

GLOBAL INSURANCE MARKET REPORT

[GIMAR]

2021



IAIS

INTERNATIONAL ASSOCIATION OF
INSURANCE SUPERVISORS

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), member of the Standards Advisory Council of the International Accounting Standards Board (IASB), and 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.

About the GIMAR

This is the ninth issue of the Global Insurance Market Report (GIMAR).

This 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. In 2020, it was repurposed to assess the impact of Covid-19 on the sector.

Acronyms

CDS	Credit default swap
CLO	Collateralised loan obligation
GIMAR	Global Insurance Market Report
GME	Global Monitoring Exercise
GRMS	Global reinsurance market study
IAIS	International Association of Insurance Supervisors
IIM	Individual insurer monitoring
MA	Matching adjustment
MGVP	Minimum guarantees on variable products
M&A	Mergers and acquisitions
ORSA	Own risk and solvency assessment
PE	Private equity
P&C	Property and casualty
SIFI	Systematically important financial institution
SWM	Sector-wide monitoring

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

© International Association of Insurance Supervisors (IAIS) 2021.

All rights reserved. Brief excerpts may be reproduced or translated provided the source is stated.

Design and layout by Clarity Global Strategic Communications.

CONTENTS

EXECUTIVE SUMMARY	1
1 INTRODUCTION	4
2 GLOBAL INSURANCE MARKET DEVELOPMENTS	5
2.1 Solvency	5
2.1.1 Developments	5
2.1.2 Measures taken by insurers	6
2.1.3 Outlook	6
2.2 Profitability	7
2.2.1 Developments	7
2.2.2 Measures taken by insurers	7
2.2.3 Outlook	8
2.3 Liquidity	8
2.3.1 Developments	8
2.3.2 Measures taken by insurers	9
2.3.3 Outlook	9
2.4 Assets and liabilities	10
2.4.1 Developments	10
2.4.2 Measures taken by insurers	11
2.5 Macroprudential themes	11
2.5.1 Low interest rate environment and private equity ownership	11
2.5.2 Credit risk	14
2.5.3 Cyber risk	16
3 INDIVIDUAL INSURER MONITORING 2021	20
3.1 Introduction	20
3.2 The aggregate totals (denominators) for each IIM methodology indicator	20
3.3 Formulas used for calculation of indicator scores	21
3.4 The absolute reference values used for the indicators and their monitoring	22
3.5 The IIM data template and technical specifications used	23
3.6 An analysis of aggregate trends in the insurer pool	23
4 GLOBAL REINSURANCE MARKET	25
4.1 Introduction: reinsurance data collection	25
4.1.1 Link to former Global Reinsurance Market Survey (GRMS)	25
4.1.2 Interplays with the SWM	26
4.2 Reinsurance premiums	27
4.2.1 Life and non-life sector, retention, developments	27
4.3 Regional distribution of the reinsurance market	28
4.3.1 Regional distribution	28
4.3.2 Regional premium transfers	29
4.4 Reinsurance asset allocation	29
4.5 Reinsurance solvency and capital	31
4.6 Reinsurance profitability	32
Endnotes	34

EXECUTIVE SUMMARY

The 2021 Global Insurance Market Report (GIMAR) reports on the outcome of the [2021 Global Monitoring Exercise](#) (GME), the IAIS' risk assessment framework to monitor key risks and trends and to detect the potential build-up of systemic risk in the global insurance sector. This report also provides an update on the outcome of the Covid-19 targeted assessment based on year-end 2020 data.

The GME builds on data collected from approximately 60 of the largest international insurance groups (individual insurer monitoring or IIM) and aggregate sector-wide data from supervisors across the globe (sector-wide monitoring or SWM), covering over 90% of global written premiums. The GME helps ensure that the international coordination of supervisory responses to mitigate systemic risk is grounded in evidence.

Last year, the GME was repurposed to undertake a targeted assessment of the impact of Covid-19 on the global insurance sector, the results of which were published in the [2020 GIMAR Covid-19 edition](#). The targeted assessment of the impact of Covid-19 on the global insurance sector was updated this year and is based on year-end 2020 data. The data showed that in the face of significant market movements and disrupted economic activity, insurers remained operationally and financially resilient. Strong performance of financial markets in the second half of 2020, supported by unprecedented fiscal and monetary

stimuli, resulted in insurers' solvency ratios continuing to improve in Q4 2020 compared to Q2 2020. On aggregate, however, Q4 2020 solvency ratios were below the baseline of Q4 2019. Insurers' profitability continued to be under pressure, recovering slightly over the course of 2020. Liquidity positions remained stable overall. Insurers continued to implement several measures in response to the pandemic, such as reduced shareholder dividends and share buy-backs, increased solvency and liquidity monitoring, debt issuance and measures to support solvency and liquidity across different subsidiaries. For the non-life insurance sector, lower economic activity increased underwriting profits in some lines of business, such as motor, property and casualty. Other lines of business such as event cancellation, travel, business interruption and credit insurance continued to be negatively affected. The life insurance sector was mainly impacted by declining interest rates in most regions, resulting in reduced profits due to increasing liabilities and decreasing revenues, alongside heightened reinvestment risk.

This year, for the first time, the regular GME has been completed, covering two years of data.¹ The GME process is set out in the [GME document](#). The IAIS held collective discussions on the outcome of the GME, based on a defined scope of individual insurers and three sector-wide macroprudential themes, which were identified as supervisory priorities: (1) low yield environment and private equity (PE) ownership, (2) credit risk and (3) cyber risk.

STRONG PERFORMANCE OF FINANCIAL MARKETS IN THE SECOND HALF OF 2020, SUPPORTED BY UNPRECEDENTED FISCAL AND MONETARY STIMULI, RESULTED IN INSURERS' SOLVENCY RATIOS CONTINUING TO IMPROVE IN Q4 2020 COMPARED TO Q2 2020.

The outcome of the supervisory assessment and discussion on supervisory response with respect to individual insurers is not publicly disclosed for confidentiality reasons. The key points from the collective discussion on the three macroprudential themes include:

(1) Low interest rate environment and private equity (PE) ownership

The low interest rate environment, which has continued through the pandemic, has had direct effects on insurers (for example, strains on profitability) as well as potential indirect effects (for example, from associated management actions, such as a reach for yield or changing business models by altering life insurance product offerings, putting life portfolios in run-off, or transferring (parts of) the (re)insurance business). Relatedly, the PE industry's growing interest in acquiring life (re)insurance assets has been identified as an emerging trend in certain jurisdictions.

Supervisors note that it is a challenge for insurers to find assets with sufficient yield to match guaranteed life products and maintain the asset-liability matching without taking on a significantly higher level of risk.²

In terms of supervisory response, key supervisory elements consist of intensified supervisory dialogue, updating supervisory reporting, onsite reviews, quarterly monitoring exercises, stress testing and sensitivity analysis. Regulatory measures relate to requirements for additional interest rate reserving, capping the maximum guaranteed interest rate, installing policyholder surrender and/or tax penalties and changes to profit-sharing regulations, among others.

Regarding PE ownership, supervisors are continuing to fully evaluate the implications. Some acknowledge that PE-owned insurers may pose unique risks, such as increased exposures to private placements and private label asset-backed securities – notably collateralised loan obligations (CLOs). Others note that PE-ownership may also bring synergies, such as the investment expertise that PE-owned firms provide, and indicate that they have observed the same trend of lower credit quality purported to be associated with PE-owned firms occurring elsewhere across the insurance industry.

THREE MACROPRUDENTIAL THEMES IDENTIFIED AS SUPERVISORY PRIORITIES ARE (1) LOW YIELD ENVIRONMENT AND PRIVATE EQUITY OWNERSHIP, (2) CREDIT RISK AND (3) CYBER RISK.

(2) Credit risk

Sovereign and corporate debt reached historically high levels, which could lead to credit spreads widening, defaults and ratings (outlook) changes. Insurers, as substantial fixed-income investors, need to manage this risk in both their asset and liability portfolios.

Most of the insurers assessed are not taking excessive credit risks, with high average credit quality of assets. However, in the search for yield, some changes in insurers' asset allocations can be observed, leading to increases in credit risk.

In terms of supervisory measures, key supervisory areas of focus are intensified monitoring of investment portfolios and reinsurance positions, intensified onsite reviews and/or supervisory dialogues and reviews of risk management structures and processes. Some supervisors limited or halted dividend payments during the Covid-19 crisis, linked to uncertainty around credit risk.

In terms of regulatory measures, firstly, supervisors note that risk-based capital requirements (such as for spread and credit risk) discourage insurers from taking on excessive risk in asset portfolios. Secondly, some supervisors have put in place enhanced requirements regarding investments in their internal control procedures that they require of insurers. Thirdly, supervisors note that requirements for public disclosure regarding credit risk in insurers' solvency reports similarly discourage insurers from taking on excessive credit risk.

(3) Cyber risk

Supervisors are mindful of the increased frequency and severity of cyber-attacks during the Covid-19 pandemic (in terms of number, impact and sophistication).

Also, supervisors have noted that malware and phishing campaigns have become more common. The shift to remote working and increased digitalisation combined with the rise of new technologies has increased cyber risk, including for the insurance sector.

In response, supervisors are strengthening their own governance and building up expertise on cyber issues, for example by establishing cyber-resilience committees. Supervisors stress the need for insurers to maintain their cyber capabilities. Leveraging on- and off-site engagements with insurers, supervisors both enforce prudential standards and encourage insurers to continuously improve their cyber risk management.

In terms of regulation, some supervisors have established requirements to embed cyber defence policies within both risk management and governance. Further requirements relate to supervisory reporting on cyber incidents and cyber-security measurement and testing. Finally, some supervisors note that they encourage the financial institutions they supervise to buy cyber insurance coverage, which may help to mitigate cyber risks both from a financial and an operational resilience perspective.

Global reinsurance market

The GIMAR also includes an assessment of developments in the global reinsurance market. By embedding the data collection that formerly took place through the IAIS' annual Global Reinsurance Market Survey into the SWM, the IAIS has enhanced the global coverage and representativeness of its analysis, adding 13 jurisdictions to the scope of the data collection. The results of the reinsurance data collection indicate:

- The size of the global net reinsurance market covered by the SWM was approximately \$312 billion in 2020, accounting for approximately 7% of all global net insurance premiums. Non-life reinsurance premiums account for more than 50% of all global reinsurance gross premiums.
- From a regional perspective, the five largest reinsurance markets based on the SWM are Bermuda, the United States, Germany, Switzerland and China. In terms of reinsurance gross premiums based on SWM data, Bermuda was the largest reinsurance market in the world at year-end 2020. From the net reinsurance premiums perspective, the United States was the largest reinsurance market.

- Reinsurance asset holdings mainly consist of equities and corporate bonds. The share of debt investments held by reinsurers has remained relatively stable over time, while there has been a slight decrease in the relative share of equity securities.
- Reinsurance solvency ratios have been on a decreasing trend since 2014; however, the average solvency ratio is still well above 100%.
- Retained earnings remain the main source of available capital. Changes in available capital are mainly driven by a decreasing share of paid-up capital, whereas the relative levels of retained earnings and hybrid capital remained stable. Gearing ratios have been declining since 2008, meaning that capital resources are growing more rapidly than recoverables from retrocession. The spread between the gross and net gearing ratio is declining, indicating that there is an increased use of collateral for retrocession.
- Non-life reinsurance profitability is slightly up; in 2019–2020 there was a slight decrease in the average combined ratio of the global non-life reinsurance market. Combined ratios remain below 100%, indicating profitable underwriting. For both life and non-life reinsurance, the ratio of revenues to total assets, is about 15%, with some regional differences.

2. GLOBAL INSURANCE MARKET DEVELOPMENTS

This section outlines the key global insurance market developments, covering solvency (Section 2.1), profitability (Section 2.2), liquidity (Section 2.3), assets and liabilities (Section 2.4) and macroprudential themes (Section 2.5).

2.1 SOLVENCY

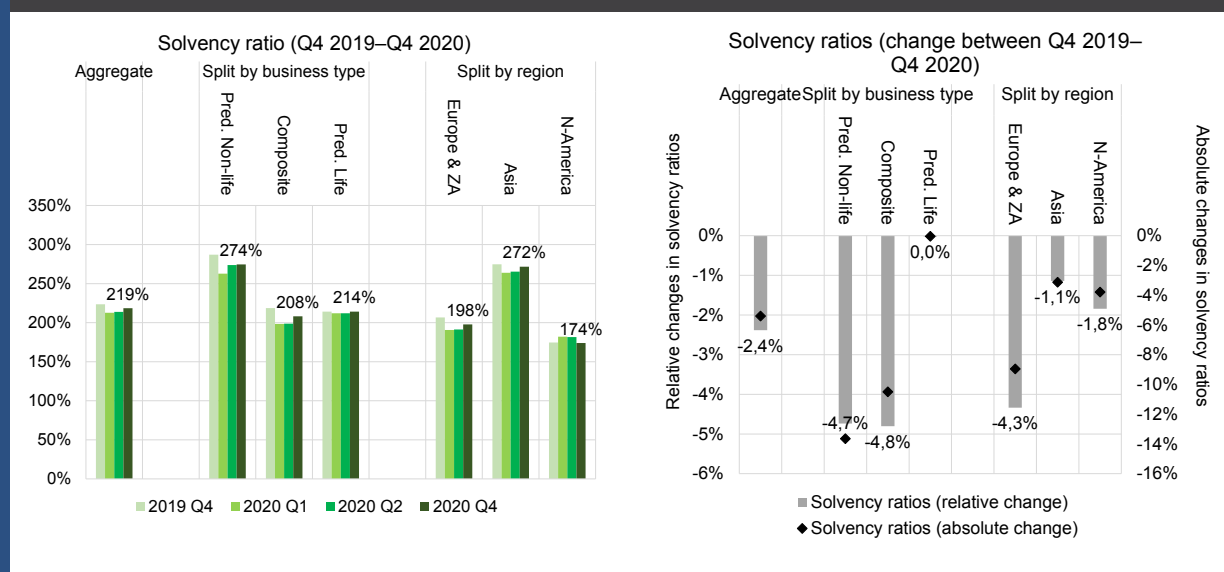
2.1.1 Developments

On aggregate, insurers' solvency ratios as reported in the IIM continued to improve in Q4 2020 compared to Q2 2020, as a result of strong performance of financial markets over the second half of 2020, supported by unprecedented fiscal and monetary stimuli.⁵

As shown in Figure 1, on aggregate, solvency ratios continued to improve at Q4 2020 compared to Q2 2020, approaching 2019 Q4 levels. All reported solvency ratios were above 100%, indicating that capital resources are above capital requirements, with varying developments across participating insurers.⁶ However, a majority of insurers still experienced lower solvency ratios at year-end 2020 compared to year-end 2019.

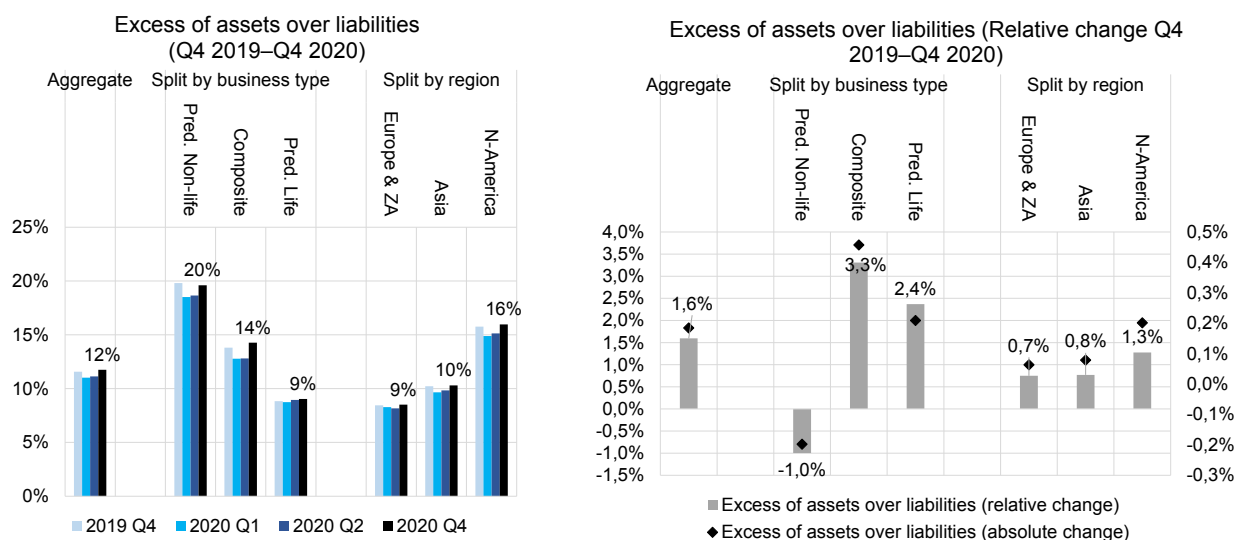
Figure 2 illustrates that, on aggregate, the excess of assets over liabilities ratio continued to improve in Q4 2020 compared to Q2 2020, exceeding Q4 2019 levels.

Figure 1: Solvency ratios (per cent)



Source: IIM Covid-19 Q4 2020

Figure 2: Excess of assets over liabilities (per cent)



Source: IIM Covid-19 Q4 2020

2.1.2 Measures taken by insurers

Insurers continued to access capital markets over the second half of 2020 (such as through debt issuance). Lower interest rates resulted in a reduction of future coupon payments for floating rate instruments. Some insurers secured funding out of precaution given the unpredictability of the current environment (for example by pre-financing maturing debt earlier than planned). Others issued debt to fund various corporate and M&A activities, also considering the favourable terms during the period.

Several insurers continued to halt or reduce shareholder dividends and share buy-backs, under supervisory guidance in certain regions. Others continued dividend pay-outs based on strong capital positions.

Asset-side measures to improve capital positions have continued, including de-risking over the second half of 2020 and/or making improvements to asset-liability duration matching. Liability-side measures to improve capital positions mainly include reduced sales of capital-intensive products to conserve capital. Some insurers performed further shifts in intra-group capital allocation to strengthen subsidiaries' capital positions.

Other measures taken in the second half of the year match those taken in the first half of 2020, including continued dynamic hedging, increased solvency monitoring, stress testing, and optimising capital allocation through reinsurance.

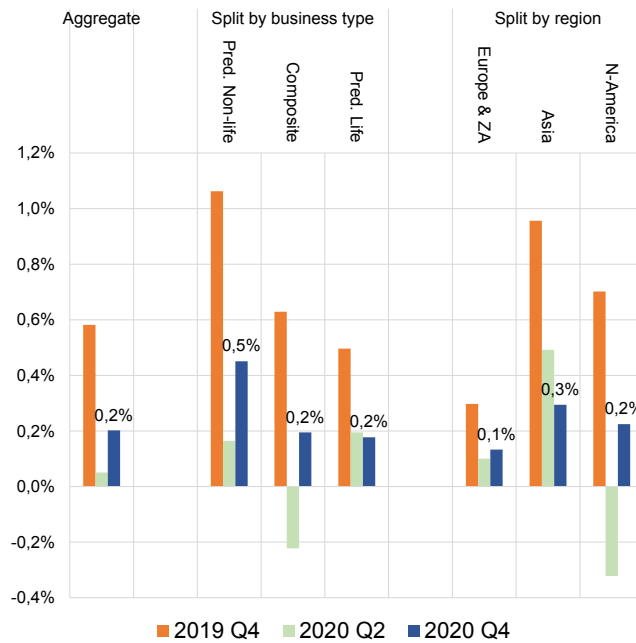
2.1.3 Outlook

In terms of outlook, insurers expect solvency positions to remain stable, noting, however, the high degree of uncertainty as solvency depends on the future path of financial markets and interest rates, which in turn depends on further government support measures and developments with respect to the Covid-19 pandemic.

Insurers note that financial markets over the second half of 2020 already reflected economic growth expectations, based also on successful vaccination campaigns that may be unevenly distributed across countries (and hence the heterogeneous impact across subsidiaries in different countries).

Certain insurers began to resume share buy-backs as the economic outlook improves. Some insurers expect further deterioration in credit quality in certain asset segments (such as bond portfolios), which would impact their solvency positions.

Figure 3: Return on assets (per cent)



Source: IIM Covid-19 Q4 2020

2.2 PROFITABILITY

2.2.1 Developments

Insurers' profitability continued to be under pressure in the second half of 2020, recovering slightly over time.

Lower interest rates in most regions resulted in declining profitability due to increasing liabilities and decreasing interest rate revenues.

Net operating results were impacted positively by cost savings resulting from new ways of working, such as extended remote working, reduced travel expenses and reduced expenses for events. However, profitability was also negatively impacted by increases in other expenses, such as IT.

On the asset side, lower dividend income (notably from corporate bonds) and decreases and/or impairments in equities were reported. On the liability side, the main impact was on claims, impacting underwriting profits to a varying extent. Premiums were mostly impacted through lower new business volumes (such as due to lockdown measures including travel restrictions).

To varying degrees depending on the mix of business lines, non-life insurers experienced

increasing underwriting profits due to decreases in motor and P&C insurance claims, offset by decreasing profits due to losses from event and travel cancellation, business interruption, and credit insurance business. For life insurance, the overall impact on profitability depends on the extent of an insurer's exposure to mortality or longevity risk. For life and unit-linked business, profitability was mainly impacted through lower asset-based fees, recovering over the second half of 2020.

A substantial decrease in return on assets occurred during 2020 across all regions and businesses (see Figure 3). The decrease mainly occurred over the first half of 2020 (sometimes reaching negative returns), recovering partially over the second half of the year.

2.2.2 Measures taken by insurers

In order to strengthen profitability, insurers are undergoing a strong shift to digitalisation. For instance, digital technologies are being deployed to allow for face-to-face client/policyholder meetings.

In 2020, insurers undertook continued efforts to reduce expenses, such as reprioritising projects, reducing marketing and consulting expenses and

limiting or delaying salary increases or variable remunerations. Travel expenses also decreased due to reduced travel.

To enhance profitability, certain insurers decreased discretionary profit and dividend payments to policyholders (for example, for participating policies). Some insurers have undertaken commercial initiatives to retain policyholders (such as by extending policy loans to policyholders in order to help customers in financial difficulty, by granting fee/premium waivers and extending grace periods to mitigate surrenders, or by allowing additional coverage for Covid-19 related claims).

Finally, insurers note that continued hedging of costs, mainly to stabilise solvency ratios, will affect profitability.

2.2.3 Outlook for profitability

Several insurers indicate a high degree of uncertainty about profitability due to the ongoing Covid-19 pandemic. Insurers continue to monitor fiscal and monetary stimuli and vaccination/pandemic prospects, given the impact on financial markets and interest rate volatility. Future government measures to contain the pandemic may also impact new business sales.

Looking ahead, insurers expect continued strains on profitability due to a variety of factors, including the risk of further credit downgrades and impairments, exchange rate movements that

affect certain subsidiaries, very low interest rates in certain markets, increases in non-performing debt in lending businesses, higher claims in certain lines of business (such as business interruption insurance) and fixed distribution costs relative to lower expected new business volumes. Positive impacts on profitability are expected from economic recovery with the easing of lockdown measures.

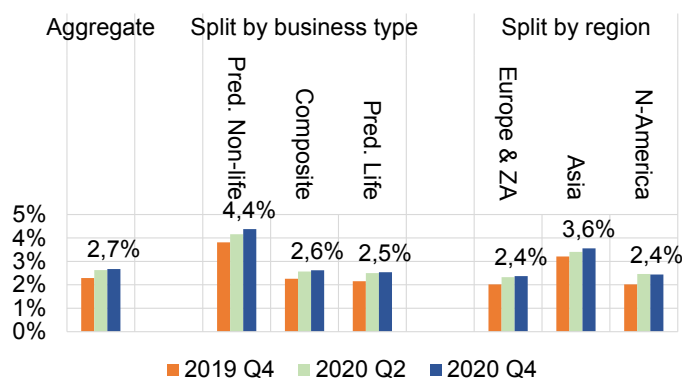
2.3 LIQUIDITY

2.3.1 Developments

Overall, insurers report that liquidity positions have remained stable in 2020. The impact of Covid-19 on the liquidity of insurers' investments was moderated by significant central bank interventions. Some insurers observed that liquidity positions were affected by the impact of Covid-19 on some lines of business, such as through premium deferrals and higher claims. However, the overall impact on liabilities is assessed to be limited, due to the offsetting effect of lower claims in other business lines.

The group-level liquidity positions of some insurers were impacted, for example due to financing subsidiaries as part of capital management policies or from providing for subsidiaries' liquidity guarantees. Some insurers note that liquidity positions were affected by central clearing collateral posting requirements, as a result of changes in financial markets (notably changes to interest rates).

Figure 4: Share of cash on assets (per cent)



Source: IIM Covid-19 Q4 2020

Insurers' cash positions, as a percentage of total assets, generally increased over 2020 (see Figure 4). A comparable share of cash in balance sheets can be observed across business types (2.6%–2.9%).

2.3.2 Measures taken by insurers

In 2020, insurers strengthened liquidity buffers through a variety of measures, such as increasing cash buffers, extending terms of repo transactions, raising short-term funds through cash-secured bond lending, replacing less liquid assets with more liquid ones, issuing additional debt and postponing share buy-backs and dividend distributions.

Insurers also enhanced liquidity contingency planning, ensuring that liquidity sources are accessible as back-up facilities, such as (central) bank credit lines, access to capital markets (debt issuance) and fund facility agreements. Derivatives positions were closely managed to secure collateral positions. For insurers that provided capital support to subsidiaries, cash upstreams from local entities were closely monitored, and/or intra-group dividend policies were updated.

2.3.3 Outlook

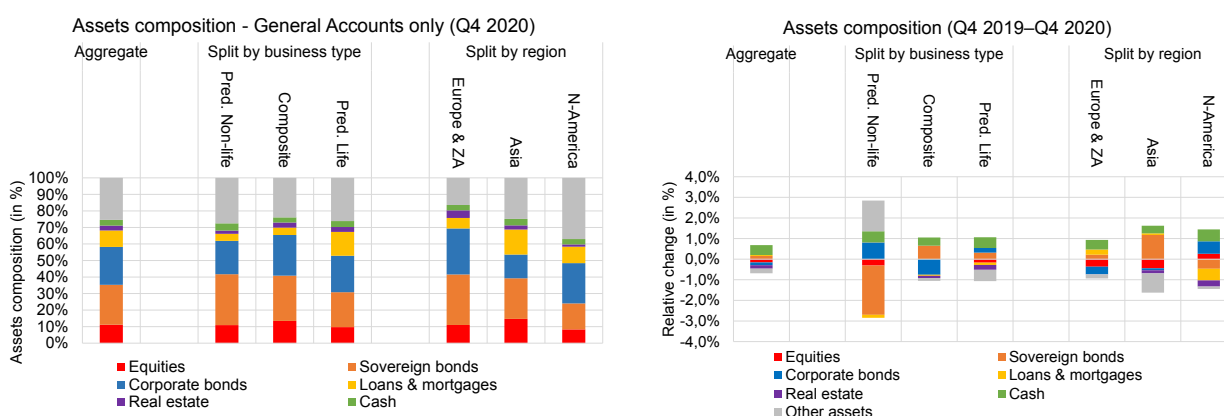
Based on internal liquidity metrics and monitoring frameworks, insurers are generally confident in their ability to meet future payments and obligations. Insurers note that at end-2020, global liquidity was abundant, supported by central bank measures. However, some note that as the economy recovers, there will be upward pressure on commodity prices and inflation, which may tighten monetary policy going forward. Some insurers note that any need to increase the use of alternative sources of liquidity may result in increased balance sheet leverage, negatively impacting financial strength ratings and rating outlooks. Finally, some insurers expect the usual seasonality in liquidity positions going forward, related to recurring shareholder dividend payments.

2.4 ASSETS AND LIABILITIES

2.4.1 Developments

Overall strong performance of financial markets was observed over the second half of 2020. As per the right-hand side of Figure 5, on aggregate, insurers' asset compositions remained stable over 2020 compared to 2019. The left-hand side of Figure 5 shows that the majority of insurers' assets is held in corporate bonds, sovereign bonds, equities and loans and mortgages.

Figure 5: Asset composition (per cent)



Source: IIM Covid-19 Q4 2020

Figure 6 shows that, on aggregate, insurers' equity and corporate debt exposure to the top five industries most negatively affected by Covid-19 represents approximately 2% of their total general account assets.⁷

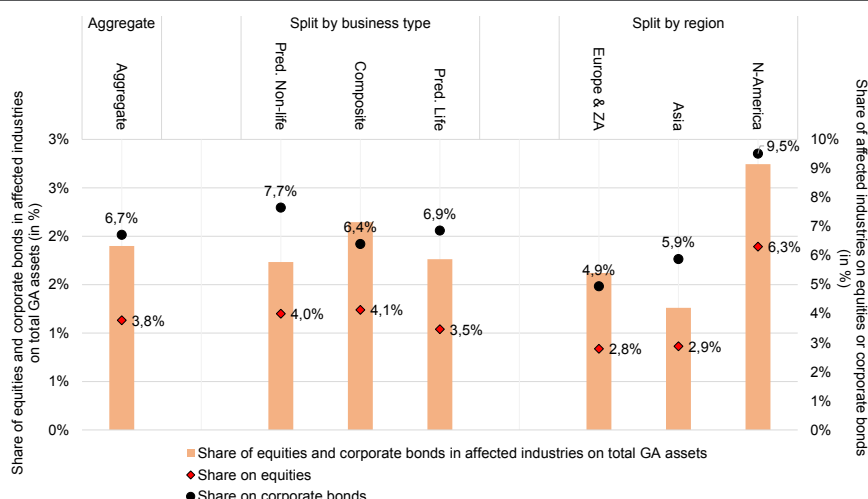
Looking at the composition of liabilities in the left-hand chart of Figure 7, technical provisions represent approximately 60% of total liabilities, consistent across all regions. From the right-hand chart, on aggregate, a slight decrease in gross written premiums can be observed over 2020,

factoring in seasonality in underwriting, with the majority of premiums being written in the first quarter.

2.4.2 Measures taken by insurers

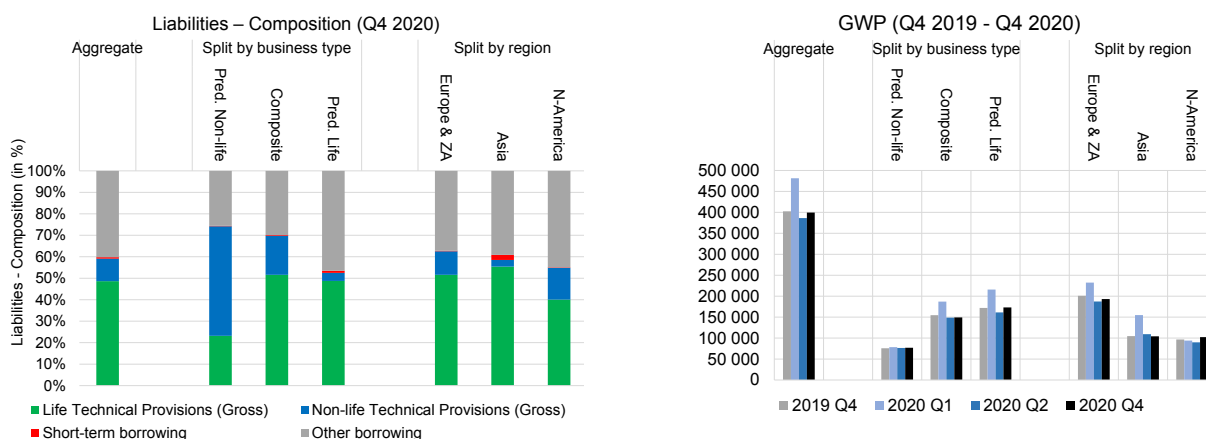
Insurers implemented varied investment portfolio measures over the second half of 2020. Some insurers further shifted their portfolios to higher yielding assets, for instance by increasing investments in high-dividend assets and by increasing investments in corporate bonds when credit spreads widened. Other insurers report

Figure 6: Exposure to industries most negatively affected by Covid-19 (per cent)



Source: IIM Covid-19 Q4 2020

Figure 7: Liabilities composition (per cent) and Gross written premiums (USD million)



Source: IIM Covid-19 Q4 2020

asset de-risking (for example, further deploying capital on high-quality assets, decreasing credit risk exposures and reducing equity exposures to volatile segments). Finally, some insurers indicated that they maintained a steady asset allocation strategy. In terms of liability-side measures, a key observation relates to life insurance business transformation and repricing due to the low interest rate environment, as outlined in more detail in the next section.

2.5 MACROPRUDENTIAL THEMES

In this year's GME, the IAIS identified three macroprudential themes based on supervisory priorities identified by the annual SWM. The highlights of these macroprudential themes are structured as follows: (1) theme description; (2) supervisory assessment; (3) measures taken by insurers; and (4) supervisory measures.

2.5.1 Low interest rate environment and private equity ownership

2.5.1.1 Theme description

Covid-19 has triggered unprecedented monetary policy interventions, further lowering interest rates. This has both direct effects on insurers (such as profitability strains) and potential indirect effects (for example, from associated management actions, such as a reach for yield or changing business models by altering life insurance product offerings, putting life portfolios in run-off, or transferring (parts of) the (re)insurance business).

Relatedly, an emerging trend in certain jurisdictions is the PE industry's growing interest in acquiring life (re)insurance business. Over the last decade, PE firms have been increasingly active participants in life insurance M&A as they seek permanent capital vehicles to complement their existing portfolio or fund offerings. This trend has accelerated considerably over the last two years.

PE ownership in the life insurance sector may pose potential risks. For example, PE-owned life insurers typically have complex group structures and may take on risks that could leave policyholders more vulnerable to financial loss. This includes engaging in riskier capital, liquidity and investment strategies. Supervisors should consider whether such potential risks are adequately captured in their supervisory practices and under current capital frameworks.

Additionally, and particularly relevant from a financial stability perspective, the PE/life insurance partnership increases the overall importance and interconnectedness of the combined enterprise to the financial system, as it expands PE's role in non-bank credit intermediation and deepens its linkage with key market participants.

2.5.1.2 Supervisory assessment

Supervisors assess low interest rates as a factor that will significantly impact insurers' profitability and solvency. Life insurers holding large amounts of long-term liabilities with investment return guarantees⁸ are especially impacted, as low interest rates increase long-term liabilities and decrease investment and fee income. This impact is the strongest in the case of large gaps in asset-liability duration matching.

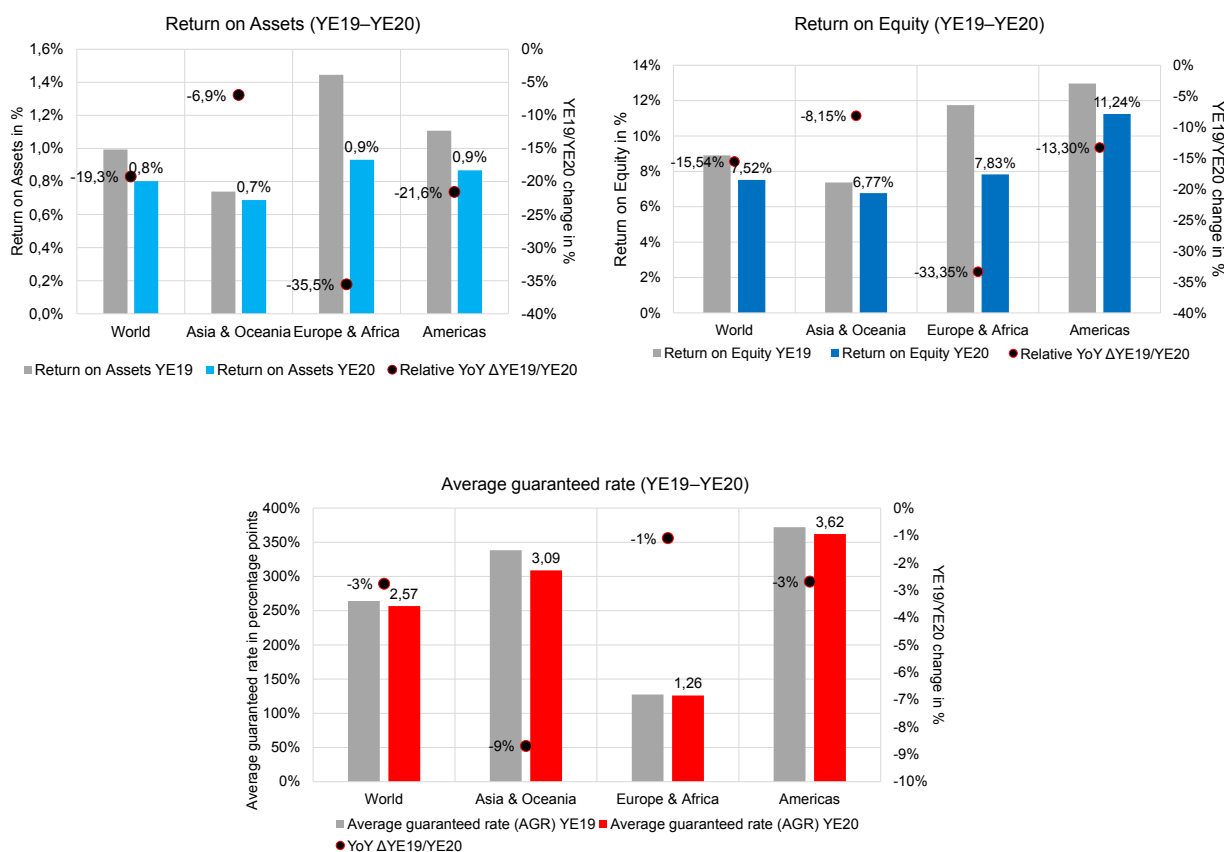
Supervisors note the challenge for insurers to find assets with a sufficient yield to match guaranteed life products and to maintain asset-liability matching without taking on a significantly higher level of risk, leading to the risk of underperforming the guaranteed return. To a certain extent, this challenge also applies to non-life insurers, as lower investment profits decrease overall profitability, notably in case of weaker underwriting results.

From the quantitative sector-wide analysis (2021 SWM), there is reported pressure on investment returns, with the main trends being decreasing returns on assets and equity, in excess of the decrease in average guaranteed rates.

On the asset side, in general supervisors have not yet observed large increases in risk-taking. At an aggregate level, asset allocation is stable, yet a shift can be observed towards for example infrastructure and real estate investments. Supervisors are mindful of the potential impact of Covid-19 on commercial real estate prices, for instance. Also, an increase in interest rates derivatives can be observed, mainly for hedging purposes.

On the liability side, supervisors note increases in liabilities due to the discounting of expected cash flows at lower interest rates (larger increases in liabilities than in assets, due to the duration gap). Also, lower new business volumes and increased lapses for traditional life insurance products can be observed.

Figure 8: Return on assets, return on equity and average guaranteed rate (per cent)



Source: SWM 2021

Regarding PE ownership of insurers, some supervisors note an increase in the number of life insurers being purchased or entering into strategic partnerships with PE firms. Others note PE ownership of insurers is not yet significant in their markets but note this is an area that is being closely monitored. Some supervisors observe PE ownership of run-off platforms for life insurance (consisting mainly of savings products) and note that life insurers are increasingly considering the transfer of less profitable insurance portfolios to run-off platforms due to the ongoing low interest rate environment.

Supervisors are continuing to fully evaluate the implications of PE ownership. Some supervisors acknowledge PE-owned insurers may pose unique risks, such as increased exposures to private placements (direct lending) and private label asset-backed securities (notably CLOs). Others note that PE ownership may also bring synergies, such

as the investment expertise PE firms provide, and indicate that they have observed the same trend of lower credit quality purported to be associated with PE-owned firms also occurring across the insurance industry.

2.5.1.3 Measures taken by insurers

In response to the low interest rate environment, a key observed trend is that insurers are changing their business models.

In particular, insurers have implemented changes in their product mix, shifting towards more capital light products such as biometric risk and unit-linked business. Supervisors observe that the range of products with interest rate guarantees has been considerably reduced by insurers. In certain regions, insurers have discontinued underwriting long-term products such as annuity plans and guaranteed rates business, putting existing business in liquidation (run-off).

Other observed business model changes include:

- ▶ Repricing of existing business: adjustment of guaranteed rates (both in life retail and in life group insurance) to reflect changes in expected investment returns
- ▶ Decreasing profit sharing to policyholders and shareholders (dividends), loadings and commission structures
- ▶ Expanding the fee business (including through partnerships and acquisitions)
- ▶ Increased sectoral consolidation through M&A.

SUPERVISORS NOTE THAT IT IS A CHALLENGE FOR INSURERS TO FIND ASSETS WITH A SUFFICIENT YIELD TO MAINTAIN ASSET-LIABILITY MATCHING WITHOUT TAKING ON A SIGNIFICANTLY HIGHER LEVEL OF RISK.

These changes have led to increased competition in business lines less sensitive to the interest rate environment, such as non-life, mortality, unit-linked and variable interest rate products.

In addition to changes in business models, other measures taken by insurers to cope with the low interest rate environment include:

- ▶ Closer monitoring of interest rate developments and their impact on investment portfolios, insurance product mix, the duration gap and cash-flow gap
- ▶ Reviewing asset allocations:
 - Decreasing liquid fixed income securities and fostering new sources of income in asset classes such as real estate, mortgages, securitisations and alternative (illiquid) investments (like infrastructure projects, private credit and equity)
 - Efforts to reduce duration gaps, lengthening asset durations (for example, by purchasing ultra-long-term bonds) combined with moves to diversify risk assets, including overseas credit assets and alternative investments in some regions
 - Shifts in hedging strategies to enhance interest rate, duration and cashflow matching

and to limit income statement volatility.

- ▶ Solvency measures, such as injecting capital, increasing reinsurance (for example, to reduce interest rate sensitivity of long-term liabilities) or, in some cases, issuing intragroup guarantees
- ▶ Profitability measures, such as cost savings (operating/administrative expense cuts, bonus cuts), further outsourcing and digitalisation and an adjustment of discount rates for reserving (such as for health insurance).

2.5.1.4 Supervisory measures

Supervisors across the globe have taken a broad range of measures in recent years relating to the low interest rate environment.

In terms of supervision, key measures taken include:

- ▶ Intensified supervisory dialogue on this topic, including in regular supervisory engagements with the board of directors and senior management (such as monthly interviews)
- ▶ Updating supervisory reporting to include more detailed information on alternative investments
- ▶ Onsite reviews (requiring action plans for supervisory findings), with key examples of areas of focus being reserve adequacy (technical provisions, especially for life business), asset and liability management reviews and assessments of balance sheet exposure to market risks
- ▶ Undertaking stocktakes to identify PE-owned insurers and to monitor the investment management fees and complex ownership structures of these insurers
- ▶ Quarterly monitoring exercises, with key examples of areas of focus being:
 - Assessing changes in interest rate modelling assumptions and reserve strengthening
 - Reviewing investment allocations, with particular attention paid to any increases in risk-taking and levels of duration mismatches
 - Assessing earnings performance and the use of leverage (as a potential strategy to boost yield).
- ▶ Stress testing and sensitivity analysis, with key examples of areas of focus being:
 - Impact of interest rates on solvency and profitability (such as “low-for-long” interest rate environment scenarios or multi-period

macro-financial stress tests)

- Liquidity stress tests to assess the impact that low interest rates may have on liquidity
 - Reviewing dynamic hedging modelling assumptions (such as those around hedging costs – considering speed and volatility of rates, as dynamic hedging can be complex and costly, requiring significant hedges to be managed very quickly).
- ▶ Thematic research into the consequences of low interest rates for investment and capital policy
 - ▶ Assessment of dividend policies in relation to the low interest rate environment
 - ▶ Facilitating innovative product developments while securing policyholder interests.

In terms of regulation, key focus areas have included:

- ▶ Issuing requirements for additional interest rate reserving for life insurers to cover guarantees in life insurance contracts
- ▶ Capping the maximum guaranteed interest rate for life insurance (applying a fixed rate maximum rate in some regulation, or a maximum rate as a function of the average government bond yield in others)
- ▶ Installing policyholder surrender and/or tax penalties when life insurance contracts are surrendered with a certain time period
- ▶ Updating solvency frameworks to better capture interest rate risk (such as updates to capture the risk of negative interest rates in the capital requirements)
- ▶ Allowing matching adjustment (MA) mechanisms⁹ for certain product portfolios, subject to eligibility criteria
- ▶ Changing profit-sharing regulations, allowing insurers to distribute discretionary profits over a longer period
- ▶ Issuing supervisory recommendations on how to perform interest rates sensitivity analysis, or how to assess risk in complex/illiquid assets
- ▶ Considerations on additional disclosures around ownership and fee structures.

Finally, some supervisors note that they have a broad range of powers of intervention¹⁰ as well as macroprudential tools¹¹ in place to further counter the impact of low interest rates if need be.

2.5.2 Credit risk

2.5.2.1 Theme description

Sovereign and corporate debt levels reached historically high levels, which could lead to credit spreads widening, defaults and rating (outlook) changes. Relatedly, some insurers may be taking on more credit risk following a search for yield in the current low interest rates environment. As substantial fixed-income investors, insurers need to manage this risk in their asset and liability portfolios.

SOME INSURERS MAY BE TAKING ON MORE CREDIT RISK IN THE SEARCH FOR YIELD.

2.5.2.2 Supervisory assessment

From the feedback received from supervisors and the SWM analysis, the overall assessment is that most insurers are not taking on excessive credit risks, with the average credit quality of assets remaining high.

However, in the search for yield, some changes in insurers' asset allocations can be observed, leading to increases in credit risk. Notably, there is a trend towards increased alternative investments such as mortgages, structured securities, private placements, private equity and hedge funds.

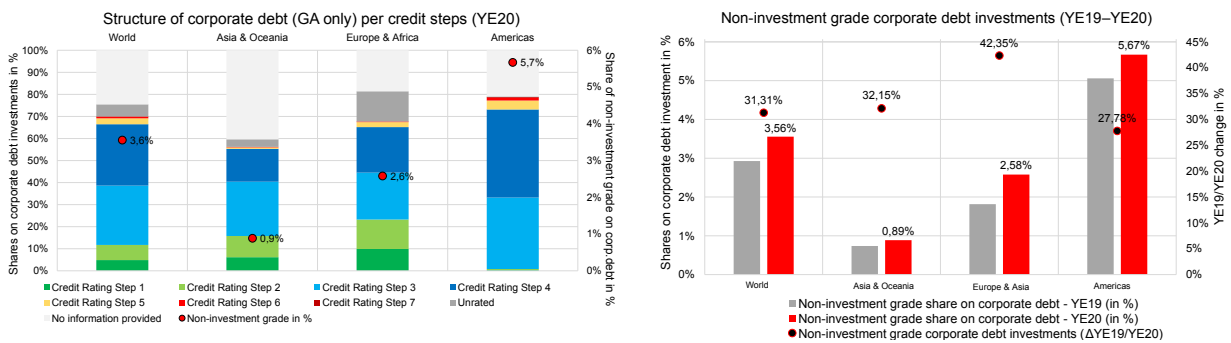
Figure 9 shows that, as reported in the SWM, there is a high credit quality of corporate debt overall. However, increasing amounts of non-investment grade corporate debt investments can be observed across all regions.

At year-end 2020, increases in credit risk can be observed within investment portfolios as a result of downward credit rating migrations and increased defaults, which was material in certain markets. On aggregate, insurers do not have high exposures to sectors most strongly affected by Covid-19, however other corporate sectors and real estate may be impacted indirectly, notably when government and central bank support measures are unwound.

2.5.2.3 Measures taken by insurers

Supervisors note that credit risk is a central

Figure 9: Corporate debt structure and change in non-investment grade (per cent)



Source: SWM 2021

focus of insurers' group-level risk management, embedded in group-wide governance (for example through credit risk committees).

To manage credit risk, insurers have concentration limits in place on asset, sectoral, geographic, currency, maturity and counterparty level. Risk-return frameworks set the overall risk appetite, and insurers' own risk and solvency assessment (ORSA) reports include detailed information on credit risk exposures and the impact of credit stress scenarios.

Supervisors note insurers have intensified credit risk monitoring during the pandemic (for example, to a monthly basis). Some insurers undertook additional mitigating measures, such as increased derivatives hedging (for example, spread locks) and increased collateral requirements to mitigate credit risk for reinsurance transactions.

Some supervisors note changes in asset allocation to diversify credit risk assets (geographically), including alternative investments.

2.5.2.4 Supervisory measures

Supervisors across the globe have implemented a broad range of measures in recent years relating to credit risk.

In terms of supervision, key measures taken include:

- ▶ Intensified monitoring of investment portfolios and reinsurance positions, including monitoring of:
 - Search for yield behaviour, by looking at the composition of the assets portfolio by type of security, rating, sector, or issuer
 - Exposures to alternative assets and mortgage portfolios
 - The sovereign-insurer nexus, by assessing insurers' credit risk link to the home country risk, which may have deteriorated due to increases in sovereign debt (particularly from Covid-19 relief measures)
 - Interconnectedness with the banking industry, especially where banks are affiliated with insurers (bank-affiliated insurers underwrite a substantial proportion of private pension assets; and large banks own fund managers).
- ▶ Intensified onsite reviews and/or supervisory dialogues on this topic (such as monthly interviews)
- ▶ Performing supervisory reviews of the effectiveness and appropriateness of the risk management structures and processes
- ▶ Undertaking stress tests and sensitivity analyses, focusing on market and credit risk (using a forward-looking supervisory approach). For example, "fallen angel"¹² scenarios have highlighted the vulnerability of some insurers, leading to intensified supervisory activity, sometimes triggering capital increases
- ▶ Some supervisors limited/halted dividends payments during the Covid-19 crisis, linked to the uncertainty around credit risk

- ▶ Some supervisors granted flexibility during the pandemic, such as:
 - Easing requirements in some of the limits of representative investments aimed at avoiding fire sales as a result of ratings downgrades (for example, flexibility associated with liquidity limits)
 - Allowing exceptional replacement of part of the assets assigned to hold-to-maturity portfolios
 - Facilitating credit risk management by making the provisions associated with premiums receivable more flexible.
- ▶ Publication of supervisory reports on aggregate trends in insurers' exposures to different asset types, which include an analysis of asset class allocation and trends in credit quality.

In terms of regulatory measures, supervisors have noted the general adequacy of risk-based capital requirements (such as for spread and credit risk) in preventing insurers from taking on excessive risk in asset portfolios. Some supervisors assessed insurers' risk profiles against credit capital requirements, and they are updating regulatory models as a result.

Some supervisors who do not have risk-based capital requirements in place have made plans to introduce economic value-based solvency requirements based on the global Insurance Capital Standard (ICS) being developed by the IAIS. Others intend to improve the design of the credit risk standard model in their solvency regimes.

Some supervisors have enhanced requirements on internal control procedures for insurers regarding investments, so as to assess and monitor the market risks to which an insurer is exposed. Other supervisory requirements include public disclosure of solvency reports, including a statement of investment orientations (such as in the investment plan and performance objectives); limits on volatility and sensitivity of financial instruments; minimum required diversification of investments; and the reinsurance strategy (describing how reinsurance policies must consider diversification and the financial rating of reinsurers).

2.5.3 Cyber risk

2.5.3.1 Theme description

Cyber risk entails information security risk or risk of cyber-security attacks, leading to misuse or

loss of information (including personal data breaches), discontinuity of operations or financial or reputation loss. Cyber risk may also affect insurers through cyber insurance underwriting and through non-affirmative cyber risk coverage in insurance contracts.

2.5.3.2 Supervisory assessment

Supervisors have observed an increase in the number of malware and phishing campaigns during the Covid-19 pandemic and are concerned about the increased frequency and severity of cyber-attacks, boosted due to remote working, digitalisation, increased use of third-party services and digital infrastructure (such as cloud services and data providers). Given current trends, some supervisors note that insurers are likely to experience material cyber incidents in the foreseeable future.

Some supervisors consider cyber risk to be a systemic risk, which has led them to monitor cyber risk within the framework of systemic risk committees, establishing prudential expectations regarding operational business continuity and security for systematically important financial institutions (SIFIs).

A key vulnerability is the growing dependency on third parties, with a small number of critical service providers presenting an ever-increasing concentration risk. The potential for aggregated losses that could occur via attacks on cloud service or software providers may have a system-wide impact in the case of dysfunctions or breaches.

A second vulnerability is the risk of IT performance declining as technology becomes obsolete, with weaker cyber protection. Supervisors note that mitigation of these vulnerabilities is not straightforward.

In terms of impact assessment, some supervisors assess the ultimate materiality of such cyber-attacks as generally being low to moderate, due to their historically limited financial impact. Others note a very large potential impact on the financial sector as a whole; for example, cyber incidents might lead to significant operational risks (such as service disruption) and reputational risks affecting customer trust (such as theft or ransom of sensitive client data, the corruption of insurers'

databases, fraud or the theft of intellectual property). Potentially severe financial implications may also arise if accounting or customer records are irretrievably lost.

In terms of exposure, supervisors note that all entities are exposed. Smaller insurers may have greater relative exposure due to lower cyber-security capabilities. Large insurance groups might be more exposed due to their larger digital footprint.

Cyber risk may also impact insurers' liabilities, not only of those directly underwriting cyber insurance, but also through silent or non-affirmative cyber risk exposure, which occurs when cyber risk is not explicitly excluded and is therefore potentially covered by non-life insurance policy contracts.

In terms of cyber insurance underwriting, this remains a relatively small portion of overall business volumes, but significant growth rates have been observed in certain markets. Some smaller underwriters may have large relative concentrations. Supervisors also observe a significant increase in ransomware attacks and cyber-security claim counts (some supervisors note a doubling in 2020 compared to 2019) and elevated loss ratios, which could result in further premium increases and coverage restrictions.

Finally, supervisors note that significant cyber events affecting multiple policyholders can adversely affect cyber insurers, especially where there is insufficient reinsurance coverage. This is exacerbated by a lack of historical data, leading to the potential for mispricing.

The cyber underwriting market is limited in market size, estimated at approximately \$6 billion for a subset of 13 jurisdictions that completed the SWM cyber risk data request. The data indicated that the market is concentrated in two jurisdictions, being the US and the UK.

In terms of jurisdictional approaches and frameworks, a cyber incident reporting framework is in place in most participating jurisdictions. However, data on cyber exposures of insurers is limited, while there is even less quantitative data on accumulation risk related to cyber underwriting.

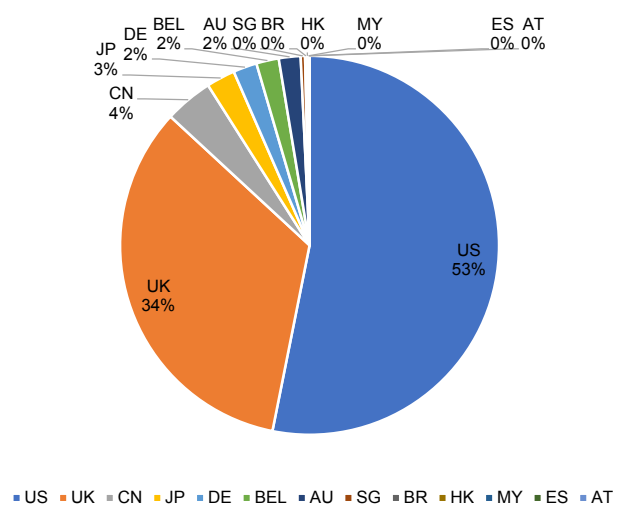
A KEY VULNERABILITY IS THE GROWING DEPENDENCY ON THIRD PARTIES, WITH A SMALL NUMBER OF CRITICAL SERVICE PROVIDERS PRESENTING AN EVER-INCREASING CONCENTRATION RISK.

2.5.3.3 Measures taken by insurers

Insurers increasingly embed cyber risk into their group-wide governance and risk management, involving dedicated board responsibilities (for example, by appointing information security officers, establishing IT security departments, and ensuring dedicated committees are in place that are responsible for establishing cyber-resilience plans).

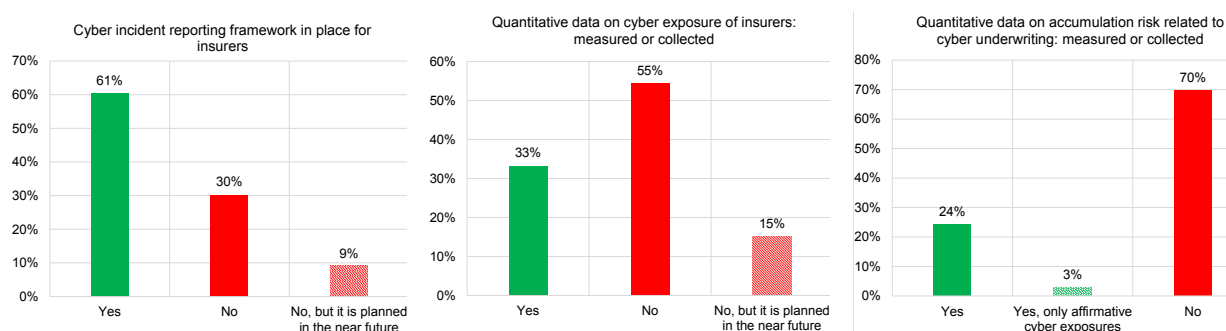
Insurers have developed cyber-security strategies, which consist of testing methods, vulnerability and patch management, incident response and

Figure 10: Cyber underwriting market (per cent)



Source: SWM 2021

Figure 11: Cyber data availability (per cent)



Source: SWM 2021

recovery plans, and measures regarding data security and encryption. As part of business continuity plans, processes and controls have been put in place, such as crisis communication processes consisting of responses to cyber incidents (for example, playbooks and testing). Examples of IT controls are multifactor logins, email scanning, restricted network access and malware protection.

In terms of monitoring, supervisors note that insurers have improved oversight and risk assessment of third-party suppliers (for example, of software and cloud services), including vulnerability assessments and security testing. The most critical data and systems are identified, in order to manage exposure with a particular focus on accumulation risks (such as cloud outages).

Insurers increasingly develop technical tools to identify compromised data/breaches. Some supervisors refer to ISO norms and assessments from independent firms and/or auditors to measure cyber-security maturity levels.

In terms of cyber insurance underwriting, key measures being put in place by insurers to limit risks include:

- ▶ Adding cyber risk exemption clauses to limit silent (non-affirmative) cyber risk exposure in traditional insurance products, such as property insurance
- ▶ Conservative underwriting, in parallel with improving underwriting standards (for example, excluding elements such as cyber war and

terrorism, and putting limits on business interruptions in terms of insured amount or third-party cover).

Future business plans of insurers tend to include further digitalisation of their business and the removal of legacy systems (which are prone to obsolescence in IT assets). Some supervisors note that insurers are experimenting with new technological solutions, such as artificial intelligence technologies. Insurers are also shifting to increased remote working capabilities, with connectivity solutions that enable staff to work and access critical data remotely.

2.5.3.4 Supervisory measures

Supervisors stress the need for insurers to maintain their cyber capabilities (including cyber resources, skills and controls that provide the ability and capacity to maintain information security) in a manner that adapts to changing threats.

Also, supervisors are strengthening their own governance and expertise on cyber issues, for example through establishing cyber-resilience committees charged with mapping local financial industry infrastructure, liaising with industry bodies and enhancing cyber-simulation exercises. Some supervisors note they are working with government agencies to improve the cyber-resilience of the financial system more broadly, focusing on improving incident response and regulatory harmonisation.

Off-site reviews include surveys (such as those on cyber exposures and governance), industry trend

analysis and technology-focused data collections to identify cyber weaknesses warranting further scrutiny. Some supervisors have performed cross-sectoral cyber-security exercises or cyber drills for financial institutions, to assess the industry's readiness for effectively detecting and responding to cyber incidents. Findings from cyber and cloud maturity level assessments are incorporated into the risk scorings. Cyber-security self-assessment tools allow institutions to conduct an evaluation of their cyber-security level.

Cyber-security onsite inspections and/or audits are aimed at identifying deficiencies, notably in the areas of information risk management, detection of security events, user access rights management and outsourcing. The scope of onsite inspections often includes group level cyber-security governance (competencies and responsibilities), existence and appropriateness of measures and controls for protection of (customer) data, and internal processes and infrastructure to ensure the availability, confidentiality and integrity of critical functions in case of cyber-attacks. Inspections sometimes involve both supervisory and IT risk divisions.

Some supervisors note that they have taken measures to promote technological innovation in the insurance sector, including regulatory sandboxes.

In terms of regulation, some supervisors have established governance requirements to embed cyber defence policies within insurance groups' risk management and governance, including with respect to outsourcing and external service providers. More detailed examples are requirements to establish key functions of cyber-resilience (identify, protect, detect, respond, and recover) in internal control systems.

Further requirements relate to supervisory reporting of cyber incidents and security measurement and testing requirements (for example, establishing a cyber testing ground to assess security and ability to resist attacks). Supervisors note that local cyber and/or data security regulations are in place, which often fall under the purview of cyber-security authorities. For supervising the application of cyber-security regulations in the financial sector, cyber-security authorities often cooperate with financial sector supervisors.

Finally, some supervisors note that they encourage the financial institutions they supervise to purchase cyber insurance coverage, which may help to mitigate cyber-security risks from both a financial and an operational resilience perspective given the expertise in cyber recovery measures that cyber underwriters may be able to provide to clients. Supervisors note that cyber underwriters may also help encourage sound cyber-security hygiene, which can help to further mitigate cyber-security risks.

SUPERVISORS STRESS THE NEED FOR INSURERS TO MAINTAIN THEIR CYBER CAPABILITIES IN A MANNER THAT ADAPTS TO CHANGING THREATS.

3. INDIVIDUAL INSURER MONITORING 2021

3.1 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. 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. This section covers public disclosure 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 disclosure related to the IIM includes information on:

- ▶ The aggregate totals for each indicator
- ▶ Formulas used for calculation of indicator scores
- ▶ Absolute Reference Values (ARVs)
- ▶ The data template and instructions used in the assessment process
- ▶ An analysis of aggregate trends in the insurer pool.

3.2 THE AGGREGATE TOTALS (DENOMINATORS) FOR EACH IIM METHODOLOGY INDICATOR

According to paragraph 108 of the GME document, the aggregate totals for each indicator, the formulas used for calculation of indicator scores and the ARVs used for the indicators are disclosed in the following subsections.

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

1. **Denominators – Absolute approach:** These are the denominators used to calculate the IIM systemic risk scores using the IIM 2019 Absolute methodology¹³
2. **Denominators – Relative approach using year-end 2019 data:** These are the insurer pool aggregates at year-end 2019
3. **Denominators – Relative approach using year-end 2020 data:** These are the insurer pool aggregates at year-end 2020.

Table 1: IIM 2021 denominators

Indicator (USD million, except indicator 4)	Denominators: Absolute approach	Denominators: Relative approach YE19	Denominators: Relative approach YE20
1 Total assets	18,027,170	19,053,450	21,362,222
2 Total revenues	2,517,164	2,655,448	2,679,580
3 Revenues outside of home country	901,436	887,732	859,595
4 Number of countries ¹⁴	1,144	1,148	1,199
5 Intra-financial assets	3,861,401	4,268,171	4,660,847
6 Intra-financial liabilities	1,719,091	1,699,906	2,007,452
7 Derivatives	4,162,248	5,337,560	5,969,702
8 Derivatives Trading	52,703	53,109	50,804
9 Financial guarantees	20,715	14,049	11,617
10 MGVP – Denominator A	1,374,140	1,102,634	1,227,737
MGVP – Denominator B	5,116,697	6,284,688	7,232,547
11 Short term funding	671,449	703,604	836,627
12 Level 3 assets	541,186	634,696	884,329
13 Liability liquidity	4,838,260	4,789,087	5,481,087
14 Premiums for specific LoB – A	5,065	758	735
Premiums for specific LoB – B	3,274	5,507	5,337
Premiums for specific LoB – C	6,204	7,255	7,970
Premiums for specific LoB – D	22,539	26,788	28,536

3.3 FORMULAS USED FOR CALCULATION OF INDICATOR SCORES

Formulas used for the calculation of indicator scores are listed in Table 2:

Table 2: IIM 2021 formulas used to calculate indicator scores

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

3.4 THE ABSOLUTE REFERENCE VALUES USED FOR THE INDICATORS

According to paragraph 50 of the GME document, the 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.

$$ARV_{FC} = \frac{\$67bn}{\frac{\$868bn + \$1,074bn + \$1,360bn}{3}} = 6,09\%$$

Derivatives Trading (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 statistics on derivatives (D10.1, Total CDS Contracts – Notional amounts outstanding) for

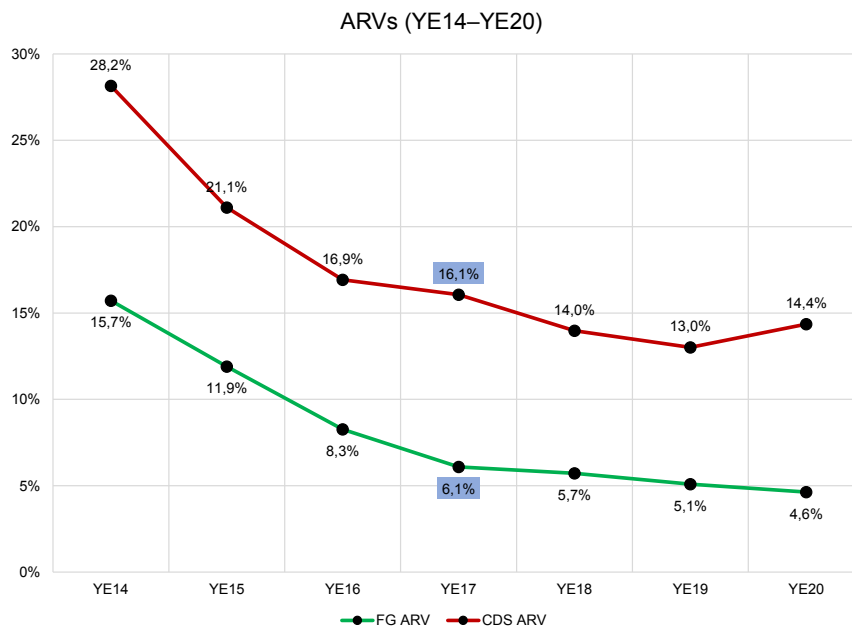
the respective years to establish the reference value by using the data as an approximation for the global market for CDS.

$$ARV_{CDS} = \frac{\$9,354bn}{\$58,244bn} = 16,06\%$$

Data used to establish the ARVs reflect the result of a best effort search for an approximation of the respective markets. In selecting data to calculate an ARV, the IAIS researched a broad range of available sources and used the most suitable approach for the GME. ARV for reinsurance is no longer used and monitored in the GME.

As mentioned in paragraph 50 of the GME document, the IAIS continues to monitor both ARVs. The ARVs were relatively stable in the last four years as seen in Figure 12.

Figure 12: IIM absolute reference values (ARVs)



3.5 THE IIM DATA TEMPLATE AND TECHNICAL SPECIFICATIONS

In line with paragraph 108 of the GME document, the IIM data template and technical specifications are disclosed in Annex 1 and 2 of this report.

3.6 AN ANALYSIS OF AGGREGATE TRENDS IN THE INSURER POOL

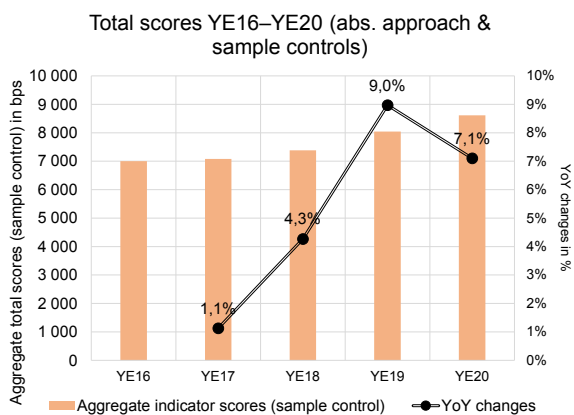
In accordance with paragraph 56 of the GME document, the IAIS performed trend analysis on data from the Insurer Pool and used the outcomes for the overall assessment. Trend analysis includes developments of denominators (for each quantitative indicator used in the IIM 2019 Methodology), drivers of those developments, identification of outliers and data issues, and impact analysis 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.

For the insurer pool, the aggregate systemic risk score has been on an increasing trend over the last four years (see Figure 13).

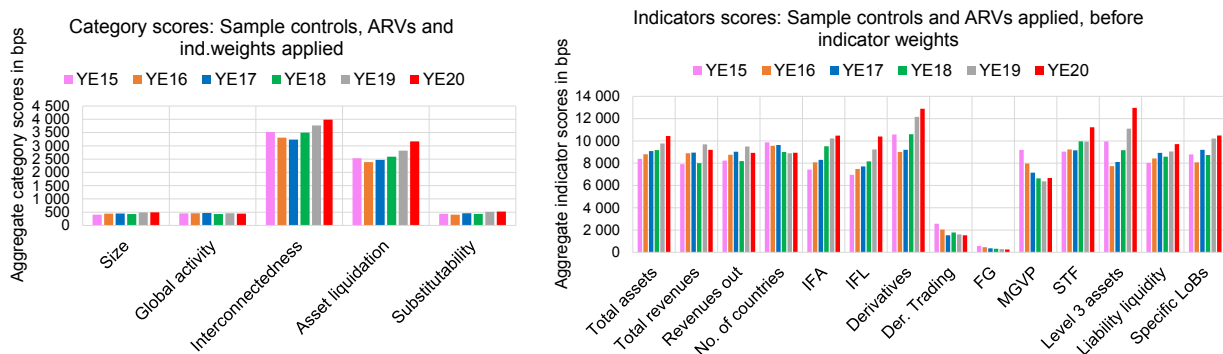
Taking a closer look at the systemic risk categories and indicators, there has been notable growth in the interconnectedness and assets liquidation categories (see Figure 14). Looking at the indicator level, a growing trend in most indicators can be observed, except for derivatives trading, numbers of countries, financial guarantees and minimum guarantees on variable products (MGVP).

Figure 13: IIM 2021 total systemic risk scores



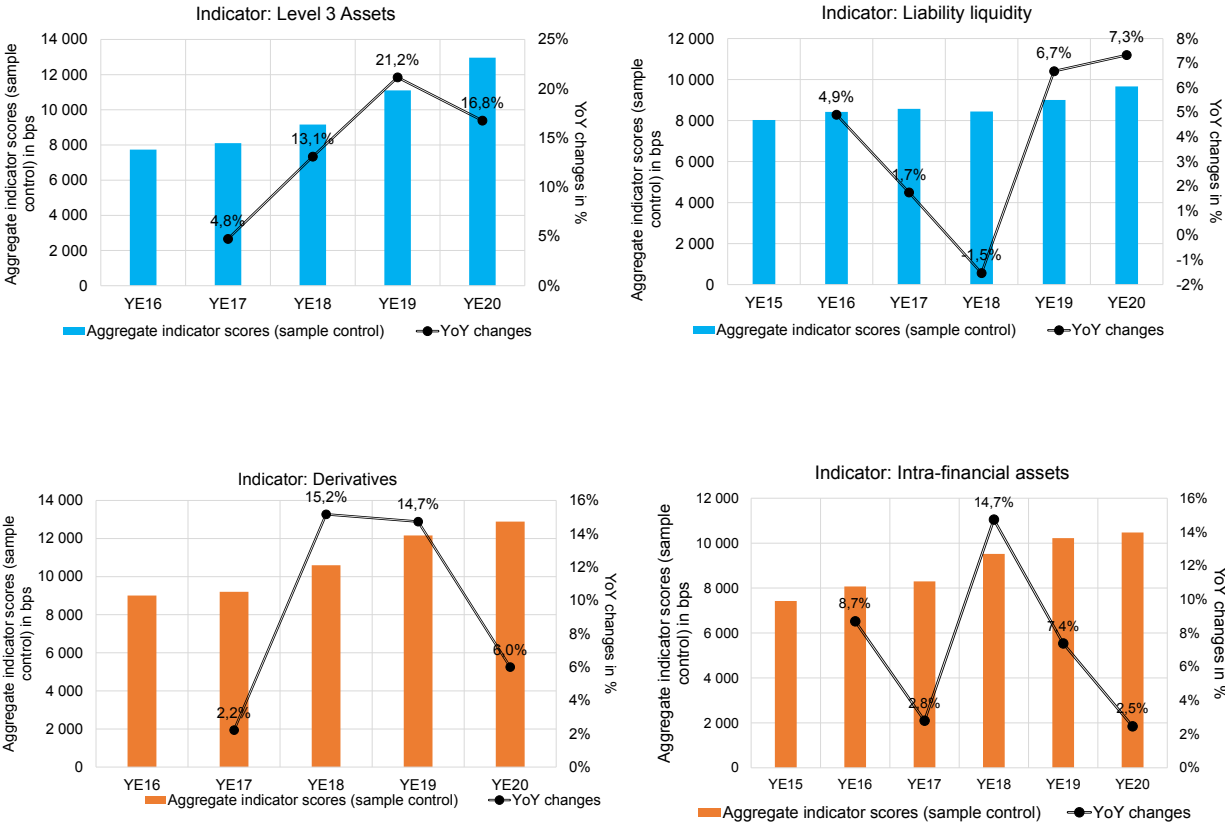
THE AGGREGATE SYSTEMIC RISK SCORE HAS BEEN INCREASING, WITH NOTABLE GROWTH IN THE INTERCONNECTEDNESS AND ASSETS LIQUIDATION CATEGORIES.

Figure 14: Systemic risk scores by category and indicator



Looking at the trend of the top four indicators, outlined in Figure 15, there have been increasing scores for all of the top four indicators over the last four years, except for the liability liquidity indicator which slightly decreased at year-end 2018.

Figure 15: IIM 2021 top four indicator systemic risk scores



4. GLOBAL REINSURANCE MARKET

4.1 INTRODUCTION: REINSURANCE DATA COLLECTION

4.1.1 [Link to former Global Reinsurance Market Survey](#)

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 reinsurance companies based in nine jurisdictions: Bermuda, France, Germany, Japan, Luxembourg, Spain, Switzerland, the United Kingdom and the United States. The participating reinsurers have remained largely consistent throughout the years. The GRMS 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 (SWM Reinsurance Component). Including the reinsurance data collection in the SWM has enhanced the global coverage and completeness of the reinsurance data collection in two ways. Firstly, the following 13 IAIS Members have been added to the reinsurance data collection, improving data coverage in the Asia, Africa, Oceania and Latin America regions:

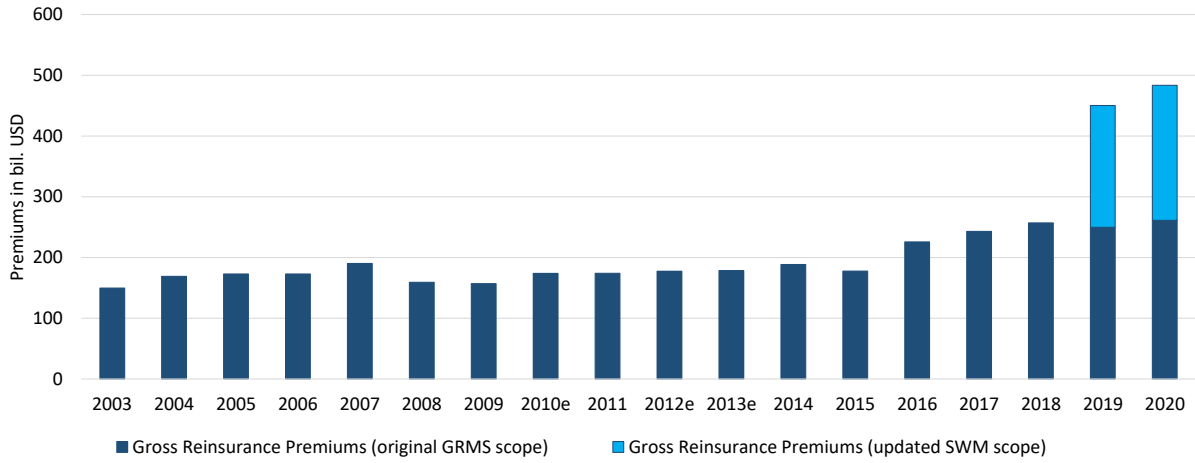
- ▶ Asia and Oceania: Australia, China, China Hong-Kong, Chinese Taipei, Malaysia, Singapore
- ▶ Europe and Africa: Portugal, Russia, South-Africa, The Netherlands
- ▶ Americas: Argentina, Brazil, Canada.

Secondly, some of the nine original GRMS participating jurisdictions 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 insurers in 2018 to over 300 insurers in 2020. As a result, the reinsurance data collection now covers to a greater extent 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 16. Light blue bars show the increase in gross premiums included in the exercise due to the expanded scope. Dark blue bars plot developments of the original GRMS sample. The enhanced reinsurance data collection has increased the amount of reinsurance gross written premiums covered by the analysis by more than 80%.

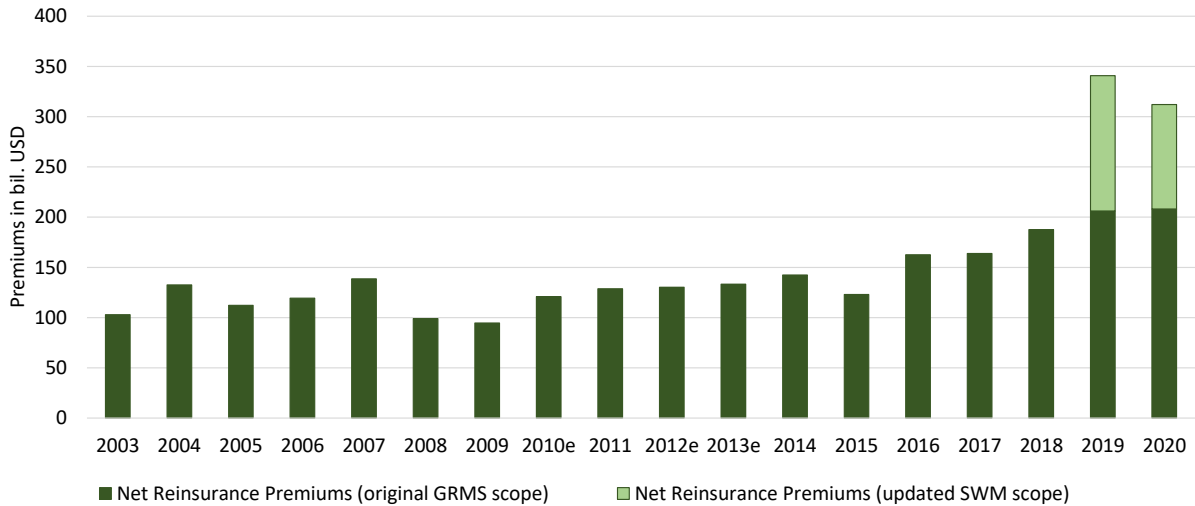
Keeping the sample stable, an increase in reinsurance net written premiums can be observed over the last two years, whereas looking at the broader sample shows a decrease in the last year (see Figure 17).

Figure 16: Reinsurance gross written premiums (USD billion)



Source: SWM 2021

Figure 17: Reinsurance net written premiums (USD billion)



Source: SWM 2021

4.1.2 Interplays with the SWM

In this section, the size of the global insurance and reinsurance market is estimated. The estimate covers both primary (direct) and secondary (reinsurance) written premiums. Reinsurance premiums are a subset of global (sector-wide) insurance premiums.

As shown in Table 3, the global gross insurance market covered by the SWM is approximately \$6 trillion, with approximately half located in the Americas. The size of the global gross reinsurance market covered by the SWM is approximately

\$483 billion, with more than two-thirds written in the Americas. In total, reinsurance accounts for about 7% of all global gross insurance premiums covered by the SWM.

The global net insurance market is approximately \$4.5 trillion (see Table 4). The size of the global net reinsurance market covered by the SWM is approximately \$312 billion. In total, reinsurance accounts for around 7% of all global net insurance premiums covered by the SWM.

Table 3: Gross reinsurance premiums

Segmentation	Gross reinsurance premiums (million USD)	Regional share	Total gross insurance premiums (including reinsurance) (million USD)	Regional share	Share of reinsurance (gross)	Retention ratio total insurance premiums (including reinsurance)
World	483,407		6,019,738		8.0%	74.8%
Asia & Oceania	61,488	13%	1,318,166	22%	4.7%	86.0%
Europe & Africa	138,252	29%	1,634,890	27%	8.5%	85.7%
Americas	283,667	59%	3,066,682	51%	9.2%	64.1%

Source: SWM 2021

Table 4: Net reinsurance premiums

Segmentation	Net reinsurance premiums (million USD)	Regional share	Total net insurance premiums (including reinsurance) (million USD)	Regional share	Share of reinsurance (net)	Retention ratio reinsurance premiums
World	312,108		4,500,370		6.9%	64.6%
Asia & Oceania	39,370	13%	1,133,705	25%	3.5%	64.0%
Europe & Africa	102,657	33%	1,400,391	31%	7.3%	74.3%
Americas	170,081	54%	1,966,274	44%	8.6%	60.0%

Source: SWM 2021

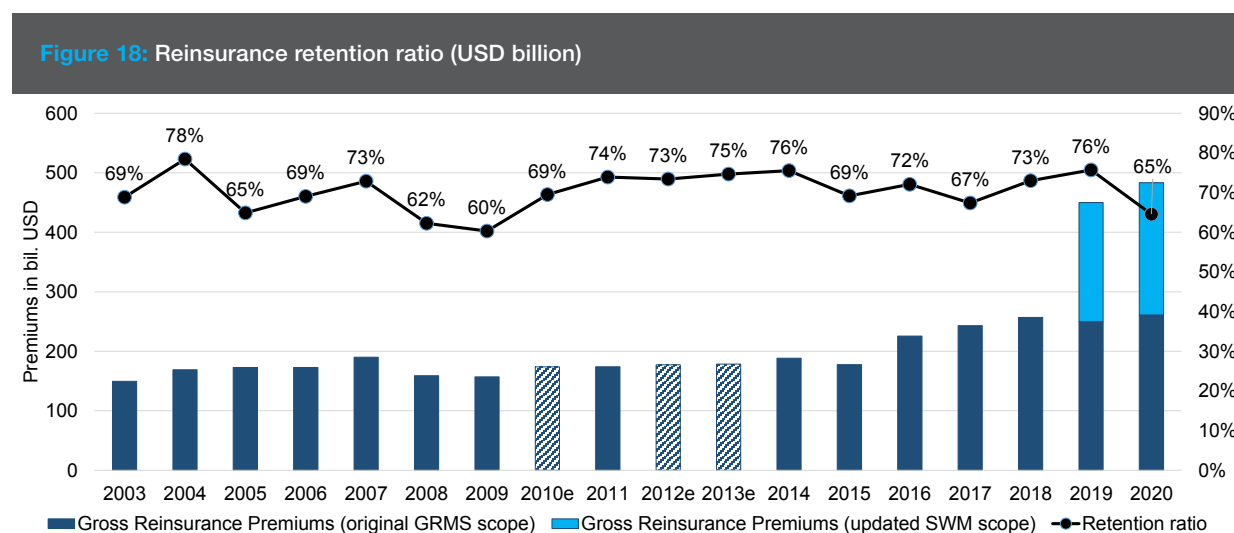
Retention ratios indicate the percentage of gross premiums that is not reinsured or retroceded (namely, the ratio of net premiums to gross premiums). Reinsurance retention ratios are slightly lower than overall insurance retention ratios. The highest reinsurance retention ratios reported were in Europe and Africa. Reinsurance retention ratios indicate the extent of retrocession, which represents secondary reinsurance (that is, when

a reinsurer buys insurance).

4.2 Reinsurance premiums

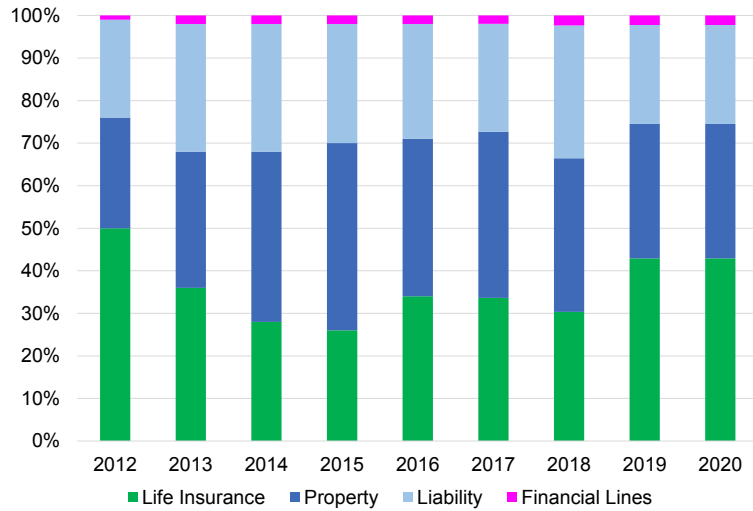
4.2.1 Life and non-life sector, retention, developments

Figure 18 shows a decline in reinsurance retention ratios at year-end 2020 compared to year-end 2019, mainly driven by declining retention ratios in part of the expanded sample in 2020.



Source: SWM 2021

Figure 19: Composition of reinsurance gross written premiums (per cent, 2012–2020)



Source: SWM 2021

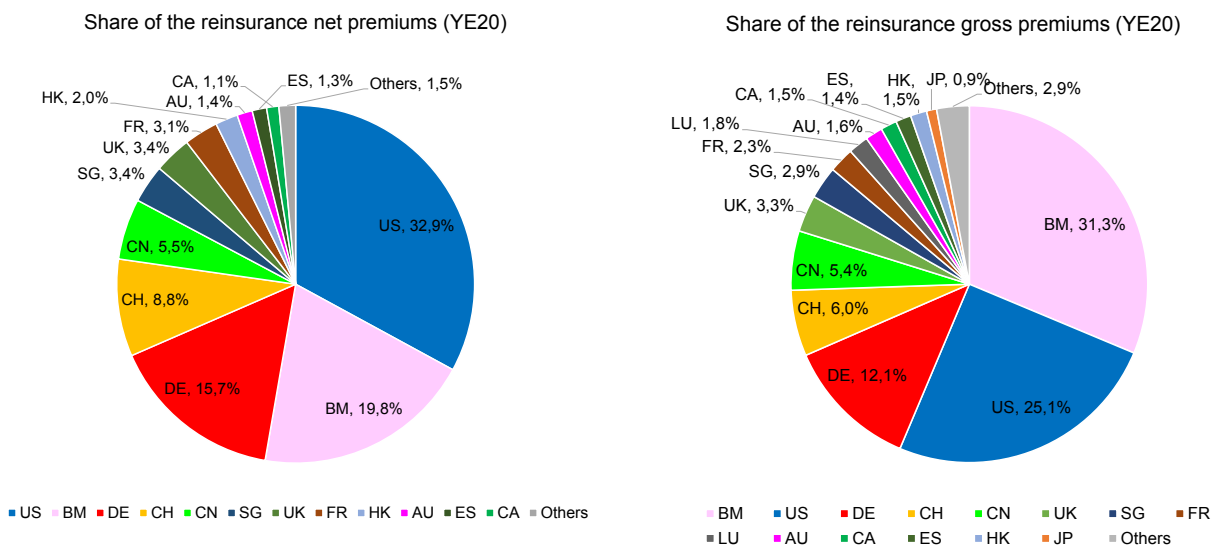
In Figure 19, the structure of reinsurance gross written premiums in the last nine years is shown. Non-life premiums account for more than 50% of all reinsurance gross premiums. However, the share of life reinsurance premiums has been increasing over the last three years, driven by, for instance, the private equity-owned life insurance model, which is built around reinsurance vehicles.

4.3 REGIONAL DISTRIBUTION OF THE REINSURANCE MARKET

4.3.1 Regional distribution

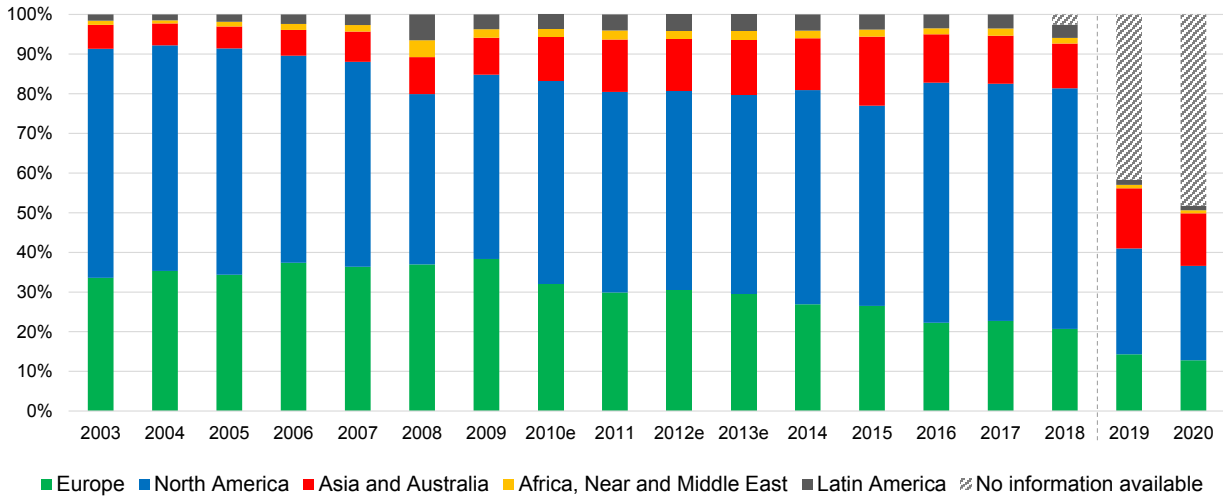
Figure 20 shows the regional distribution of reinsurance net and gross premiums. Based on the SWM data collection, the five largest reinsurance markets are Bermuda, the United States, Germany, Switzerland and China.

Figure 20: Share of reinsurance net and gross premiums (per cent by market)



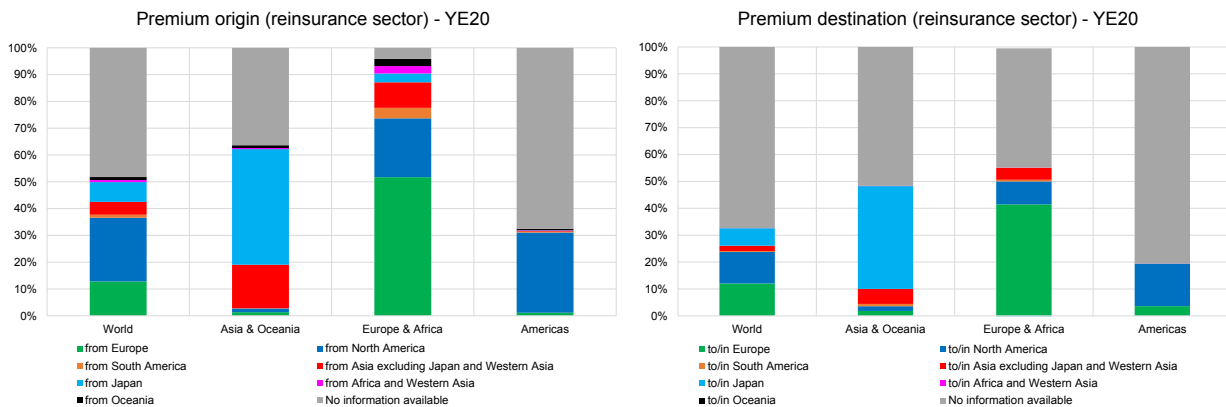
Source: SWM 2021

Figure 21: Reinsurance gross assumed premiums by region (per cent, 2003–2020)



Source: SWM 2021

Figure 22: Reinsurance risk transfers between regions (per cent)



Source: SWM 2021

4.3.2 Regional premium transfers

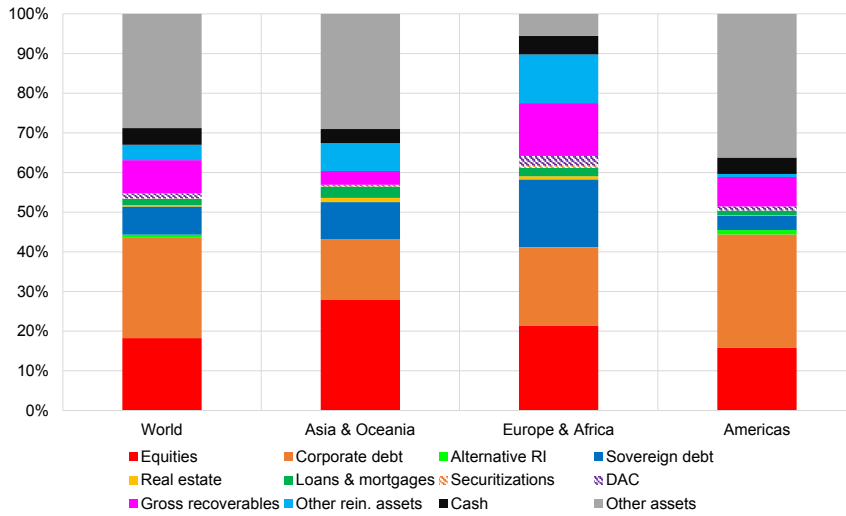
Figure 21 presents the gross assumed reinsurance premiums by the region of the ceding insurer. In 2018, the North America region accounted for a majority of reported gross reinsurance premiums. The shaded grey bar areas for 2019–2020 relate to the change of scope of the data collection; for some jurisdictions there is limited information available on the origins of reinsurance premiums.

Figure 22 shows the reinsurance risk transfers between regions, namely the premium origins and destinations by region. The shaded grey bar areas indicate the percentage of premiums for which there is limited information available.

4.4 REINSURANCE ASSET ALLOCATION

Figure 23 illustrates the regional split of reinsurers' asset allocations. The distribution is roughly similar across regions. Key asset classes are equities and corporate bonds in all regions.

Figure 23: Reinsurance asset allocation (per cent, YE20)

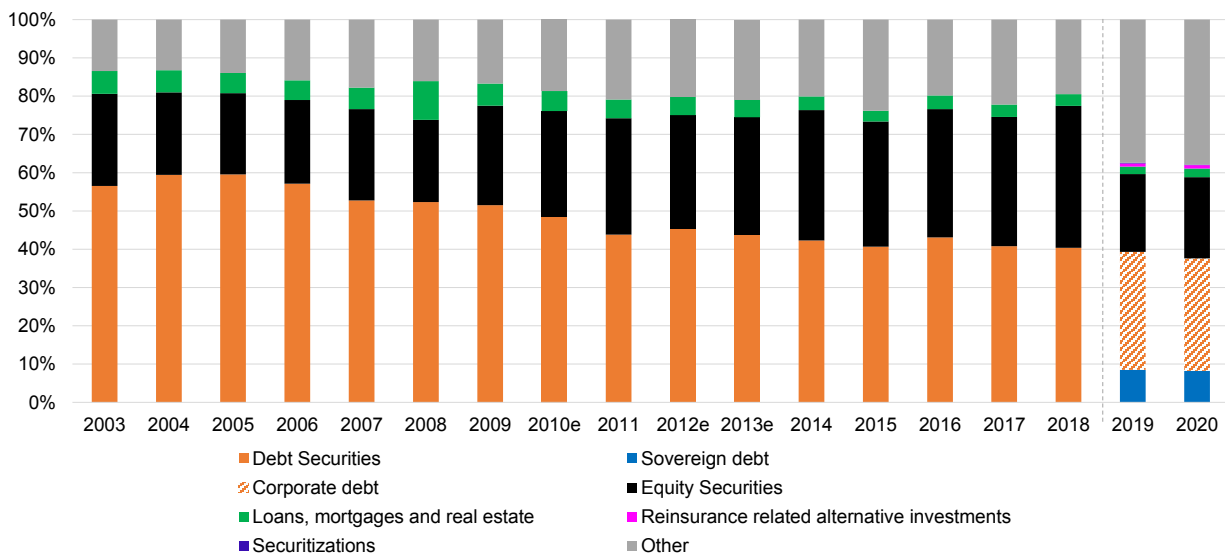


Source: SWM 2021

The largest relative shares of sovereign debt securities are held in the Europe and Africa region. Overall, reinsurers hold limited investments in loans and mortgages and real estate.

Figure 24 shows that the share of debt investments held by reinsurance remained relatively stable over time. A slightly decreasing trend in the relative share of equity securities can be seen. The increasing proportion of invested assets for which no information is available in 2019–2020 relates to the expanded scope of the data collection.

Figure 24: Trend of reinsurance asset allocation (per cent, 2003–2020)



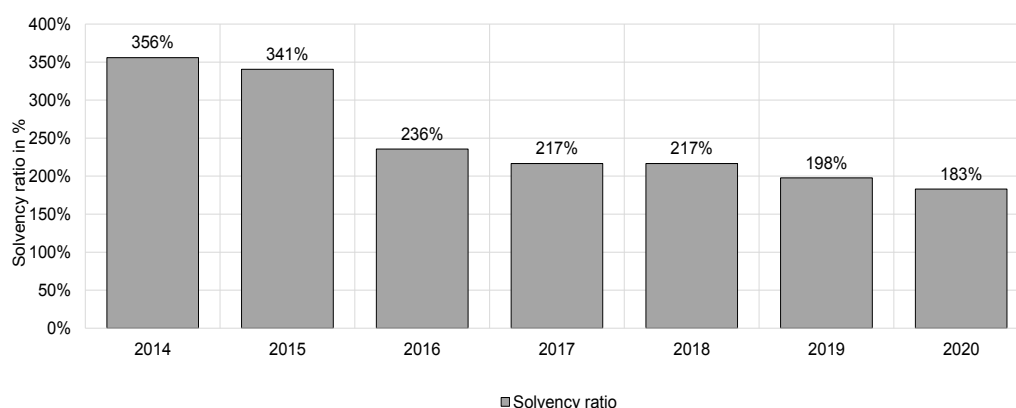
Source: SWM 2021

4.5 REINSURANCE SOLVENCY AND CAPITAL

Figure 25 shows a decreasing trend in solvency ratios in the global reinsurance sector since 2014; however, the average solvency ratio is still well above 100%. The decline in reinsurance solvency ratios in 2019–2020 is consistent with a decline in general insurance solvency ratios in 2019–2020.

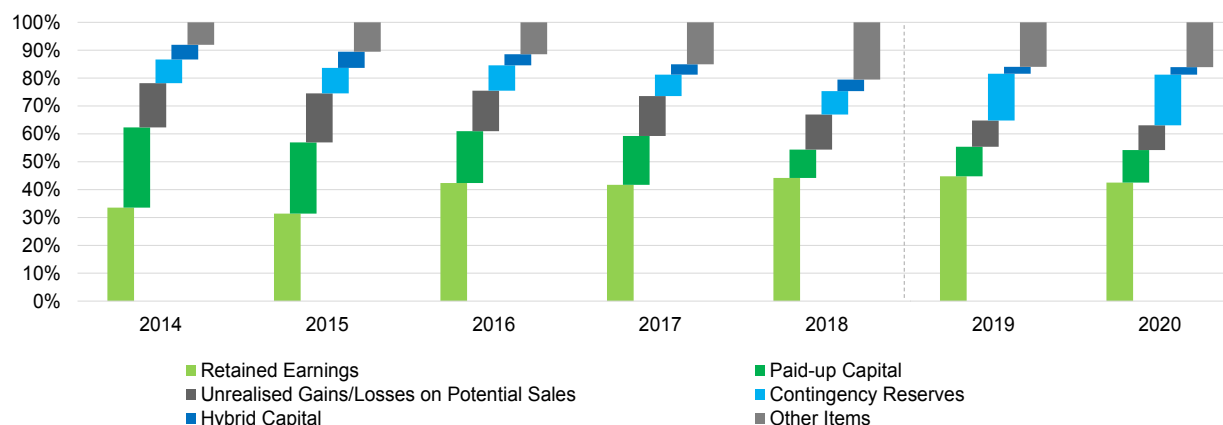
The time series in Figure 26 shows that changes in available capital are mainly driven by a decreasing share of paid-up capital, whereas retained earnings and hybrid capital remained stable overall. Retained earnings remain the main source of available capital. The growing significance of contingency reserves in 2019–2020 is mainly driven by the change in the sample.

Figure 25: Reinsurance solvency ratios (per cent, 2014–2020)



Source: SWM 2021

Figure 26: Composition of reinsurance capital resources (per cent, 2014–2020)



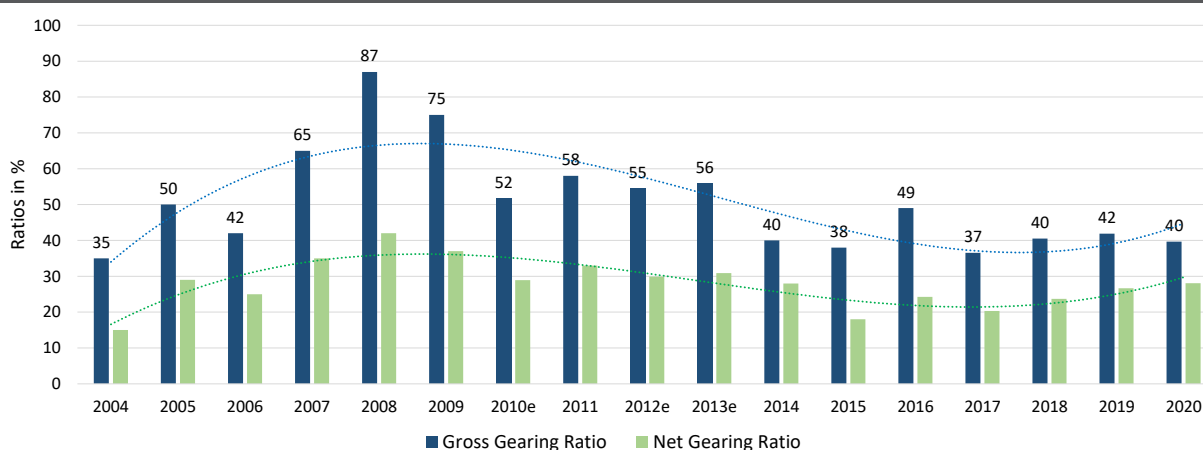
Source: SWM 2021

Figure 27 illustrates declining gearing ratios¹⁶ since 2008, meaning capital resources are growing more rapidly than recoverables from retrocession. Gearing ratios remained relatively stable over the last three years, fluctuating around the 40% level. The sample excludes jurisdictions for which there is a lack of data on recoverables. The spread between the gross and net gearing ratio is declining, indicating that there is an increased use of collateral for retrocession.

4.6 REINSURANCE PROFITABILITY

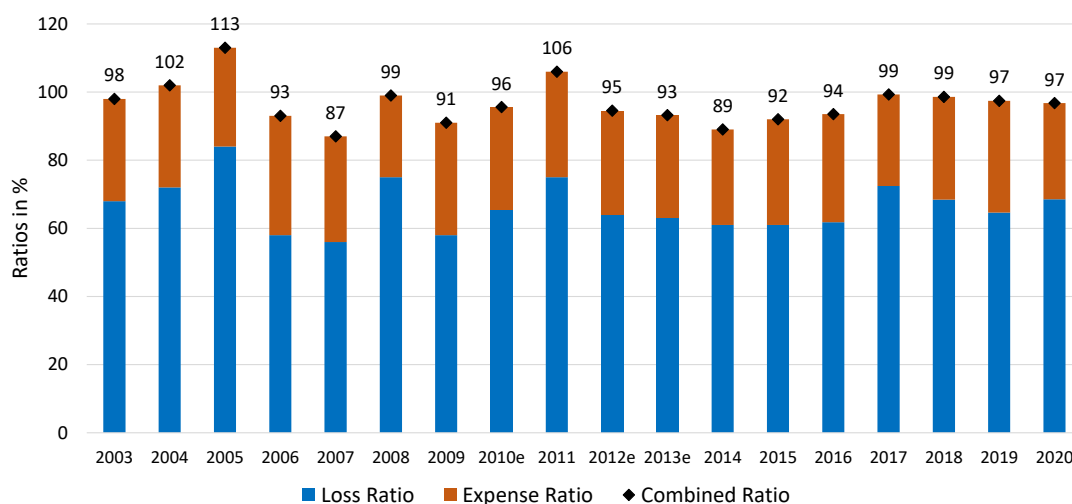
A slight decrease in the average combined ratio¹⁷ of the global non-life reinsurance market covered by the SWM can be seen in 2019–2020. Combined ratios remain below 100%, indicating profitable underwriting. The highest combined ratio was in 2005, driven by Hurricane Katrina in the US, which caused losses of \$82 billion.¹⁸ The second worst was in 2011, driven by the severe tsunami in Japan and flooding in Thailand.

Figure 27: Reinsurance gearing ratios (per cent, 2004–2020)



Source: SWM 2021

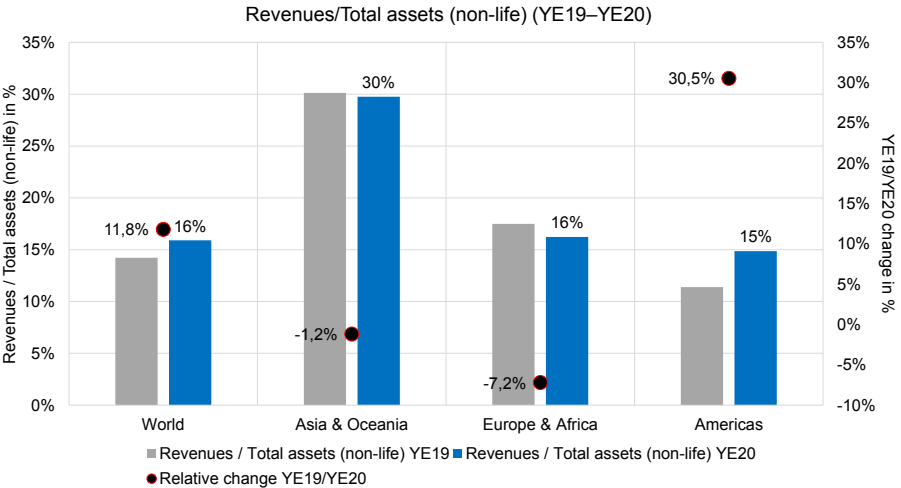
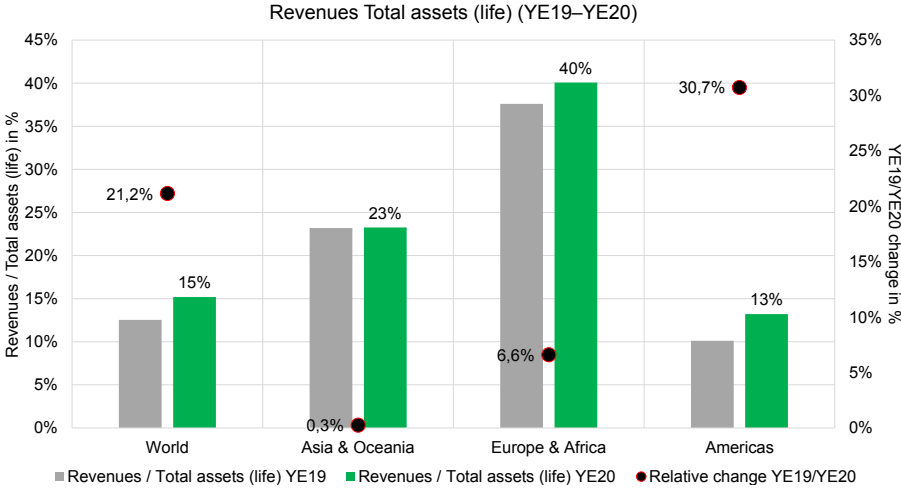
Figure 28: Non-life reinsurance combined ratios (per cent, 2003–2020)



Source: SWM 2021

For both life and non-life reinsurance, the ratio of revenues to total assets is around 15%, with some regional differences.

Figure 29: Reinsurance revenues (per cent)



Source: SWM 2021

ENDNOTES

- 1 More specifically, end-2019 and end-2020 data.
- 2 Including market, credit and/or liquidity risk.
- 3 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.
- 4 Argentina; Australia; Austria; Belgium; Brazil; Bulgaria; Canada; Chile; China; Colombia; Croatia; Czech Republic; Finland; France; Germany; Hong Kong, China; Hungary; Iceland; Israel; Italy; Japan; Korea; Luxemburg; Malaysia; Malta; Mexico; Morocco; Netherlands; New Zealand; Philippines; Poland; Portugal; Romania; Russia; Singapore; Slovak Republic; Slovenia; South Africa; Spain; Switzerland; Taiwan, China; United Kingdom; United States of America.
- 5 Reported according to the jurisdictional capital standard.
- 6 Reinsurers are not highlighted as a specific category in the 2021 GIMAR due to the limited number of reinsurers in the Insurer Pool and in order to keep consistency with previous IAIS reports. Moreover, there was no special focus on reinsurers in the 2021 GIMAR (in contrast to the public consultation document on the Developments of Liquidity Metrics – Phase 2). Reinsurers may be presented as a separate category in future GIMAR reports.
- 7 For this analysis, the top five industries most negatively affected by Covid-19 are: (1) airlines, including plane producers; (2) tourism, travel, restaurants and hospitality; (3) leisure facilities, including casinos and casino gaming; (4) auto parts and equipment; and (5) oil and gas drilling.
- 8 Such as whole life insurance with guaranteed rates, fixed-rate annuities, variable annuities or unit-linked products with minimum guarantees.
- 9 MA allows insurers to add a premium to the risk-free rates used to discount liabilities, which enhances solvency positions and incentivises asset-liability management and hold-to-maturity.
- 10 Examples of powers of intervention: limit or ban activities, including the acceptance of deposits or premiums; temporarily suspend or restrain free disposal of assets; suspend, delay or limit all or part of the payment of surrenders; ban or limit the distribution of dividends to shareholders; require the sale/business transfer of some activities.
- 11 Examples of macroprudential tools: measures to prevent risks that pose a serious threat to financial stability (such as halting surrenders); modify provisions for profit distribution to policyholders and/or shareholders; require insurance business transfers.
- 12 Investment-grade debt that is downgraded to a below-investment-grade rating.
- 13 As mentioned in paragraph 48 of the GME document, the base year for the IIM 2019 Absolute methodology is set using denominators from the data exercise year 2018. This will be reviewed during the next regular review.
- 14 Number of countries where insurance groups operate with branches and/or subsidiaries outside of the respective home countries.
- 15 The number codes refer to the data rows in the IIM 2021 data template (see Annex 1).
- 16 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.
- 17 Combined ratio = Loss + Expense ratio.
Loss ratio = Incurred claims including loss adjustment expenses (LAE) / Net earned premiums.
Expense ratio = Other expenses than LAE / Net earned premiums.
- 18 <https://www.reinsurancene.ws/insurance-industry-losses-events-data/>



IAIS

INTERNATIONAL ASSOCIATION OF
INSURANCE SUPERVISORS

International Association of Insurance Supervisors

c/o Bank for International Settlements

CH-4002 Basel, Switzerland

Tel: +41 61 280 8090 Fax: +41 61 280 9151

www.iaisweb.org