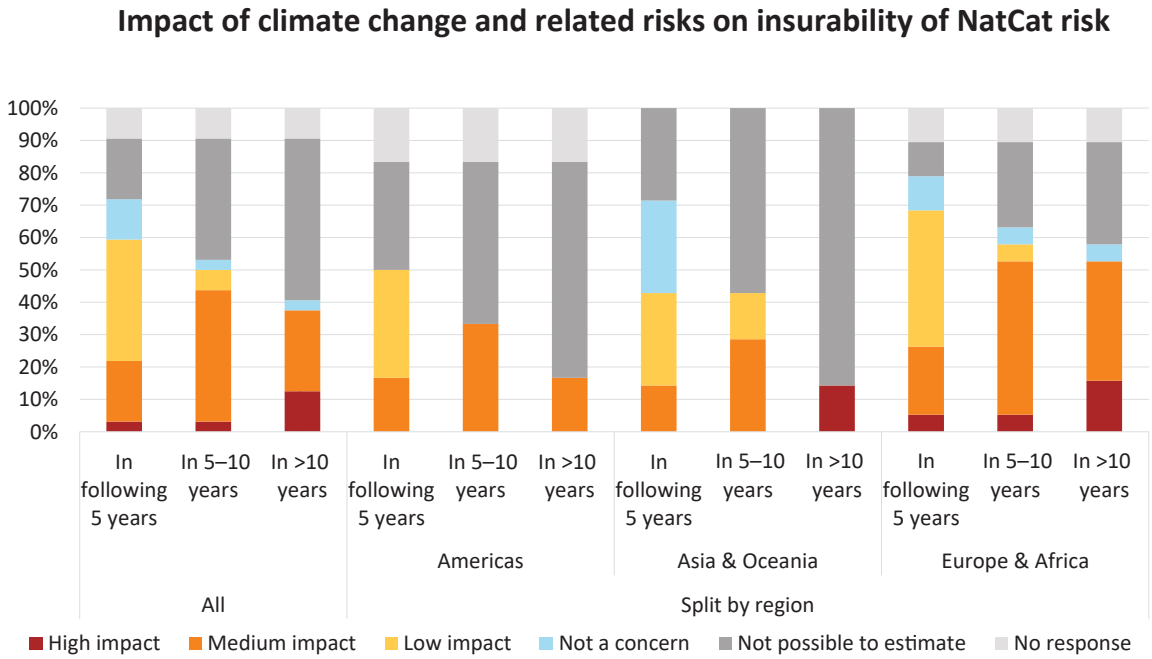
FIGURE 18



Source: IAIS SWM 2022

Many jurisdictions expect climate-related risks to impact the insurability of NatCat risk, especially in the longer term. For instance, at least half of the supervisors in the Europe and Africa region expect medium to high impact in the longer term. However, especially for the longer term, a number of jurisdictions indicate it is not possible to make an estimate of the impact at this stage.

FIGURE 19



Source: IAIS SWM 2022

BOX 4: IAIS WORK ON ADDRESSING CLIMATE-RELATED RISKS

To support members in their efforts to address climate-related risks, the IAIS has published several papers since 2018. The full overview can be found on its website. The most recent report is the Application Paper on the Supervision of Climate-related Risks in the Insurance Sector, published in May 2021, which was jointly developed with the UN Development Programme Sustainable Insurance Forum (SIF). The paper provides insurance supervisors with concrete tools to further strengthen their efforts in assessing and addressing climate-related risks. It also sets out recommendations and examples of good practice, consistent with the IAIS' Insurance Core Principles (ICPs).

The 2021 Application Paper focused on a number of high priority topics, such as climate-related disclosures and enterprise risk management. In 2022, the IAIS performed a complete review of its supervisory material (including the ICPs and the Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame)) to assess whether there is a need for changes to these standards or the development of further supporting materials. While the IAIS concluded that the ICPs and ComFrame are sufficiently broad to cover climate risks, the IAIS will make some changes to ICP guidance to make it even more explicit that insurance supervisors should require insurers to incorporate climate-related risks into their day-to-day operations. Furthermore, the IAIS will develop a comprehensive set of new supporting material to help its members better understand and supervise the risks. Two sets of consultations are planned in 2023.

In addition, in 2022 the IAIS organised regional workshops on climate risk scenario analysis to support members in building their capacity and to take forward international supervisory cooperation in this area. More than 200 supervisors across all regions joined these sessions.

Finally, the IAIS contributed to the FSB Roadmap for Addressing Financial Risks from Climate Change. A progress report was published in July 2022.

4.3 NEXT STEPS

Climate data elements have become a regular feature of the GME and provide a global baseline of climate risk data for the insurance sector. Similar to last year's Climate GIMAR, the quantitative analysis this year focuses on the impact of climate change on the insurance sector's investment portfolio. Given the improvements in the data collected, both in terms of coverage and quality, this year's analysis provides a more accurate indication of the industry's exposures to climate-related assets. The analysis of the impact of climate change on insurer liabilities focused on the possibility of increasing protection gaps. This year's data collection from IAIS members continues to set the groundwork for enhanced data collection and analysis moving forward, which, in time, will be complemented by improved climate and sustainability data reporting and disclosures from financial institutions and real economy corporates and businesses.

The IAIS will continue to refine and explore how best to enrich both asset and liability data in order to enable further quantitative analysis on the impact of climate change on the resilience of the global insurance sector and to assess the impact on protection gaps. In particular, the IAIS will aim to further refine the liability-related climate data requirements to allow it to analyse quantitatively the impact of climate change on the liability side of insurers' balance sheets.

Given the importance of understanding the impact of climate change, the IAIS will continue to support its members through a wide range of activities going forward, including further development of supervisory/supporting material, capacity building and knowledge sharing. Also, the IAIS is exploring work to better understand the possible externalities (including cross-sectoral implications) of reduced insurability, in collaboration with other international organisations where relevant.

The IAIS will continue to refine and explore how best to enrich both asset and liability data for climate risk analysis.

5. Individual insurer monitoring 2022

5.1 INTRODUCTION

In addition to the monitoring of potential systemic risk arising from sector-wide trends related to specific activities and exposures, the GME includes an assessment of the possible concentration of systemic risks at an individual insurer level arising from these activities and exposures through the IIM.

The IIM is applicable to insurance groups meeting the Insurer Pool criteria, consisting of approximately 60 of the largest international insurance groups from 18 jurisdictions.

The GME includes an assessment of the possible concentration of systemic risks at an individual insurer level.

This section covers public disclosures on specific aspects of the IIM. As outlined in paragraphs 107–109 of the GME document, public reporting on the GME will contain both a general description of developments in the global insurance sector and the outcomes of the GME as a whole. Public disclosures related to the IIM include information on:

- An analysis of aggregate trends in the Insurer Pool;
- The aggregate totals for each indicator;
- Formulae used to calculate indicator scores;
- The absolute reference values used for the indicators; and
- The data template and instructions used in the assessment process.

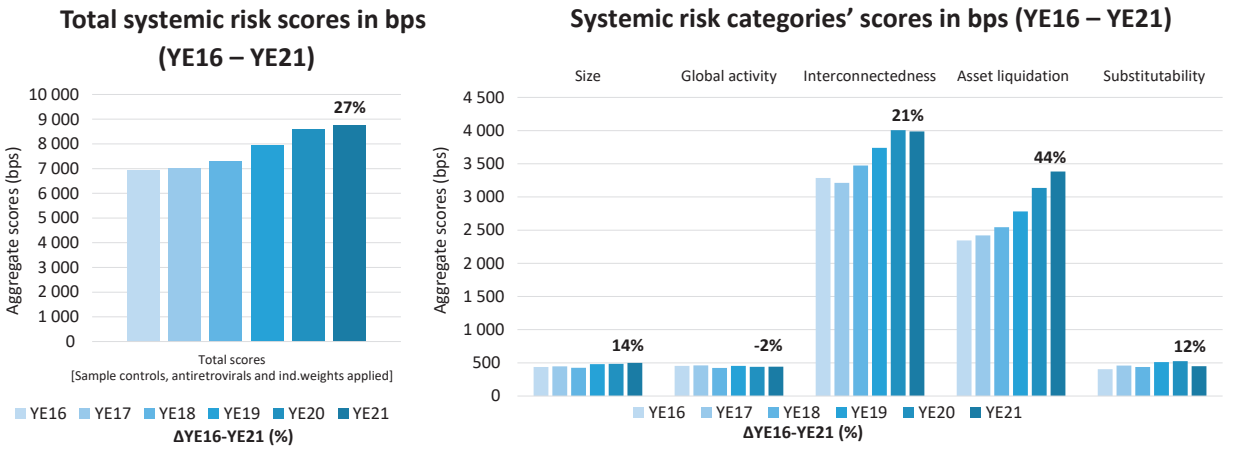
5.2 AN ANALYSIS OF AGGREGATE TRENDS IN THE INSURER POOL

In accordance with paragraph 56 of the GME document, the IAIS performed trend analysis on data from the Insurer Pool and used the outcomes for the overall assessment. Trend analysis includes the development of denominators (for each quantitative indicator used in the current IIM methodology), drivers of those developments, identification of outliers and data issues, and the impact of foreign exchange rates or sample fluctuations. Trend analysis also covers a comparison of individual insurers versus Insurer Pool developments. Sample controls are applied to keep the sample stable over time.

The largest growth in systemic risk scores was identified in the level 3 assets, intra-financial assets, derivatives and short-term funding indicators.

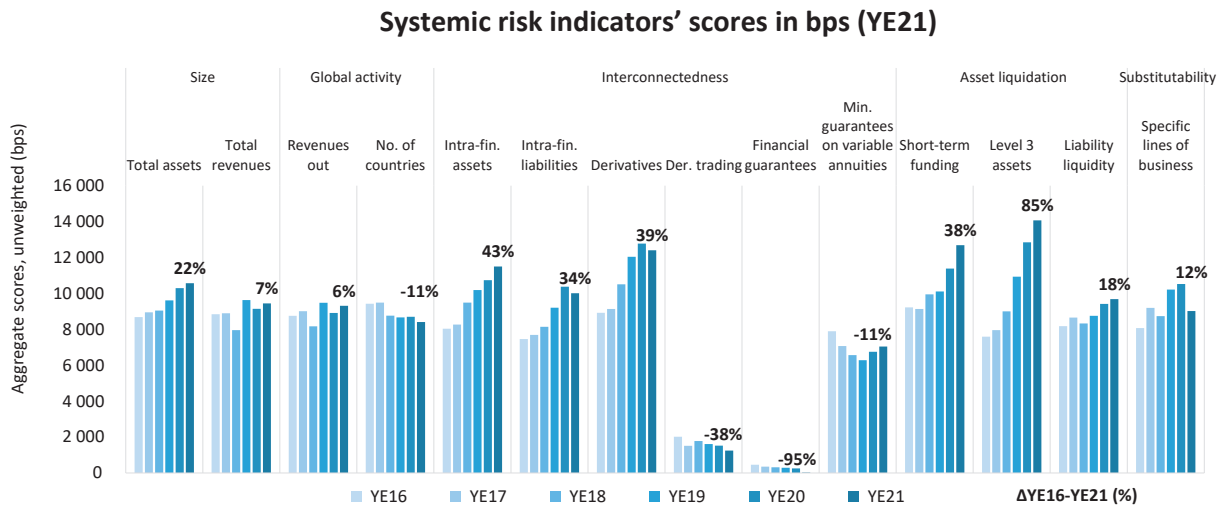
For the Insurer Pool, the aggregate systemic risk score has been increasing over the past five years (see Figure 20). This increase was primarily driven by the interconnectedness and asset liquidation categories, which account for most of the total systemic risk score and have risen by 21% and 44%, respectively.

FIGURE 20



Source: IAIS IIM 2022

FIGURE 21

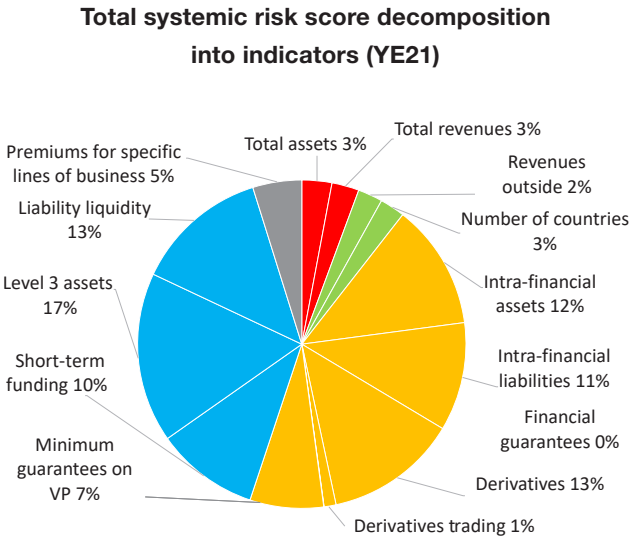


Source: IAIS IIM 2022

Taking a closer look at the systemic risk indicators in Figure 21, an increasing trend in most indicators can be observed, except for the indicators showing financial guarantees, derivatives trading, number of countries and minimum guarantees on variable products.

The largest growth was identified in the following indicators: level 3 assets (+85%), intra-financial assets (+43%), derivatives (+39%), short-term funding (+38%) and intra-financial liabilities (+34%). Figure 22 shows that the three indicators that account for most of the total systemic scores at year-end 2021 are for level 3 assets, liability liquidity and derivatives.

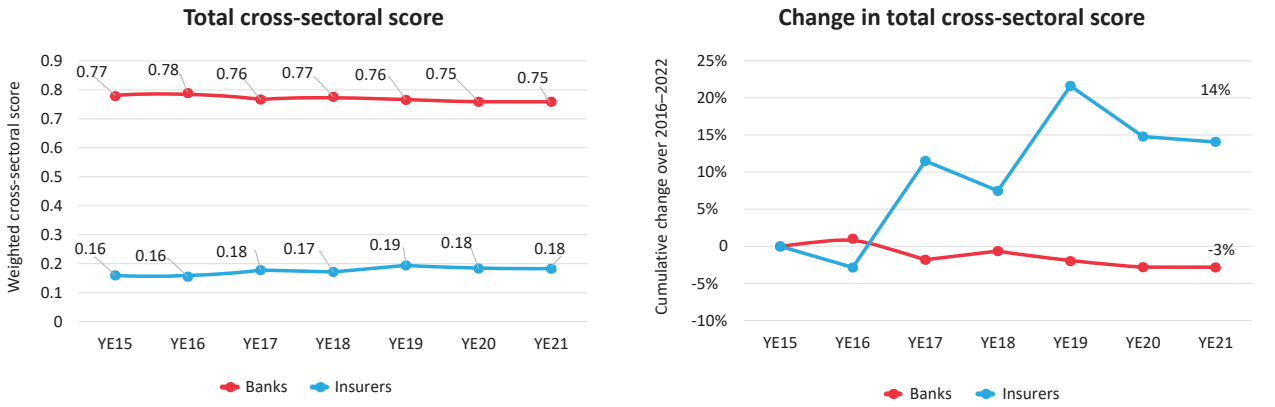
FIGURE 22



Source: IAIS IIM 2022

Cross-sectoral analysis is performed to compare the systemic footprint of insurers with banks using a systemic risk scoring methodology based on indicators that are common to both the Global Systemically Important Bank methodology developed by the Basel Committee on Banking Supervision (BCBS) and the IAIS' IIM methodology. The cross-sectoral methodology was developed by the joint IAIS-BCBS Task Force on Banks and Insurers in 2019.

FIGURE 23



Source: IAIS, BCBS 2022

The results in Figure 23 show that, keeping the pool of banks and insurers stable over time, the total cross-sectoral scores for banks are still significantly higher than for insurers. However, from year-end 2016 to year-end 2021, insurers' scores trended upwards (+14%), whereas banks' scores trended slightly downwards (-3%).[41]

5.3 THE IIM TECHNICAL DETAILS, DATA TEMPLATE AND TECHNICAL SPECIFICATIONS

In line with paragraph 108 of the GME document, the GIMAR also contains the following information:

- The aggregate totals (denominators) for each IIM methodology indicator: Annex 1
- Formulae used to calculate IIM indicator scores: Annex 2
- The absolute reference values used for the indicators and their monitoring: Annex 3
- IIM 2022 data template and technical specifications: Annex 4

[41] At the time of the analysis, the values for banking were not yet available for year-end 2021 – an estimate was derived from applying the average inflation rate over YE18 to YE21.

6. Global Reinsurance Market

6.1 INTRODUCTION: REINSURANCE DATA COLLECTION

From 2003 to 2019, the IAIS collected data on the global reinsurance market through its annual Global Reinsurance Market Survey (GRMS). The GRMS covered about 50 reinsurers based in nine jurisdictions: Bermuda, France, Germany, Japan, Luxembourg, Spain, Switzerland, the UK and the US. The participating reinsurers remained largely consistent throughout those years. The survey captured data from reinsurers with gross unaffiliated reinsurance premiums of more than $800 million or unaffiliated gross technical provisions of more than $2 billion. The GRMS was discontinued with the adoption of the Holistic Framework in 2019, when the IAIS decided to include the reinsurance data collection under the SWM as a part of the GME in order to improve its regional balance and data completeness.

Some of the nine original GRMS participating jurisdictions (labelled as "original GRMS scope" in charts) expanded the number of reporting insurers to capture more insurers and reinsurers providing reinsurance or retrocession services. For example, Bermuda expanded its coverage from three (re)insurers in 2018 to over 300 (re)insurers in 2019. Moreover, the UK expanded its coverage from one (re)insurer in 2020 to over 30 (re)insurers in 2021. As a result, the reinsurance data collection now to a greater extent covers the significant amount of reinsurance written by composite insurers that also provide direct (primary) insurance.

The impact of the expanded scope can be seen in Figure 25. Green bars show the increase in gross premiums included in the exercise due to the expanded scope (eg new jurisdictions or an increased scope in the GRMS jurisdictions). Blue bars plot developments in the original GRMS sample (including all nine jurisdictions and their scope used under the GRMS).[42]

In 2022, the IAIS continued the annual reinsurance data collection using the SWM reinsurance component as part of the GME. Reinsurance data was provided by 22 jurisdictions from the following regions:

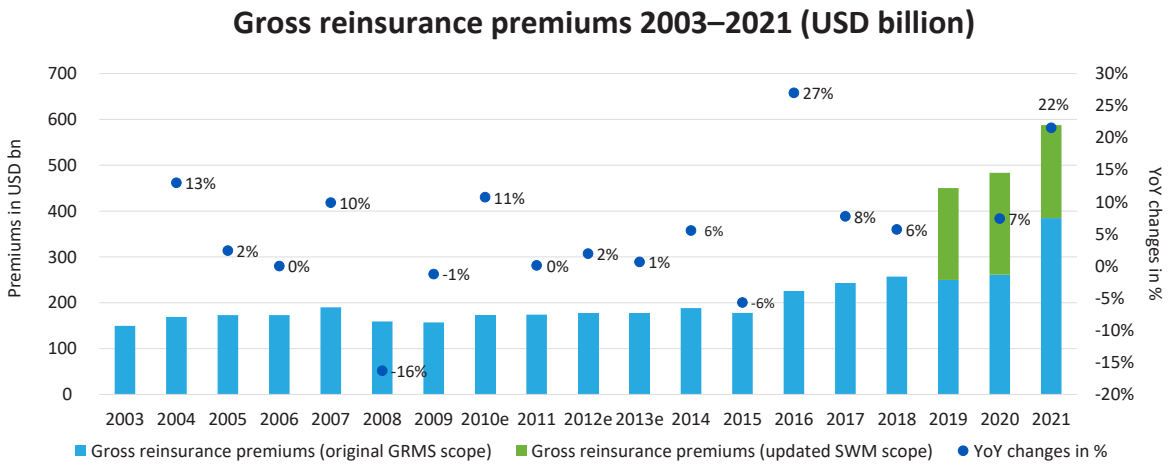
- Asia and Oceania: Australia; China; China, Hong Kong; Chinese Taipei; Japan; Malaysia and Singapore;
- Europe and Africa: Croatia, France, Germany, Luxembourg, the Netherlands, Portugal, Spain, South Africa, Switzerland and the UK; and
- Americas: Bermuda, Brazil, Canada, Mexico and the US.

[42] In 2019, the enhanced reinsurance data collection increased the amount of reinsurance gross written premiums covered by the analysis by more than 80%.

The SWM reinsurance component collects aggregate jurisdictional reinsurance data that cover all reinsurance entities in a jurisdiction on a solo entity level, as is the case in the other components of the SWM. In addition, for some jurisdictions, the component includes reinsurance data of primary insurers who conduct reinsurance activity, if this reinsurance activity can be separated from the primary insurance activity.

As can be seen in Figure 24, reported gross reinsurance premiums increased by more than 20% in 2021. This is substantially more than the growth of the global insurance market (covering both primary and reinsurance markets) in 2021, which is reported at 8% in the SWM 2022.

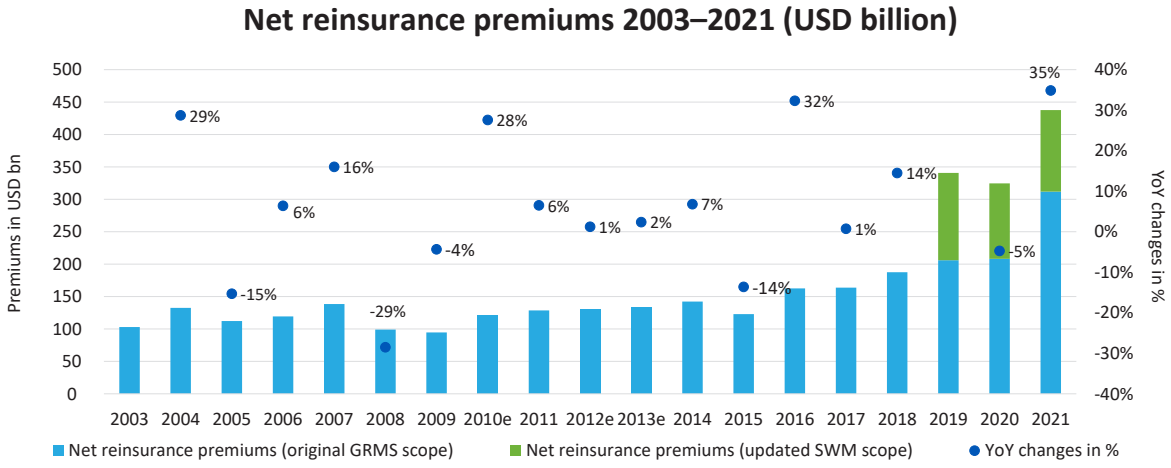
FIGURE 24



Source: IAIS SWM 2022

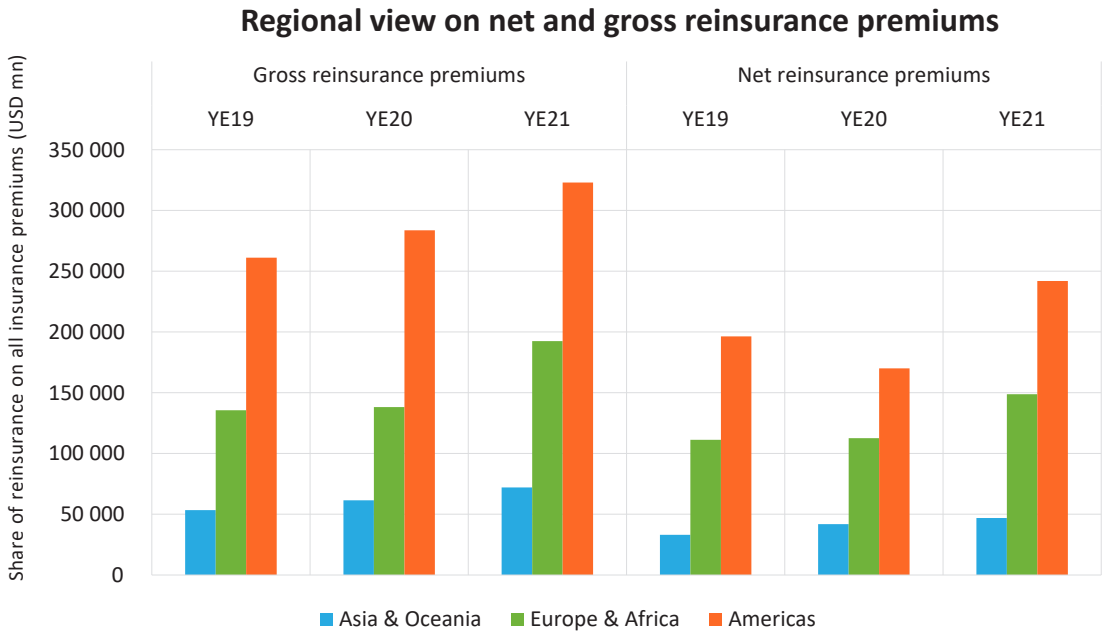
Figure 25 shows an increase in net reinsurance written premiums of 35% in 2021, following a decrease of 5% in 2020 (which can be explained by the Covid-19 pandemic and related lockdowns).

FIGURE 25



Source: IAIS SWM 2022

FIGURE 26



Source: IAIS SWM 2022

Figure 26 shows regional developments in gross and net reinsurance premiums. The 2020 decrease in net reinsurance premiums was driven by the Americas region. The strong growth in net and gross premiums in 2021 is explained by a combination of developments in the Americas, Europe and Africa.

As mentioned above, the 2021 data collection scope was adjusted and included more than 30 new UK (re)insurers. However, even if these new UK (re)insurers are excluded, gross reinsurance premiums increased by 16% and net premiums by 34% relative to the previous year, so the impact on net premiums was not significant.

The IAIS also monitors the amount of retrocession taking place in the reinsurance market. Retrocession is a contract between a retrocession provider (the reinsurer) and an original reinsurer (the reinsured) that assumed premiums in a contract with a primary insurer (the insured). Retrocession is placed to provide additional capacity to the original reinsurer or to reduce the original reinsurer's risk of loss. Globally, approximately 32% of all gross reinsurance premiums originate from retrocession contracts, based on the SWM data. There are material differences in the reported usage of retrocession[43] across regions:

- Asia and Oceania: 9.4%
- Europe and Africa: 14.2%
- Americas: 47.2%

The IAIS also monitors the size of the global reinsurance market as a share of the total global insurance market. For the purpose of this monitoring, the global insurance market estimate covers both primary (direct) and secondary (reinsurance) premiums, whereas the reinsurance market is a subset of the global insurance market (capturing the secondary premiums only).

[43] Expressed as a percentage of all gross reinsurance premiums that originate from retrocession contracts.

In 2021, the global gross insurance market covered by the SWM data was approximately $7.28 trillion, with approximately 45% located in the Americas. The size of the global gross reinsurance market covered by the SWM was approximately $588 billion, with approximately 55% located in the Americas. The usage of reinsurance differed across regions, with the lowest levels reported in Asia and Oceania (approximately 4% of gross premiums in 2021) and the highest levels reported in the Americas (approximately 10% of gross premiums in 2021). The reinsurance market grew substantially quicker than the global insurance market in terms of gross premiums in 2021 (21.5% [44] compared to 8%), based on the SWM data.

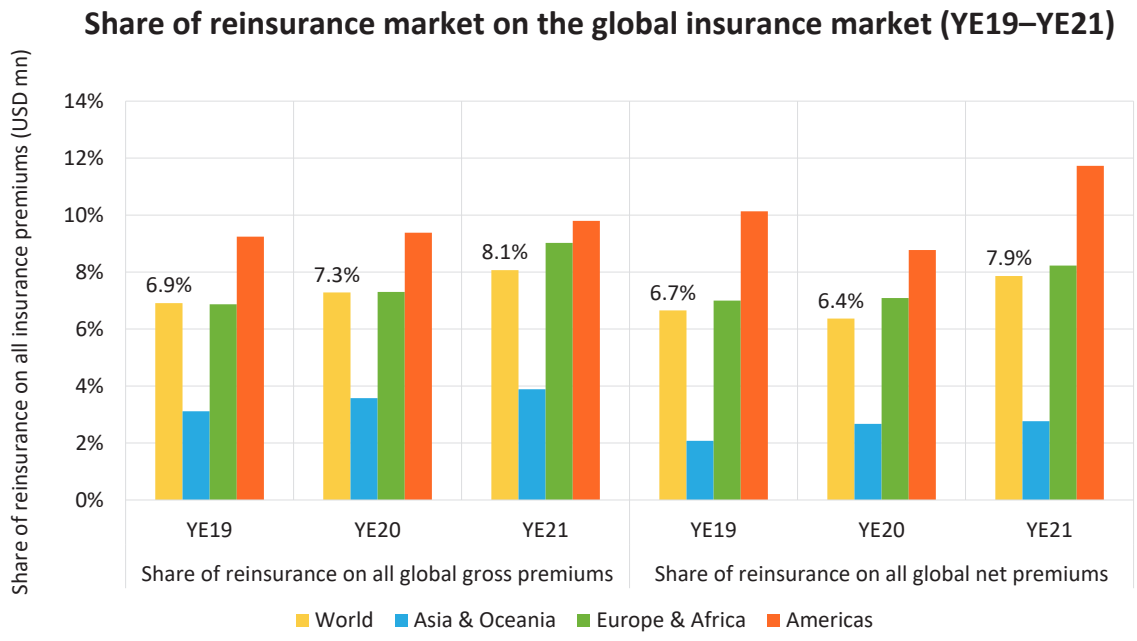
The global net insurance market covered by the SWM was approximately $5.57 trillion in 2021. The size of the global net reinsurance market covered by the SWM was approximately $438 billion. In total, reinsurance accounted for about 8% of all global net insurance premiums covered by the SWM (see Figure 27).

6.2 REINSURANCE PREMIUMS: LIFE AND NON-LIFE SECTORS, RETENTION

Retention ratios indicate the percentage of gross premiums that is not reinsured or retroceded and forms the ratio of net premiums to gross premiums. In 2021, the SWM data indicated that reinsurance retention ratios were comparable for the reinsurance market and the overall insurance market (74.5% for reinsurance compared to 76.4% for direct insurance). The highest reinsurance retention ratios were reported in Europe and Africa. Reinsurance retention ratios indicate the extent of retrocession, which represents secondary reinsurance (when a reinsurer buys insurance).

Figure 28 shows a decline in reinsurance retention ratios at year-end 2020 compared to year-end 2019, and a subsequent return to year-end 2018 values in 2021. The 2021 increase was mainly driven by retention increases in North America.

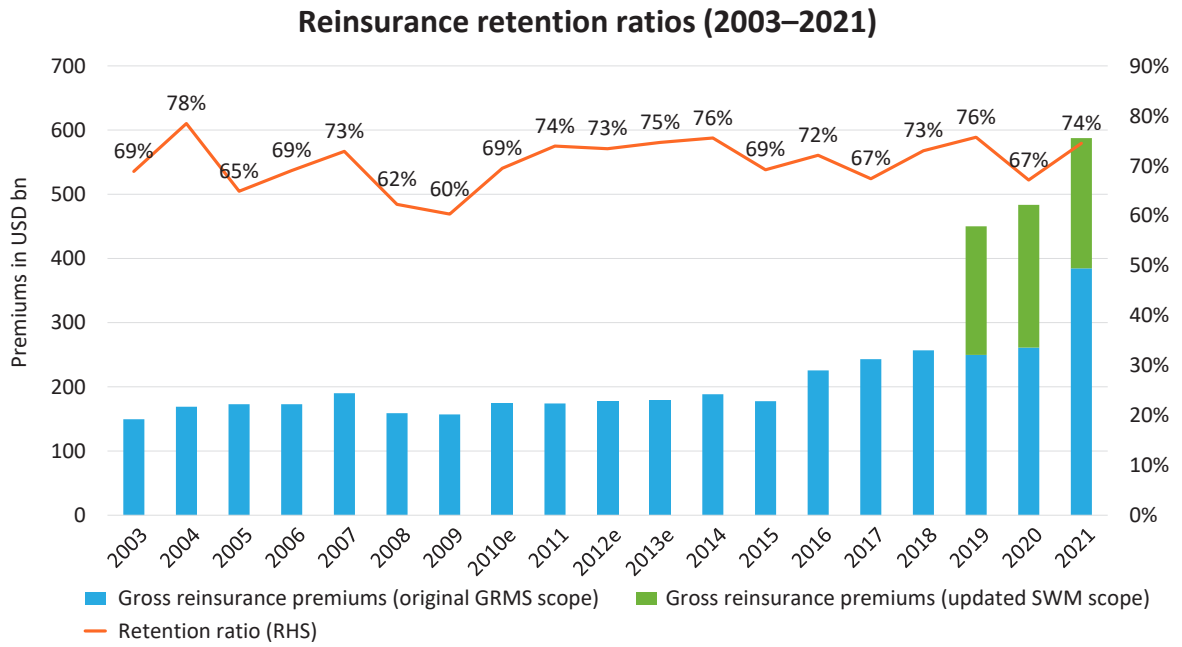
FIGURE 27



Source: IAIS SWM 2022

[44] This increase was partially driven by the sample changes. With a consistent sample, global gross reinsurance premiums increased by 15.5%.

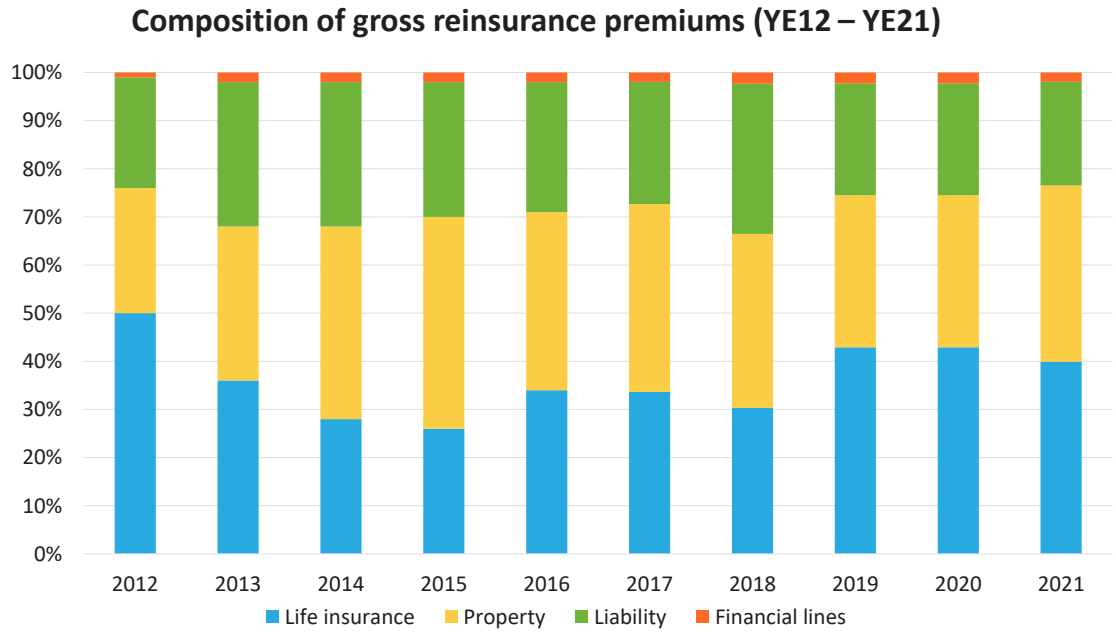
FIGURE 28



Source: IAIS SWM 2022

Figure 29 shows the structure of reinsurance gross written premiums over the last 10 years. Non-life premiums account for more than 60% of all reinsurance gross premiums in 2021, based on the SWM data. The share of life reinsurance premiums as reported in the SWM has been stable over the last three years. No significant jurisdictional developments for life reinsurance were identified.

FIGURE 29



Source: IAIS SWM 2022

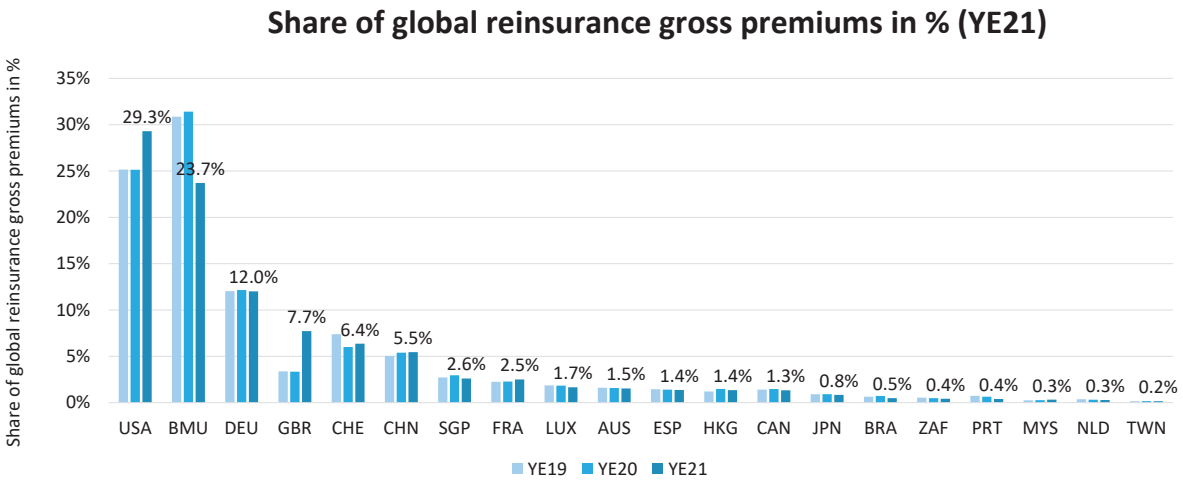
6.3 REGIONAL DISTRIBUTION OF THE REINSURANCE MARKET

6.3.1 Jurisdictional distribution

Figure 30 shows the jurisdictional distribution of reinsurance gross premiums in the last three years. Based on the SWM data collection, the five largest reinsurance markets are the US, Bermuda, Germany, the UK and Switzerland. However, the IAIS notes that the different reporting approaches applied in different jurisdictions (ie sample of companies approach compared to full population approach) may limit the comparability (eg the US, Germany, Switzerland, Japan, France, Luxembourg and Spain did not report the full population of their reinsurance markets, whereas other jurisdictions did).

A significant increase in US market share in 2021 was driven by increases in non-life and life premiums assumed in the US rather than any change in reporting scope. These increases are explained by the Covid-19 pandemic and its related effects.

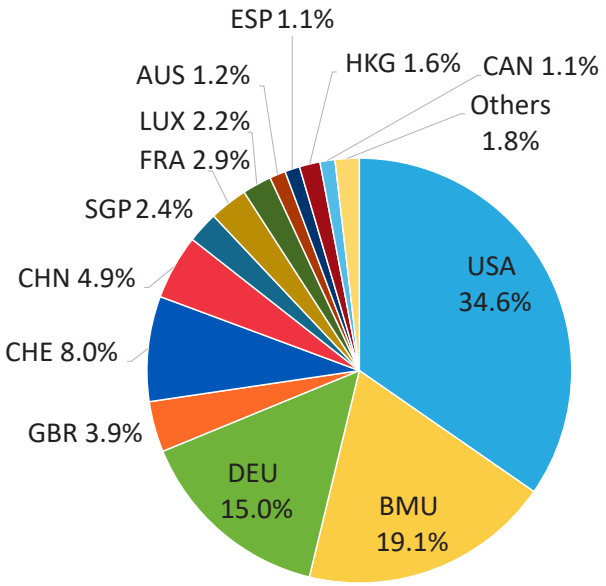
FIGURE 30



Source: IAIS SWM 2022

FIGURE 31

Share of reinsurance net premiums by jurisdiction in % (YE21)



Source: IAIS SWM 2022

The distribution of net reinsurance premiums in 2021 is shown in Figure 31. The US represents the largest reinsurance market, covering more than one third of all global net reinsurance premiums, based on the SWM data. Bermuda, Germany, Switzerland and China complete the top five, based on net premiums. The composition of the net reinsurance market is comparable with that of 2020.

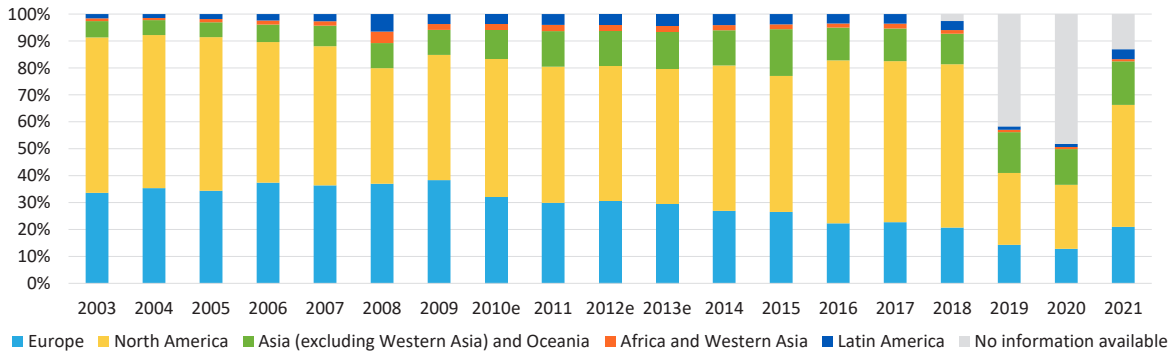
6.3.2 Regional premium transfers

Figure 32 presents the gross assumed reinsurance premiums according to the region of the ceding insurer. In 2018, the North America region accounted for the majority of reported gross reinsurance premiums. The grey bars for 2019, 2020 and 2021 relate to the change in scope of the data collection when some jurisdictions provided limited information on the origins of reinsurance premiums. In 2021, more information was available and, currently, the IAIS has insight into the origins of about 87% of assumed reinsurance premiums.

Based on the 2021 SWM data, the North America region accounts for more than 45% of the global reinsurance market, followed by the European region that accounts for more than 20% of the global reinsurance market.

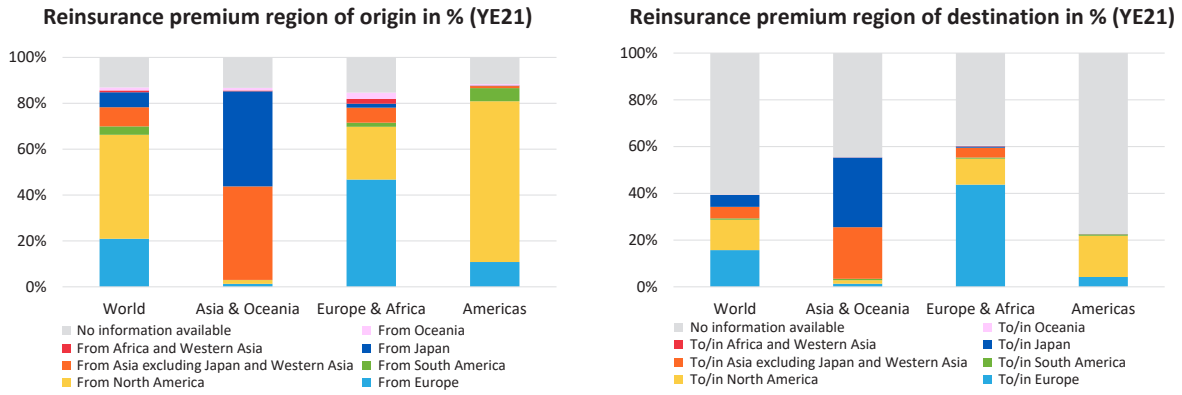
FIGURE 32

Gross reinsurance premiums by region of ceding entity in % (2003–2021)



Source: IAIS SWM 2022

FIGURE 33



Source: IAIS SWM 2022

Figure 33 shows the reinsurance risk transfers between regions, namely the origins and destinations of premiums by region. The grey bars indicate the percentage of premiums for which there is limited information available. A majority of premiums assumed in the Americas was assumed from either North or South America. For Asia and Oceania, limited cross-regional transfers are observed, as a vast majority of premiums was assumed from the same region. Reinsurers in Europe and Africa reported the highest degree of cross-regional activity, with approximately 50% of intra-regional premiums.

The information provided on the origins of premiums substantially improved in 2021 (in comparison to 2019 and 2020). The SWM data collection shows that there is limited information available on the destinations of premiums (ie where the premiums are ceded or retroceded to). The IAIS will continue to make refinements in the SWM 2023 data collection.

Based on the 2021 SWM data, the North America region accounts for more than 45% of the global reinsurance market, followed by the European region that accounts for more than 20% of the global reinsurance market.

6.4 REINSURANCE ASSET ALLOCATION

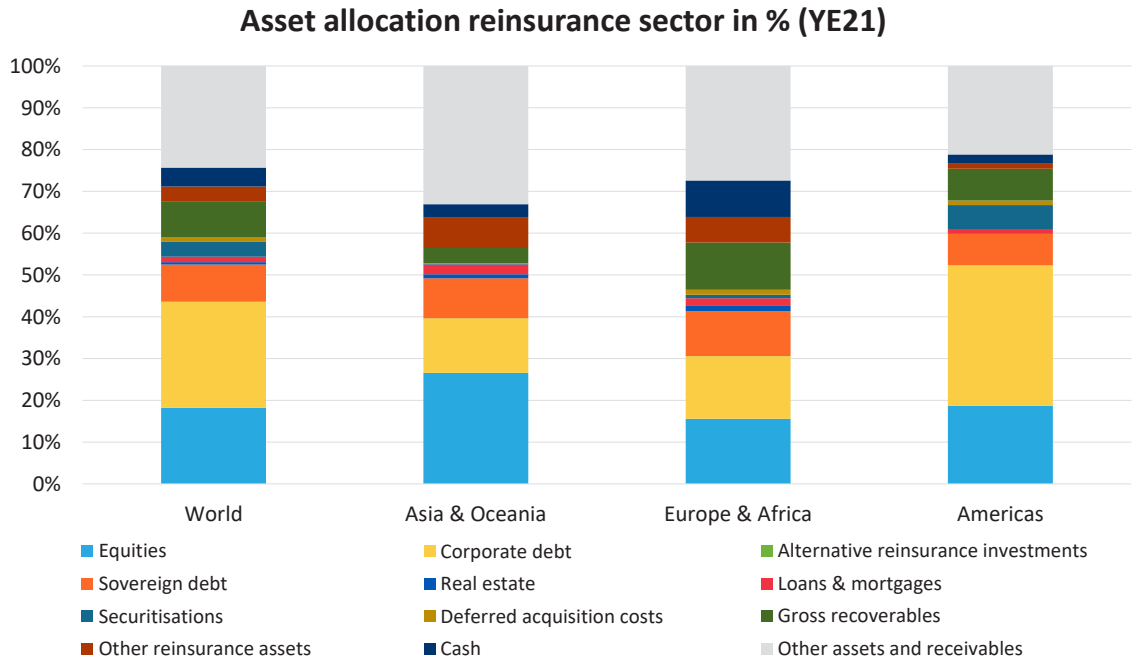
Figure 34 illustrates the split of reinsurers' asset allocations, by region, as reported in the SWM 2022. The distribution is roughly similar across regions. Key asset classes are equities and corporate bonds in all regions. The largest relative shares of sovereign debt securities are held in the Europe and Africa region. Overall, reinsurers hold limited investments in L&M and real estate. In comparison to the overall insurance market, the following main differences were identified, based on SWM reporting:

- Higher shares of equities (18% compared to 11%);
- Lower shares of sovereign debt (9% compared to 20%);
- Lower shares of L&M (1% compared to 6%); and
- Higher shares of recoverables (9% compared to 4%).

Comparing 2021 to 2020, the following main changes were identified:

- Slightly higher shares of securitisations in reinsurance (by 4%);
- Slightly higher shares of sovereign debt in reinsurance (by 2%); and
- Increase of other assets in the Europe and Africa region (by 22%).

FIGURE 34



Source: IAIS SWM 2022

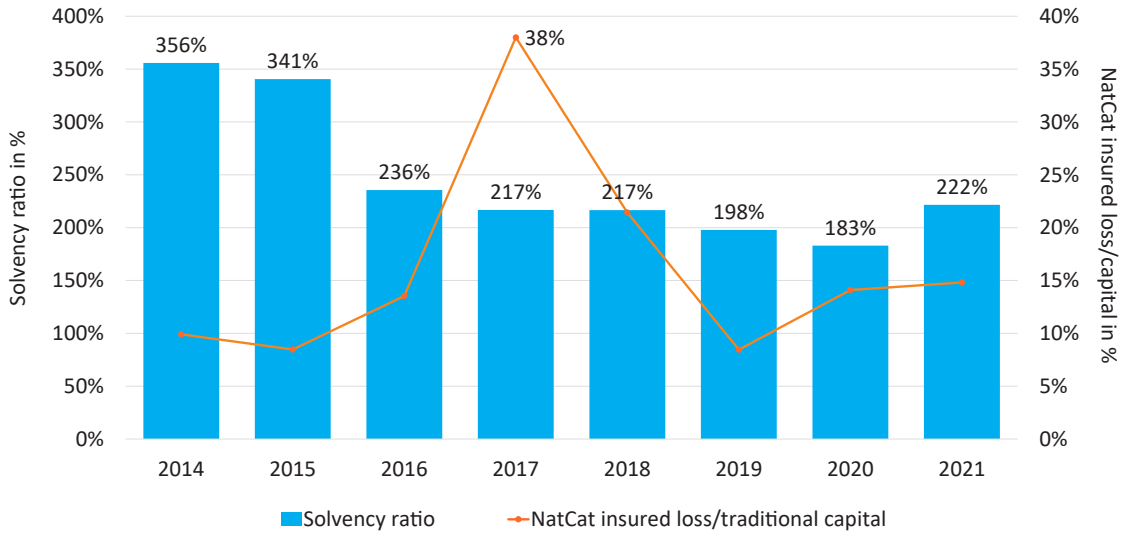
6.5 REINSURANCE SOLVENCY AND CAPITAL

Figure 35 shows that the average reinsurance solvency ratios [45] have been well above 100% since 2014. The decline in reinsurance solvency ratios in 2019–2020 was consistent with a decline in the general insurance sector solvency ratios over the same period. Likewise, the increase in the overall reinsurance solvency ratio in 2021 is aligned with developments in the overall insurance sector.

The figure also compares total available capital resources (excluding alternative capital instruments (ACIs)) with NatCat claims since 2014. For NatCat developments, data on insured losses were utilised from the Swiss Re Sigma database. The SWM data shows that even in 2017, which saw the highest amount of NatCat claims in the last eight years (due to three major F4/F5 [46] category hurricanes – Harvey, Maria and Irma), the claims reached a maximum of 38% of the total amount of traditional capital instruments (excluding any ACIs).

FIGURE 35

Reinsurance solvency ratios and interplay with NatCat claims in % (2014–2021)



Source: IAIS SWM 2022 and Swiss Re (Sigma database – all rights reserved)

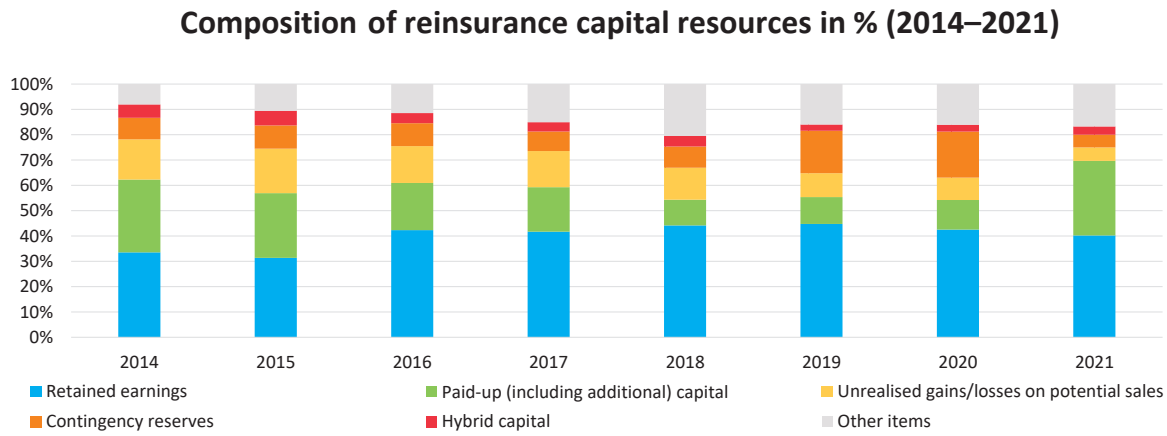
The time series in Figure 36 shows the changes in the composition of available capital up until 2020. The changes were mainly driven by a decreasing share of paid-up capital, whereas retained earnings and hybrid capital remained stable overall. Retained earnings remains the main source of available capital. The growing significance of contingency reserves in 2019 and 2020 was mainly driven by the change in the SWM reporting sample.

In 2021, two major capital-related developments were identified: a significant increase in paid-up capital (including additional paid-up capital) of reinsurance companies and a material decrease in contingency reserves. The growing amounts of paid-up capital were the main driver of the improving reinsurance solvency ratio in 2021.

[45] The solvency ratios are based on local solvency requirements and are simplified, which can limit regional comparability.

[46] Based on the Saffir–Simpson hurricane wind scale that classifies hurricanes exceeding the intensities of tropical depressions and tropical storms into five categories, distinguished by the intensities of their sustained winds.

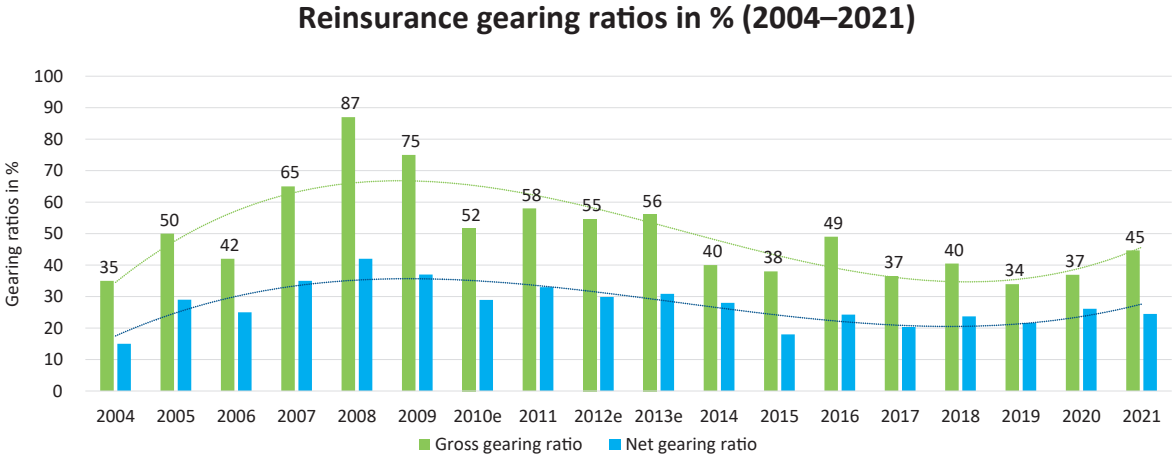
FIGURE 36



Source: IAIS SWM 2022

Figure 37 illustrates declining gearing ratios [47] between 2008 and 2019, meaning capital resources were growing more rapidly than recoverables from retrocession. Reported gearing ratios increased materially last year. The reporting sample excludes jurisdictions for which there is a lack of data on recoverables. The spread between the gross and net gearing ratio was on a declining trend until 2017, indicating an increased use of collateral for retrocession. Since 2017, this spread has remained relatively stable.

FIGURE 37



Source: IAIS SWM 2022

[47] Gross gearing ratio = gross recoverables from reinsurance and retrocessions/total capital resources
Net gearing ratio = net recoverables from reinsurance and retrocessions/total capital resources
Net recoverables means net of collateral and offsetting items.

6.6 ALTERNATIVE CAPITAL INSTRUMENTS

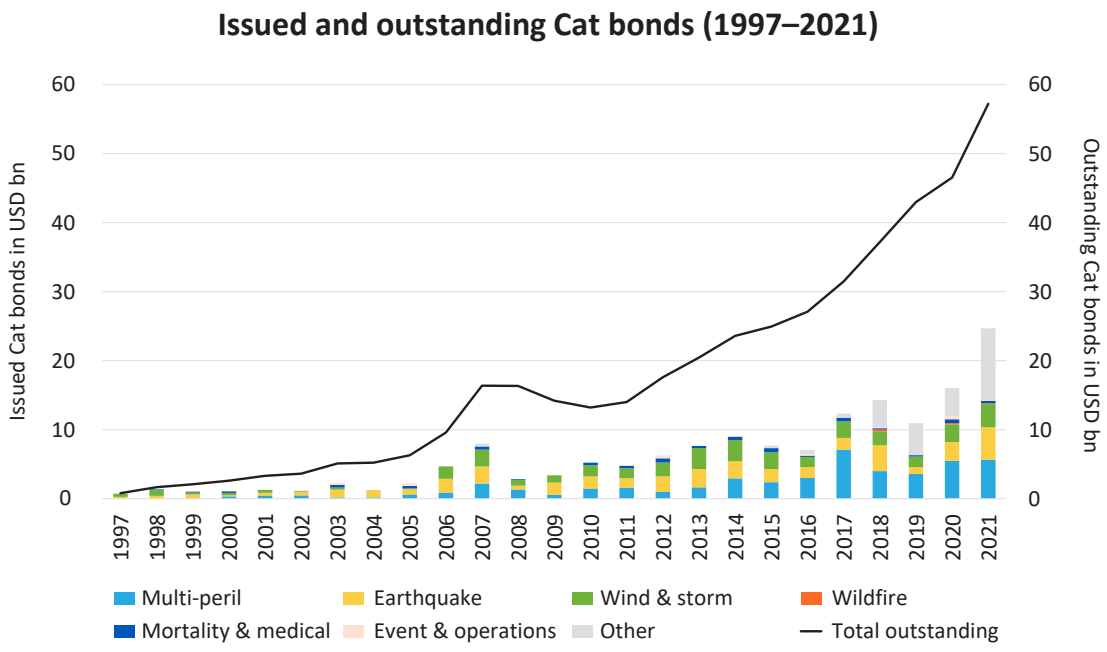
In addition to traditional capital instruments, various ACIs are used in the reinsurance sector to strengthen the capital positions of reinsurers and to transfer (part of) the risk to capital markets. The ACI category includes various insurance-linked securities that can be broadly defined as financial instruments where values are driven by insurance loss events.

Reinsurance ACIs include, for example:

- Issued catastrophe bonds (Cat bonds); [48]
- Organised or owned sidecars; [49]
- Issued industry loss warranties; [50] and
- Issued or organised collateralised reinsurance.[51]

Figure 38 shows the growing size of the Cat bond market since 1997. The main covered perils are mortgage, wind and storm, and earthquake. The materiality of the Cat bond market is approximately 6% to 8% of traditional capital instruments (since 2014).

FIGURE 38



Source: Artemis database

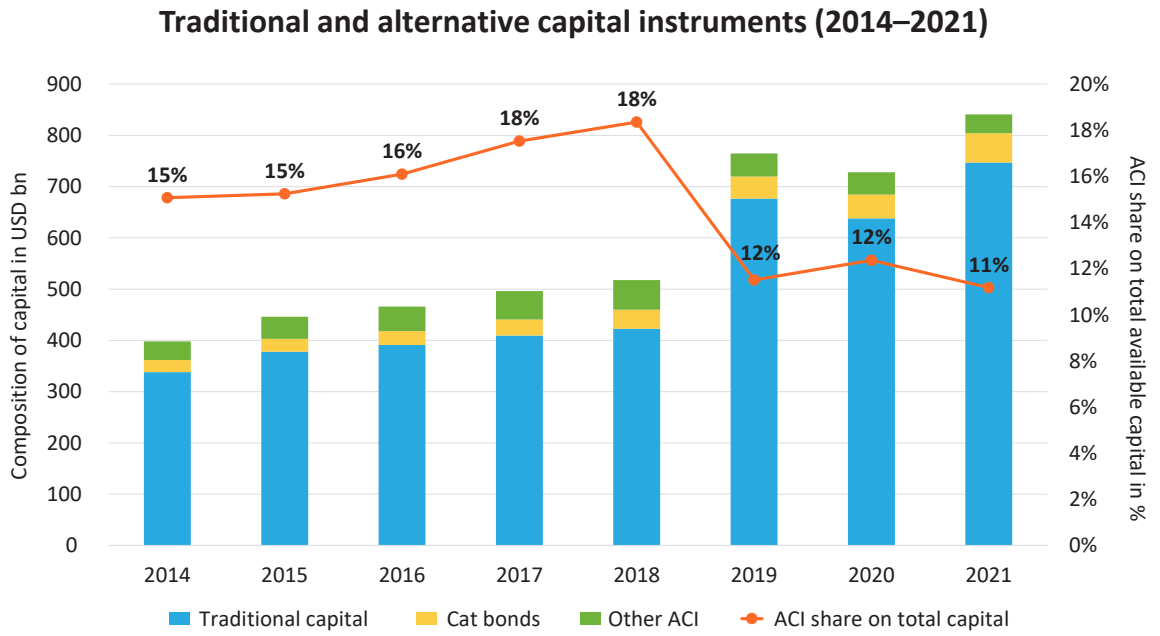
[48] A Cat bond is a high-yield debt instrument that is designed to raise money for (re)insurers in the event of a natural disaster.

[49] A reinsurance sidecar, sometimes referred to as a reinsurance sidecar vehicle or simply a sidecar, is a financial structure established to allow investors (often external or third-party) to take on the risk and benefit from the return of specific books of insurance or reinsurance business.

[50] Industry loss warranties are a type of reinsurance contract used in the insurance industry through which one party will purchase protection based on the total loss to the entire insurance industry arising from an event above a certain trigger level rather than their own losses.

[51] Collateralised reinsurance refers to a reinsurance contract or programme which is fully collateralised. The collateral is put up by investors or third-party capital providers to cover in full the potential claims that could arise from the reinsurance contract. Normally, the collateral posted is equal to the full reinsurance contract limit, minus the net premiums charged for the protection. Collateralised reinsurance allows insurance-linked securities funds, hedge funds, pension funds and unrated, third-party capitalised reinsurance vehicles to participate in major reinsurance programmes as the contracts they write are fully collateralised.

FIGURE 39



Source: IAIS SWM 2022, Guy Carpenter report and Artemis database

Figure 39 shows that on aggregate, at year-end 2021, ACI represents 11% to 12% of all available capital resources (ie combining traditional capital instruments such as paid-up capital or retained earnings with ACIs such as Cat bonds or sidecars). The decrease in this ratio between 2018 and 2019 was caused by the change in the reporting sample. Figure 39 also shows that Cat bonds are one of the main forms of ACIs. Collateralised reinsurance is reported to be the biggest class of ACIs. [52]

6.7 NATURAL CATASTROPHES AND THEIR COVERAGE

Reinsurance market developments are closely linked to natural catastrophes and their (re)insurance, in particular by sharing the burden of heavy NatCat claims.

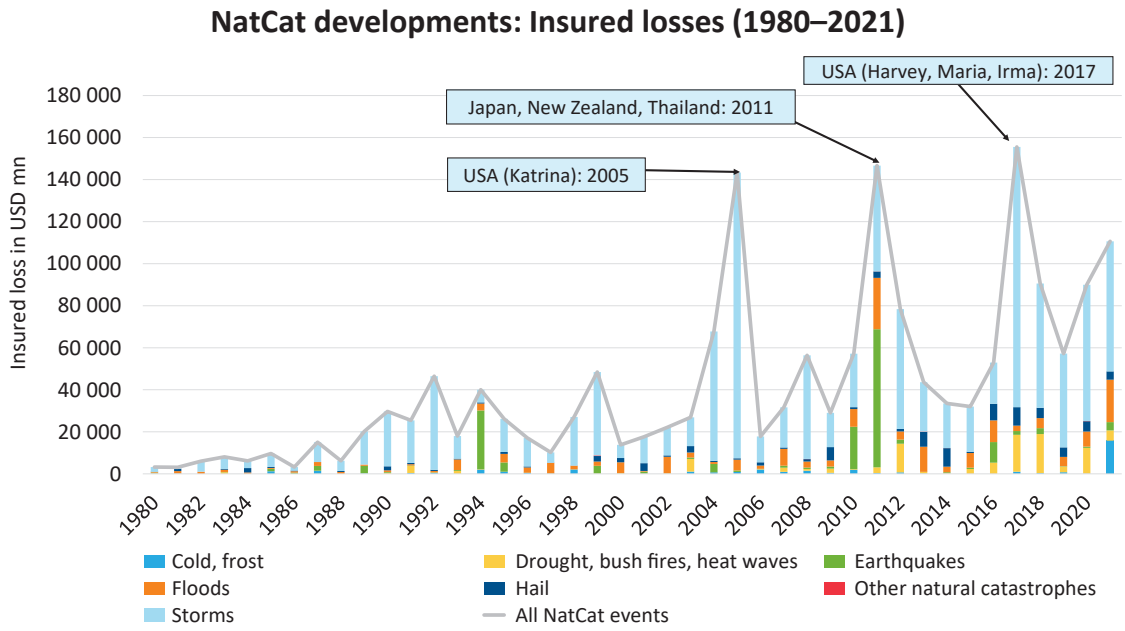
Figure 40 shows NatCat developments calculated as insured losses [53] and structured by perils. A growing trend is observed in these claims, with a few peak years. The three peaks represent the three most expensive years for (re)insurers:

- 2005: Hurricane Katrina in the United States;
- 2011: Severe tsunami in Japan, New Zealand earthquakes and flooding in Thailand; and
- 2017: Hurricanes Harvey, Maria and Irma in in the United States.

[52] AON – ILS Annual Report 2022.

[53] Using the Sigma database from Swiss Re.

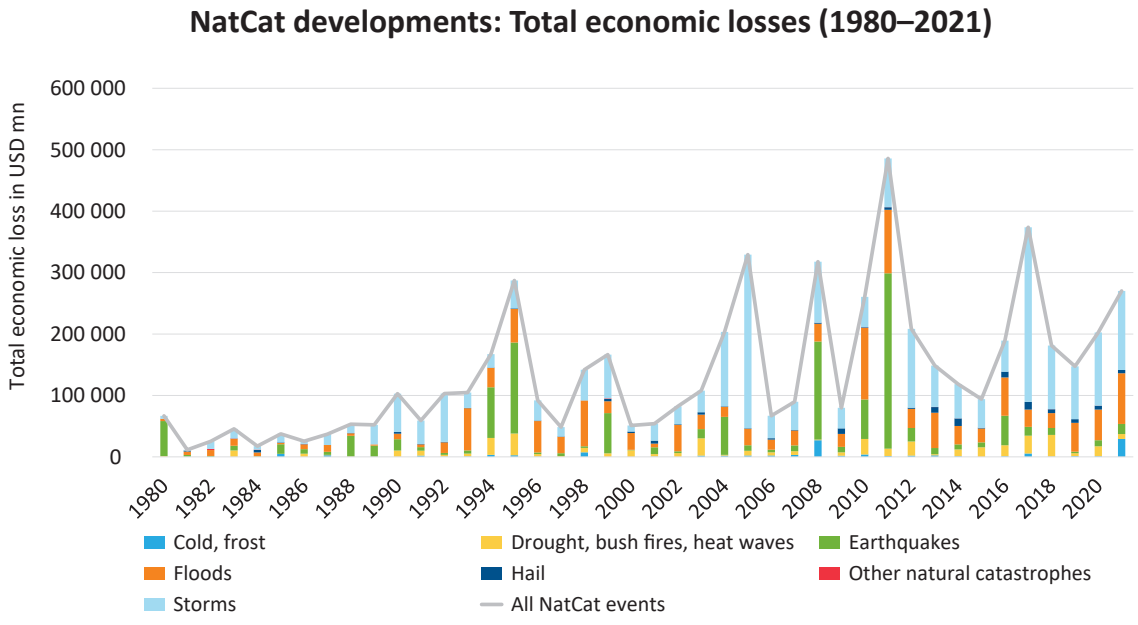
FIGURE 40



Source: Swiss Re (Sigma database – all rights reserved)

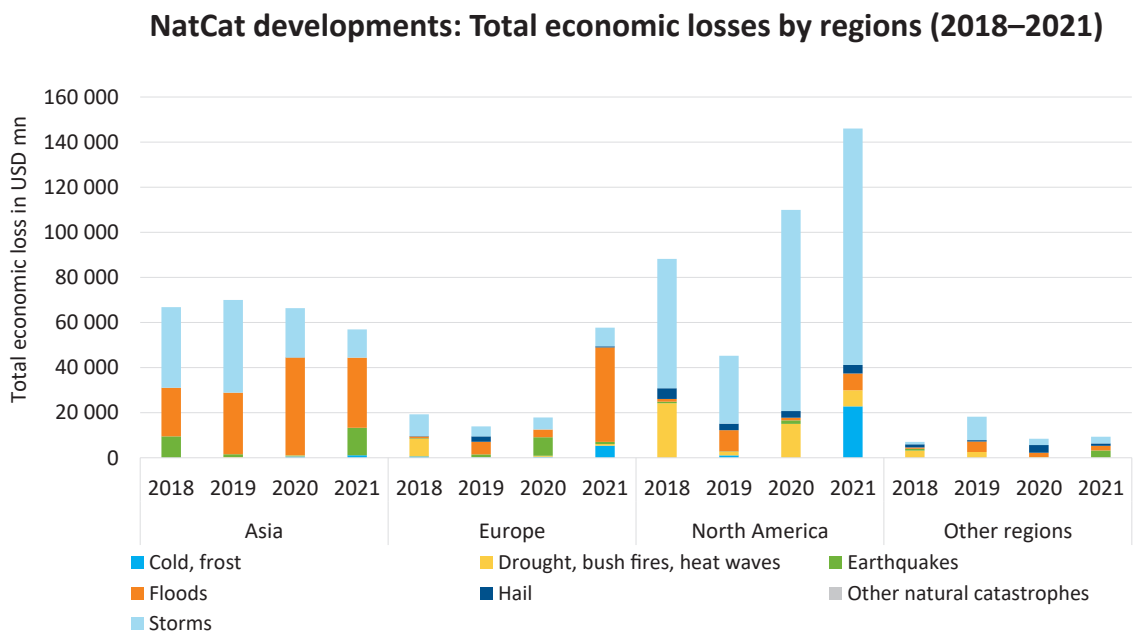
Additionally, with regards to NatCat monitoring, total economic losses may be considered. Figure 41 shows the development of these total losses. The difference between Figures 41 and 42 is explained by catastrophes in regions with lower levels of insurance protection.

FIGURE 41



Source: Swiss Re (Sigma database – all rights reserved)

FIGURE 42



Source: Swiss Re (Sigma database – all rights reserved)

Figure 42 provides more detailed insight into total economic losses that occurred in the last four years, segmented by region. The majority of losses were caused by storm events, in particular in North America and Asia. The second most costly peril was flooding, especially in Asia and Europe.

In the history of (re)insurance markets, 2021 was the fourth most expensive year following the three years mentioned above. In North America, Hurricane Ida in August caused the largest global insured loss from a single event in 2021, with a cost of $37 billion. In Europe, Storm Bernd caused around $13 billion in insured losses, mainly in Germany and Belgium. In Asia, total losses were somewhat lower than previous years, as, in contrast to the typical typhoon season, no typhoons made landfall in Japan. [54]

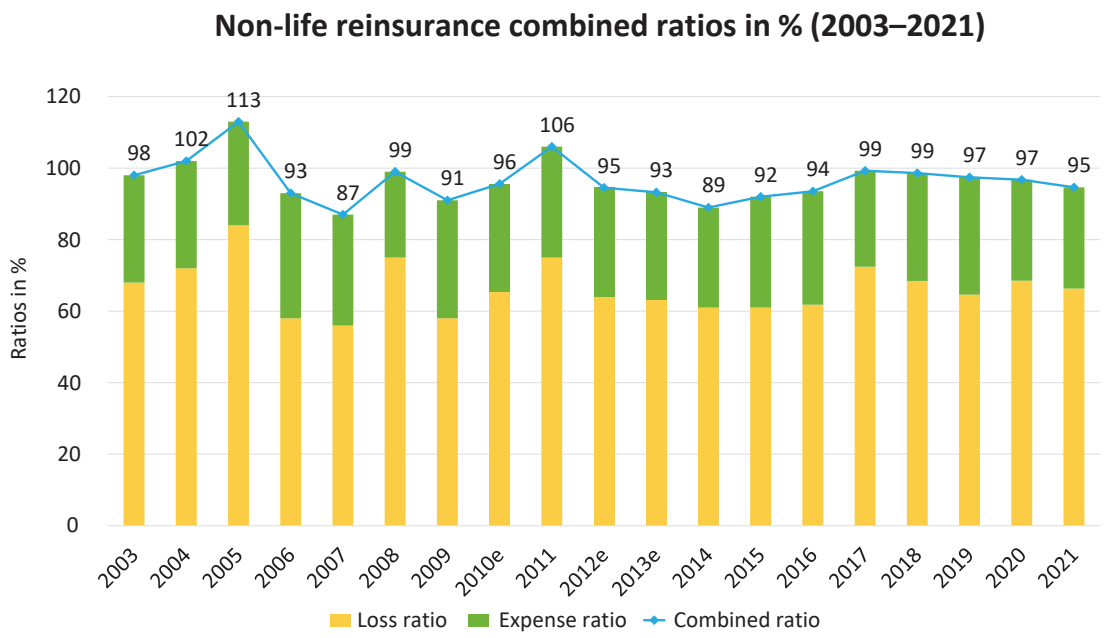
Reinsurance market analysis shows that the largest losses from natural catastrophes in 2021 were attributed to Hurricane Ida in North America in August and Storm Bernd in Europe in July.

[54] www.ajg.com/gallagherre/news-and-insights/2022/february/gallagher-re-natural-catastrophe/

6.8 REINSURANCE PROFITABILITY

Figure 43 shows a slight decrease since 2018 in the average combined ratio [55] of the global non-life reinsurance market covered by the SWM. Combined ratios remain below 100%, indicating profitable underwriting. The highest combined ratio was in 2005, driven by Hurricane Katrina in the US, which caused losses of $82 billion.[56] The second highest was in 2011, driven by the severe tsunami in Japan and flooding in Thailand.

FIGURE 43



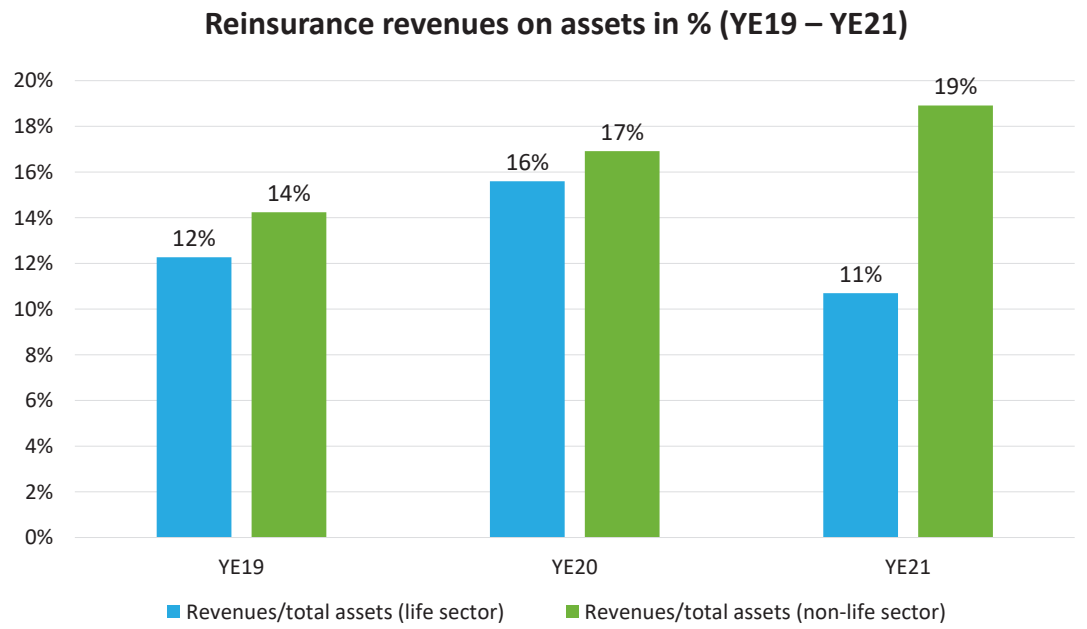
Source: IAIS SWM 2022

Combined ratios remain below 100% at year-end 2021, indicating profitable underwriting as net earned premiums exceed incurred claims and expenses.

[55] Combined ratio = loss + expense ratio
Loss ratio = incurred claims including loss adjustment expenses/net earned premiums
Expense ratio = other expenses than loss adjustment expenses/net earned premiums

[56] www.reinsurancene.ws/insurance-industry-losses-events-data/

FIGURE 44



Source: IAIS SWM 2022

Figure 44 shows that for both life and non-life reinsurance, the ratio of revenues to total assets reported in the SWM is between 11% and 19%, with some regional differences and higher levels for the non-life reinsurance sector. Non-life reinsurance sector profitability has grown over the last two years.

Annex 1: The aggregate totals (denominators) for each IIM methodology indicator

In line with paragraph 108 of the GME document, the aggregate totals for each indicator, the formulae used to calculate indicator scores, and the absolute reference values used for the indicators are disclosed in the following subsections.

Two types of denominators are calculated using no sample controls (meaning that all provided data are included after considering the data validation outcomes), as shown in Table 1:

1. **Denominators – absolute approach using fixed year-end 2018 data**: These are the denominators used to calculate the IIM systemic risk scores using the IIM absolute methodology from 2019.[57]

2. **Denominators – relative approach using year-end 2021 data**: These are the Insurer Pool aggregates at year-end 2021.

[57] As mentioned in paragraph 48 of the GME document, the base year for the IIM Absolute methodology is set using denominators from the data exercise year 2018.

TABLE 1: IIM 2022 DENOMINATORS

	Indicator ($ million, except indicator 4)	Denominators: absolute approach	Denominators: relative approach YE21
1	Total assets	18,027,170	22,030,073
2	Total revenues	2,517,164	2,815,523
3	Revenues outside of home country	901,436	904,888
4	Number of countries [58]	1,144	1,170
5	Intra-financial assets	3,861,401	5,210,241
6	Intra-financial liabilities	1,719,091	2,012,079
7	Derivatives	4,162,248	5,918,755
8	Derivatives trading	52,703	42,209
9	Financial guarantees	20,715	1,093
10A	Minimum guarantees on variable products – Denominator	1,374,140	1,331,081
10B	Minimum guarantees on variable products – Denominator	5,116,697	7,709,853
11	Short-term funding	671,449	938,293
12	Level 3 assets	541,186	987,570
13	Liability liquidity	4,838,260	5,739,205
14A	Premiums for specific lines of business	5,065	1,631
14B	Premiums for specific lines of business	3,274	3,395
14C	Premiums for specific lines of business	6,204	8,389
14D	Premiums for specific lines of business	22,539	28,880

[58] Number of countries where insurance groups operate with branches and/or subsidiaries outside of their respective home countries.

Annex 2: Formulae used to calculate IIM indicator scores

Formulae used to calculate indicator scores are listed in Table 2.

TABLE 2: IIM 2022 FORMULAE USED TO CALCULATE INDICATOR SCORES

	Indicator	Formulae [59]
1	Total assets	(9 – 9.3) / (Denominator 1)
2	Total revenues	Max(((15 – 15.3) / (Denominator 2)), 0)
3	Revenues outside of home country	16 / (Denominator 3)
4	Number of countries	17 / (Denominator 4)
5	Intra-financial assets	(20.2 + 21.2 + 22.1 – 22.1.P + 23.2 + 27.1.B + 27.1.C + 39.3.a.1 + 43.A + 40.B.1.a.1) / (Denominator 5)
6	Intra-financial liabilities	(24 – 24.3.b – 24.3.d – 24.4.b – 24.4.d + 24.D.c + 27 + 27.1.A + 39.4.a.1 + 40.B.2.a.1 + 43.B + 12.1.c) / (Denominator 6)
7	Derivatives	(40.A.1.a) / (Denominator 7)
8	Derivatives trading	41.1 / (Denominator 8)
9	Financial guarantees	(28.1.b) / (Denominator 9)
10	Minimum guarantees on variable products	Max(((31.1 + 31.2) / (Denominator 10A) – (40.A.H) / (Denominator 10B)), 0)
11	Short term funding	({25 + 24.3 + (42.4 – 42.4.d) + (43.4 – 43.4.d) + (40.B.1 – 40.B.1.a + 40.B.2 – 40.B.2.a) * √ (252 / 10)}) / (Denominator 11)
12	Level 3 assets	30.3 / (Denominator 12)
13	Liability liquidity	(100% * 33.A.1.1 + 50% * (33.A.1.2 + 33.A.2.1) + 25% * 33.A.2.2 + 2.5% * (33.A.1.3 + 33.A.3.1)) / (Denominator 13)
14	Premiums for specific lines of business	25% * (45.1 + 45.2) / (Denominator 14A) + 25% * (47.1 + 47.2) / (Denominator 14B) + 25% * (48.1 + 48.2) / (Denominator 14C) + 25% * (49.1 + 49.2) / (Denominator 14D)

[59] The number codes refer to the data rows in the IIM 2022 data template (see Annex 1).

Annex 3: The absolute reference values used for the indicators

According to paragraph 50 of the GME document, the absolute reference values (ARVs) for the indicators on financial guarantee and derivatives trading are fixed during IIM 2020–2022 and correspond to year-end 2017 values based on the following:

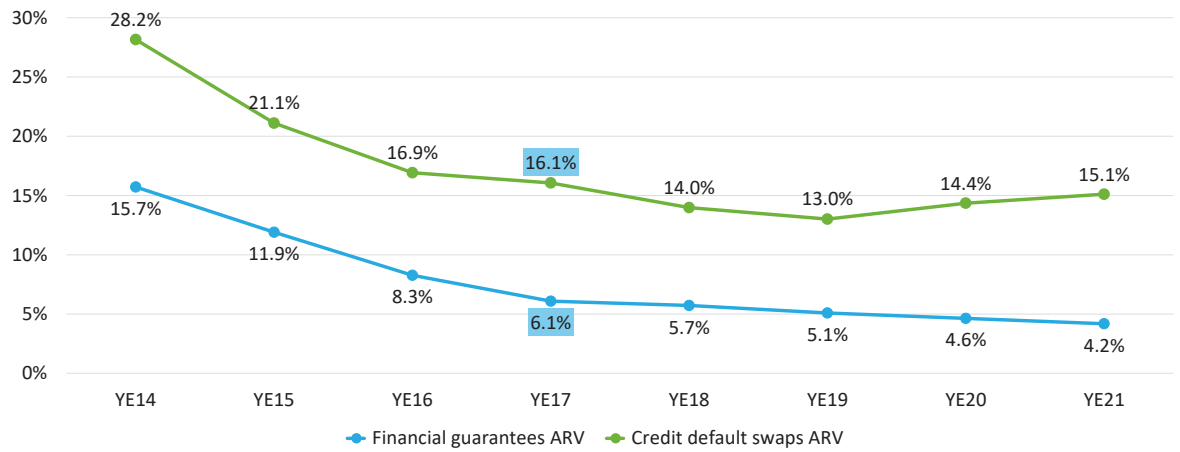
- Financial guarantee: This ARV is the ratio of the current par value of structured finance bonds (as of year-end 2017) insured relative to the average annual total from 2005 to 2007.

$$ARV_{FG} = \frac{\$67bn}{\frac{\$868bn+\$1,074bn+\$1,360bn}{3}} = 6.09\%$$

- Derivatives trading (credit default swap (CDS) or similar derivatives instrument protection sold): This ARV is the ratio of the total current global CDS market (as of year-end 2017) to the total global CDS market in 2007. The IAIS used the Bank for International Settlements (BIS) statistics on derivatives (D10.1, total CDS contracts – notional amounts outstanding) for the respective years to establish the reference value by using the data as an approximation for the global market for CDS.

$$ARV_{CDS} = \frac{\$9,354bn}{\$58,244bn} = 16.06\%$$

Absolute reference values (ARVs) (YE14 – YE21)



Source: IAIS IIM 2022

Annex 4: IIM 2022 data template and technical specifications

- The IIM 2022 data template and technical specifications can be found under the following link.

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