

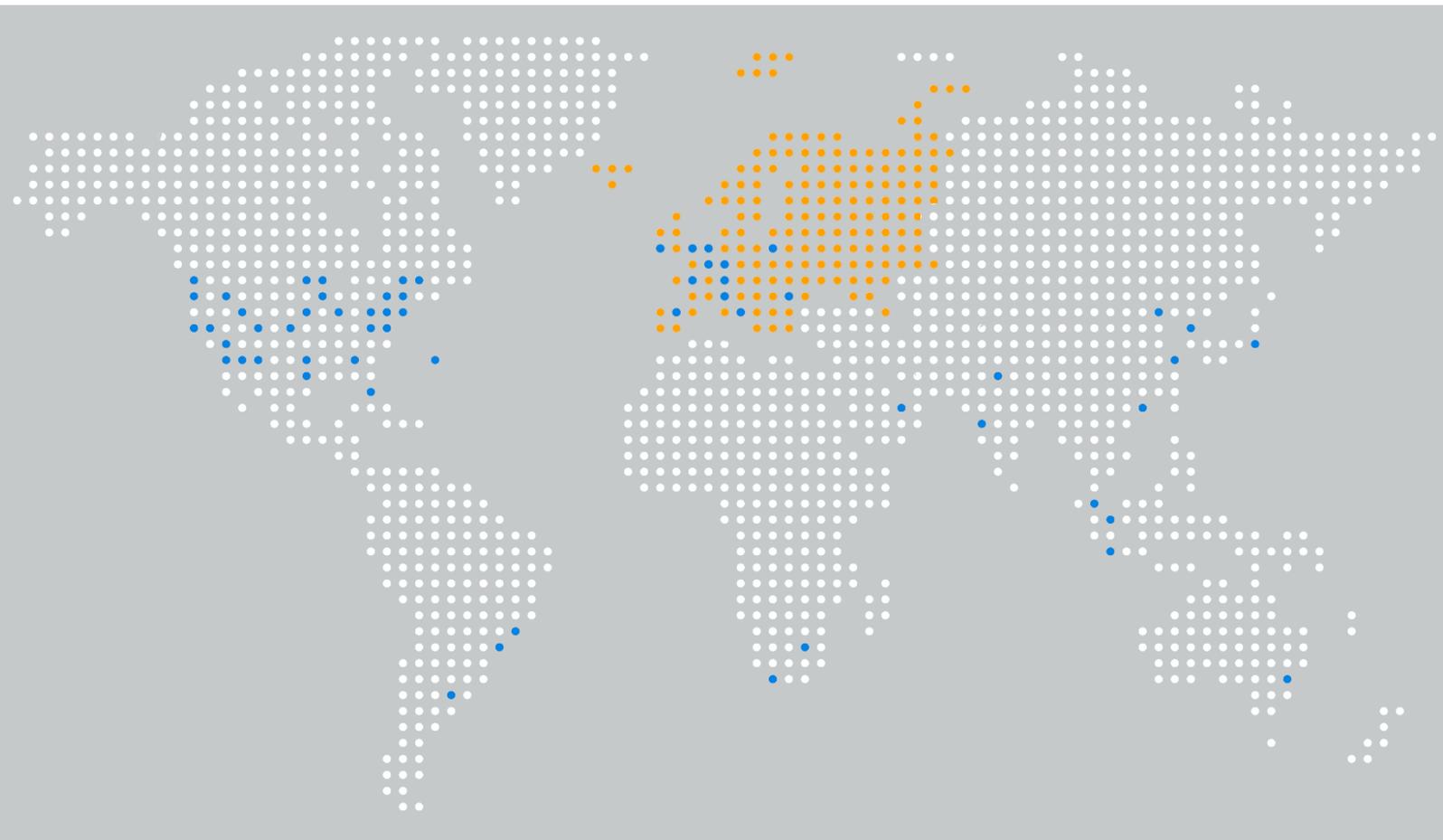
MILLIMAN RESEARCH REPORT

# Analysis of insurers' first set of Solvency and Financial Condition Reports

European health insurers

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# 1. Introduction

## BACKGROUND

Under Solvency II, European insurers were required to publish their Solvency and Financial Condition Reports (SFCRs) for the first time in May 2017.<sup>1</sup> The SFCRs contain a significant amount of information including details of the company's performance over the reporting period, system of governance, risk profile, valuation basis and capital requirements. In addition, the SFCRs include a number of Quantitative Reporting Templates (QRTs) providing details of the company's financial position under Solvency II.

The aim of this analysis is to compare the information provided in the QRTs and SFCRs to see if we can draw any conclusions about the balance sheets and risk exposures of European health insurers.

## HEALTHCARE SYSTEMS INCLUDED IN THIS ANALYSIS

Our focus is on health insurers in the UK, the Netherlands and Ireland and insurers selling International Private Medical Insurance (IPMI) based in Europe. We also considered select insurers in other territories using Undertaking Specific Parameters (USPs) to calculate their Solvency Capital Requirements (SCRs) using the standard formula. The size of the private health insurance market varies considerably by territory, primarily due to government policy in relation to public health coverage. We describe each of the categories further below.

### Ireland

The Irish health system is characterised by a mix of public and privately funded health services. There is a public health system funded through the taxation system that entitles all residents of the state to a range of health services, with some out-of-pocket expenses that depend on income level. In addition to the public health system, Ireland has a strong private health insurance market that operates on a voluntary basis.

The Irish private health insurance market is community-rated and subject to open enrolment (i.e. insurers cannot turn down prospective policyholders). The Irish private health insurance market is supported by a risk equalisation system that pays age-related credits and utilisation-related credits to insurers based on their own portfolios of insured lives.

### United Kingdom

Similar to Ireland, healthcare in the UK is publicly funded with public healthcare services provided through the National Health Service (NHS). Private health insurance is voluntary and people typically purchase health insurance to avoid NHS waiting lists and to gain access to a greater choice of providers and treatments. Private health insurance in the UK does not provide full coverage of healthcare treatments; services such as emergency, maternity and chronic conditions are excluded and primary care coverage is limited. Private health insurance in the UK is risk-rated so it is not supported by a risk equalisation system.

### The Netherlands

The Dutch healthcare system provides universal coverage to the whole population and health insurance in the Netherlands is mandatory. Dutch citizens are automatically insured by the government for services such as long-term care but are required to purchase their own basic healthcare insurance to cover a wide range of (short-term) health services delivered by general practitioners, healthcare specialists and hospitals. By law, insurers are required to charge all members the same premium and the health insurance market is subject to open enrolment. As risk rating or risk selection is not allowed, insurers get compensated through a national risk-equalisation system to cover the risk associated with certain policyholders. In addition to the basic health insurance, Dutch citizens can also purchase supplementary health insurance cover for additional services and treatments such as dental care. Supplementary insurance is voluntary and premiums are risk-rated. Approximately 85% of the insured take out supplementary insurance.

### International Private Medical Insurance (IPMI)

The IPMI market focuses on private health insurance for expatriates. IPMI coverage provides beneficiaries with private health insurance outside of their home countries and is designed to provide seamless access to comprehensive international healthcare services. IPMI policies are typically purchased by employers for employees with long-term travel requirements. The benefits under such policies are generally comprehensive and global in nature and are not tied to a specific country or healthcare system. The premiums are risk-rated and a key difference in coverages is whether treatments in the US are included or excluded.

<sup>1</sup> Group SFCRs were published in July 2017 and some insurers were required to publish their SFCRs earlier where they had a year end reporting date between 30 June 2016 and 31 December 2016.

### COMPANIES INCLUDED IN THIS ANALYSIS

For this analysis, we selected insurers that primarily sell health insurance. We have excluded non-life insurers that sell health insurance in addition to other lines of business such as motor insurance or property and casualty insurance (e.g. Aviva in the UK) as it is not possible to isolate the capital charges for health insurance based on the information included in the QRTs.

There are some companies of interest that have not been included in this analysis, for example Allianz Worldwide Care (IPMI) and Westfield (UK). In some cases the SFCR was published late and was therefore not available at the time when the analysis was conducted. In other cases we were not able to locate the companies' SFCRs or QRTs online.

Appendix 1 presents the list of companies included in our analysis for each category.

Note that all the figures published in this report have been converted into euros using exchange rates as at 31 December 2016.

### UNDERLYING DATA

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

In carrying out our analysis and producing this research report, we relied on the data and information 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 made minor adjustments to the data to correct known errors such as inconsistencies across 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 educational 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.

## 2. Premiums, claims and expenses

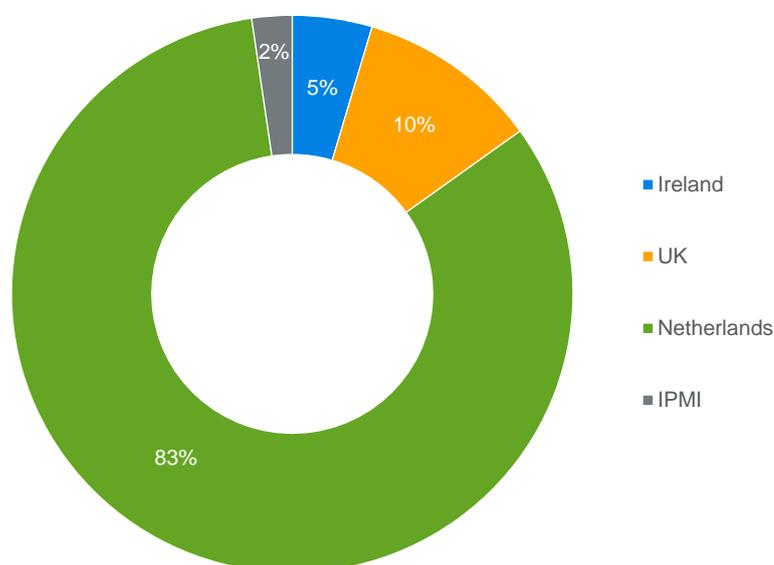
This section focuses on premiums, claims and expenses of health insurers based on the information reported in Premiums, Claims and Expenses by Line of Business (S.05.01.02<sup>2</sup>) and Premiums, Claims and Expenses by Country (S.05.02.01). We also reviewed the 'Business and Performance' section of some of the insurers' SFCRs to provide more commentary on the results where relevant.

### GROSS WRITTEN PREMIUM BY CATEGORY

Gross written premium from the Netherlands makes up 83% of the total gross written premium from the four categories included in our analysis. This reflects the larger private health insurance (PHI) market in the Netherlands compared to other markets, which is due to the compulsory PHI coverage for Dutch citizens. This is in contrast to the smaller voluntary markets for the UK, Ireland and IPMI. In addition, the proportion of gross written premium shown for the UK and IPMI is understated due to the exclusion of some insurers from this category, as noted in Section 1 above.

The graph in Figure 1 shows a split of gross written premium for each territory.

FIGURE 1: DISTRIBUTION OF GROSS WRITTEN PREMIUM BY CATEGORY

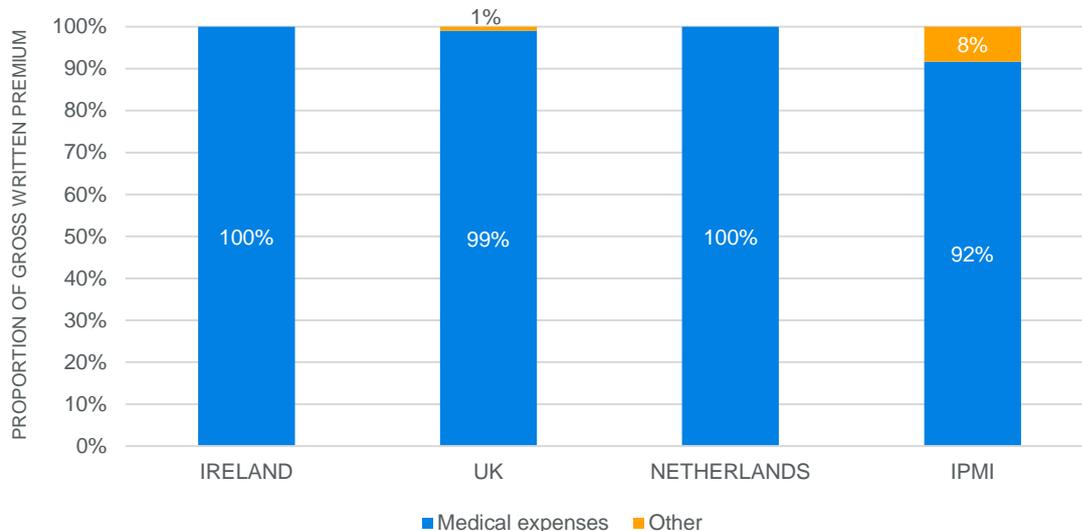


As we would expect, medical expense is the main line of business across all four categories. Health insurers in Ireland and the Netherlands write solely medical expense insurance. The small proportion of nonmedical expense insurance in the UK relates to assistance business (accident and travel insurance). Other lines of business included in the IPMI category are income protection and legal expenses.

<sup>2</sup> This is the Solvency II naming convention for the QRTs.

The graph in Figure 2 shows the split of gross written premium by line of business for each category.

**FIGURE 2: PROPORTION OF GROSS WRITTEN PREMIUM BY LINE OF BUSINESS**

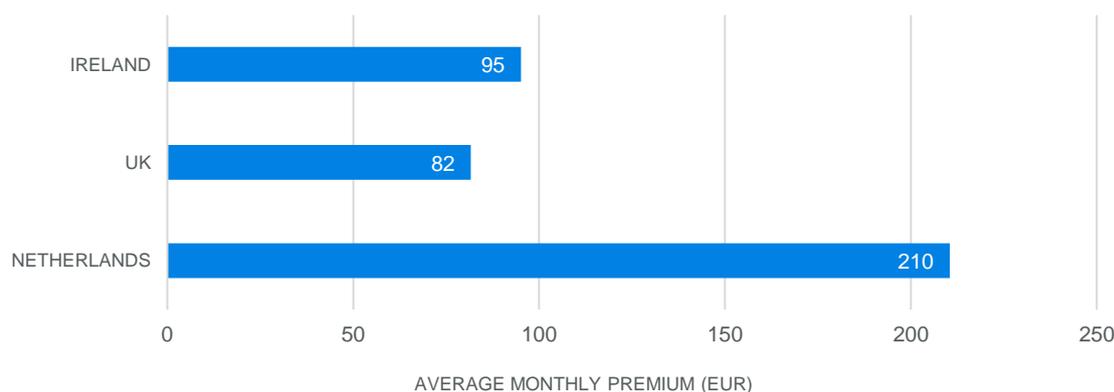


In addition to analysing the information in the QRTs, we also estimated the average premium in Ireland, the UK and the Netherlands<sup>3</sup> by using publicly available information on the insured population. The number of lives covered by IPMI insurers was not publicly available and therefore IPMI insurers are not included in the graph in Figure 3.

The average estimated monthly premium for the Netherlands is more than double that of Ireland and the UK. This reflects the fact that the coverage of the basic health insurance in the Netherlands is much more comprehensive than the UK and Irish markets, reflecting the universal health insurance system in the Netherlands. In addition, the figure for the Netherlands reflects total premiums paid for both basic and supplementary health insurance. In the UK and Ireland, a large portion of the healthcare system is funded through general taxation so private health insurance covers fewer services and premiums are correspondingly lower. The UK has the lowest average monthly premium, which reflects the more limited benefit coverage of UK private health insurance products.

Figure 3 shows the estimated average monthly premium for the Netherlands, the UK and Ireland.

**FIGURE 3: AVERAGE MONTHLY PREMIUM BY CATEGORY**



<sup>3</sup> For the Netherlands, we divided total written premium for basic and supplementary insurance by the total population so this is a rough estimate because, while everyone must purchase basic insurance, supplementary insurance is voluntary. Approximately 85% of the insured take out supplementary insurance.

## GROSS PREMIUM COMPOSITION

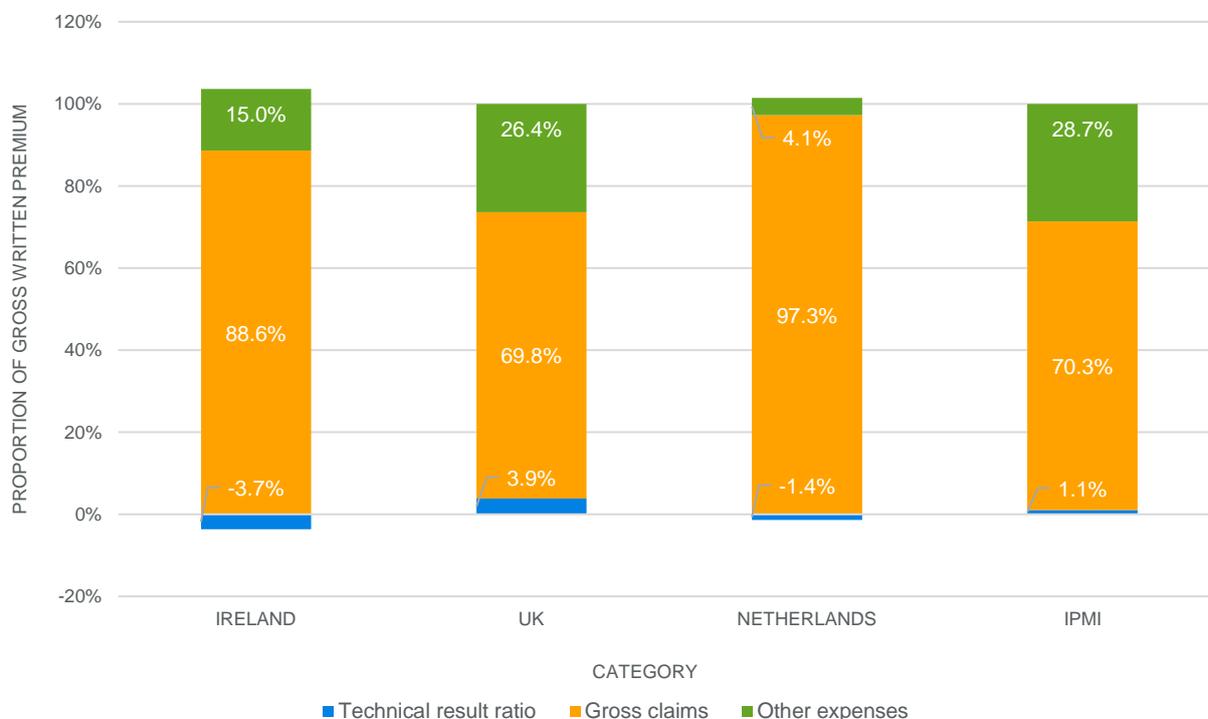
The gross written premium can be analysed in terms of three major components based on the information provided in the Premiums, Claims and Expenses by Line of Business QRT (S.05.01.02):

- Gross claims (represented by the gross of reinsurance loss ratio).
- Other expenses (expenses, change in net technical provisions and the difference between ceded reinsurance premiums and claims paid by reinsurers).
- Technical result ratio (difference between net premium income and net outgo items as a percentage of gross written premium), i.e. a high level estimate of profit.

This analysis shows significant variation among the categories in the composition of gross premium. However, it is important to note that the technical result in Figure 4 only takes into account premium income and does not include other cash flows such as fees, commissions and in some cases payments into and out of the risk equalisation fund. This is primarily due to the prescribed format of this QRT but may also be due to the reporting principles of individual insurers.

Figure 4 shows the gross written premium composition for each of the categories.

FIGURE 4: GROSS WRITTEN PREMIUM COMPOSITION BASED ON DATA IN QRT S.05.01.02



The combination of Ireland's gross claims of 88.6% and other expenses of 15.0% as a proportion of gross written premiums yields a technical result ratio of -3.7%. However, this only reflects the information included in the public QRT. The 'Business and Performance' section of the insurer's SFCRs provides some further detail on profitability. In the SFCR's we can see that Irish Life Health also received fee and commission income that was not included in this QRT and VHI Insurance DAC (VHI) has not included the net impact of the risk equalisation scheme in the premium, claims and expenses QRT. Allowing for these additional cashflows would increase the technical result ratio to 2.2% in Ireland.

The UK has the lowest gross loss ratio but the proportion of other expenses is substantially higher than Ireland and the Netherlands. Overall, the UK has a positive technical result ratio of 3.9%. AXA PPP Healthcare, Bupa Insurance Limited (Bupa) and Civil Service Healthcare Society Limited have technical result ratios close to 4.0%, while Simplyhealth Access and Vitality Health have lower technical result ratios than the UK average (0.9% and 1.3%, respectively).

The Netherlands has the lowest proportion of expenses and the highest gross loss ratio. Almost 80% of the health insurers in the Netherlands have a gross loss ratio higher than 90% and about 70% have a negative technical result ratio. The basic insurance in the Netherlands is not very profitable and as a result insurers also sell supplementary insurance to increase profitability. In addition, the Dutch regulator has requested that insurers align their capital management and pricing policies.<sup>4</sup> This requires insurers to offer discounts to policyholders when their SCR coverage ratios increase above a certain amount, which may be resulting in the high loss ratios and negative technical result ratios.

The overall gross written premium composition for the IPMI category is fairly similar to the UK category, with IPMI having a lower, yet still positive, technical result ratio.

### USE OF REINSURANCE

The use of reinsurance varies by category. Irish and IPMI insurers are the highest users of reinsurance, with both of these categories having over 40% of earned premium ceded to reinsurers and over 40% of claims paid by reinsurers.

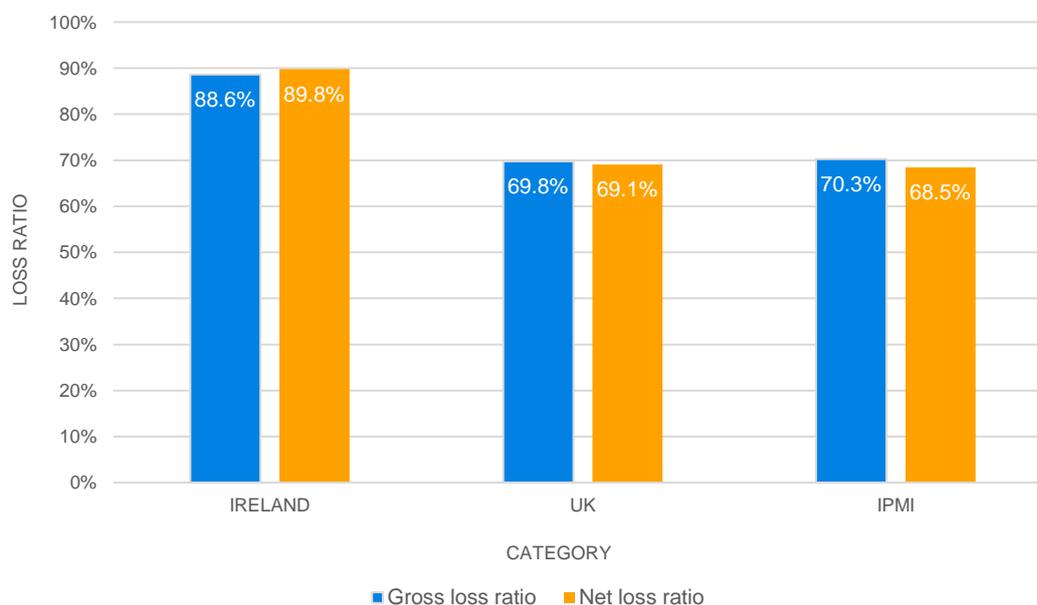
The Dutch health insurance market does not make any use of reinsurance. While the use of reinsurance is not prohibited, the risk equalisation system compensates insurers for large claims, expensive drugs and members with chronic diseases, so there is less of a need for reinsurance as a form of risk mitigation.

High levels of reinsurance are common across all three companies in the Irish market, with ceded premiums ranging from 30% to 65% of earned premium. Similarly for the IPMI insurers, the two Cigna companies and Globality all rely heavily on reinsurance, with ceded premiums of about 50%. Aetna is the outlier in the group with very low levels of reinsurance.

In comparison, the UK health insurers on average make very little use of reinsurance, with only 6.6% of premiums ceded to reinsurers and 7.4% of claims paid by reinsurers.

Assessing the gross and net loss ratios indicates that, for all categories, overall performance is similar with and without reinsurance (i.e. gross and net of reinsurance). The graph in Figure 5 shows the gross and net loss ratio by category.

**FIGURE 5: GROSS AND NET LOSS RATIO BY CATEGORY**



<sup>4</sup> Principle 6 (for health insurers) published in the DNB letter, 'Policy on capital management - Principles and expectations - publication open book, 30-11-2016.'

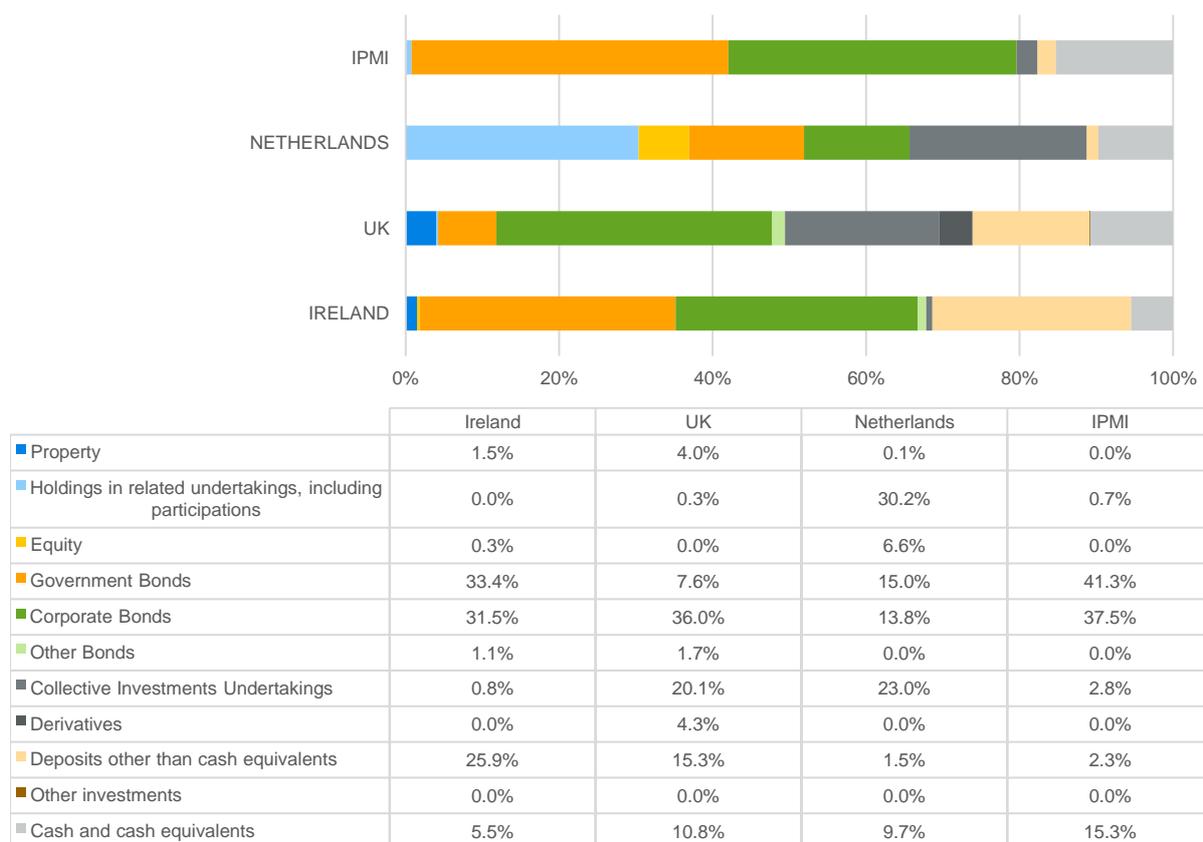
### 3. Assets and liabilities

This section focuses on the main categories of assets and liabilities of health insurers reporting under Solvency II, based on the information reported in Balance Sheet QRT (S.02.01.02) and the Non-Life Technical Provisions QRT (S.17.01.02). We have focused our analysis on investment assets and technical provisions as they make up the largest proportion of assets and liabilities on insurers' balance sheets.

#### ASSETS

Investment assets account for between about 50% (IPMI) and about 70% (UK) of total assets and represent the largest single asset item on health insurers' balance sheets. An analysis of the split of investments by asset class reveals some differences across all four market segments considered, as shown in the graph in Figure 6.

FIGURE 6: SPLIT OF INVESTMENTS BY ASSET CLASS



Investments in bonds (government and corporate bonds) largely dominate the portfolio for the UK, Ireland and IPMI segments, ranging between about 45% (UK) and about 80% (IPMI) of companies' total assets. The regular payment stream of bonds allowing insurers to perform duration matching and the reduced volatility and lower capital requirements relative to equities make bonds particularly attractive to insurers.

It is interesting to note that the UK insurers and the Dutch insurers have higher portions invested in collective investment undertakings or collective investment funds (20% and 23%, respectively) than the Irish and IPMI insurers. The public QRTs do not include asset look-through details so it is not clear what the underlying assets are in the investment funds. The Dutch insurers also have over 7% of assets invested in direct equities.

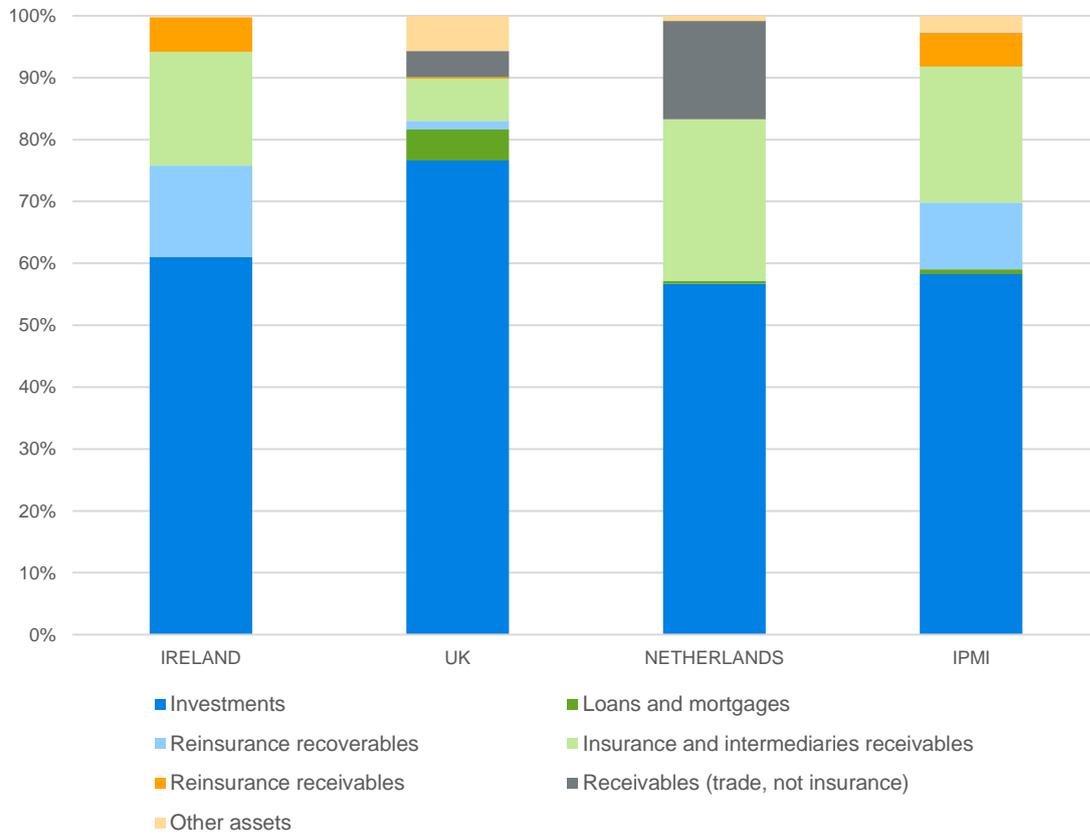
For Dutch companies, bonds make up a smaller portion of insurers' assets on average (about 30%). The Dutch insurers have a higher portion of 'holdings in related undertakings, including participations' (about 30%) than any of the other categories. This is due to a small number of Dutch health insurers having large participations in related holdings, as the Dutch health insurance market consists of a number of groups of health insurers such as Achmea and CZ Group.

Outside of investment assets, debtors or 'receivables' (such as insurance and intermediary receivables, reinsurance receivables and trade receivables) are the next largest asset on the balance sheets of health

insurers. The much lower proportion of reinsurance receivables observed in UK insurers relative to health insurers in other markets is consistent with our analysis of reinsurance by category in the prior section.

The graph in Figure 7 shows the split of assets by type for each of the categories, with cash deposits and cash and cash equivalents included under “Investments”.

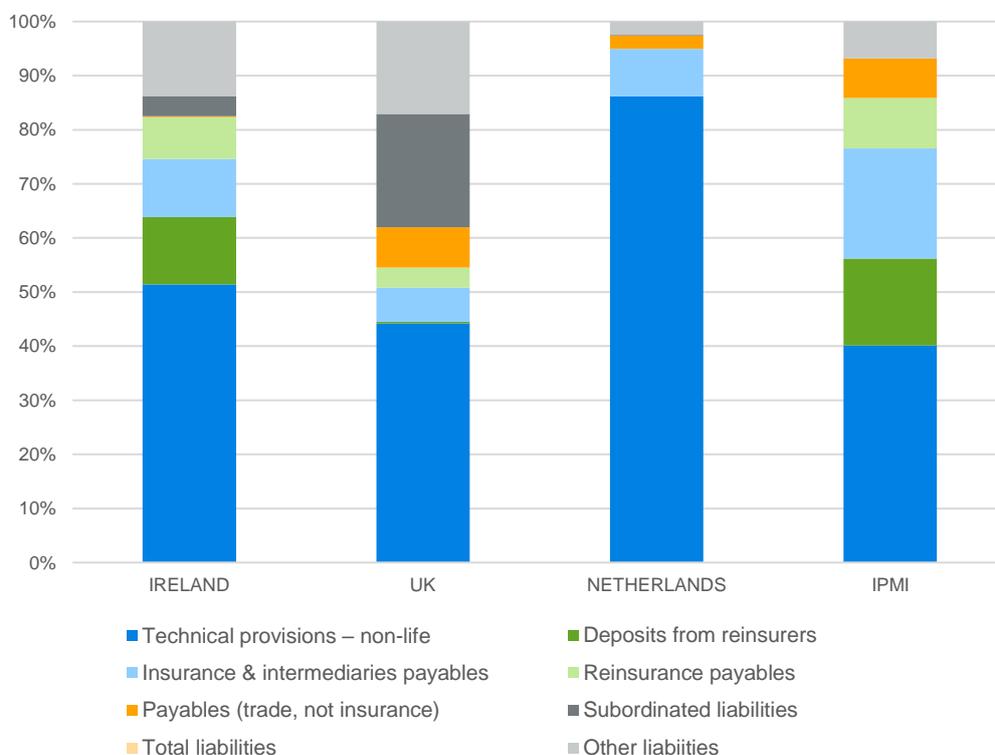
**FIGURE 7: SPLIT OF ASSETS BY TYPE**



## LIABILITIES

Technical provisions make up the largest liability on health insurers' balance sheets, but their relative proportion varies considerably among the four market segments considered. Technical provisions account for nearly 90% of total liabilities for Dutch insurers, a proportion sometimes twice as large as that of the other three market segments, as shown in Figure 8, which shows the split of liabilities as defined in the Solvency II Balance Sheet QRT (S.02.01).

FIGURE 8: SPLIT OF LIABILITIES BY TYPE



In the UK, subordinated liabilities make up a higher portion of balance sheet liabilities. This is due to Bupa's subordinated liabilities, which include a callable subordinated perpetual loan of £330 million. While this is treated as a liability on the Solvency II balance sheet, it is also considered as an Own Funds capital item where eligible.

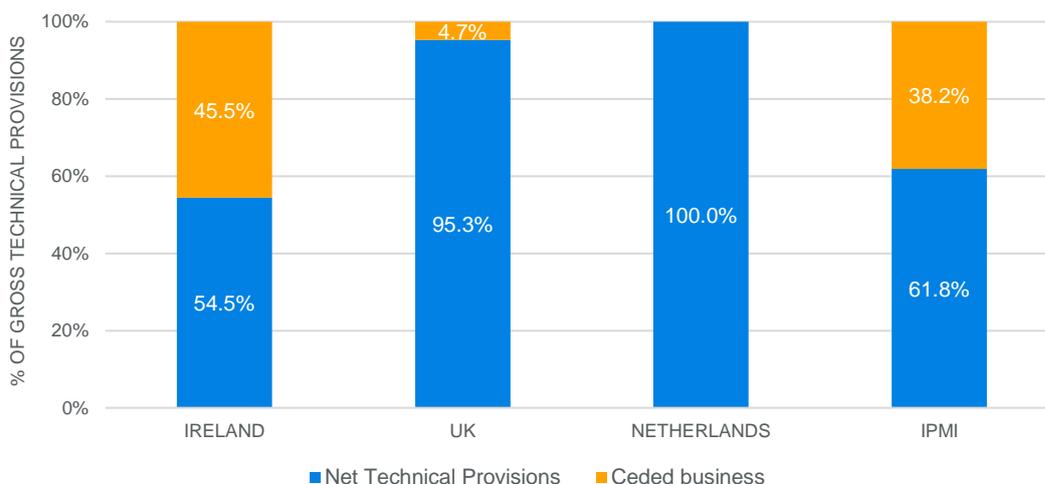
The IPMI insurers have a higher portion of creditors or total 'payables' (such as insurance payables, reinsurance payables and trade payables) than any of the other categories. This may be due to the business model of IPMI insurers, where policies are sometimes distributed or administered by third-party providers.

## TECHNICAL PROVISIONS

As expected, medical expenses is the dominant line of business in terms of technical provisions across all four market categories. However, some insurers also hold technical provisions in respect of assistance, legal expenses and income protection lines of business.

Consistent with the analysis of reinsurance on premiums and claims in the section above, the Irish and IPMI insurers are much more reliant on reinsurance than the UK insurers.

**FIGURE 9: CEDED BUSINESS AS A PERCENTAGE OF GROSS TECHNICAL PROVISIONS**

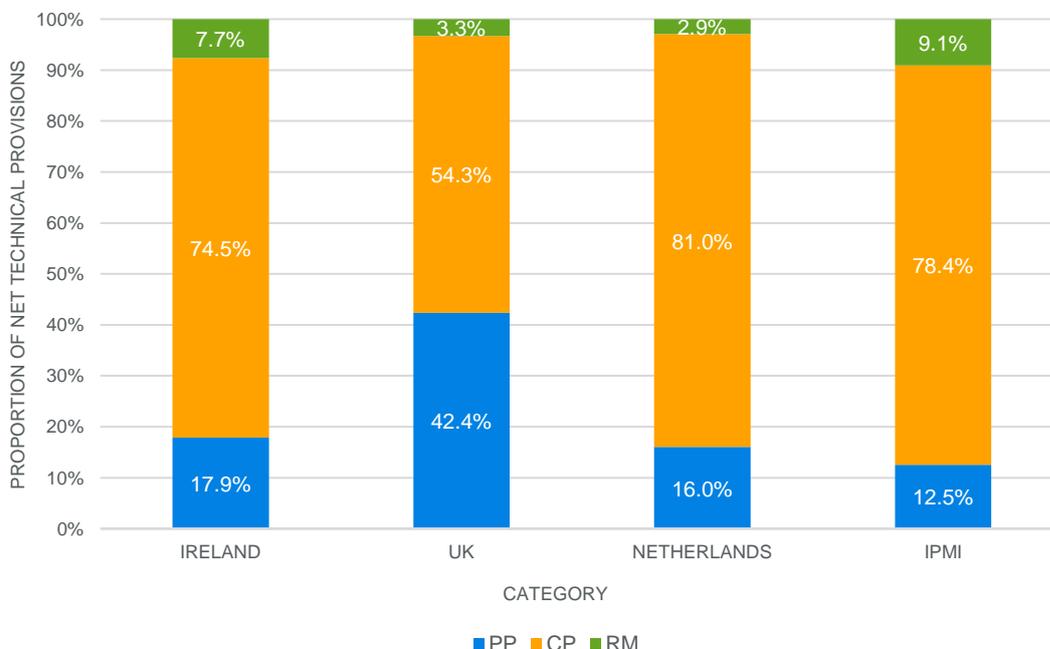


The split of technical provisions among premium provisions, claims provisions and risk margin also varies across all four categories.

The claims provision is the largest component of the technical provisions for all four categories, representing the liabilities associated with claims that have already occurred, whether reported or not reported. The UK has the lowest claims provision; this may be due to the prevalence of cash plans in the UK that have short-tailed claims. IPMI claims are generally much longer tailed, resulting in the claims provision and risk margin comprising a higher portion of total technical provisions for IPMI insurers.

The risk margin is discussed further in below. The graph in Figure 10 shows a split of technical provisions by premium provision (PP), claims provision (CP) and risk margin (RM).

**FIGURE 10: BREAKDOWN OF NET TECHNICAL PROVISIONS**



Nearly all health insurers analysed reported positive technical provisions. However, some insurers such as Irish Life Health (Ireland) showed negative technical provisions on their balance sheets. For Irish Life Health, this was due to a negative premium provision, indicating that future premiums are sufficient to cover expected future

claims i.e. the contracts are profitable and are therefore the technical provisions represent an asset on the Solvency II balance sheet.

### Risk margin

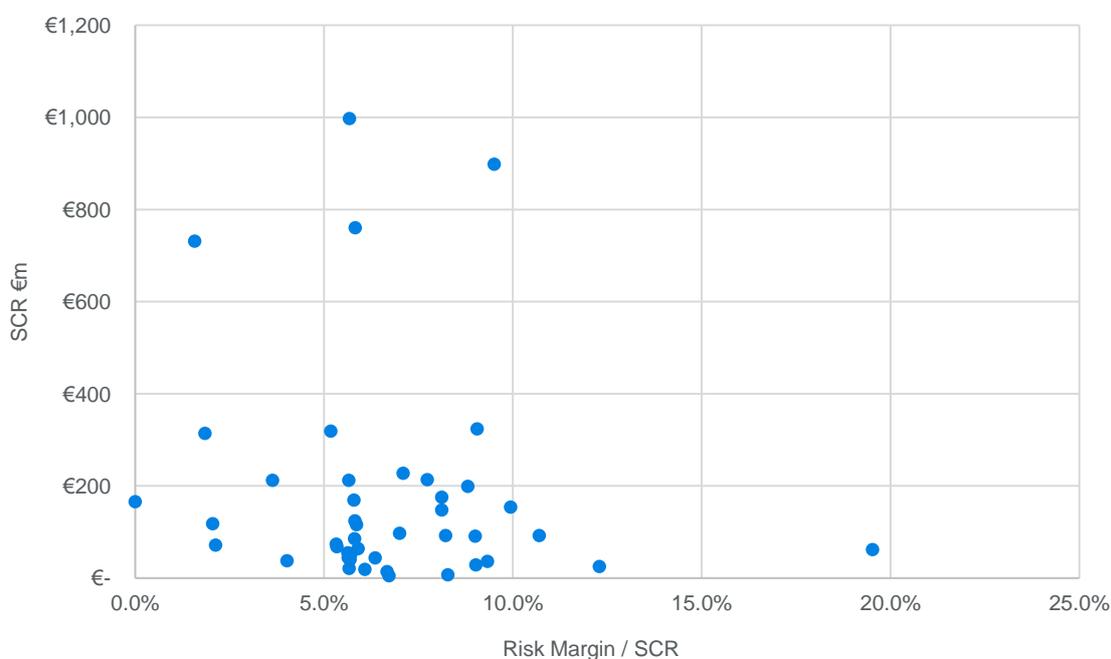
The risk margin is added to the best estimate of claims provisions and premiums provisions to form the total technical provisions. Figure 10 shows that the risk margin as a portion of total technical provisions varies by category but typically accounts for less than 10% of the net technical provisions. It is notable that the risk margin as a percentage of technical provisions is much higher for the Irish and IPMI insurers than the UK and Dutch insurers. This may be due to lower SCRs for the UK and Dutch insurers because of the Health Risk Equalisation System adjustment in the Netherlands and the use of Undertaking Specific Parameters by Bupa in the UK. This is expanded on in Section 4 below.

The risk margin makes up a higher portion of total technical provisions for IPMI insurers than the other categories. Again, this may be driven by the fact that IPMI claims are generally longer tailed than domestic health insurance claims.

Figure 11 shows the risk margin as a percentage of SCR for all companies considered in the analysis. The risk margin is calculated as a function of the SCR so this is an interesting ratio to analyse. It represents the expected runoff of the company's risk exposure in terms of cost of capital, with the cost of capital defined as 6% of the SCR (excluding the capital charge for hedgeable market risk). The requirement to exclude hedgeable market risk from this calculation can distort the ratio slightly but, in general, a ratio of about 6% implies that the runoff is about one year. A ratio below 6% implies a quicker runoff and a ratio above 6% implies a slower runoff.

Figure 11 shows that for the majority of health insurers, the risk margin as a percentage of SCR is about 6%, as expected. However, some companies have a ratio that is lower or higher than 6%. In particular, there is one material outlier with a ratio of about 20%. This is Elips Versicherungen, a Swiss company that primarily sells health insurance in the Irish market through Laya Healthcare. It is not entirely clear from the SFCR what is driving the very high ratio of risk margin to SCR of this company, but it may be due to the fact that Elips Versicherungen also sells some business that is classified as 'other health' under Solvency II, which is likely to have a longer runoff than medical expense insurance.

FIGURE 11: RATIO OF RISK MARGIN OVER SCR BY COMPANY



## 4. Solvency Capital Requirement and Own Funds

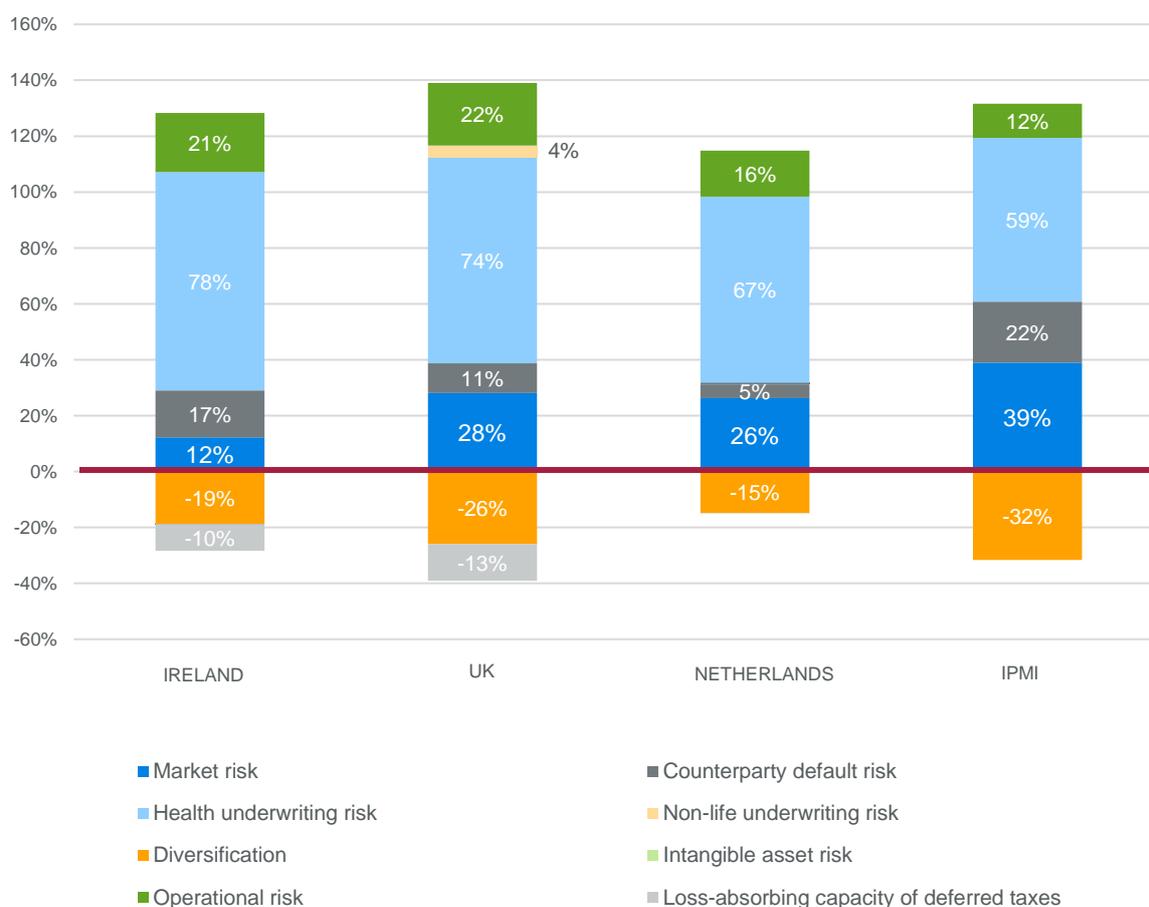
This section of the paper focuses on the solvency capital requirement and own funds of health insurers, based on the information reported in Own Funds QRT (S.23.01.01) and Solvency Capital Requirement ('SCR') QRTs (S.25.01, S.25.02 and S.25.03).

### SOLVENCY CAPITAL REQUIREMENT: STANDARD FORMULA (INCLUDING HRES AND USP)

The SCR for health insurers primarily consists of the capital charge for health underwriting risk, with market risk, operational risk and counterparty default risk also making up large portions of the SCR.

The split for the standard formula SCR by category is presented in Figure 12. This is based on health insurers using the standard formula but also includes the health insurers in the Netherlands using the risk equalisation system adjustment (further detailed below) and health insurers with approved Undertaking Specific Parameters (USPs).<sup>5</sup>

FIGURE 12: SCR BREAKDOWN BY CATEGORY



In Figure 12, everything above the red line represents a capital charge such as health underwriting risk, market risk, operational risk etc. Everything below the line represents a reduction to the SCR, e.g. for diversification benefits or the loss-absorbing capacity of deferred taxes. The loss-absorbing capacity of technical provisions is not relevant for health insurance and therefore has no impact on the SCR.

### Health underwriting risk

Figure 12 above shows that health underwriting risk makes up a similar portion of the SCR for Irish and UK insurers. However, health underwriting risk makes up a lower portion of the overall SCR for Dutch insurers and IPMI insurers. Unfortunately the split of health underwriting risk into its component parts, premium and reserve risk, lapse risk and health catastrophe risk, is not included in the public QRTs. However, it is possible to surmise the reasons for these differences.

<sup>5</sup> Bupa in the UK is the only health insurer in our sample using a USP.

For Dutch insurers the lower capital charge for health underwriting risk may be due to a specific allowance in the calculation of premium and reserve risk for companies operating within Health Risk Equalisation Systems (HRES). The Solvency II text allows companies operating within HRES to reduce the standard deviation for premium risk and the standard deviation for reserve risk relative to the normal factors set out in the standard formula. This applies to Dutch insurers offering basic health insurance. It does not apply to supplementary health insurance. On average, it results in a reduction to the factor applied to premium risk, from 5.0% to 2.7%.<sup>6</sup> It has been estimated that, in some cases, this can reduce the capital charge for premium risk for Dutch health insurers selling basic insurance by about 30% relative to the standard formula, with no HRES adjustment. However, the impact varies by company.

It should be noted that HRES adjustment does not apply to Irish health insurance companies as the Solvency II Directive states that, for this adjustment to apply, the health insurance within the HRES must be compulsory. In Ireland, take-up of private health insurance is voluntary.

There is no lapse risk capital charge for the Dutch health insurance as lapse risk is not a feature of these insurance contracts. In Ireland, however, the lapse risk component of the health underwriting risk capital charge is particularly onerous due to the mechanics of the Irish risk equalisation system. The risk equalisation credits are paid on a quarterly basis in respect of each new or renewed contract. Where a contract lapses within the first three months since inception, the insurer is still entitled to pay the annual risk equalisation credit for that contract. Therefore, under the health lapse risk capital charge (which is based on an instantaneous mass lapse scenario of 40%), the reinsurer is still liable to pay the full annual risk equalisation credit for new policies, including those that have lapses in this scenario.

Health catastrophe risk is also relatively low in the Netherlands, as this only applies to basic health insurance and is partially covered by a government compensation scheme. This may be another reason for the lower capital charge for health underwriting risk relative to the other categories.

Health underwriting risk for IPMI insurers makes up a lower overall proportion of their total SCRs, but this may be because the market risk component makes up a higher portion than the other categories (as discussed further below).

#### Market risk

Market risk is another large risk for health insurers. The analysis above shows that market risk makes up about 25% to about 30% of the total SCR for the UK and Dutch health insurers. However, for Irish health insurers, it is a much lower proportion (12%) and for the IPMI insurers it is a much higher proportion (about 40%).

The analysis of investment assets in Section 3 above shows that IPMI insurers are generally investing more conservatively than the other categories, with the majority of their investments in bonds and cash. Therefore it is unusual for this category to have such a high proportion of market risk but this could be due to currency risk. The IPMI insurers cover lives across various markets such as the Eurozone, UK, Switzerland, Singapore, United Arab Emirates, Thailand and Hong Kong, amongst others and their liabilities are generally denominated in many different currencies. While matching assets and liabilities by currency can be used to reduce currency risk, in reality it is not always possible to match the assets and liabilities exactly by currency and some residual risk may remain on the balance sheet. This is corroborated by the SFCR of Cigna Group, which shows that currency risk makes up a significant portion of the total market risk capital charge for the Cigna Group (although it should be noted that this is calculated using a partial internal model rather than standard formula).

The Irish insurers also have a larger portion of assets invested in government bonds, cash deposits and cash and cash equivalents compared to the other categories. These assets do not give rise to large capital charges under the standard formula. In addition, the Irish insurers are not exposed to currency risk in the same manner as the IPMI insurers, as the majority of their liabilities are euro-denominated. This may be the reason why market risk is a lower portion of the overall SCR for Irish insurers.

The UK and Dutch insurers have a much higher portion invested in collective investment schemes and direct equity than the other categories, which may be the reason for the higher market risk in these territories.

<sup>6</sup> Based on the calibration by the Dutch regulator in 2012 over the period 2006 to 2011.

### Counterparty default risk

Counterparty default risk is generally associated with reinsurance, therefore it's not surprising that the Irish and IPMI insurers have the highest portion of counterparty risk, given that these companies have a higher portion of reinsurance than the Dutch and UK insurers.

Counterparty default risk is particularly low for Dutch insurers as there is no reinsurance within the Dutch health insurance market. The main driver of this capital charge for the Dutch insurers is the counterparty risk associated with policyholder liabilities, intermediaries and cash at bank.

### Operational risk

Operational risk is calculated quite crudely using the standard formula. For most health insurers it is equal to 3% of gross earned premiums. Given the formulaic approach underlying this calculation it is difficult to infer much from Figure 12 above in respect of operational risk. For example, Figure 12 would suggest that Irish and UK insurers have a higher operational risk exposure than IPMI insurers, but this is not necessarily true as the operational risk capital charge simply looks at earned premiums as a proxy for operational risk, when in fact the opposite may be true given the global nature of IPMI business.

### Diversification

Diversification varies depending on the overall risk exposures of the companies. Those with a more diversified risk exposure will gain from a higher diversification benefit under the standard formula approach.

The IPMI insurers have the highest diversification benefit as a proportion of SCR, reflecting the large exposures to underwriting risk, market risk and counterparty risk. Whereas the Irish insurers have a much lower diversification benefit, reflecting the fact that the exposure to health underwriting risk outweighs any of the other risk exposures for the Irish insurers.

### Loss Absorbing Capacity of Deferred Tax (LACDT)

The LACDT is broadly consistent for the UK and Ireland. In the Dutch market, however, health insurers are exempt from paying taxes and as a result no deferred taxes are recognised on their balance sheets. Therefore, the SCR reduction for LACDT is not applicable for Dutch health insurers.

## SOLVENCY CAPITAL REQUIREMENT: INTERNAL MODEL

The majority of the health insurers included in our analysis use the standard formula to calculate the SCR. A small number of companies in our sample use internal models—AXA PPP Healthcare Limited uses a full internal model and both Cigna companies use a partial internal model.

AXA PPP Healthcare calculates its SCR using the AXA Group internal model. In addition to the risks that are covered in the standard formula (market, credit, underwriting, operational), the internal model also includes a capital charge for pensions risk. The market risk capital charge also covers risks such as interest rate implied volatility, equity implied volatility, government spread and inflation, which are not explicitly covered in the standard formula. The company's SCR coverage ratio was 134% at yearend 2016.

The Cigna Group includes two companies, Cigna Europe Insurance S.A. (CEIC) and Cigna Life Insurance S.A. (CLICE). Both solo entities are included in our analysis. The partial internal model has been developed at a solo entity level. The main differences between the standard formula and partial internal model relate to the calibration of the health underwriting risk capital charge, followed by market risk and the allowance for diversification. The SCR coverage ratio for CLICE was 171% and the SCR coverage ratio for CEIC was 156% at year end 2016, both using the solo entity partial internal models.

## SOLVENCY COVERAGE RATIO

The weighted average SCR solvency coverage ratio of the health insurers in our sample is 195%. This includes the three companies noted above that are using full and partial internal models, in addition to the standard formula companies. This compares to an average solvency coverage ratio of 184% across European non-life insurers.

The weighted average solvency coverage ratios<sup>7</sup> for each health insurance category is shown in Figure 13.

**FIGURE 13: WEIGHTED AVERAGE SOLVENCY COVERAGE RATIOS BY CATEGORY**

AVERAGE SOLVENCY COVERAGE RATIO	SCR	MCR
IRISH HEALTH INSURERS	286%	979%
UK HEALTH INSURERS	162%	412%
DUTCH HEALTH INSURERS	196%	523%
IPMI HEALTH INSURERS	150%	589%
ALL HEALTH INSURERS INCLUDED IN SAMPLE	195%	534%
EUROPEAN NON-LIFE INSURERS	184%	

Overall the solvency coverage ratios for the health insurers included in our analysis are very healthy, with the averages significantly in excess of the required solvency coverage ratio of 100%. The solvency coverage ratios of Irish health insurers are much higher than the other categories. This is predominantly due to one large insurer, VHI Healthcare, which has a very healthy capital position, with an SCR coverage ratio of 361% and an MCR coverage ratio of 1,166%.

For the Dutch health insurers, the average SCR calculated above is much higher than the SCR quoted by the Dutch regulator in a recent publication of aggregate Solvency II figures. This seems to be because our analysis aggregates figures published by solo entities, whereas the Dutch regulator's figures are based on consolidated group figures. Based on the figures published by the Dutch regulator, the average SCR solvency coverage ratio for Dutch health insurers is 157%, which is lower than the weighted average figure quoted above of 196%. This is contrary to what would be expected, in particular as the consolidated SCR may be lower at a group level when consolidation method 1<sup>8</sup> is applied, which is the preferred method of Dutch health insurers, and this would result in a higher solvency coverage ratio, all other things being equal.

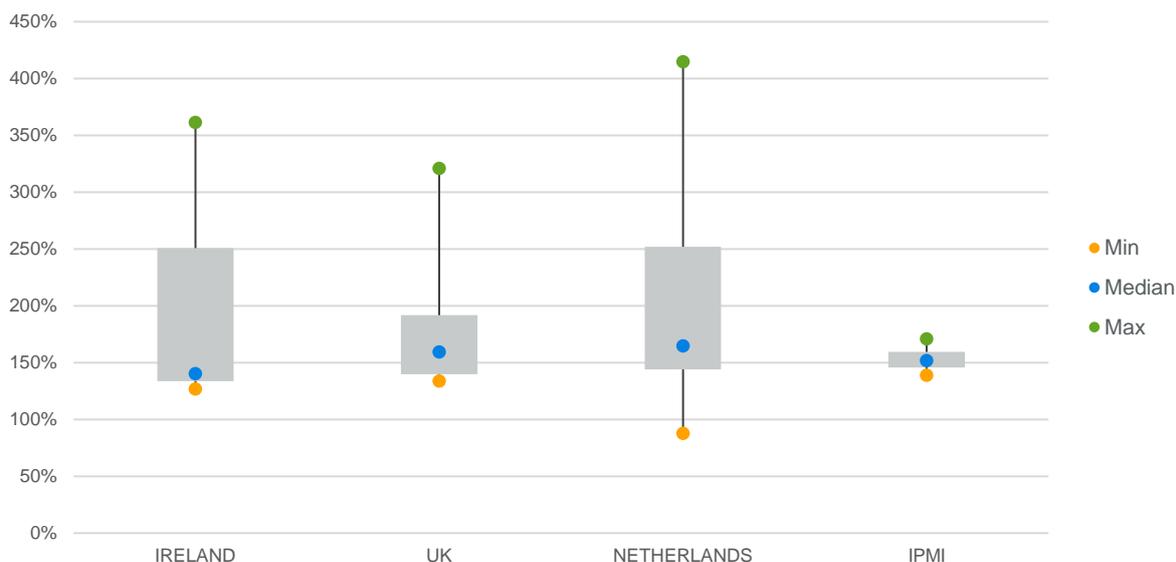
The reason for this difference seems to be the leveraging effect of intragroup transactions. At a solo level these transactions can be taken into account when calculating the own funds of a solo entity, but when the transactions are consolidated at a group level they are netted off against one another. This means that the sum of own funds for the solo entities within a group is often higher than the consolidated group own funds, resulting in a higher solvency coverage ratio. This is something that impacts all European insurance groups across all territories, but the impact is particularly material in the Dutch health insurance market due to the prevalence of a number of large Dutch groups focusing primarily on that market.

Figure 14 shows the distribution of the SCR by category. Note that the distribution shows the median rather than the weighted average so this information does not compare to the table in Figure 13.

<sup>7</sup> This has been calculated as the sum of the Own Funds of the insurers in each category divided by the sum of the SCR or MCR of the insurers in each category.

<sup>8</sup> Method 1 is the accounting consolidated method as set out in the Delegated Regulations.

FIGURE 14: DISTRIBUTION OF SCR COVERAGE RATIOS BY CATEGORY

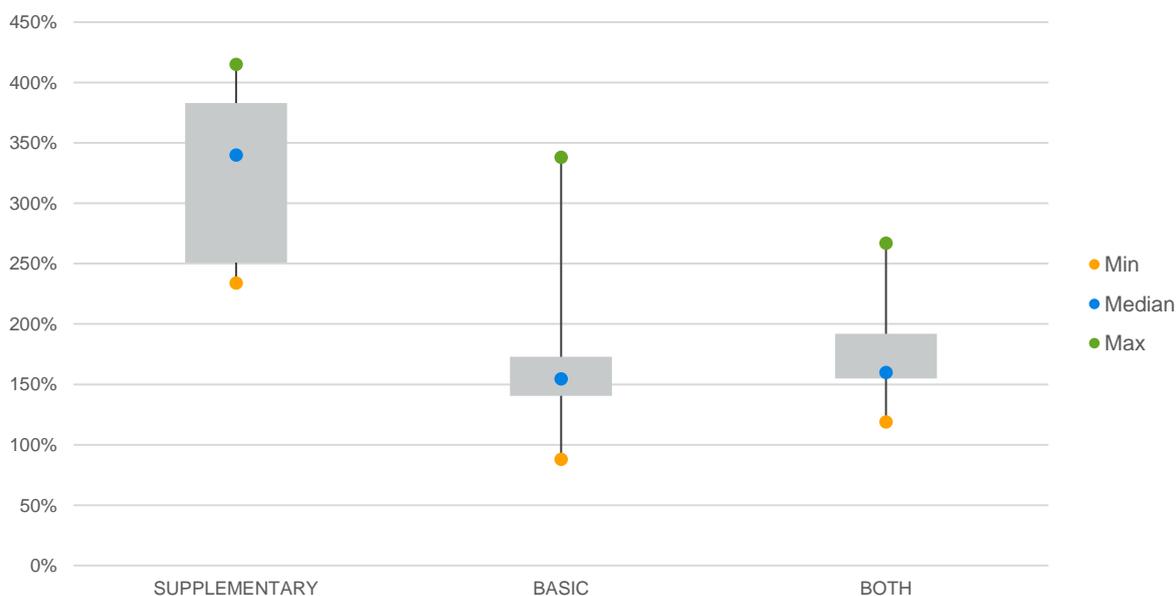


While the weighted average SCR coverage ratio (as quoted above) varies by category, it is interesting to see that the median is broadly similar for all categories – it is between 140% and 160% for all categories. The IPMI insurers have the tightest distribution of SCR coverage ratio, while the Dutch insurers have the widest. This may be driven by the relative size of the sample for each category, as there are significantly more insurers included in the Dutch category than the IPMI category. There is also one Dutch insurer with a solvency coverage ratio below 100% - we comment on this further in Section 5 below.

We excluded one Dutch insurer, Zilveren Kruis Ziektekostenverzekeringen N.V., from Figure 14, as this insurer has a significantly higher SCR coverage ratio than the rest of the market. The SCR coverage ratio of this company was 1,708% at 31 December 2016, with an SCR of €37 million. This company has also been excluded from the remainder of the graphs in this section.

It should be noted that in the Netherlands there is a wide variation in the solvency coverage ratio of insurance companies, depending on whether they sell basic or supplementary health insurance, or a combination of the two. The distributions for the Netherlands split by type of business is shown in Figure 15.

FIGURE 15: DISTRIBUTION OF DUTCH INSURERS SCR COVERAGE RATIOS BY CATEGORY

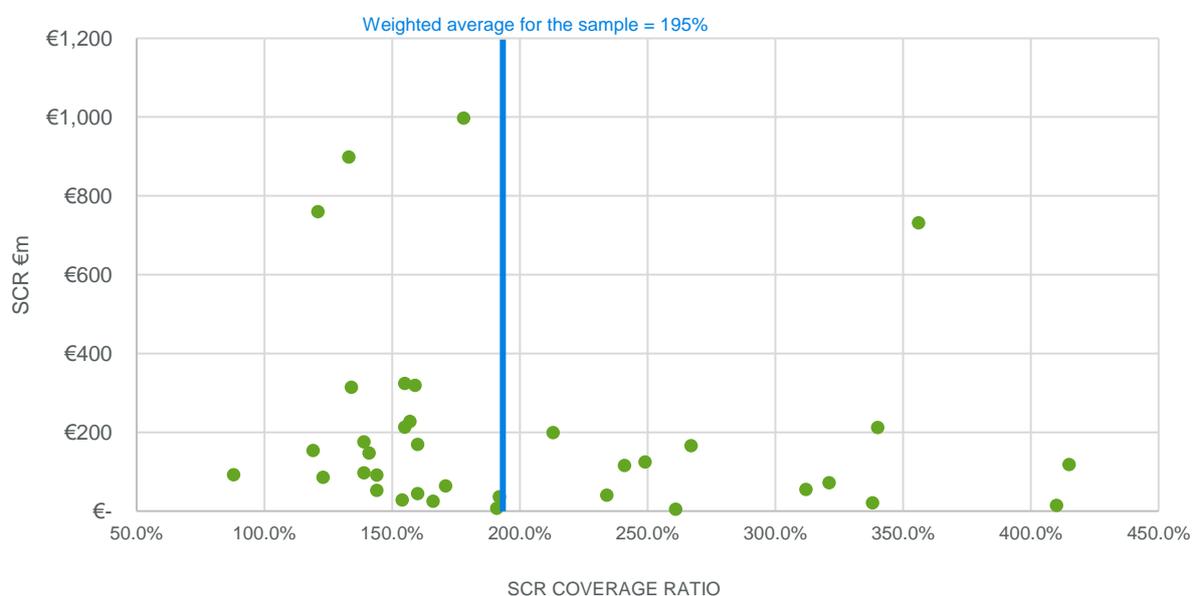


The insurers that sell supplementary insurance have higher solvency coverage ratios on average, with a median of 340% compared to 155% for those selling basic insurance only. However, it should be noted that the distribution of coverage ratios for basic insurers is quite wide.

There are a number of opposing factors underlying the differences. Firstly, the HRES factor only applies to basic health insurance and this should result in a lower SCR for basic health insurance relative to supplementary health insurance. However, the supplementary health insurance is more profitable and therefore would generate higher Own Funds than basic health insurance. Perhaps the most relevant factor is that the Dutch regulator has stated that health insurers should align their capital management and pricing policies.<sup>9</sup> If the SCR coverage ratio is in excess of a certain amount, the regulator expects the basic health insurers to return some capital to policyholders via premium discounts.

The scatter-plot in Figure 16 shows the solvency coverage ratio of each company included in our analysis, plotted relative to the size of the company's SCR. The majority of companies in the analysis have a solvency coverage ratio between 125% and 175%. In general, only companies with an SCR lower than about €200 million have solvency coverage ratios in excess of 175%. As noted above, the weighted average for the sample as a whole is 195%.

FIGURE 16: SCR COVERAGE RATIO BY COMPANY



There is one company with an SCR coverage ratio less than 100%. This is Dutch insurer FBTO Care BV, with an SCR coverage ratio of 88% (the MCR coverage ratio was 200%). The insurer noted in its SFCR that, in 2017, new information emerged resulting in an increase in healthcare costs above its initial estimates. This led to a reassessment of the technical provisions. The company could not have foreseen this earlier and as a result did not anticipate the increase in technical provisions, which resulted in a solvency breach. The company immediately informed the Dutch supervisor and a subordinated loan was later issued to rectify the breach.

#### Own Funds

Own Funds consist of the capital items backing the company's SCR and MCR. They include equity, debt and other items such as retained earnings and the present value of future profits (both included within the reconciliation reserve). Under Solvency II, Own Funds are tiered based on their quality and availability to absorb losses, with basic tier 1 Own Funds consisting of capital items of the highest quality.

<sup>9</sup> Principle 6 (for health insurers) published in the DNB letter, 'Policy on capital management - Principles and expectations - publication open book, 30-11-2016.'

Figure 17 shows the Own Funds of the health insurers included in our sample, split by category.

**FIGURE 17: TIERING OF SCR ELIGIBLE OWN FUNDS BY CATEGORY**

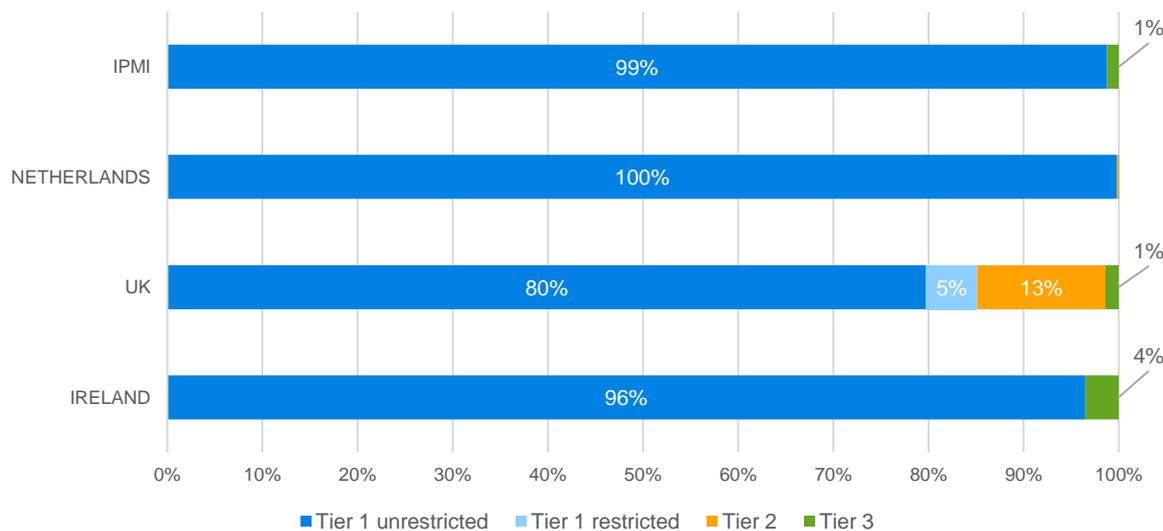


Figure 17 shows that the majority of health insurers are backing their SCR with capital of the highest quality – unrestricted tier 1 basis Own Funds. Where tier 3 Own Funds are present, they generally represent the deferred tax asset, which is classified as tier 3 under Solvency II. This is consistent with what we have seen across European non-life insurers, with 92% of Own Funds invested in tier 1 unrestricted capital on average.

The UK has the highest portion of lower-quality Own Funds, consisting of 5% restricted tier 1 Own Funds, 13% tier 2 Own Funds and 1% tier 3 Own Funds. The restricted tier 1 and tier 2 Own Funds represent subordinated liabilities held by Bupa and, to a lesser degree, Vitality Health.

It should be noted that none of the health insurers included in our sample held any ancillary Own Funds as of 31 December 2016.<sup>10</sup>

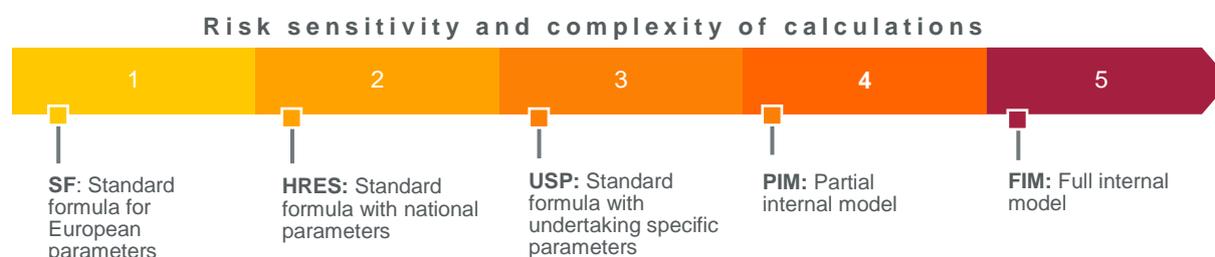
<sup>10</sup> Ancillary Own Funds include off balance sheet items such as unshared paid capital and letters of credit.

## 5. Analysis of SCR calculation methods

### USAGE OF SCR METHODS

The Solvency II legislation provides insurers with a variety of methods to calculate their SCRs, ranging from simple to complex. The type of method used tends to differ largely by country and by company. In this section we analyse these differences and the potential impact on the SCR coverage ratios.

FIGURE 18: SCR CALCULATION METHODS



The majority of health insurers included in our sample use the standard formula to calculate the SCR but the sample includes all three variations on the standard formula (with Bupa in the UK using a USP and the Dutch basic health insurers using the HRES adjustment). We have also included insurers using a partial internal model (the two Cigna companies) and a full internal model (AXA PPP Healthcare).

The various methods of calculation are illustrated in Figure 18, and can be summarised as follows:

- **SF: Standard formula with pan-European parameters:** The standard formula approach is prescribed under Solvency II and is based on the risk profile of a typical insurer. Using this approach, a set of shocks are applied to the Solvency II balance sheet, based on default parameters calibrated using a pan-European data set. The underlying standard parameters for the standard deviation of premium and reserve risk are 5.0% for both premium and reserve risk for medical expense insurance, although the parameters are currently under consultation by European Insurance and Occupational Pensions Authority (EIOPA).<sup>11</sup>
- **HRES: Standard formula with national parameters:** Specifically, for Dutch health insurers subject to the Health Risk Equalisation System (HRES) adjustment, this approach involves deviating from the underlying set of the standard parameters for premium and reserve risk. The current parameters were calibrated by the Dutch regulator in 2012 on the basis of a national data set for basic health insurers and are equal to 2.7% for premium risk and 5.0% for reserve risk, respectively. The HRES parameters are subject to a lower limit set by EIOPA, equal to one-third of the standard formula parameters for premium and reserve risk (currently 1.7% for both premium and reserve risk).
- **USP: Standard formula with USPs:** In addition, the Solvency II text allows all insurers (including healthcare insurers subject to HRES) to replace a subset of the standard parameters with USPs. For health insurers, the parameters for the standard deviation of premium and reserve risk in the Not Similar to Life Techniques ('NSLT') health insurance risk module can be based on parameters specific to the insurance company, with other SCR parameters following the standard formula. USPs are subject to regulatory approval and there is a prescribed standard method<sup>12</sup> underlying the calculation. Currently there is no requirement for insurers to disclose their USPs in their SFCRs.
- **PIM: Partial Internal Model:** The Solvency II text also allows insurers to use a Partial Internal Model ('PIM') for the calculation of specific capital charges, with the remaining capital charges calculated using the standard formula approach. The PIM can apply to all business or to only one or more business units. In developing a PIM, an insurer is free to determine a suitable calculation method and calibrate the model based on its own risk profile. The use of a PIM is subject to approval by the national regulator and the approval process is subject to strict regulations.
- **FIM: Full Internal Model:** Finally, a Full Internal Model ('FIM') can be used. This is an economic capital model that is customised to fully reflect the specific risk profile of the insurer. Like the PIM, a FIM is subject to a strict

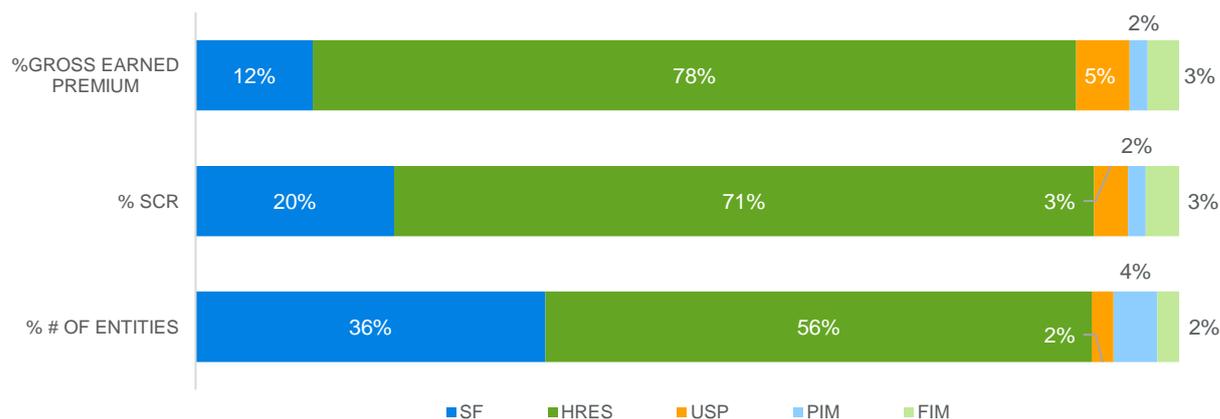
<sup>11</sup> Consultation Paper on EIOPA's second set of advice to the European Commission on specific items in the Solvency II Delegated Regulation, available at: [https://eiopa.europa.eu/Publications/Consultations/EIOPA-CP-17-006\\_Consultation\\_Paper\\_on\\_Second\\_set\\_of\\_Advice\\_on\\_SII\\_DR\\_Review.pdf](https://eiopa.europa.eu/Publications/Consultations/EIOPA-CP-17-006_Consultation_Paper_on_Second_set_of_Advice_on_SII_DR_Review.pdf).

<sup>12</sup> As set out in Article 149 of the Delegated Acts.

regulatory approval process. Within our sample, the UK company AXA PPP Healthcare is currently the only insurer using a FIM.

Within our database, the vast majority of insurers are using the standard formula to calculate the SCR. A large proportion of insurers are using the HRES adjustment, reflecting the large number of health insurers selling basic health insurance in the Dutch market. Our sample is limited in terms of the other calculation methods – there is only one health insurer using a USP (Bupa in the UK), two health insurers using a PIM (the two companies in the Cigna Group) and one health insurer using a FIM (AXA PPP Healthcare). If we focus on the health insurers included in our analysis, we can draw some inferences from the split of the gross earned premiums and SCR by calculation method, as shown in Figure 19.

FIGURE 19: SPLIT OF GROSS EARNED PREMIUM AND SCR BY CALCULATION METHOD



The vast majority of companies in our sample are using the standard formula (over 90%). This is consistent with figures published by EIOPA showing that over 90% of European insurers are using the standard formula.

Figure 19 shows that while the Dutch health insurers subject to HRES represent more than half of the companies within our sample (56%), they have a significantly higher share in gross earned premiums (78%) and are contributing to a higher share of total SCR. However, their share in the total SCR (71%) is somewhat lower than their contribution to gross earned premiums, which reflects the HRES adjustment to the premium risk sub-module.

The other companies using the standard formula in our sample contribute a lower share to total gross earned premiums (12%), reflecting primarily the size of the Dutch health insurance market relative to the other categories. However, these companies contribute to a relatively higher share of the SCR (20%), indicating that the standard formula results in a relatively high solvency capital requirement compared to the other calculation methods.

We do not have a large amount of data in our sample to draw many conclusions in respect of the other calculation methods (USP, PIM and FIM) except to say that the contribution to gross earned premium and SCR is relatively stable. Perhaps the main thing to note is that the company using the USP (Bupa in the UK) had a lower contribution to SCR than gross earned premium, which reflects the fact that the USP is resulting in a lower capital charge for this company.

### FOCUS ON USPS

While there is only one health insurer in our sample using a USP, we know that there are more European insurers that have approved USPs for medical expense insurance. EIOPA published a consultation paper in early 2017<sup>13</sup> that showed that six companies had an approved USP for premium risk for medical expense insurance and two companies had an approved USP for reserve risk for medical expense insurance. In addition, there are six groups that have approved group-specific parameters ('GSPs'), of which two have approved GSPs for both premium and reserve risk for medical expense insurance and another has a GSP for premium risk for medical

<sup>13</sup> Consultation Paper on EIOPA's first set of advice to the European Commission on specific items in the Solvency II Delegated Regulation, available at: [https://eiopa.europa.eu/Publications/Consultations/EIOPA-CP-17-004\\_Consultation\\_Paper\\_on\\_First\\_set\\_of\\_Advice\\_on\\_SII\\_DR\\_Review.pdf](https://eiopa.europa.eu/Publications/Consultations/EIOPA-CP-17-004_Consultation_Paper_on_First_set_of_Advice_on_SII_DR_Review.pdf)

expense insurance. While the numbers may be relatively low compared to other non-life insurers, we are aware of other health insurers that are currently considering USPs or actively working on USP applications.

At the time when EIOPA was developing the calibration of the standard formula, it only had access to a limited amount of data from health insurers. There is a general view amongst health insurance professionals that the standard formula calibration for the standard deviation for premium risk (5.0%) is too high and the calibration for the standard deviation for reserve risk (5.0%) is too low. While they move in opposite directions, the volume measure for premium risk as defined under the standard formula tends to be much higher than the volume measure for reserve risk, so many health insurers believe that they are overstating their capital requirements using the standard formula parameters. Therefore USPs are commonly viewed as a way to realign an insurer's capital requirements with its actual risk exposure. While USPs are subject to regulatory approval, the process is not as onerous as the approval process required for partial or full internal model approval.

It is worth noting that the latest consultation from EIOPA<sup>14</sup> recommends an increase in the parameters for premium and reserve risk for medical expense insurance. The original parameters were set based on limited data, and as a result EIOPA asked undertakings to submit data again in December 2016. Based on the latest data, EIOPA has suggested an increase in standard deviation parameter for premium risk from 5.0% to 6.0% and an increase in the parameter for reserve risk from 5.0% to 6.6%. This is currently under consultation, but if EIOPA ultimately recommends an increase in parameters, it may result in more undertakings considering USPs.

Unfortunately, EIOPA has not published a full list of undertakings using USPs for medical expense insurance across Europe. However, through our review of the SFCRs we have been able to identify three other insurers using USPs for medical expense insurance in addition to Bupa in the UK. Details of these insurers are outlined in Figure 20.

**FIGURE 20: HEALTH INSURERS IDENTIFIED TO BE USING USPs**

COMPANY NAME	COUNTRY	USP FOR PREMIUM RISK	USP FOR RESERVE RISK
BUPA INSURANCE LIMITED (BUPA)	UK, PART OF THE BUPA GROUP	Y	-
SANITAS S.A DE SEGUROS ('SANITAS')	SPAIN, PART OF THE BUPA GROUP	Y	-
CATTOLICA ASSICURAZIONI SOC. COOP ('CATTOLICA')	ITALY, PART OF THE CATTOLICA GROUP	Y	Y
TUA ASSICURAZIONI S.P.A. ('TUA')	ITALY, PART OF THE CATTOLICA GROUP <sup>15</sup>	Y	Y

While insurers are required to publicly disclose the use of USPs in their SFCRs, they are not yet required to publish the impact of USPs on their capital requirements. Therefore it is not easy to analyse the impact of USPs compared to the standard formula in particular, as there may be other variations in companies' risk exposures or target capital underlying differences in the SCR or solvency coverage ratio.

However, we carried out some high-level analysis based on the information provided in the public QRTs to estimate the USPs of these companies. This analysis was based on a number of assumptions. For example, we assumed that the standard formula capital charge for health underwriting risk is solely due to premium and reserve risk i.e. that there is no capital charge for lapse risk or health catastrophe risk and that the volume measure for premium risk is equal to net earned premiums received over the past 12 months. In addition, we assumed that the volume measure for reserve risk is equal to the net claims provision at the valuation date and that there is no benefit for geographical diversification in the calculation of the premium and reserve risk capital charge.

Based on this analysis, we estimate that the use of a USP for premium risk could reduce the capital requirement for premium and reserve risk by up to 50% to 60%. When USPs are used for both parameters, we estimate that the impact can be even greater – up to 70% to 80%. While the underlying calculations are based on some high-

<sup>14</sup> Consultation Paper on EIOPA's second set of advice to the European Commission on specific items in the Solvency II Delegated Regulation, available at: [https://eiopa.europa.eu/Publications/Consultations/EIOPA-CP-17-006\\_Consultation\\_Paper\\_on\\_Second\\_set\\_of\\_Advice\\_on\\_SII\\_DR\\_Review.pdf](https://eiopa.europa.eu/Publications/Consultations/EIOPA-CP-17-006_Consultation_Paper_on_Second_set_of_Advice_on_SII_DR_Review.pdf).

<sup>15</sup> Both Cattolica and Tua have received approval for a number of non-life USPs. These insurers are part of the same group and received approval for the use of their USPs on the same date, so this may have been part of a GSP application rather than individual USP applications.

level assumptions, it is fair to infer that the use of USPs can have a significant impact on the capital requirement for premium and reserve risk.

The exact impact for a specific company will depend on its underlying risk exposure to premium and reserve risk and the quality of the data underlining the USP calculation. However, we believe that this is an area that will be of increased focus to health insurers in the future, particularly if EIOPA recommends an increase to the parameter's following its latest consultation.

## 6. Conclusion

Overall the European health insurers included in our sample were in a very strong position at yearend 2016, with an average SCR coverage ratio of 195%, which is slightly higher than the EU average for non-life insurers of 184%. Of the companies included in our analysis, there was only one health insurer with an SCR coverage ratio less than 100% at 31 December 2016 and action has subsequently been taken to resolve this.

Health underwriting risk is the largest risk exposure of health insurers, based on the split of the SCR components for standard formula companies, not surprisingly. However, there are some differences in the risk exposure across the various categories, generally depending on the nuances of the healthcare systems in which the insurers operate. Market risk and operational risk are also material risk exposures for European health insurers.

Own Funds of European health insurers are predominantly 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. This is consistent with what we have seen across European non-life insurers, with 92% of Own Funds invested in tier 1 unrestricted capital on average. This further emphasises the strong financial position of Irish life insurers.

It is not possible to draw many inferences on the impact of an internal model versus the standard formula based on the insurers included in our sample and the information provided in the QRTs and SFCRs. However, we have carried out some additional analysis on the impact of USPs on health insurer's standard formula SCRs. Based on our estimates, the use of USPs can significantly reduce the capital requirement for premium and reserve risk for health insurers. However, the exact impact for a specific company will depend on its underlying risk exposure to premium and reserve risk and the quality of the data underlining the USP calculation.

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DNB (November 2016). Policy on capital management - Principles and expectations.

EIOPA (July 2017), Consultation Paper on EIOPA's first set of advice to the European Commission on specific items in the Solvency II Delegated Regulation.

European Commission (2014). Commission Delegated Regulation (EU) 2015/35 'Delegated Regulations'

European Parliament and Council (2009). Directive 2009/138/EC (recast) 'Solvency II Directive'

## Appendix 1 – Companies included in this analysis

COMPANY NAME	CATEGORY	SCR CALCULATION	
		METHOD	SCR COVERAGE RATIO
CIGNA EUROPE INSURANCE S.A. *	IPMI	PIM	155%
CIGNA LIFE INSURANCE S.A. *	IPMI	PIM	170%
AETNA	IPMI	Standard Formula	148%
GLOBALITY S.A.	IPMI	Standard Formula	139%
ELIPS VERSICHERUNGEN ***	Ireland	Standard Formula	127%
IRISH LIFE HEALTH	Ireland	Standard Formula	140%
VHI INSURANCE DAC	Ireland	Standard Formula	361%
ACHMEA ZORGVERZEKERINGEN N.V.	Netherlands	Standard Formula	356%
ASR AANVULLENDE ZIEKTEKOSTENVERZEKERINGEN N.V.	Netherlands	Standard Formula	410%
CZ GROEP AANVULLENDE VERZEKERING U.A. , OWM	Netherlands	Standard Formula	340%
DE FRIESLAND PARTICULIERE ZIEKTEKOSTENVERZEKERINGEN N.V.	Netherlands	Standard Formula	415%
ENO AANVULLENDE VERZEKERINGEN N.V.	Netherlands	Standard Formula	261%
MENZIS N.V.	Netherlands	Standard Formula	241%
ONVZ AANVULLENDE VERZEKERING N.V.	Netherlands	Standard Formula	234%
ZILVEREN KRUIS ZIEKTEKOSTENVERZEKERINGEN N.V.	Netherlands	Standard Formula	1708%
ANDERZORG N.V.	Netherlands	Standard Formula (HRES)	123%
ASR BASIS ZIEKTEKOSTENVERZEKERINGEN NV	Netherlands	Standard Formula (HRES)	144%
AVÉRO ZORGVERZEKERINGEN N.V.	Netherlands	Standard Formula (HRES)	249%
AZIVO ZORGVERZEKERAAR N.V.	Netherlands	Standard Formula (HRES)	144%
CENTRALE ZORGVERZEKERAARS GROEP, ZORGVERZEKERAAR U.A. OWM	Netherlands	Standard Formula (HRES)	178%
DE FRIESLAND ZORGVERZEKERAAR N.V.	Netherlands	Standard Formula (HRES)	155%
DELTA LLOYD ZORGVERZEKERING NV	Netherlands	Standard Formula (HRES)	267%
ENO ZORGVERZEKERAAR N.V.	Netherlands	Standard Formula (HRES)	160%
FBTO ZORGVERZEKERINGEN N.V.	Netherlands	Standard Formula (HRES)	88%
INTERPOLIS ZORGVERZEKERINGEN N.V.	Netherlands	Standard Formula (HRES)	171%
IZA ZORGVERZEKERAAR NV	Netherlands	Standard Formula (HRES)	213%
IZZ ZORGVERZEKERAAR N.V.	Netherlands	Standard Formula (HRES)	119%
MENZIS ZORGVERZEKERAAR N.V.	Netherlands	Standard Formula (HRES)	121%
N.V. VGZ CARES	Netherlands	Standard Formula (HRES)	166%
OHRA ZIEKTEKOSTENVERZEKERINGEN NV	Netherlands	Standard Formula (HRES)	160%
OHRA ZORGVERZEKERINGEN N.V.	Netherlands	Standard Formula (HRES)	312%
ONVZ ZIEKTEKOSTENVERZEKERAAR N.V.	Netherlands	Standard Formula (HRES)	141%
OWM DSW ZORGVERZEKERAAR U.A.	Netherlands	Standard Formula (HRES)	139%
OWM ZORGVERZEKERAAR ZORG EN ZEKERHEID U.A.	Netherlands	Standard Formula (HRES)	157%
OZF ZORGVERZEKERINGEN N.V.	Netherlands	Standard Formula (HRES)	338%
STAD HOLLAND ZORGVERZEKERAAR U.A. OWM	Netherlands	Standard Formula (HRES)	154%
UMC ZORGVERZEKERAAR NV	Netherlands	Standard Formula (HRES)	192%
UNIVÉ ZORG N.V.	Netherlands	Standard Formula (HRES)	155%
VGZ ZORGVERZEKERAAR NV	Netherlands	Standard Formula (HRES)	133%
ZILVEREN KRUIS ZORGVERZEKERINGEN N.V.	Netherlands	Standard Formula (HRES)	164%
AXA PPP HEALTHCARE *	UK	FIM	134%
CIVIL SERVICE HEALTHCARE SOCIETY LIMITED	UK	Standard Formula	191%
SIMPLYHEALTH ACCESS	UK	Standard Formula	321%
VITALITY HEALTH INSURANCE LIMITED **	UK	Standard Formula	139%
BUPA INSURANCE LIMITED *	UK	Standard Formula (USP)	159%

\* Companies have been allocated to each category according to the majority of business written in each category. For example, Bupa and AXA PPP Healthcare sell both UK private health insurance and IPMI insurance. However for the purposes of this report these companies have been included in the UK analysis. Conversely, Cigna which also sells private health insurance in the UK and IPMI insurance has been allocated to the IPMI category.

\*\* Vitality Health Insurance Limited has a reporting date of 30 June 2016. All other companies included in this analysis have a reporting date of 31 December 2016.

\*\*\* Elips Versicherungen has been included in the analysis as an Irish company. This company is actually based in Switzerland. However, the vast majority of this company's sales represent policies sold in Ireland through Laya Healthcare.



Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in life insurance and financial services, property & casualty insurance, healthcare, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

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