MILLIMAN RESEARCH REPORT

Analysis of life insurers' second set of Solvency and Financial Condition Reports

European and UK life insurers

February 2019

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Introduction

Solvency II came into effect on 1 January 2016 and introduced a number of disclosure requirements for European insurers. Under these requirements, the majority of European insurers were required to publish detailed Solvency and Financial Condition Reports (SFCRs) for the first time in May 2017. The second set of SFCRs were published the following year, in May 2018.[1] The SFCRs contain a significant amount of information on the insurance companies, including details on business performance, risk profile, balance sheet and capital position, amongst other things. Insurers are also required to publish a great deal of quantitative information in the public Quantitative Reporting Templates (QRTs) included within the SFCRs.

EUROPEAN MARKET COVERAGE

Our analysis of the European life insurance market covers 600 companies from 31 countries and one territory, representing approximately £612 billion (€691 billion[2]) of Gross Written Premium (GWP) and approximately £6,508 billion (€7,302 billion) of gross Technical Provisions. The countries and territories included in the analysis are:

- Austria (AT)
- Belgium (BE)*
- Bulgaria (BG)
- Croatia (HR)
- Cyprus (CY)
- Czech Republic (CZ)
- Denmark (DK)*
- Estonia (EE)
- Finland (FI)
- France (FR)*
- Germany (DE)*
- Gibraltar (GI)
- Greece (GR)
- Hungary (HU)
- Iceland (IS)
- Ireland (IE)*
- Italy (IT)*
- Latvia (LV)
- Liechtenstein (LI)
- Lithuania (LT)
- Luxembourg (LU)
- Malta (MT)
- Netherlands (NL)*
- Norway (NO)
- Poland (PL)
- Portugal (PT)
- Romania (RO)
- Slovakia (SK)
- Slovenia (SV)
- Spain (ES)*
- Sweden (SE)*
- United Kingdom (UK)*

* One of the 10 largest European life insurance markets.

Our analysis is based on a sample of insurers that are primarily focussed on selling life insurance business and, as a result, some composite companies have been excluded from the analysis. Reinsurers have been included in the analysis where their business has been deemed to be predominantly life reinsurance.

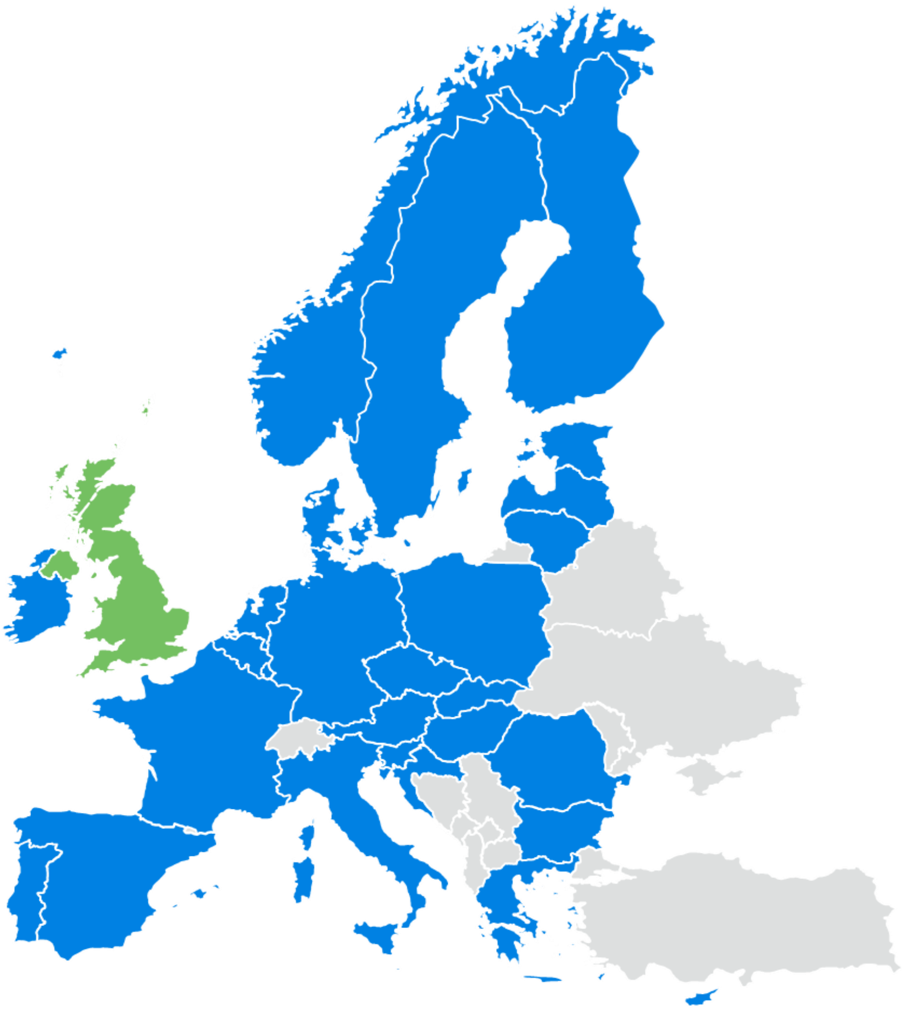
The charts and results in this report focus on 10 of the largest European life insurance markets by the total volume of technical provisions, denoted in the list above with asterisks. These markets account for over 90% of the total European market.

Figure 1 shows the geographical coverage of this report. The countries shaded blue are the countries included in the report. The UK is highlighted in green.

[1] These SFCRs are referred to as the year-end 2017 SFCRs throughout this report though the reporting date for some firms was not 31 December 2017.

[2] GBP: EUR exchange rate of 1:1.125.

FIGURE 1: EUROPEAN COUNTRIES INCLUDED IN THE ANALYSIS



UNDERLYING DATA

The analysis underlying this report focusses on the quantitative information contained in the public QRTs. Where relevant we have also studied the SFCRs to gain additional insights into some companies, in particular if they displayed characteristics that differed from market norms. Our focus is on solo entities rather than groups.

In carrying out our analysis and producing this research report, we relied on the data provided in the SFCRs and QRTs of our sample companies. We have not audited or verified this data or other information. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete.

We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have not found material defects in the data. It should be noted that in some cases errors were spotted in the underlying data. We have made minor adjustments to the data to correct known errors such as inconsistencies between QRTs in order to better inform our analysis; however, we have not made any material changes to the underlying data. We have not made any changes to the data to reflect additional information or changes following the reporting date.

This research report is intended solely for informational purposes and presents information of a general nature. The underlying data and analysis have been reviewed on this basis. This report is not intended to guide or determine any specific individual situation and persons should consult qualified professionals before taking specific actions.

The data analysed in this report has been sourced from Solvency II Wire Data and companies' disclosed SCFRs. The data is available via subscription from: https://solvencyiiwiredata.com/about/.

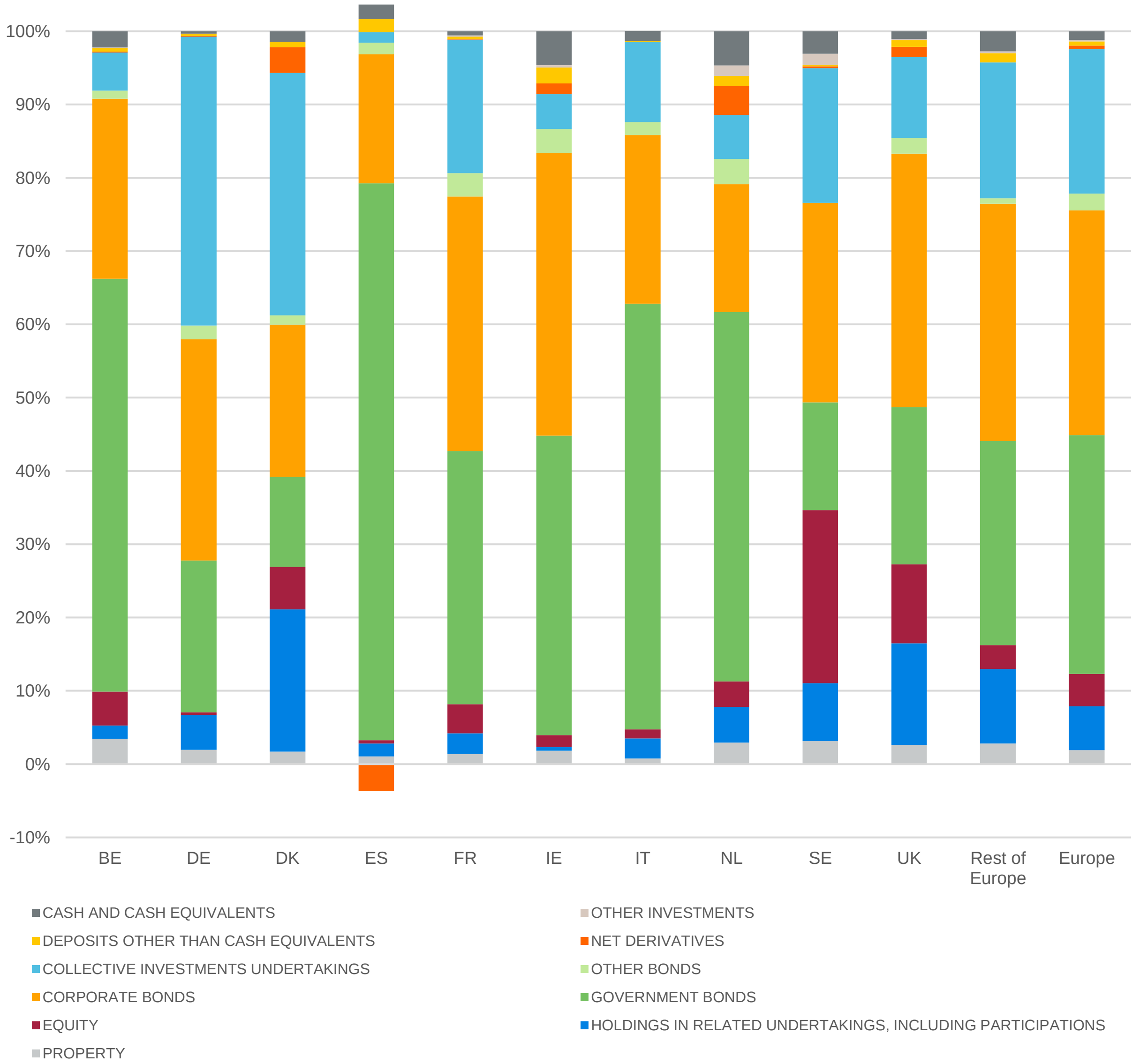
Analysis of European life insurers

Analysis of balance sheet

ASSETS

The chart in Figure 2 shows the split of financial investments held by life insurers across European countries as at year-end 2017, with the total EU figures represented in the last bar on the chart, labelled as 'Europe.' This chart comprises financial investments classified as 'Investments (other than assets held for index-linked and unit-linked contracts)' and 'Cash and cash equivalents' on the Solvency II balance sheet.

FIGURE 2: SPLIT OF NON-LINKED ASSETS ACROSS EUROPE



In general, investments in government bonds and corporate bonds make up the majority of financial investments on European life insurers' balance sheets. In aggregate, across our sample of European insurers, government bonds and corporate bonds make up 33% and 31% of total financial investments, respectively. Government bonds make up a significant proportion of investments in most of the countries, including over 75% of total investments in Spain.

Investments in collective investment schemes make up a further 20% of total financial investments. This is due to large holdings of collective investment schemes by German (39%), Danish (33%), French (18%) and Swedish (18%) life insurers.

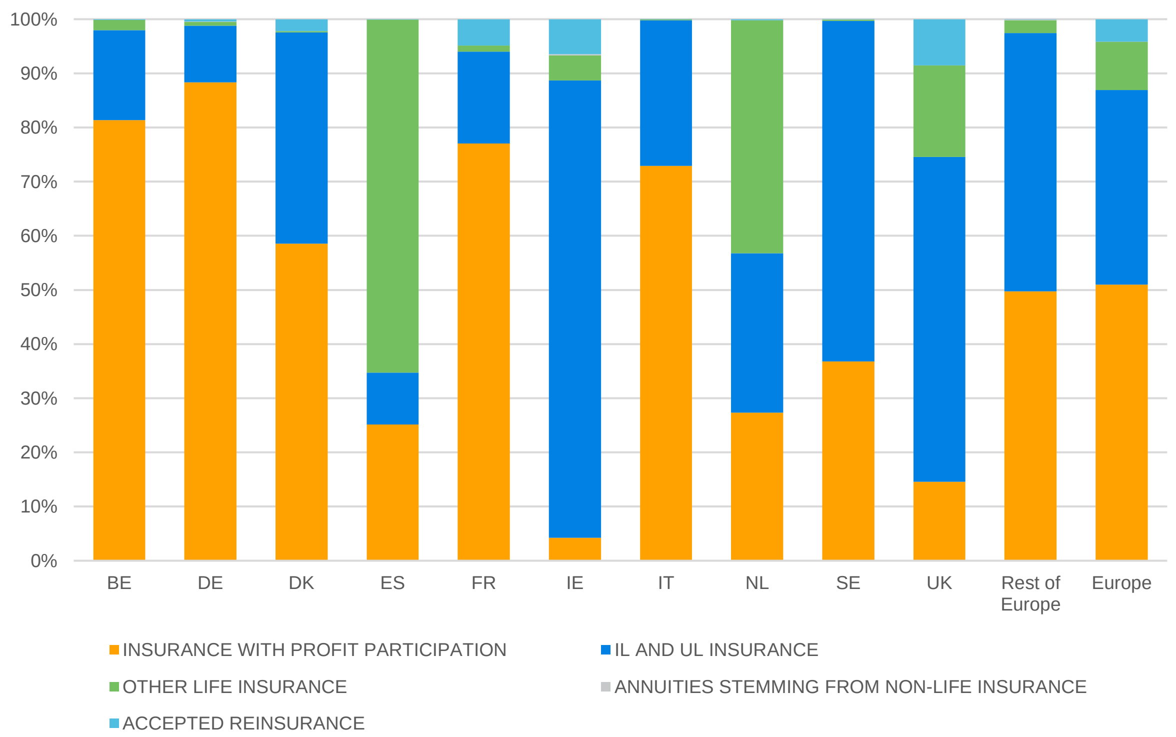
Holdings in related undertakings, including participations, make up only 6% of total financial investments, but are a much higher proportion in some countries: Denmark (19%) and the UK (14%).

The derivatives shown in Figure 2 represent the net derivative position. Based on the companies in our sample a few have net negative positions, meaning that on average the value of derivative liabilities is greater than the value of derivative assets on the Solvency II balance sheet. This is particularly prevalent in Spain.

LIABILITIES

The chart in Figure 3 shows the split of Technical Provisions (TPs) by line of business held by life insurers across European countries as at year-end 2017.

FIGURE 3: SPLIT OF TECHNICAL PROVISIONS BY LINE OF BUSINESS ACROSS EUROPE



In aggregate, across our sample of European countries, 'Insurance With Profit Participation' makes up over half of the total TPs for life insurers (51%). 'Index-Linked (IL) and Unit-Linked (UL) Insurance' makes up the second-largest portion of TPs at 37%. The TPs for many large European insurance markets including the Belgian, French, German and Italian markets, are dominated by 'Insurance With Profit Participation', whereas in the markets of Ireland, Sweden and the UK the TPs are predominantly in respect of 'IL and UL Insurance' business. As a result, these two lines of business represent the largest portion of TPs across Europe on average.

'Other Life Insurance' (8%), which includes predominantly traditional protection business, has the largest share of the market in only two countries: the Netherlands and Spain.

'Accepted Reinsurance' (4%) makes up the bulk of the remaining TPs, while 'Annuities Stemming from Non-Life Insurance Contracts' accounts for less than 1% of total TPs.

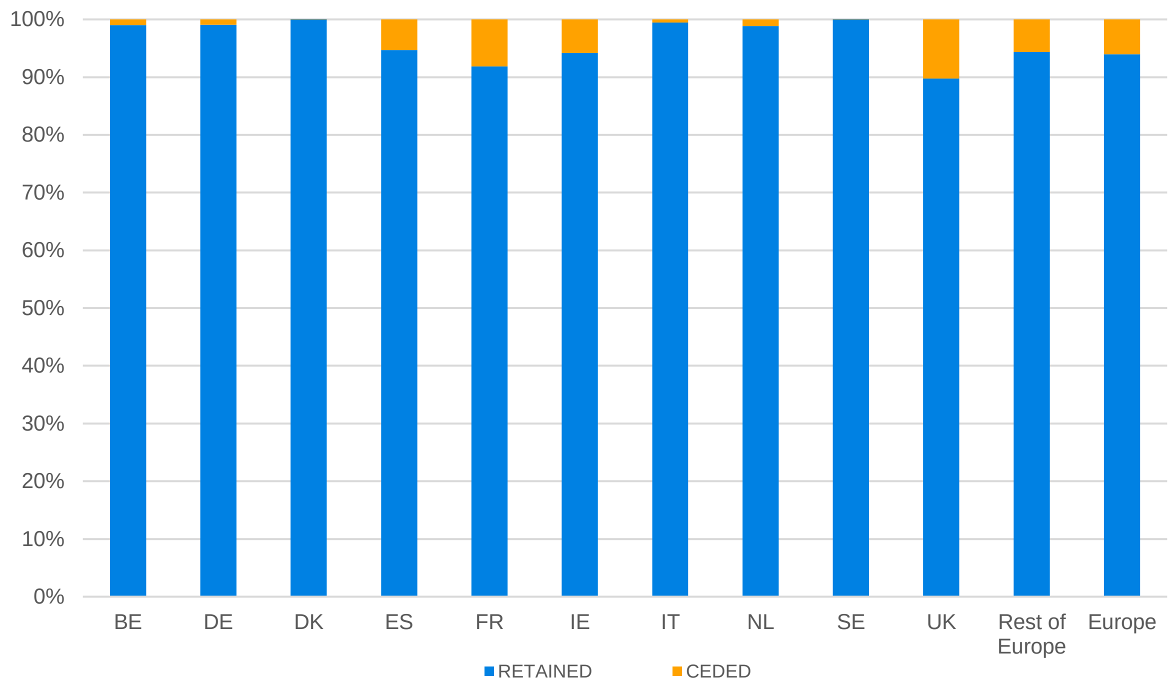
The technical provisions in respect of 'Health Similar to Life Techniques' (HSLT) business have been excluded from Figure 3 as these lines of business are very small on average across the sample of companies considered in the analysis.

Since the first set of SFCRs was published the market share of 'Insurance With Profit Participation' has decreased from 52% to 51%, while 'IL and UL Insurance' has increased its share of total TPs from 34% to 37%.

REINSURANCE

The chart in Figure 4 shows how the use of reinsurance varies across European countries as at year-end 2017. The ceded rates represent the difference in the Best Estimate Liability (BEL) gross and net of reinsurance recoverables.

FIGURE 4: ANALYSIS OF USE OF REINSURANCE ACROSS EUROPE



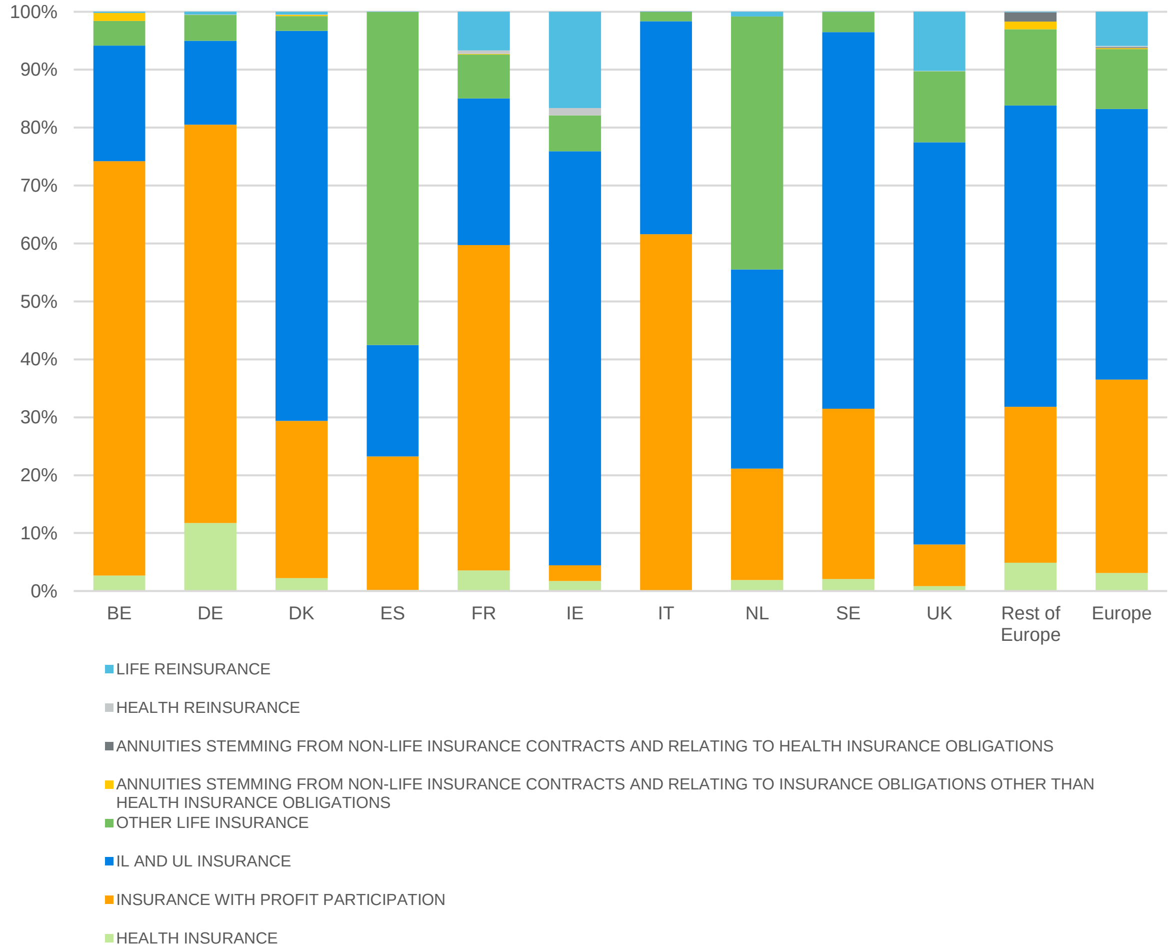
On average about 6% of the BEL is reinsured across Europe. This varies by country, with the UK being the most reliant on reinsurance, followed by France, Ireland and Spain.

The impact of reinsurance on BEL may not always give the full impact of reinsurance. For example, a longevity swap could potentially lead to a slight increase in the BEL, but will be offset by a larger impact on the Solvency Capital Requirement (SCR) and Risk Margin.

Analysis of premiums

The chart in Figure 5 shows the split of GWP by line of business held by life insurers across European countries as at year-end 2017. GWP includes premiums payable on in-force business and on any new sales over the reporting period.

FIGURE 5: SPLIT OF GROSS WRITTEN PREMIUMS BY LINE OF BUSINESS ACROSS EUROPE



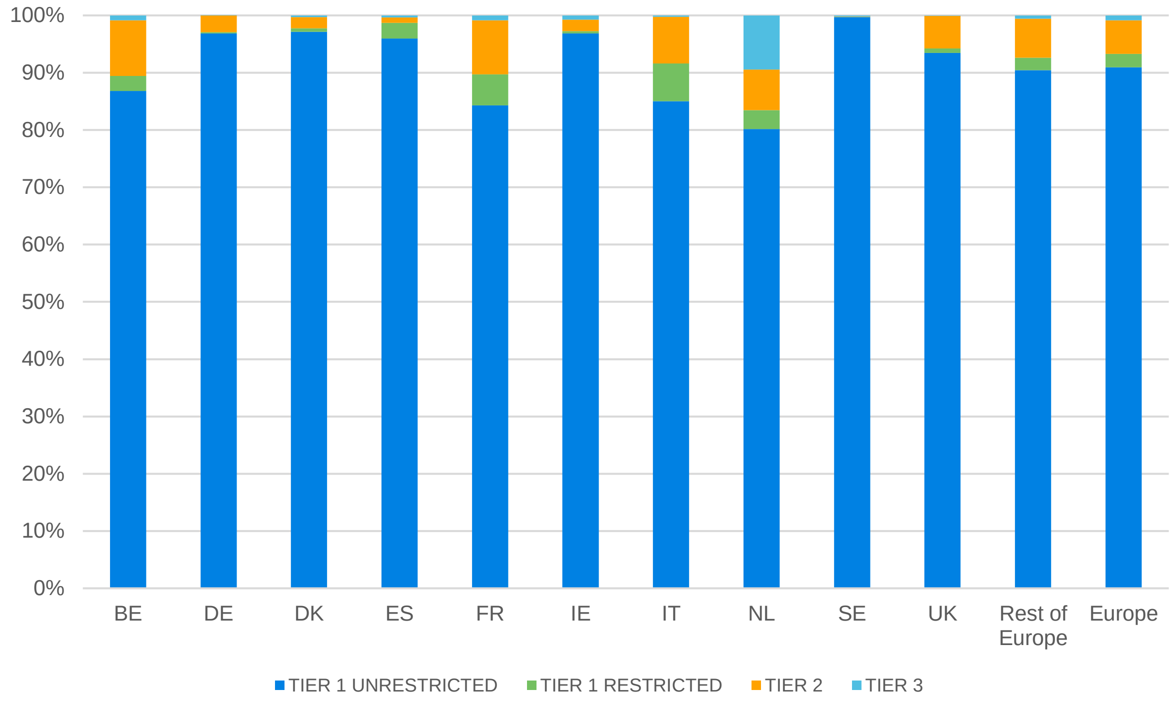
The split of premium volumes by line of business is broadly consistent with the split of TPs by line of business shown in Figure 3 above. On average across our entire sample, 'Insurance With Profit Participation' (33%) and 'IL and UL Insurance' (47%) make up the largest portions of premium volumes. This could suggest that there is more growth in the 'IL and UL Insurance' market than the 'Insurance With Profit Participation' market. This is reflected by the change in TPs outlined in the previous section as well as a comparison to the breakdown of the GWP by the line of business from the first set of SFCRs.

In the first set of SFCRs 38% of GWP was attributable to 'Insurance With Profit Participation', while 32% was for 'IL and UL Insurance', changing to 33% and 47%, respectively.

Analysis of Own Funds

The chart in Figure 6 shows the split of Own Funds across European countries as at year-end 2017.

FIGURE 6: SPLIT OF OWN FUNDS ACROSS EUROPE



The majority of Own Funds (91%) held by EU insurers in our sample are classified as Tier 1 unrestricted Own Funds. This is the highest form of capital in terms of quality and loss absorbency as defined under Solvency II. Whilst the split of Own Funds varies by country, in general the majority of European insurers have a very high portion of Tier 1 unrestricted Own Funds.

Tier 1 restricted Own Funds make up 2% of Own Funds on average across Europe. Tier 2 Own Funds make up 6% of total Own Funds and Tier 3 Own Funds make up just 1% of total Own Funds on average.

There has been little to no change in the breakdown of the Own Funds by tier since the first set of SFCRs were published.

Analysis of solvency coverage

The table in Figure 7 shows the weighted average solvency coverage ratios[3] for the Solvency Capital Requirement (SCR) and the Minimum Capital Requirement (MCR) across European countries.

FIGURE 7: SOLVENCY COVERAGE RATIOS BY COUNTRY

	BE	DE	DK	ES	FR	IE	IT	NL	SE	UK	REST OF EUROPE	EUROPE
RATIO OF ELIGIBLE OWN FUNDS TO SCR	197%	389%	293%	235%	208%	161%	229%	179%	292%	155%	218%	218%
RATIO OF ELIGIBLE OWN FUNDS TO MCR	417%	915%	824%	534%	443%	423%	487%	362%	1120%	552%	639%	579%

Overall, the average solvency coverage ratios for European life insurers show approximately double the SCR requirement, with the weighted averages significantly in excess of the required solvency coverage ratio of 100%. The European average SCR coverage ratio is 218%, based on the companies included in our sample, and the average MCR coverage ratio is 579%.

The chart in Figure 8 shows the distribution of the SCR coverage ratio by country as at year-end 2017. Note that the distribution shows the median SCR coverage ratio as a white line. The weighted average SCR coverage ratio is also shown as a blue dot, which is comparable to the percentages shown in Figure 7 above.

FIGURE 8: DISTRIBUTION OF SCR COVERAGE RATIO BY COUNTRY[4]

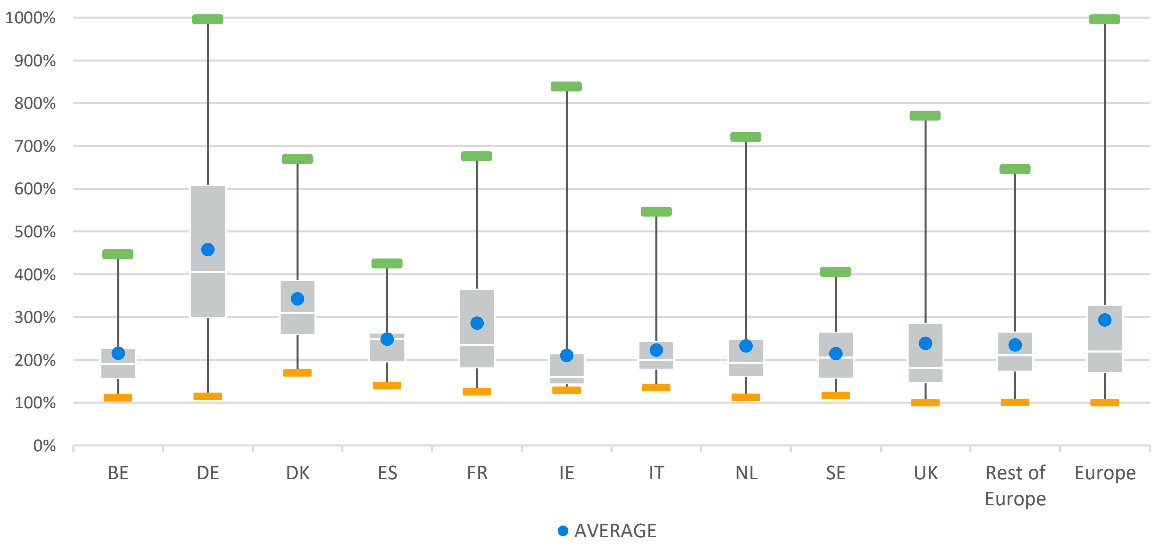


Figure 8 shows that, for most countries, the distribution of SCR coverage ratios is quite wide, although this does depend on the number of life insurers included in the analysis for each country. The largest ranges are seen in Germany, the UK and Ireland, where the number of companies included in our analysis is high.

German, Danish, Polish and Cypriot (both included in the 'Rest of Europe' category) insurers have the highest median solvency coverage ratios across Europe.

[3] The weighted average solvency coverage ratios have been calculated as the sum of the Own Funds of the life insurers in each country divided by the sum of the SCR or MCR of the life insurers in each country.

[4] Note that we have excluded companies where the SCR coverage ratio exceeded 1,000% to allow the chart to be more readable. This excluded three companies in the UK and one in Sweden.

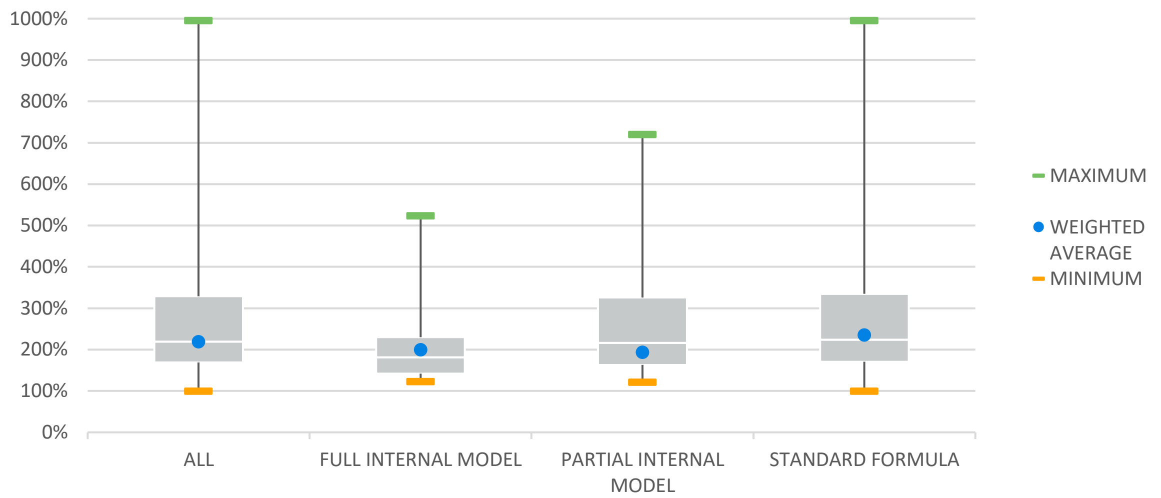
Based on the life companies included in our analysis, there were no insurers with an SCR coverage ratio below 100% as at year-end 2017. The average distribution at a European level shows a minimum SCR coverage ratio of life insurers of 100% for one company in the UK. Figure 8 shows a maximum SCR coverage ratio of 996% (Germany), but this excludes three UK firms and one Swedish firm that reported SCR coverage ratios in excess of 1,000%. The highest of these companies was from the UK and reported an SCR coverage ratio of 6,976%. The range of the SCR coverage ratios is comparable to that seen in the first set of SFCRs.

The weighted average SCR coverage ratio was 293% across all firms. This weighted average in Germany is significantly higher at 458%, which is in line with the higher coverage ratios seen for German insurers. Some of this is due to a higher-than-average use of long-term guarantee measures, covered in a later section of this report.

The majority of the 643 companies included in our analysis are companies that report under the Solvency II Standard Formula (87%). Of the remaining 81 companies (13%), 51 companies (8%) were using a Partial Internal Model (PIM) and 30 companies (5%) were using Full Internal Models (FIMs).

The chart in Figure 9 shows a split of the SCR coverage ratio distribution by SCR calculation type as at year-end 2017, with any undertaking-specific parameters (USP) companies included with the Standard Formula companies. Note that the distribution shows the median SCR coverage ratio as a white line. The weighted average SCR coverage ratio is also shown.

FIGURE 9: DISTRIBUTION OF SCR COVERAGE RATIOS BY SCR CALCULATION METHOD

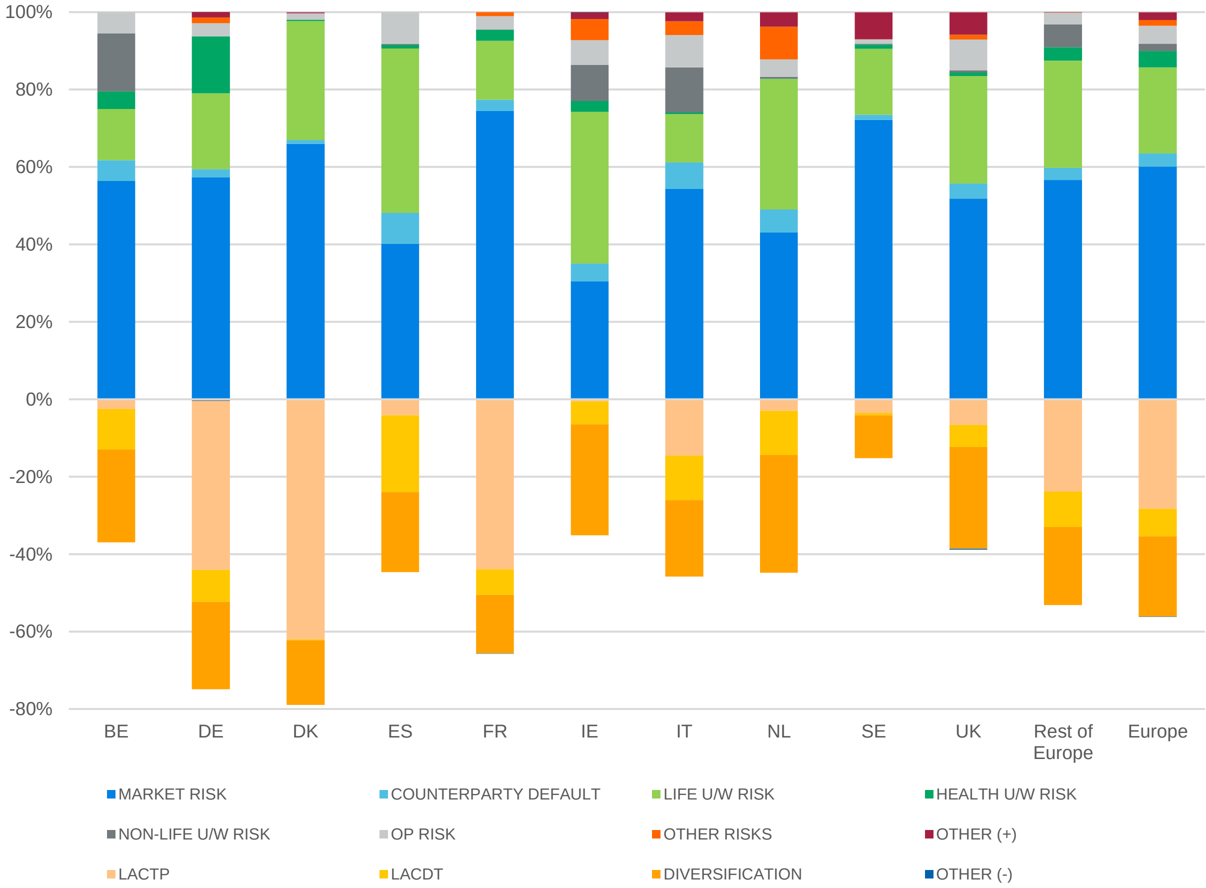


In general the distributions are broadly similar, with the PIM and FIM companies having slightly tighter distributions and slightly lower median SCR coverage ratios than the Standard Formula companies. It is difficult to draw any inferences from this but Figure 9 suggests that capital is more closely managed in companies with a PIM or a FIM than in those using the Standard Formula. This may be because internal model companies are more likely to be part of large insurance groups and therefore may more actively manage their capital. This is consistent with what was seen with the first set of SFCRs.

Analysis of SCR

The chart in Figure 10 shows the breakdown of the SCR by risk module for companies across Europe as at year-end 2017, with the European average represented in the last bar on the chart, labelled as 'Europe.'

FIGURE 10: BREAKDOWN OF SCR BY COUNTRY[5]



On average across the EU, market risk makes up the highest proportion of the undiversified SCR (60%) for life insurers. Life underwriting risk makes up the second-largest portion (23%). Only Spain and Ireland do not have market risk as the greatest proportion of the undiversified SCR of the top 10 largest markets. Both have the highest proportion of the undiversified SCR as life underwriting risk.

The remainder of the undiversified SCR is mostly made up of operational risk (5%), health underwriting risk (4%) and Counterparty default risk (3%). Non-life underwriting risk, other risks (including intangible asset risk and underwriting risk which has not been specified as life, non-life or health) and other positive adjustments account for around 2%, 1% and 2%, respectively.

Some of the countries in the sample, such as Germany, France, the Netherlands and the UK, show little to no non-life underwriting risk in the breakdown. The companies in our sample in these countries tended to be more focussed as either life or non-life companies and as such it was easier to decide which companies to include. In other countries such as Belgium, Italy and Romania[6] almost all companies are composites and as such it was difficult to define the distinction between life and non-life companies. As such, these countries display a greater proportion of their SCRs held for non-life underwriting risk.

The diversification of risk results in a reduction of 21% of the undiversified SCR on average across Europe. This is diversification between the risk sub-modules and not within the risk modules (which is not disclosed in the SFCRs for many companies). The amount of benefit varies widely by country, with diversification benefit highest

[5] The amounts within this figure are as a percentage of the total of the capital requirement for each risk module, including operational risk (the undiversified SCR). Each element has been calculated as the sum across the firms within the region.

[6] Romania is included in the 'Rest of Europe' data.

where there is a wider spread of risk exposure. For example, the Netherlands has the highest diversification benefit, reflecting the fact that Dutch insurers have a wide range of risk exposures across market risk, life underwriting risk, health underwriting risk and non-life underwriting risk, resulting in a reduction of 30%. This is closely followed by Ireland (29%), the UK (26%) and Belgium (24%).

The Loss Absorbing Capacity of Technical Provisions (LACTP) and the Loss Absorbing Capacity of Deferred Tax (LACDT) result in further reductions of 28% and 7%, respectively. LACTP is largest in Denmark at 62% reduction, while LACDT is largest in Spain at 20%.

It's not surprising that many of the countries with high exposure to market risk are some of the countries with the largest portions of TPs in respect of 'Insurance With Profit Participation' (Belgium, Germany, France and Italy). The investment guarantees associated with these contracts result in a high exposure to market risk. Some of these countries also benefit from significant reductions as a proportion of the undiversified SCR reflecting the LACTP associated with 'Insurance With Profit Participation' business. The LACTP in Belgium is lower than the other countries with high levels of 'Insurance With Profit Participation' business.

Unfortunately, due to the nature of the public disclosure requirements for PIMs and FIMs, it is not straightforward to make a direct comparison with Standard Formula firms to analyse the SCR breakdown by risk type, as the risk exposures captured in the internal models vary by company. Where reasonable we have mapped the risks resulting from the PIMs and FIMs into the Standard Formula structure for comparison.

The breakdown of the SCR has not changed significantly since the first SFCRs were published.

Long-term guarantee measures

A number of European life insurers in our sample use long-term guarantee measures (LTGMs). The measures that are available to insurers and that are discussed in this report are the:

- Matching Adjustment (MA)
- Volatility Adjustment (VA)
- Transitional Measures on Technical Provisions (TMTP)

The chart in Figure 11 shows the breakdown of the SCR coverage ratio by the different LTGM and non-LTGM components (as at year-end 2017) for each of the countries we have looked at, as well as the 'Rest of Europe'. The total across all firms in our sample is also shown.

FIGURE 11: BREAKDOWN OF SCR COVERAGE RATIO BY LONG-TERM GUARANTEE MEASURE

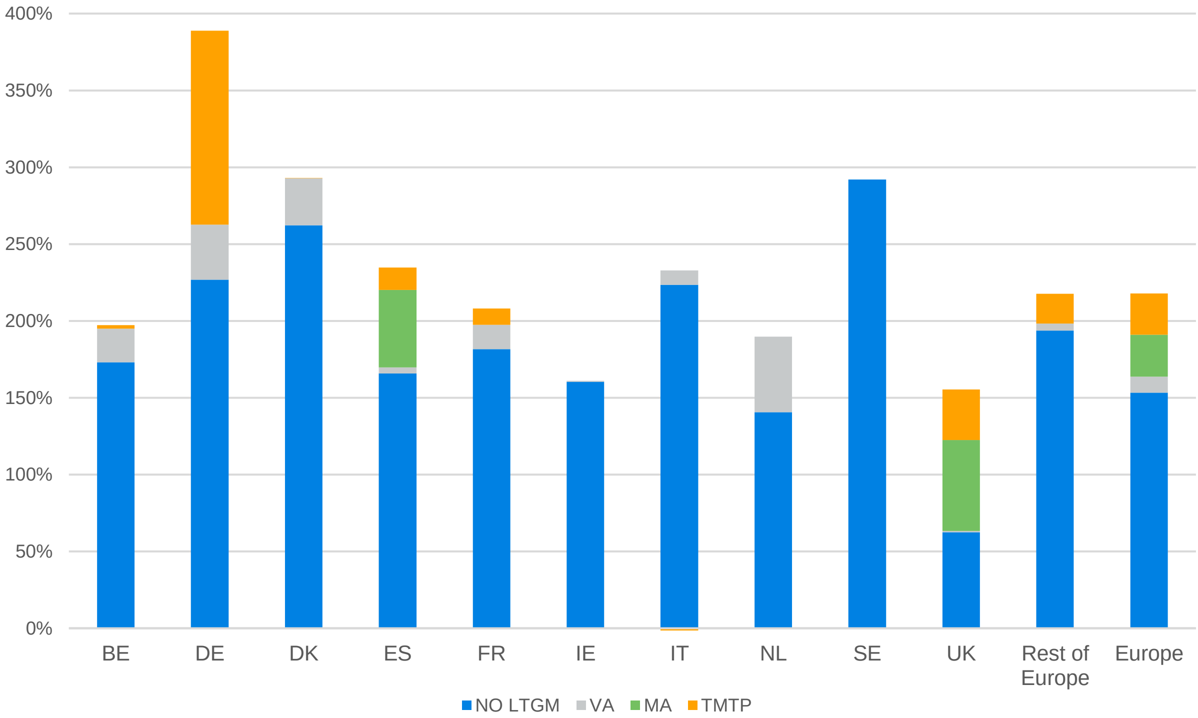


Figure 11 shows that different countries place different levels of reliance on the various LTGMs. The VA is the most widely used measure, affecting 21 of the 32 countries in our sample, including nine out of the 10 countries we have shown above.[7] It has the largest impact in the Netherlands, where it contributes an average of 49% to the SCR coverage ratio. In general, usage of the VA is lower in countries where prior approval by the regulator is required, such as the UK and Ireland. Approval is also required in Denmark. However, there is a high VA usage there (contributing 30% of the SCR coverage ratio). There are also substantial VA impacts in Germany (36%), Belgium (22%) and France (16%). Higher take-up in countries such as Germany could be due to the possibility of using the Dynamic Volatility Adjustment (DVA).

The TMTP is being used in 12 of the countries, based on our sample. Germany's SCR coverage ratio owes 126% of its total to the TMTP, the greatest percentage of any country in our sample. Almost 60% of the German firms in our report apply the TMTP, with some showing very large benefits from its use. The other countries that receive the most significant increase from using the TMTP are France (11%), Spain (15%) and the UK (33%).

The MA is the least frequently used LTGM, with visible impacts being seen by insurers in the UK and Spain (although in Spain it is only used on legacy business). It contributes 59% and 50% to each country's SCR coverage ratio, respectively, based on the companies in our sample.

[7] Sweden is the only country from our list of 10 that does not have any benefit from any of the LTGMs, of the firms we have selected.

The countries where no companies in our sample use the LTGMs are Estonia, Croatia, Iceland, Latvia, Lithuania, Malta, Poland, Romania, Sweden and Slovenia, as well as Gibraltar. Meanwhile Bulgaria, Cyprus, Ireland, Luxembourg and Slovakia only have small percentages relating to the VA.

When comparing the results in this report to the previous SFCR reports, in general we see there has been a reduction in the benefit received for using the LTGMs. These reductions are likely due to:

- TMTP benefits reducing by one-sixteenth as they run off, but they may also be impacted by recalculations of the measure, if required.
- MA has reduced due to a narrowing of credit spreads over the year in the UK.
- VA has also fallen in many countries in line with a reduction in the VA rates. For example the Euro VA rates have fallen from 13 basis points (bps) to 4 bps and the Danish Krone VA rates have fallen from 51 bps to 30 bps over the year.
- The impact of the VA reduction appears to be slightly dampened for countries which are able to use the DVA compared to those that cannot.

Conclusion

The mix of life insurance business varies across Europe, with many markets (including Belgium, France, Germany and Italy) dominated by 'Insurance With Profit Participation' business, while the market in other countries (such as Ireland, Sweden and the UK) is predominantly in respect of 'IL and UL Insurance' business. This is similar to the mix of business as seen for the first set of SFCRs.

However, despite the different business mix, overall European life insurers had high levels of cover relative to the minimum required capital based on the disclosures in the second set of SFCRs, with an average SCR coverage ratio of 218%. This represents a slight improvement on the first set of SFCRs, which had an average SCR coverage ratio of 207%.

Own Funds are predominantly invested in Tier 1 unrestricted Own Funds (91%), which is the highest form of capital in terms of quality and loss absorbency as defined under Solvency II.

For most countries the largest constituent parts of their SCRs are market risk, with life underwriting risk being the second-largest component.

The LTGMs are used to different extents in each country, with the VA the most widely used. However, in countries where the TMTP or the MA, or indeed both, are used, they generally have much higher impacts on the SCR coverage ratio than the VA.

Analysis of UK life insurers

UK MARKET COVERAGE

Our analysis is based on 87 life insurance companies authorised in the UK for 2017 (85 for 2016). This sample includes domestic companies selling within the UK market only and a small number with cross-border sales. The companies chosen for this report are all mainly life insurers, including mutual societies, annuity writers, bulk purchase annuity providers and closed-book consolidators.

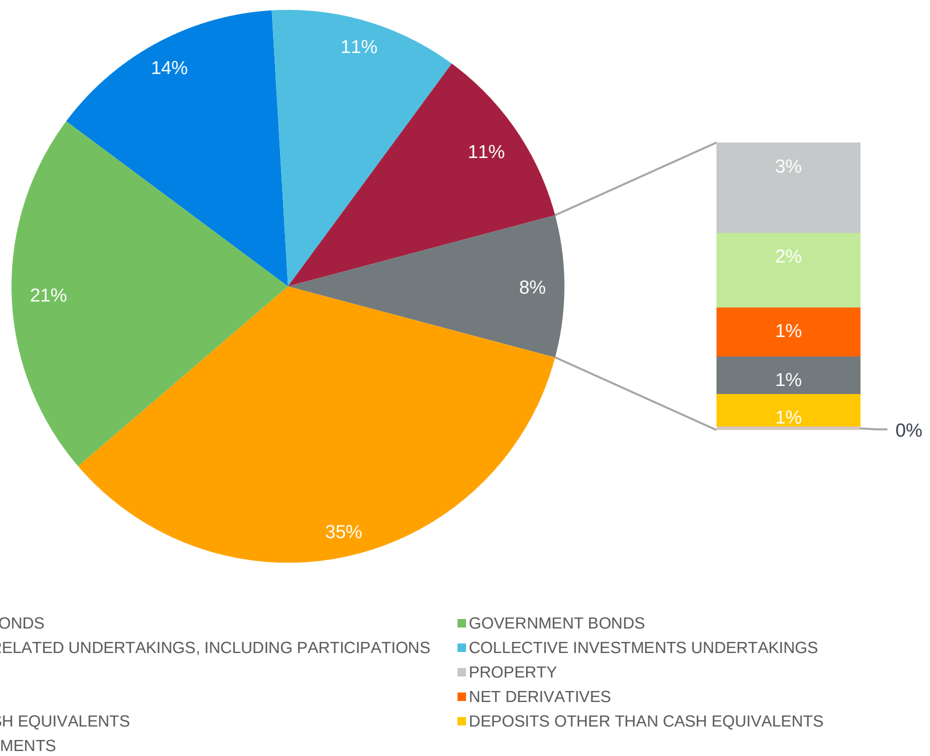
The 87 companies in the UK section of our report represent approximately £207 billion (€233 billion) of GWP and approximately £1,890 billion (€2,123 billion) of gross TPs. Appendix 1 contains a list of all the UK companies included in our analysis.

Analysis of balance sheet

ASSETS

The asset side of the balance sheet for the average UK life company as at year-end 2017 is primarily comprised of financial investments. The breakdown of non-linked financial investments for the UK life insurance market based on our sample of firms is shown in Figure 12.

FIGURE 12: SPLIT OF NON-LINKED FINANCIAL INVESTMENTS BY ASSET CLASS[8]



Outside of the 'Assets Held for IL and UL Contracts', UK life insurers are heavily invested in bonds, with a focus on investment in corporate bonds (35%) over government bonds (21%). There has been little to no change in these proportions since 2016.

The remainder of investments is concentrated in holdings in related undertakings (14%), collectives (11%) and equity (11%). There have been small increases in the proportion of these assets between 2016 and 2017.

Holdings in related undertakings come almost entirely from five of the largest insurers: Standard Life, Aviva, Phoenix Group, Royal London and Prudential, which combined make up 93% of this category. Other insurers exhibit a greater concentration in corporate bonds and collective investments undertakings in the absence of such exposures to related undertakings.

[8] Does not include 'Assets held for Index-Linked and Unit-Linked Contracts'.

LIABILITIES

The chart in Figure 13 shows the breakdown of the total UK life insurers' TPs between the Solvency II lines of business, gross of reinsurance, as at year-end 2017.

FIGURE 13: SPLIT OF TOTAL UK LIFE INSURERS TECHNICAL PROVISIONS BY PRODUCT GROUPS

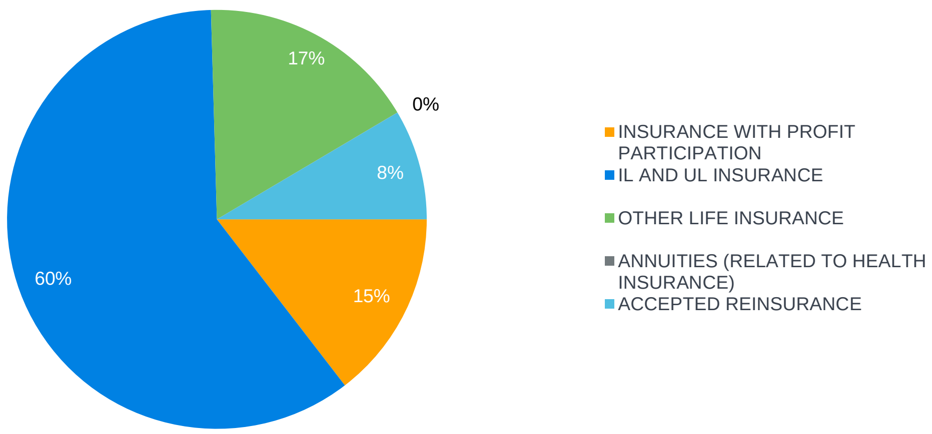


Figure 13 shows that the majority of UK life insurers' TPs are made up of 'IL and UL Insurance' (60%).

'Other Life Insurance', 'Insurance With Profit Participation' and 'Accepted Reinsurance' are the other significant product classes, at 17%, 15% and 8%, respectively.

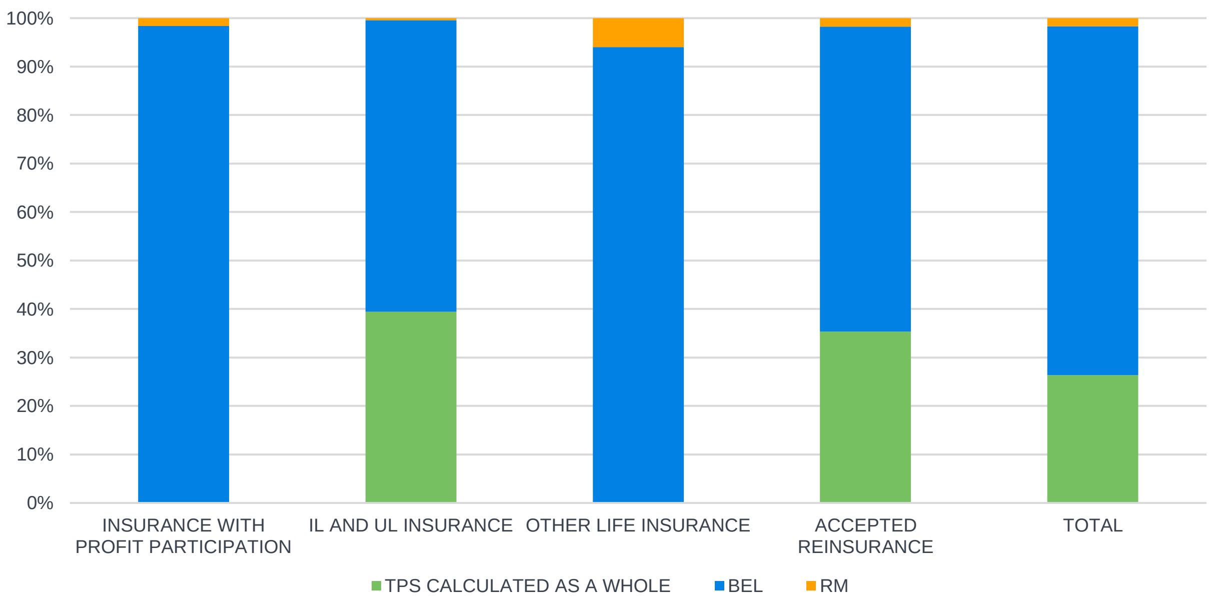
'Annuities (Related to Health Insurance)' is shown on the chart but accounts for less than 0.1% of the total TPs.

Notably the proportion of TPs has reduced for all lines of business since 2016 except for 'Accepted Reinsurance' which has grown in market share.

Overall the total value of life TPs has grown from £1,820 billion in 2016 to £1,879 billion in 2017.

The TPs can be broken down further. A breakdown of the TPs for BEL, Risk Margin (RM) and 'TPs Calculated as a Whole' is shown in Figure 14, split by the Solvency II lines of business.

FIGURE 14: SPLIT OF TECHNICAL PROVISIONS FOR EACH PRODUCT GROUP



'TPs Calculated as a Whole' are only significant for 'IL and UL Insurance' business and 'Accepted Reinsurance'. The 'TPs Calculated as a Whole' under the 'Accepted Reinsurance' category is a result of seven providers with large proportions of 'IL and UL Insurance' business. 'TPs Calculated as a Whole' contributes a relatively large proportion (26%) of the overall TPs due to the significance of UL funds under management within TPs for the UK. The proportion of 'TPs Calculated as a Whole' has increased over the year since the first set of SFCRs was published.

The BEL makes up more than 60% of the TPs for every product group, including 72% of the total insurance market, while the Risk Margin ranges from only 0.4% of 'IL and UL Insurance' TPs to 6.0% of 'Other Life Insurance' TPs.

The table in Figure 15 shows the Risk Margin as a proportion of TPs for each Solvency II line of business as at year-end 2017.

FIGURE 15: RATIO OF RISK MARGIN TO TECHNICAL PROVISIONS BY PRODUCT GROUP

	RM/TP %
INSURANCE WITH PROFIT PARTICIPATION	1.6%
IL AND UL INSURANCE	0.4%
OTHER LIFE INSURANCE	6.4%
ACCEPTED REINSURANCE	1.8%
TOTAL	1.7%

The Risk Margin for 'IL and UL Insurance' is the smallest proportion of TPs, which could be due to the majority of risks being passed onto policyholders, thus leading to a lower Risk Margin. 'Other Life Insurance' has the most significant Risk Margin at 6.0% of TPs. This category incorporates all other product types, including annuities and protection business, for which the Risk Margin is currently relatively high compared to the other product categories, which is due, in part, to the particularly long duration of annuity liabilities and the relatively small BEL for protection business.

Across our sample of UK companies and across all lines of business, the Risk Margin is about 1.7% of BEL. The ratio of the Risk Margin to TPs for 'Accepted Reinsurance' has decreased since the first set of SFCRs, from 3.4% to the current rate of 1.8%. This could be due to changes in the risk profile of the 'Accepted Reinsurance' business or to changes to the risks included within the Risk Margin. The rest of the ratios are largely unchanged.

The table in Figure 16 shows the split of each component of the total technical provisions by line of business as at year-end 2017.

FIGURE 16: SPLIT OF LIFE TECHNICAL PROVISION COMPONENTS BY LINES OF BUSINESS

	TPS CALCULATED AS A WHOLE %	BEL %	RISK MARGIN %	TOTAL TECHNICAL PROVISIONS %
INSURANCE WITH PROFIT PARTICIPATION	0.0%	19.9%	13.7%	14.6%
IL AND UL INSURANCE	88.6%	49.5%	14.9%	60.0%
OTHER LIFE INSURANCE	0.0%	23.2%	62.6%	16.9%
ACCEPTED REINSURANCE	11.4%	7.5%	8.8%	8.5%
TOTAL	100.0%	100.0%	100.0%	100.0%

As noted above, the entirety of the 'TPs Calculated as a Whole' are in respect of the 'IL and UL Insurance' and 'Accepted Reinsurance' lines of business. This is not surprising, given that many companies with unit-linked liabilities can directly replicate or observe the unit liability arising from the funds under management using market instruments, and so are reporting this business under 'TPs Calculated as a Whole', instead of separately calculating the BEL and Risk Margin. However, it should be noted that the reporting of unit-linked liabilities is not consistent across all life insurers, with some insurers reporting the unit-linked fund or funds under management within the BEL figure on the Solvency II balance sheet. This may be a result of the nature of any financial guarantees or policyholder options, which may mean that an individual projection of the unit and non-unit liabilities is required.

The majority of the BEL comes from the 'IL and UL Insurance' line of business, at 49.5%, despite the fact that the unit liability is excluded from the BEL for some insurers (including this instead in 'TPs Calculated as a Whole'). The rest of the BEL is spread across 'Other Life Insurance', 'Insurance With Profit Participation' and 'Accepted Reinsurance'. 'Other Life Insurance' and 'Insurance With Profit Participation' have similar proportions of the total BEL, at 23.2% and 19.9%, respectively. 'Accepted Reinsurance' is a much smaller proportion, at 7.5%.

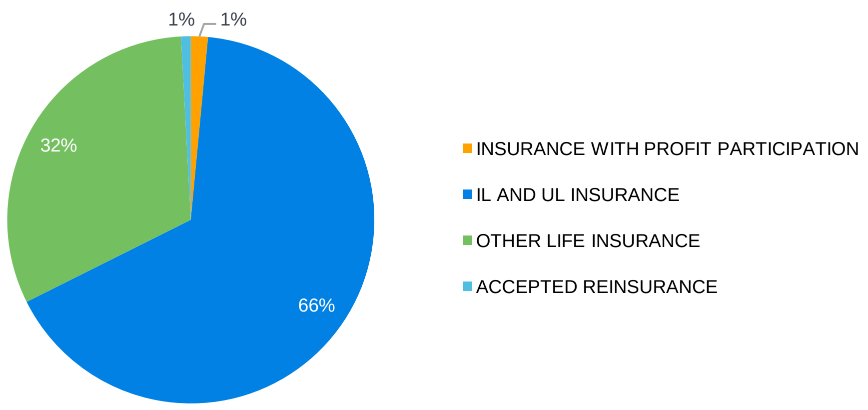
The breakdown of the Risk Margin is quite different from that of the BEL, being dominated by 'Other Life Insurance' (62.6%). 'IL and UL Insurance' business accounted for 14.9% of the total Risk Margin, with 'Insurance With Profit Participation' taking up a similar 13.7% of the total.

The split of the life TPs by line of business has changed since the first set of SFCRs was published. The biggest change is in the split of the BEL which was previously 57% 'IL and UL Insurance'. The reason for this decrease appears to have been primarily due to the reclassification of 'IL and UL Insurance' from BEL to 'TPs Calculated as a Whole'.

REINSURANCE

Reinsurance is widely used by UK life insurers, with reinsurance recoverables of 10.2% of total TPs across the 87 life insurers. The chart in Figure 17 shows the split of the total reinsurance by the Solvency II lines of business to which it is attributable as at year-end 2017.

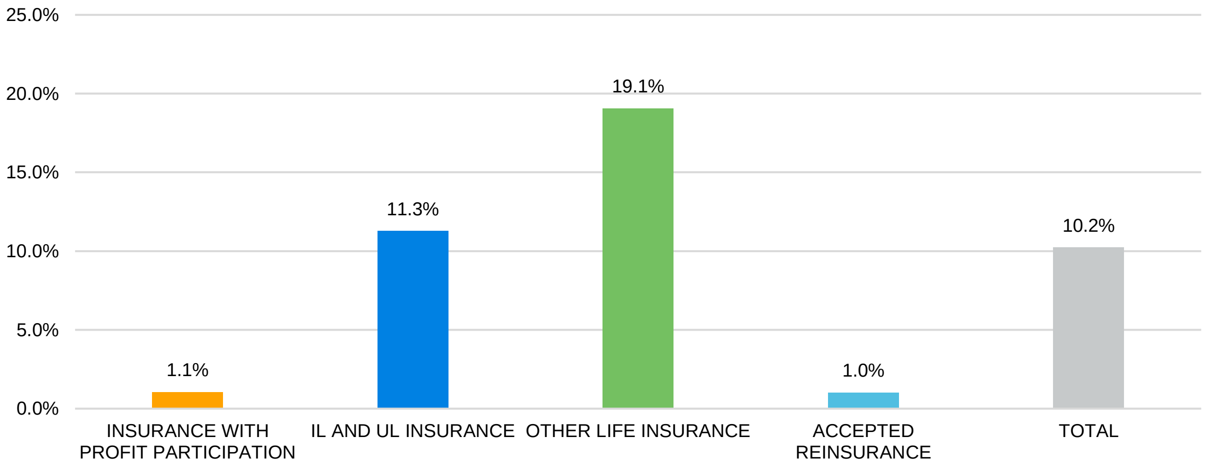
FIGURE 17: SPLIT OF TOTAL REINSURANCE BY SOLVENCY II LINE OF BUSINESS



The majority (by size of reinsurance recoverables) of reinsurance ceded by UK life insurers is in respect of 'IL and UL Insurance' business, making up 66.1% of the total. Another 31.5% of reinsurance ceded is for 'Other Life Insurance', meaning these two categories make up most of the UK life insurers' total recoverables. 'Insurance With Profit Participation' and 'Accepted Reinsurance' make up 1.5% and 0.9% of the total, respectively.

Figure 18 shows the reinsurance recoverables as a percentage of the TPs for each of the main Solvency II lines of business as at year-end 2017, alongside the total ceded percentage for UK life insurers as a whole.

FIGURE 18: PERCENTAGE OF TECHNICAL PROVISIONS WITH REINSURANCE



The line of business with the highest ceded level of reinsurance is 'Other Life Insurance' at 19.1%. This is much higher than the second-largest, which is 'IL and UL Insurance' at 11.3%, although due to the size of this market the value of total recoverables for 'IL and UL Insurance' products is actually much higher than for the other categories (£127 billion against £61 billion). The smallest percentage is 1.0% for 'Accepted Reinsurance'.

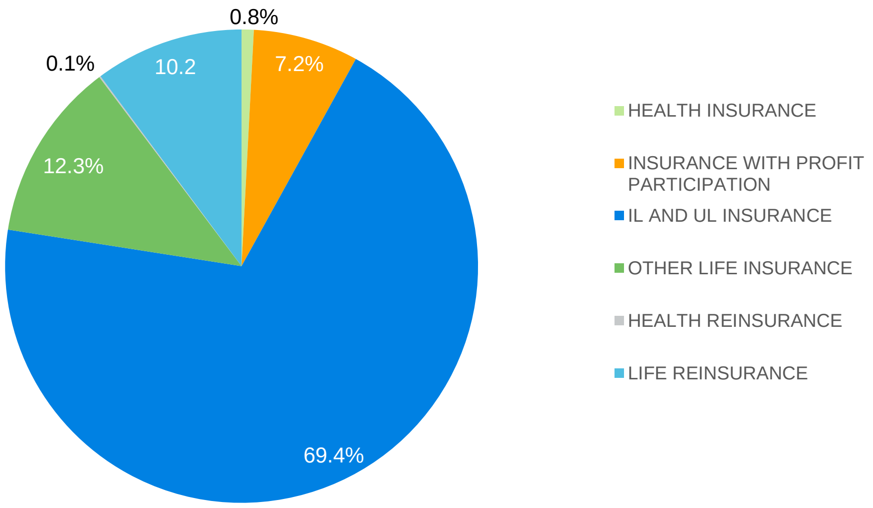
Overall the industry has reinsurance recoverables of around 10.2% of total TPs.

The proportions of reinsurance used within the UK are largely unchanged since the first set of SFCRs.

Analysis of premiums

Due to the long-term nature of life insurance business, the profile of the current book of business for many companies may be quite different from the products currently sold. The largest share of the market for the UK companies in our sample is 'IL and UL Insurance', making up 69.4% of GWP in 2017.

FIGURE 19: SPLIT OF GROSS WRITTEN PREMIUMS BY LINE OF BUSINESS

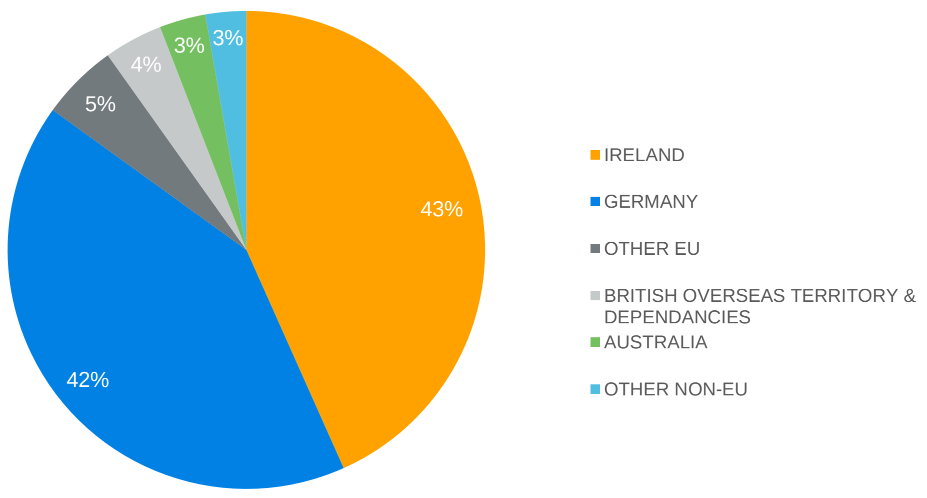


The rest of the GWP is made up of 12.3% 'Other Life Insurance', 10.2% 'Life Reinsurance', 7.2% 'Insurance With Profit Participation' and 0.8% 'Health Insurance'.

This has shown a significant change from 2016, where 'IL and UL Insurance' only accounted for 46.2% and 'Life Reinsurance' accounted for 29.5%.

There are some insurers selling overseas through their UK companies. The chart in Figure 20 shows a rough breakdown of the cross-border sales by country for 2017.

FIGURE 20: CROSS-BORDER SALES BY COUNTRY BY GROSS WRITTEN PREMIUMS



Ireland and Germany account for the majority of cross-border sales from the UK at 43% and 42%, respectively. These percentages are dominated by two companies that have a large volume of cross-border sales, one into Germany and one into Ireland.

The remaining countries all only account for small volumes of cross-border sales, coming to 15% in total. With the exception of Australia, the remaining overseas sales have been grouped into three categories. 'Other EU' countries account for 5% of total GWP (the largest shares of this are sales into France, Finland and the Netherlands). The remainder is 'British Overseas Territories and Dependencies'[9] (4%), Australia (3%) and 'Other Non-EU'[10] (3%).

[9] The figure for 'British Overseas Territories and Dependencies' contains the cross-border sales into the Isle of Man, Guernsey, Jersey and Gibraltar.
[10] The figure for 'Other Non-EU' contains cross-border sales to countries not within the EU with the exception of Australia.

Analysis of Own Funds

The chart in Figure 21 shows the split of Own Funds by tier for all UK life companies in our sample as at year-end 2017.

FIGURE 21: SPLIT OF ELIGIBLE OWN FUNDS BY TIER

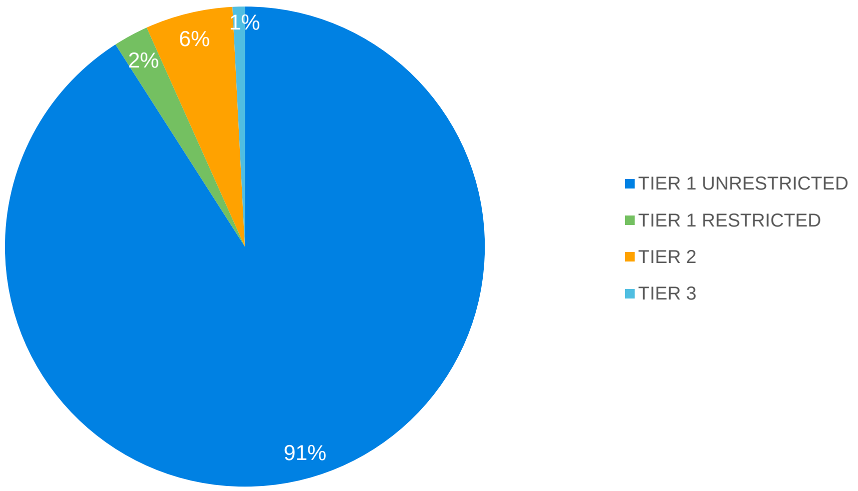


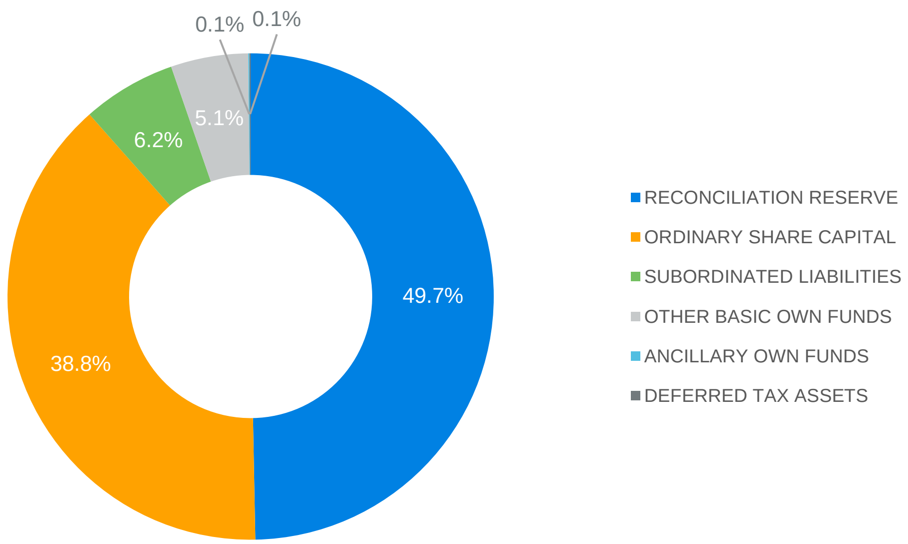
Figure 21 shows that the majority of capital for Own Funds is being held in the highest-quality Tier 1 unrestricted capital. Overall, 91% of UK life insurers' Own Funds are being invested in this highest-quality capital.

Tier 1 restricted capital and Tier 2 capital make up 2% and 6% of the total Own Funds, respectively. Tier 2 is used primarily by the larger firms, with the three largest users of Tier 2 capital accounting for over 50% of the total. Tier 2 capital is primarily made up of subordinated debt and preference shares.

There is a very small amount of Tier 3 capital, which is around 1% of the total. There was very little change to the split of Own Funds when compared to the first set of SFCRs.

Figure 22 shows the components of the Own Funds as at year-end 2017.

FIGURE 22: COMPONENTS OF OWN FUNDS



Own Funds within UK life insurers primarily consist of the 'Reconciliation Reserve' (49.7%) and the 'Ordinary Share Capital' (38.8%).

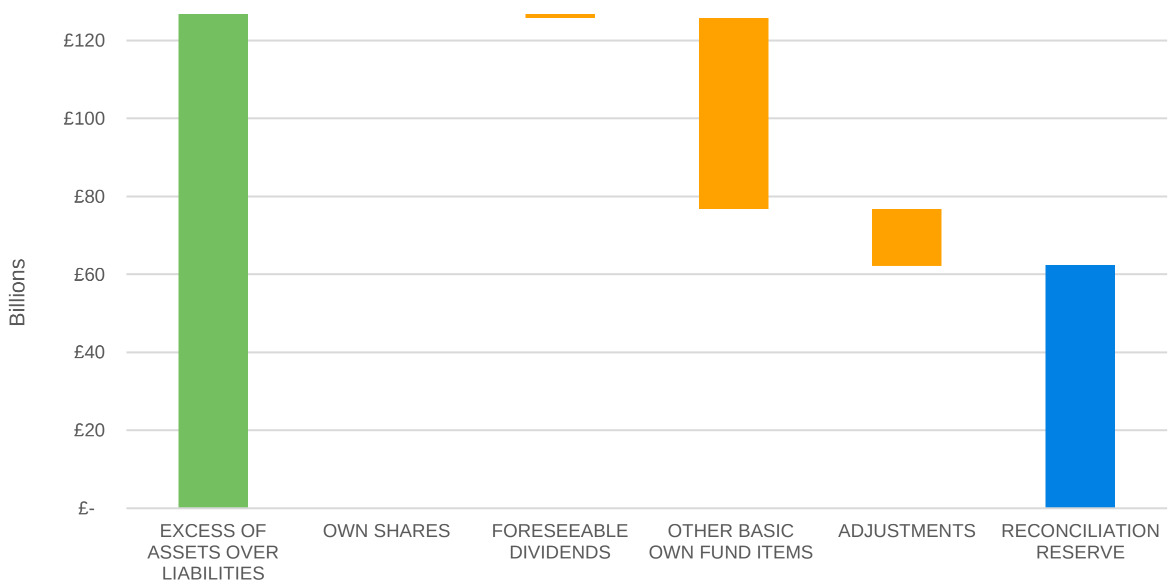
Own Funds in 'Subordinated Liabilities' contributes at 6.2% of the total, while 'Other Basic Own Funds' contributes 5.1%.

In the UK life market, 'Deferred Tax Assets' and 'Ancillary Own Funds' are both extremely small, making up less than 0.1% each of the entire Own Funds.

The breakdown of the components was broadly the same as for the first set of SFCRs except for a notable increase from almost nothing for the 'Other Basic Own Funds' category. This reduced the proportion attributable to the 'Reconciliation Reserve'.

The breakdown of the 'Reconciliation Reserve' is also available from the SFCRs and is shown in the chart in Figure 23. The 'Reconciliation Reserve' is constructed from the 'Excess of Assets over Liabilities', with deductions made for 'Own Shares', 'Foreseeable Dividends', 'Other Basic Own Fund Items' and 'Adjustments' (for restricted Own Funds items in respect of MA portfolios and ring-fenced funds).

FIGURE 23: BREAKDOWN OF THE RECONCILIATION RESERVE



The breakdown of the 'Reconciliation Reserve' is very similar to that seen for the first set of SFCRs.

Analysis of solvency coverage

The weighted average SCR coverage ratio for our sample of UK life insurers from the second set of SFCRs was 155%, based on figures from companies' public QRTs. This is well in excess of the 100% coverage required, showing that many companies are choosing to hold excess capital to provide security and stability. This is, however, noticeably lower than the European average in our sample of 218%, suggesting that UK insurers on average had less available capital than their counterparts in the 'Rest of Europe'. This is consistent with what was seen in the first set of SFCRs.

The average MCR coverage ratio for UK life companies was 552% from the second set of SFCRs. This is a very high ratio and shows that the MCR is very small compared to the level of capital that insurers are actually holding. It is also marginally lower than the European average of 571%.

The average MCR as a percentage of the SCR was 27%. This indicates that for the average company the linear MCR is calculated within the limits of 25% to 45% of the SCR, i.e., that the cap or floor is not biting for all firms, but that it is likely very close to the 25% floor for many firms.

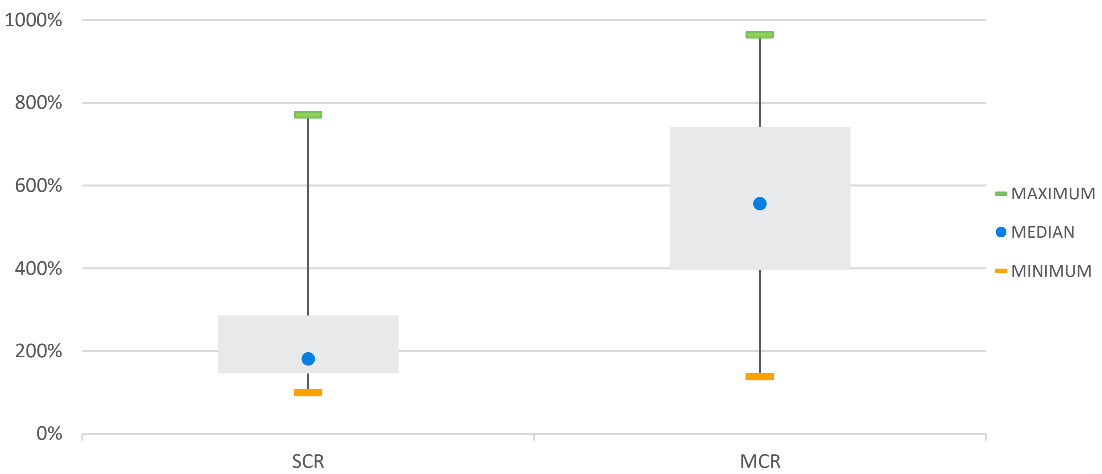
The table in Figure 24 compares the UK to the European average solvency coverage ratios.

FIGURE 24: AVERAGE SCR AND MCR COVERAGE RATIOS

	UK AVERAGE	EUROPEAN AVERAGE
RATIO OF ELIGIBLE OWN FUNDS TO SCR	155%	218%
RATIO OF ELIGIBLE OWN FUNDS TO MCR	552%	571%
MCR AS A % OF THE SCR	27%	36%

The distribution of the SCR and MCR ratios is shown in Figure 25.

FIGURE 25: DISTRIBUTION OF AVERAGE SCR AND MCR COVERAGE RATIOS



The SCR coverage ratios for UK life insurers are displayed in the box-and-whisker diagram in Figure 25. The solvency coverage has a broad spread ranging from 100% to 6,977% for the companies in the sample. It should be noted that the three companies with SCR coverage ratios of 1,000% or greater have been removed for the diagram to make it more readable. Half of the companies have an SCR coverage ratio that falls between 146% and 286%. This is a reasonably narrow range considering the overall spread of coverage ratios. It is also notable that the upper quartile makes up almost the entirety of the range.

The MCR coverage ratio has a range that is smaller in size (138% to 1,636%) than the SCR coverage ratio. It has a lower maximum and higher minimum. Half of the companies have an MCR coverage ratio that falls between 396% and 741%. The companies with an MCR coverage ratio of greater than 1,000% have also been removed from the chart for readability.

A number of UK life insurers use either PIMs or FIMs. Of the 87 insurers in our analysis, there are 13 PIM users and 10 FIM users, with the remaining 64 using the Standard Formula (SF).

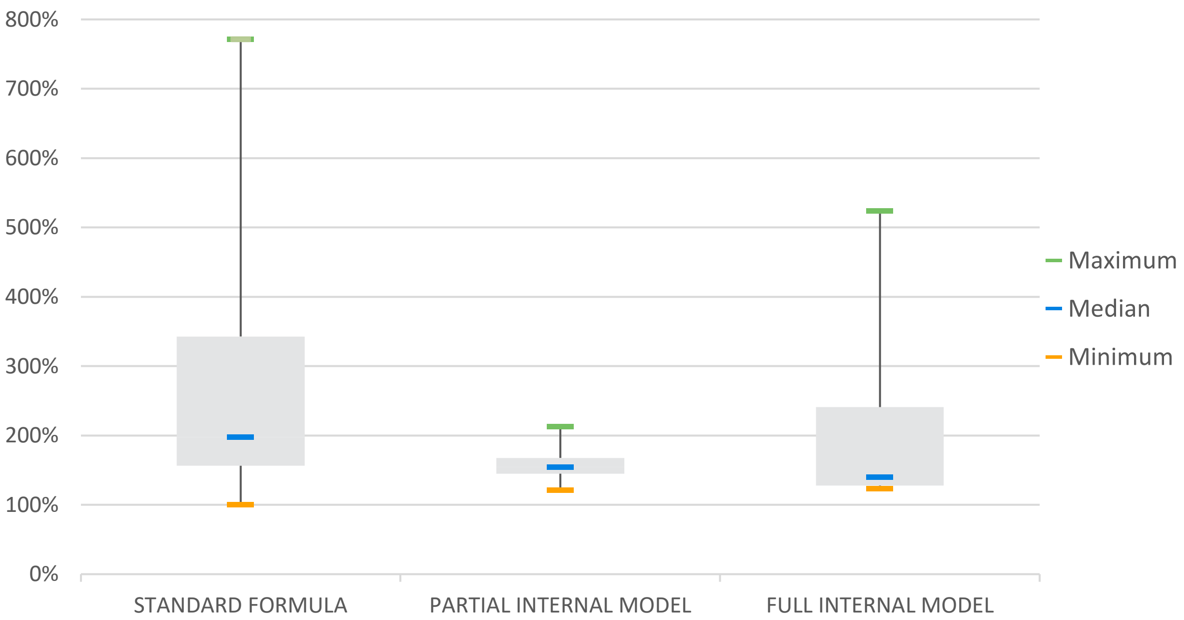
The table in Figure 26 shows the average SCR coverage ratio for firms aggregated by their SCR methodologies (SF, PIM and FIM) as at year-end 2017.

FIGURE 26: AVERAGE SCR FOR STANDARD FORMULA, PARTIAL INTERNAL MODEL AND FULL INTERNAL MODEL FIRMS

	SCR COVERAGE RATIO
FIRMS USING SF	162%
FIRMS USING PIM	158%
FIRMS USING FIM	140%

The weighted average SCR coverage ratio for firms using the Standard Formula is higher (162%) than for those firms using an internal model, with a weighted average ratio of 158% for a PIM and 140% for a FIM. The distribution of the SCR coverage ratios for each of the three different methodologies as at year-end 2017 is shown in the chart in Figure 27.

FIGURE 27: DISTRIBUTION OF SCR FOR INTERNAL MODEL FIRMS VERSUS STANDARD FORMULA[11]



The SCRs for internal model firms, PIM firms in particular, have a lower spread than the Standard Formula firms. Many of the firms using a PIM in our sample tend to be part of a group and the result suggests that firms within a group manage their capital more actively and do not hold significant surplus capital at the subsidiary level. In contrast, the FIM firms in our sample tend to be more specialised in the products they offer and business they have sold, e.g., monoline annuity firms. These firms are not necessarily a group and so may not manage capital as actively. The specialist nature of the firms may make it easier for them to apply a FIM compared to large companies selling (or having sold) a diverse range of products subject to a variety of risks.

The distribution of the SCR coverage for UK firms appears to have fallen slightly for FIM firms since the first set of SFCRs, while remaining similar for SF and PIM firms.

[11] The scale has been amended to only reach 800% coverage ratio because when the highest values, which are in excess of a 1,000% coverage ratio, are included, they make the rest of the chart more difficult to read. This limit on the scale only excludes three firms; two Standard Formula firms (Liverpool Victoria Life Company and Trafalgar Insurance) and one FIM firm (Standard Life Assurance Company 2006).

Analysis of SCR

We analysed the various SCR components for companies using the SF, a PIM or a FIM, along with the sample of companies as a whole, in order to calculate the average contribution to the SCR for each sub-module as at year-end 2017.

FIGURE 28: AVERAGE SCR BREAKDOWN OF SCR BY SF, PIM AND FIM[12]

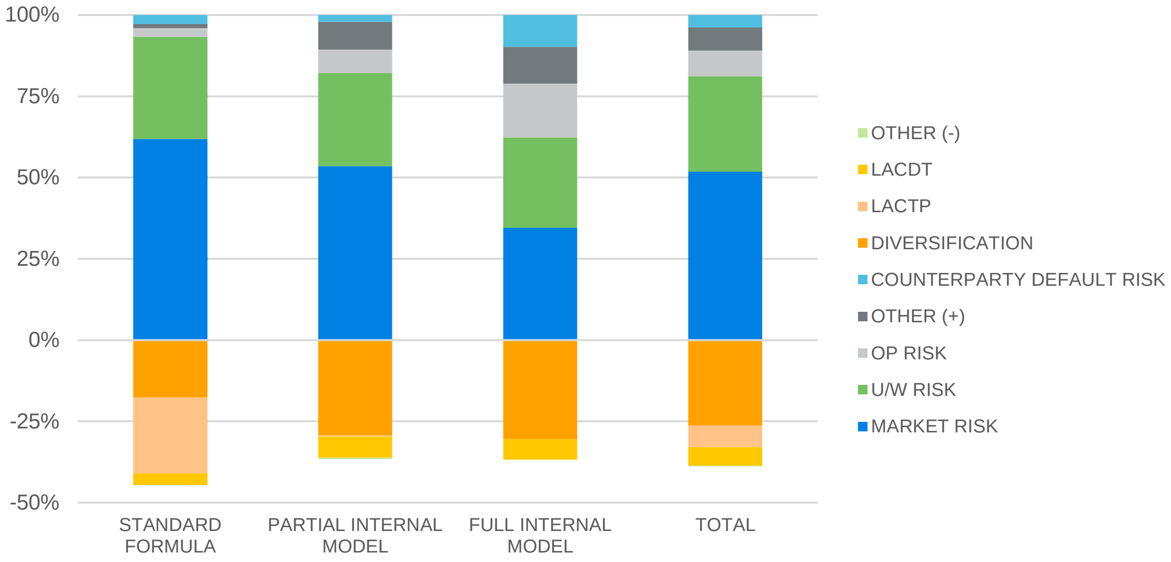


Figure 28 shows that life insurers in the UK are primarily exposed to market risk, contributing 62% of the undiversified SCR for SF firms, 53% for PIM firms and 35% for FIM firms. This gives an overall proportion of 52% of the undiversified SCR.

Underwriting risk for UK life insurers contributes 32%, 29% and 28% of the undiversified SCR for SF, PIM and FIM firms, respectively, with the vast majority coming from life underwriting risk. The remainder of the underwriting risk comes from health underwriting risk from health insurance provided by UK life insurers and non-life underwriting risk from the composite insurers with a majority of life insurance business.

Counterparty default risk is the only other risk that contributes to the Basic Solvency Capital Requirement (BSCR). It makes up only 2% to 3% of the undiversified SCR for SF and PIM firms, implying that it is not as significant as either market risk or underwriting risk. FIM firms have a greater proportion of counterparty default risk in their BSCRs, at 10%.

Operational risk only contributes 3% of the undiversified SCR for SF firms, but adds 7% and 17%, respectively, to PIM and FIM firms. This result is not unexpected as operational risk is often included within internal models, when firms decide that the factor-based approach prescribed by the SF does not appropriately reflect their risk exposures.

The diversification benefit for the UK life insurance market is large, giving a reduction of 18% of the undiversified SCR for SF firms, 29% for PIM firms and 30% for FIM firms. This is diversification between the risk modules and not within the risk sub-modules. The higher diversification benefits for PIM and FIM firms may suggest a departure from the SF method of aggregation increasing the ability of the different risks to offset one another.

In addition to diversification benefits, there are two additional adjustments available to companies:

1. LACTP, which reflects the ability to reduce future discretionary benefits under stress scenarios.
2. LACDT, which reflects the reduction in the future corporation tax payable under stress scenarios.

[12] The amounts within this figure are as a percentage of the total of the capital requirement for each risk module including operational risk (the undiversified SCR). Each element has been calculated as the sum across the firms within the region.

The published results suggest that UK insurers are heavily utilising the LACTP adjustment, resulting in an average reduction of 23% of the undiversified SCR for Standard Formula firms. In reality, only 26 insurers are using the adjustment, with one insurer accounting for 61% of the entire LACTP of UK life insurers. Only one insurer that uses the LACTP adjustment does not use the Standard Formula.

There are 45 companies using the LACDT adjustment, but the overall impact is much smaller, only allowing for a reduction of the undiversified SCR for the Standard Formula, PIM and FIM of 4%, 7% and 6%, respectively.

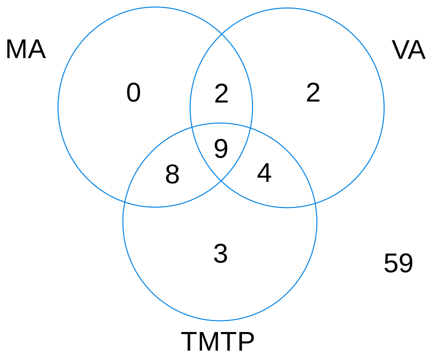
Other adjustments have been split into net increases and net decreases to the SCR. Net increases, 'Other (+),' gives 7% of the undiversified SCR across all firms, while net decreases, 'Other (-),' gives a deduction of 0.2% of the undiversified SCR across all firms. 'Other (+)' is much higher for PIM and FIM firms than for Standard Formula firms, standing at 9% and 11% of the undiversified SCR, respectively.

Long-term guarantee measures

A significant number of UK life insurers use the LTGMs included in the analysis for this report.

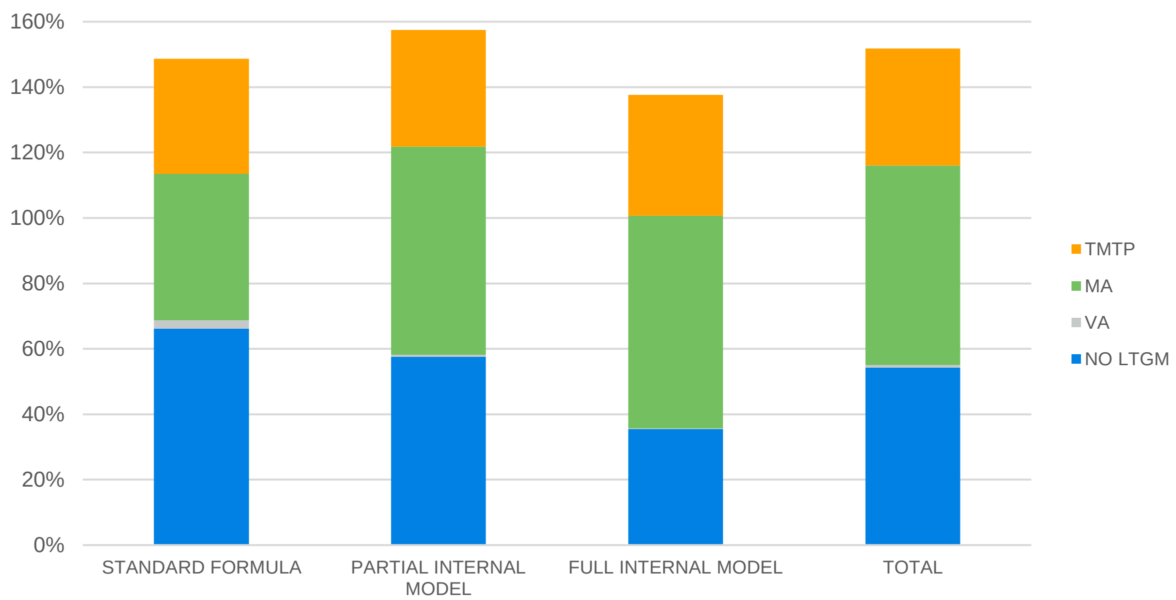
Of the firms in our list there are 17 using the VA, 19 using the MA and 24 using the TMTP as at year-end 2017, with some companies using combinations of them as shown in the Venn diagram in Figure 29. Of the UK life companies in our sample, 59 did not use any of the LTGMs. There have been some changes in LTGM usage over the year. In particular, there are fewer firms using the MA than there were at the first set of SFCRs, though this may be due to consolidation in the market.

FIGURE 29: NUMBER OF COMPANIES USING LONG-TERM GUARANTEE MEASURES



The chart in Figure 30 shows the breakdown of the SCR coverage ratio by each LTGM and the result if no LTGMs were applied as at year-end 2017. The breakdown is shown for Standard Formula, PIM and FIM firms, alongside the total across all firms.

FIGURE 30: BREAKDOWN OF SCR COVERAGE RATIO BY LONG-TERM GUARANTEE MEASURE



The general picture seen in Figure 30 is that firms using a FIM have the highest reliance on LTGM, followed by firms using a PIM, with firms using the SF in general having the least reliance on LTGMs.

The VA has the lowest impact across all categories, with only very small impacts on PIM or FIM firms. There is the potential for this to change in the future, as on 17 October 2018 the Prudential Regulation Authority (PRA) published a Policy Statement (PS23/18) setting out its plans to consider applications from internal model firms that include a Dynamic Volatility Adjustment (DVA). The use of a DVA had not previously been permitted in the SCR calculation for the UK, but has been used in other European countries.

The TMTP is the next-smallest LTGM for each category, with its highest impact on the SCR coverage ratio for firms using a FIM. The TMTP has proven to be popular in the UK, especially amongst annuity firms, primarily because of the relatively high Risk Margin for annuity business compared to other business. A number of the firms using a FIM are monoline annuity firms.

The MA makes up the largest proportion of the SCR coverage ratios for all three categories, on average accounting for 61% of the total SCR coverage ratio for firms in the UK. This is also highest for the FIM firms, at 65%, which is again most likely due to the monoline annuity firms in this group using the MA to allow for the matching of their long-term liabilities with illiquid assets.

Reliance on the LTGMs reduced between the first and second set of SFCR reports overall. The reasons surrounding this are discussed in the European section of the report covering LTGMs above.

Conclusion

UK life insurers disclosed healthy results in the second set of SFCRs, with an average SCR coverage ratio of 155%. No insurers in this report had a coverage ratio of less than 100%, but some had extremely high ratios, depending on a wide range of factors. The Matching Adjustment (MA) and the Transitional Measures on Technical Provisions (TMTP) continue to be popular in the UK, leading to significant increases in the SCR coverage ratio for some firms.

'IL and UL Insurance' business is the dominant product grouping for UK life insurers, when measured by TPs, reinsurance ceded and gross written premiums.

The most significant risks to UK life insurers are market risk and underwriting risk, which is consistent with what is being seen across Europe. LACTP is the largest deduction to the SCR in the UK.

Own Funds are primarily invested in Tier 1 unrestricted Own Funds, which is the highest form of capital in terms of quality and loss absorbency as defined under Solvency II. The rest is kept as lower-level capital and is primarily held by the largest firms.

The LTGMs used by UK life companies are primarily the MA and the TMTP, with the MA having the largest impact across SF, PIM and FIM firms. In contrast, the VA has very little impact in the UK based on the second set of SFCR disclosures.

Appendix 1: UK life companies included in the analysis

1. Abbey Life Assurance Company
2. Aberdeen Asset Management Life & Pensions
3. ACE Europe Life
4. AEGON Scottish Equitable
5. AIG Life
6. Assurant Life (*2017 only*)
7. Aviva Annuity UK
8. Aviva International Insurance
9. Aviva Investors Pensions
10. Aviva Life & Pensions UK
11. B&CE Insurance (*2017 only*)
12. BlackRock Life
13. Canada Life
14. Churchill Insurance Company
15. Cirencester Friendly Society
16. Countrywide Assured
17. Covéa Life
18. Dentists' and General Mutual benefit Society
19. Dentists' Provident Society
20. Ecclesiastical Life
21. Equitable Life Assurance Society
22. Exeter Friendly Society
23. Family Assurance Friendly Society
24. FIL Life Insurance
25. Financial Assurance Company
26. Forester Life
27. Friends Life
28. Friends Life & Pensions
29. Health Shield Friendly Society
30. Hodge Life Assurance Company
31. Holloway Friendly
32. HSBC Life (UK)
33. Inceptum Insurance Company
34. Independent Order of Odd Fellows Manchester Unity Friendly Society
35. IntegraLife UK
36. Invesco Perpetual Life
37. JPMorgan Life
38. Just Retirement
39. Kingston Unity Friendly Society
40. Legal & General Assurance (Pensions Management)
41. Legal & General Assurance Society
42. Liverpool Victoria Friendly Society
43. Liverpool Victoria Life Company
44. London General Life Company
45. Managed Pension Funds
46. Metropolitan Police Friendly Society
47. MGM Advantage Life
48. National Deposit Friendly Society
49. Old Mutual Wealth Life & Pensions
50. Old Mutual Wealth Life Assurance
51. Omnilife Insurance Company
52. Pacific Life Re
53. Partnership Life Assurance Company
54. Pension Insurance Corporation
55. Phoenix AW
56. Phoenix Life
57. Phoenix Life Assurance
58. Police Mutual Assurance Society
59. Prudential Pensions
60. Railway Enginemen's Assurance Society
61. ReAssure
62. Reliance Mutual Insurance Society
63. Rothesay Life
64. St James's Place UK
65. Sanlam Life & Pensions UK
66. Schroder Pensions Management
67. Scottish Friendly Assurance Society
68. Scottish Widows
69. Sheffield Mutual Friendly Society
70. Standard Life Assurance
71. Standard Life Assurance Company 2006
72. Standard Life Pension Funds
73. Sun Life Assurance Company of Canada (UK)
74. The Ancient Order of Foresters Friendly Society
75. The National Farmers Union Mutual Insurance Society
76. The Prudential Assurance Company
77. The Rechabite Friendly Society
78. The Royal London Mutual Insurance Society
79. The Shepherds Friendly Society
80. Threadneedle Pensions
81. Trafalgar Insurance
82. Transport Friendly Society
83. UBS Asset Management
84. Unum
85. Vitality Life
86. Wesleyan Assurance
87. Zurich Assurance

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