

4th Webinar on Health Insurance

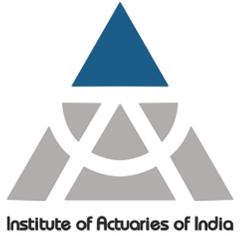
18th December 2020

RBC for Health Insurers: Lessons from Solvency II

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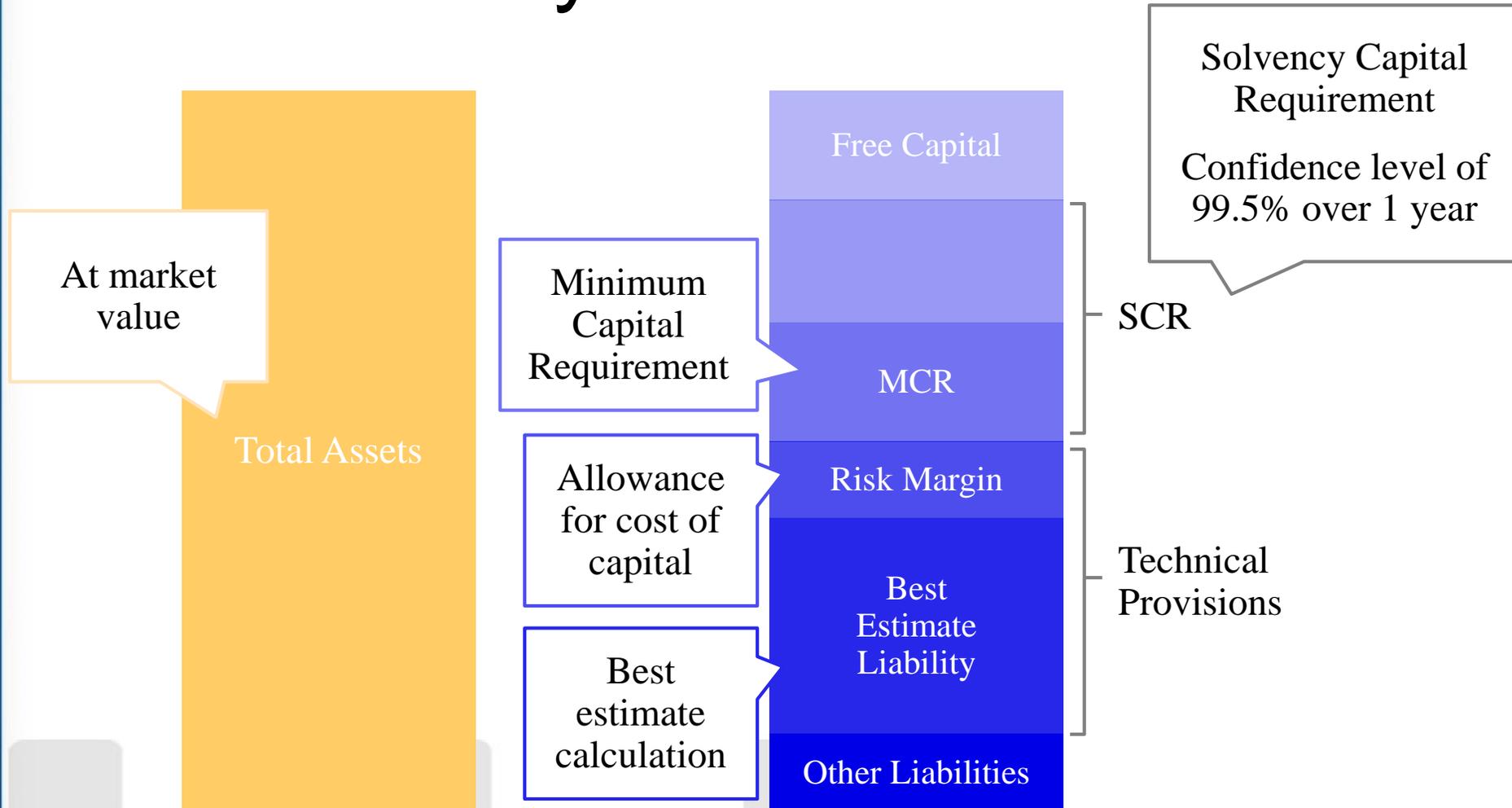


Agenda

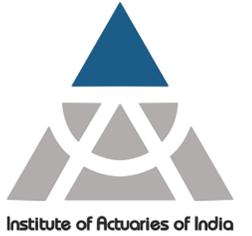


- Refresher on Solvency II capital
- SCR in Europe
- Conclusions

Solvency II Balance Sheet

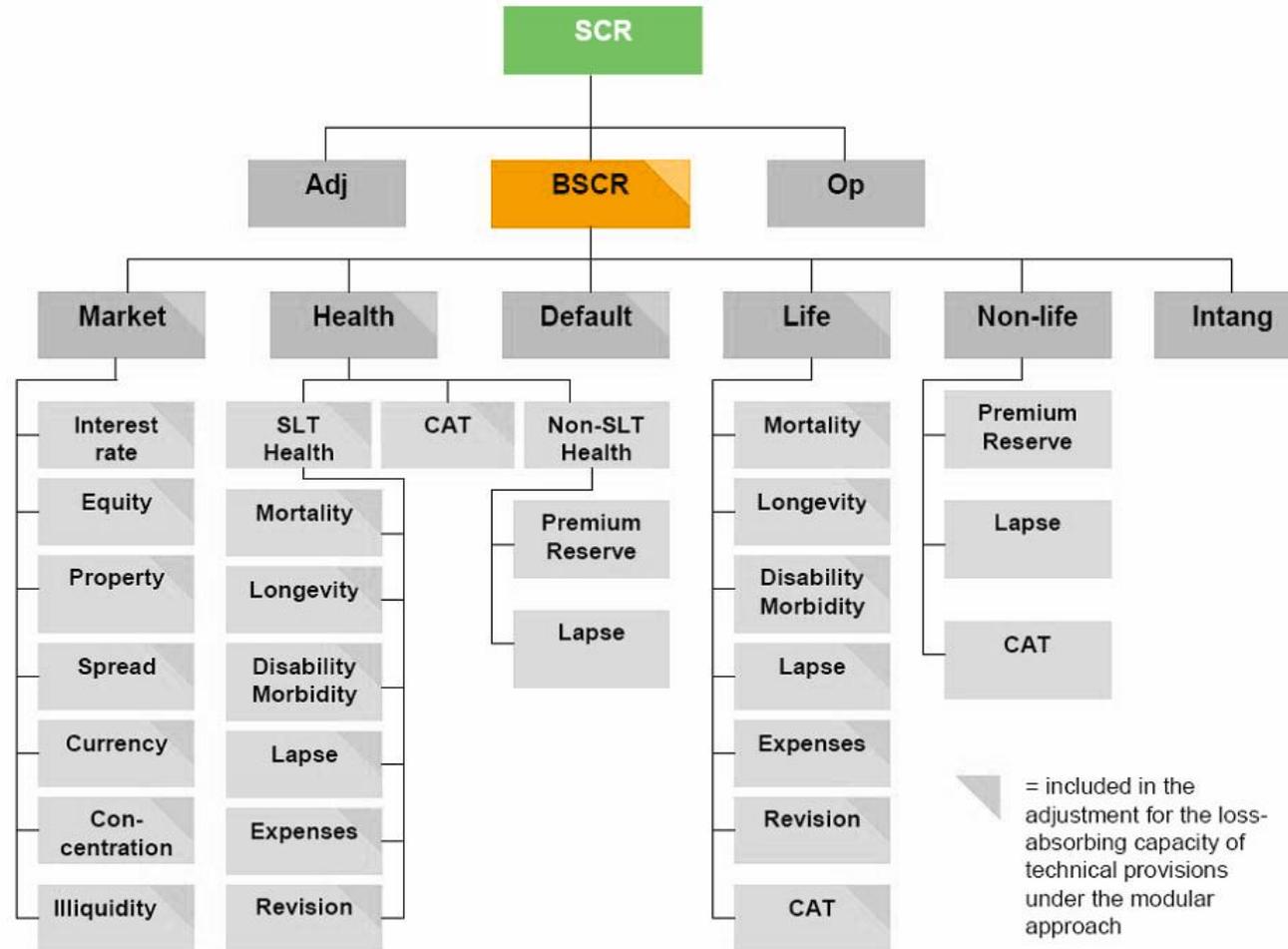


Solvency Capital Requirement (SCR)

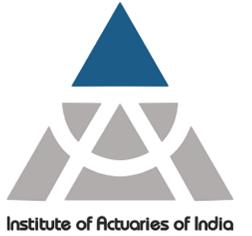


- Capital is required to meet:
 - All quantifiable risks on existing portfolio, plus
 - Expected sales volumes over the next year
 - Calibrated so that ‘probability of ruin’ is 1/200 over one year
- The SCR is calculated by applying a set of instantaneous shocks to the balance sheet:
 - The SCR is the sum of the impacts of each shock to the balance sheet
 - With an allowance for diversification
- May derive SCR from this standard formula approach, or use result of internal model or partial internal model

SCR Standard Formula

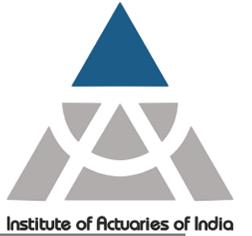


Calculating the SCR



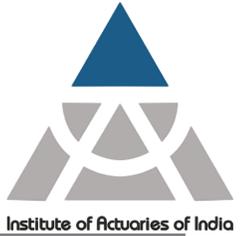
- SCR calculation is a modular, risk-based approach
- Modules calculated either via:
 - Change to net assets under stressed scenarios approach:
 - e.g. equity, mortality.
 - Factor based approach:
 - e.g. operational, premium & reserve risk.
- Risk modules are aggregated to give overall capital position:
 - Allowing for diversification between different risk types.
 - The standard formula specifies the aggregation approach and a correlation matrix.

Life Underwriting Risk



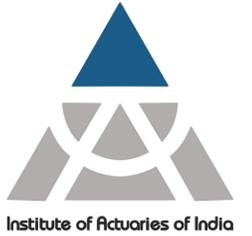
Risk Driver	Risk Description
Mortality risk	More policyholders die than expected - 15% increase in mortality rates
Longevity risk	Policyholders survive longer than expected - 20% decrease in mortality rates
Disability risk	Morbidity experience is worse than expected e.g. critical illness - 35%/25% increase in morbidity rates in years 1/2+ and a 20% decrease in recovery rates
Lapse risk	Lapse risk requires taking the worst of three scenarios: <ul style="list-style-type: none">• A 50% increase in the future lapse rates for policies where lapses increase liabilities• A 50% decrease in the future lapse rates for policies where lapses reduce liabilities• A mass lapse scenario, where 40% of retail policies and 70% of non-retail policies lapse (for policies where lapses increase liabilities)
Expense risk	Expenses and expense inflation are higher than expected - 10% increase and additional 1% p.a. inflation
Catastrophe risk	Catastrophe risk reflects a once off mortality event, such as a pandemic – additional 0.15% mortality rate for 12 months

Non – Life Underwriting Risk



Risk Driver	Risk Description
Premium & reserve risk	Volume measure times standard deviation and specified factor - parameters are specified for the standard deviation for each of the 12 segments, and combined using a specified correlation matrix
Lapse risk	40% of the insurance policies discontinue where discontinuance would result in an increase of technical provisions without the risk margin
Catastrophe risk	Factor based calculation with different calculations for different risks: <ul style="list-style-type: none">• Natural catastrophe (e.g. flood, windstorm)• Non-proportional reinsurance• Man-made catastrophe (e.g. motor, aviation)• Other

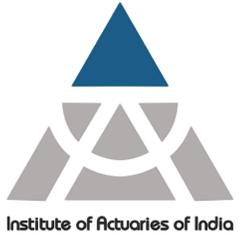
Health Underwriting Risk



- Health Similar to Life Techniques SCR:
 - Stresses are similar to those from Life Underwriting Risk SCR (but no Catastrophe Risk sub-module).
- Health Not Similar to Life Techniques SCR:
 - Stresses that are similar to those from Non-Life Underwriting Risk SCR:
 - Premium & reserve risk (factor based calculation).
 - Lapse risk (recalculation of technical provisions).
 - No catastrophe risk sub-module.
- Health Catastrophe Risk SCR:
 - Factor based calculation consisting of :
 - Mass accident sub-module.
 - Accident concentration sub-module.
 - Pandemic sub-module.

Internal Models

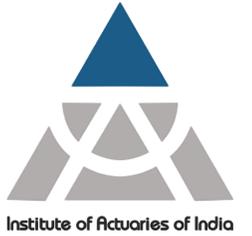
Introduction



- Companies can develop their own internal model for determining their capital requirements:
 - Full or partial model can be used instead of the standard SCR formula.
- Regulatory approval required.
- Required if standard formula doesn't capture all risks appropriately:
 - Special features not properly catered for.
 - Standard formula may be overly conservative.
- Supervisor could insist that you use a full or partial internal model.
- Regulatory capital (somewhat) aligned with economic capital.

Internal Models

Requirements



- Statistical Quality Standards:
 - Accurate, complete and appropriate data updated at least annually.
 - Model should cover all material risks.
- Calibration Standards – equivalent to standard formula calibration:
 - 99.5% confidence level over 1 year (or 1 in 200 year event).
- Profit and Loss Attribution:
 - Model needs to be back-tested to demonstrate how categorisation of risk chosen explains the causes and sources of profits and losses.
- Documentation Standards – covering theory, structure, assumptions.
- Use Test:
 - Integrate model into risk management and capital management.
 - Central to risk management and decision making.

EIOPA premium and reserve risk factors by line of business



Segment	Standard deviation for gross premium risk	Standard deviation for reserve risk
Motor vehicle liability	10.00%	9.00%
Motor other classes	8.00%	8.00%
MAT	15.00%	11.00%
Fire and other property damage	8.00%	10.00%
Third-party liability	14.00%	11.00%
Credit and suretyship	19.00%	17.20%
Legal expenses	8.30%	5.50%
Assistance	6.40%	22.00%
Miscellaneous	13.00%	20.00%
NP reinsurance - property	17.00%	20.00%
NP reinsurance - casualty	17.00%	20.00%
NP reinsurance - MAT	17.00%	20.00%
Medical expense	5.00%	5.70%
Income protection	8.50%	14.00%
Workers' compensation	9.60%	11.00%
NP reinsurance - Health	17.00%	17.00%

Undertaking Specific Parameters

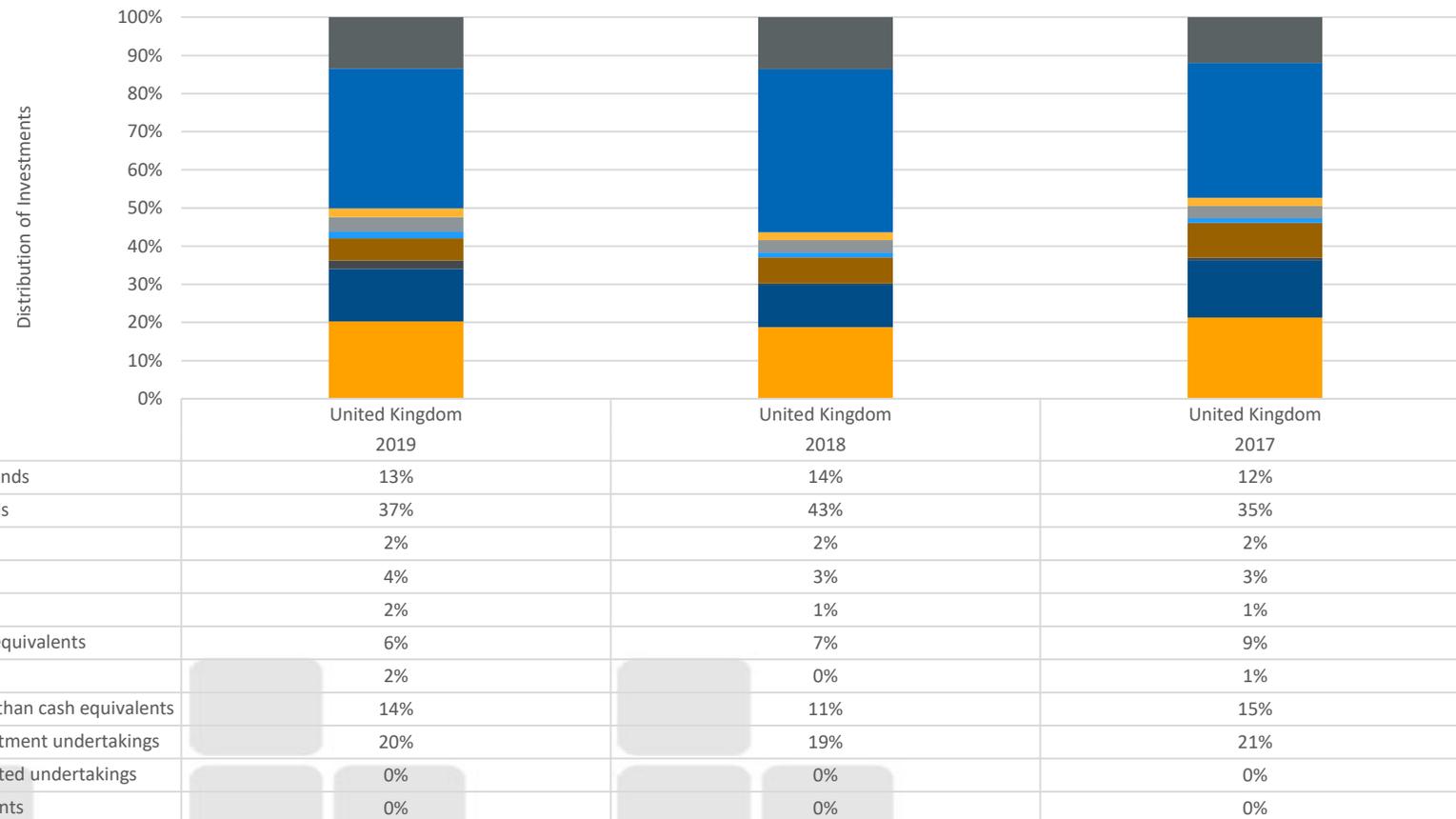
- 1 Methodology subject to approval by the supervisory authorities
- 2 Involves replacing standard formula parameters with parameters specific to the company
- 3 Only applies to non-life premium & reserve risk, life revision, and health underwriting risk modules (Mainly used by non-life companies)
- 4 Calibrated on the basis of the internal data of the company, or directly relevant data using standardised methods. Most usually on internal 10 years of historical data, but can make adjustments for the following year's expectations

A summary of healthcare systems by country

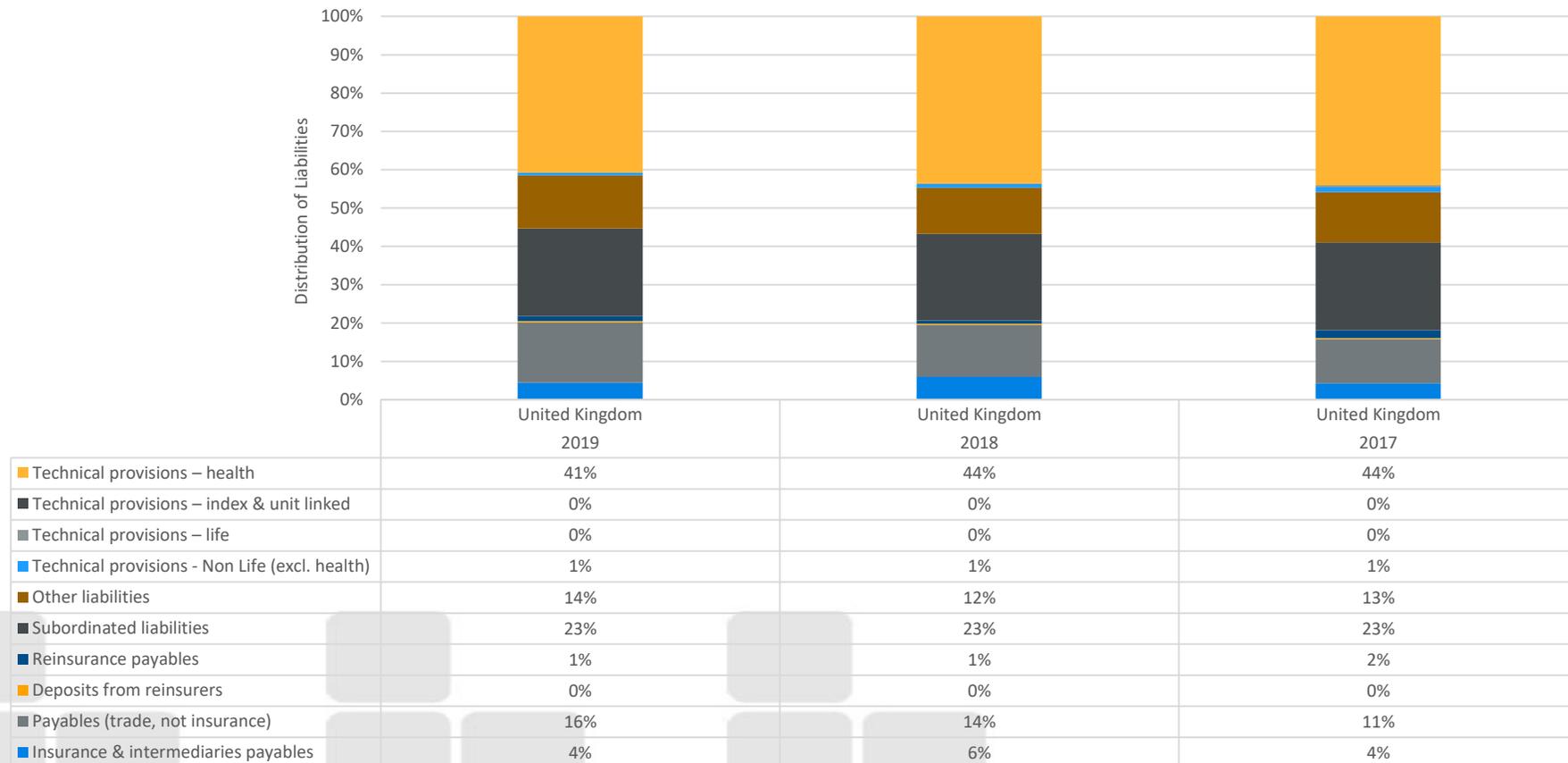


Country	Healthcare funding mechanisms	Pricing and rating methods for Private medical insurance (PMI)	PMI policy type and purpose of PMI	Typical benefit coverage in PMI
France	Primary funding system is Social health insurance (SHI). Other dominant systems are PMI and Out of pocket (OOP).	Premiums are risk-rated.	PMI undertaking is sometimes compulsory through the employer, but is voluntary for individual policies. Purpose of PMI is supplementary.	Comprehensive coverage for most services, including long-term care. Coverage for chronic conditions is excluded.
Ireland	Primary funding system is tax-based/National Health Insurance (NHI). Other dominant systems are PMI and OOP.	Premiums are mostly community-rated, but there is some capacity for age band adjustments. There is a risk equalisation system in place with open enrolment.	PMI undertaking is voluntary and individual-based. Purpose of PMI is complementary, duplicative and supplementary.	Fairly comprehensive benefits. Provision of primary care and emergency services varies by product. Generally, coverage for prescriptions, dental and optical services is excluded.
The Netherlands, Basic Health Insurers	Primary funding system is PMI (50% tax-based funded and 50% via premiums). Other dominant system is OOP.	Premiums are community-rated. A risk equalisation system is in place with open enrolment.	PMI undertaking is compulsory for individuals and PMI is the primary source of health insurance.	Comprehensive benefit coverage.
The Netherlands, Supplementary Health Insurers	Primary funding system is PMI. Other dominant system is OOP.	Premiums are risk-rated	PMI undertaking is voluntary and individual-based. Purpose of PMI is both complementary and supplementary.	Covers services such as dental, physiotherapy, optical, contraceptives and medicine copayments to supplement the services available through the basic system.
United Kingdom	Primary funding system is tax-based/NHI. Other dominant systems are PMI and OOP.	Premiums are risk-rated.	PMI undertaking is voluntary. Policies can be employer-sponsored or individual but are mostly employer-sponsored. Purpose of PMI is duplicative and supplementary.	Mostly covers inpatient elective and outpatient diagnostic services. Coverage for emergency services, chronic conditions and maternity services is excluded and primary care coverage is limited.

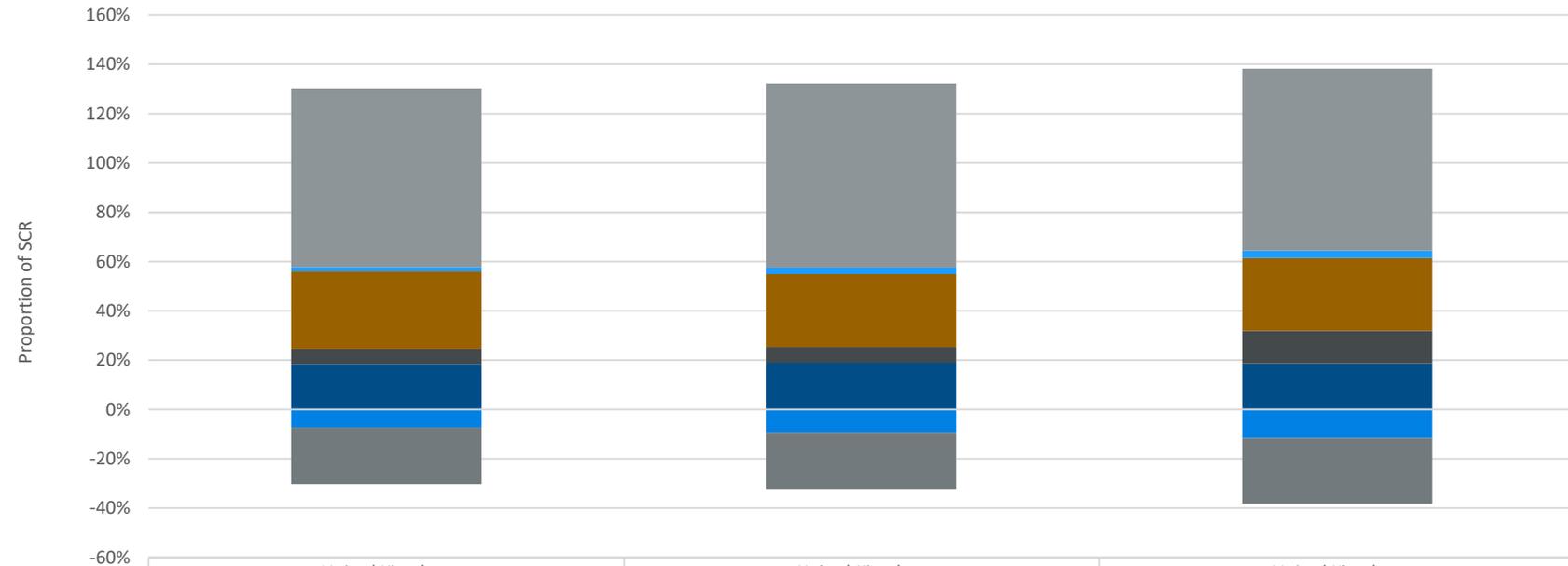
The distribution of investments in the UK



The distribution of liabilities in the UK

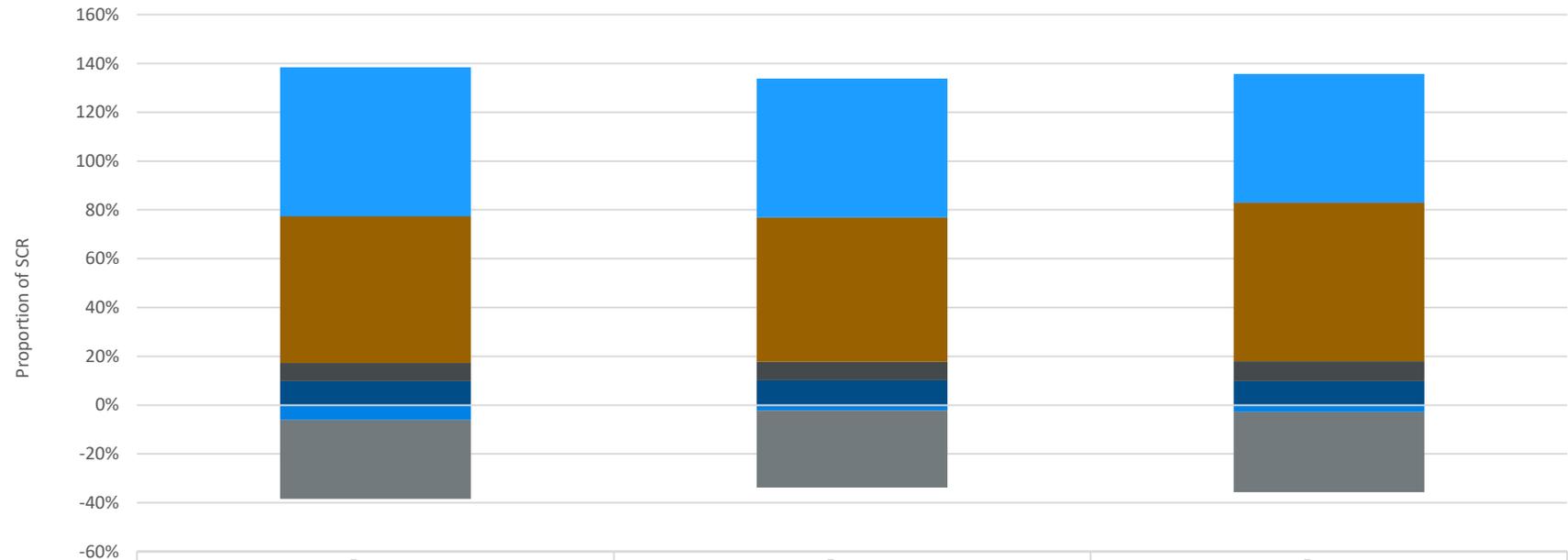


The breakdown of the SCR in the UK



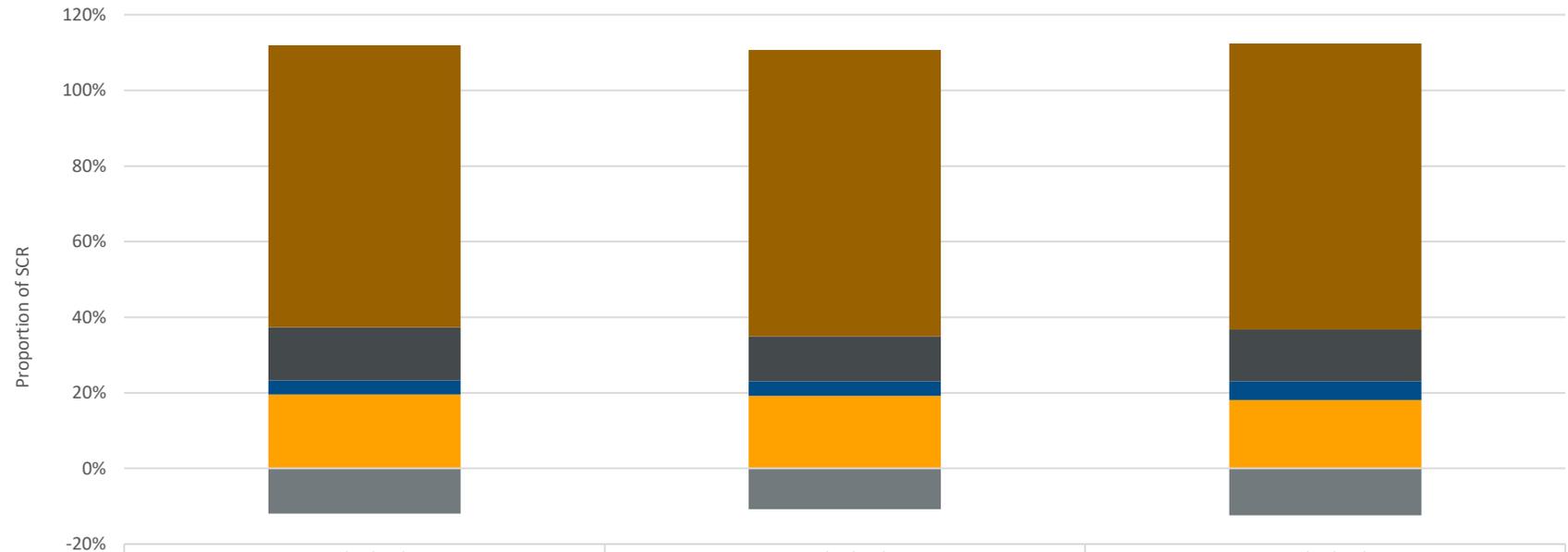
	United Kingdom 2019	United Kingdom 2018	United Kingdom 2017
Health underwriting risk	72%	75%	74%
Non Life underwriting risk	2%	3%	3%
Market risk	31%	30%	30%
Counterparty default risk	6%	6%	13%
Operational risk	18%	19%	19%
Intangible asset risk	0%	0%	0%
Diversification	-23%	-23%	-26%
Loss absorbing - Deferred taxes	-7%	-9%	-12%

The breakdown of the SCR in the France



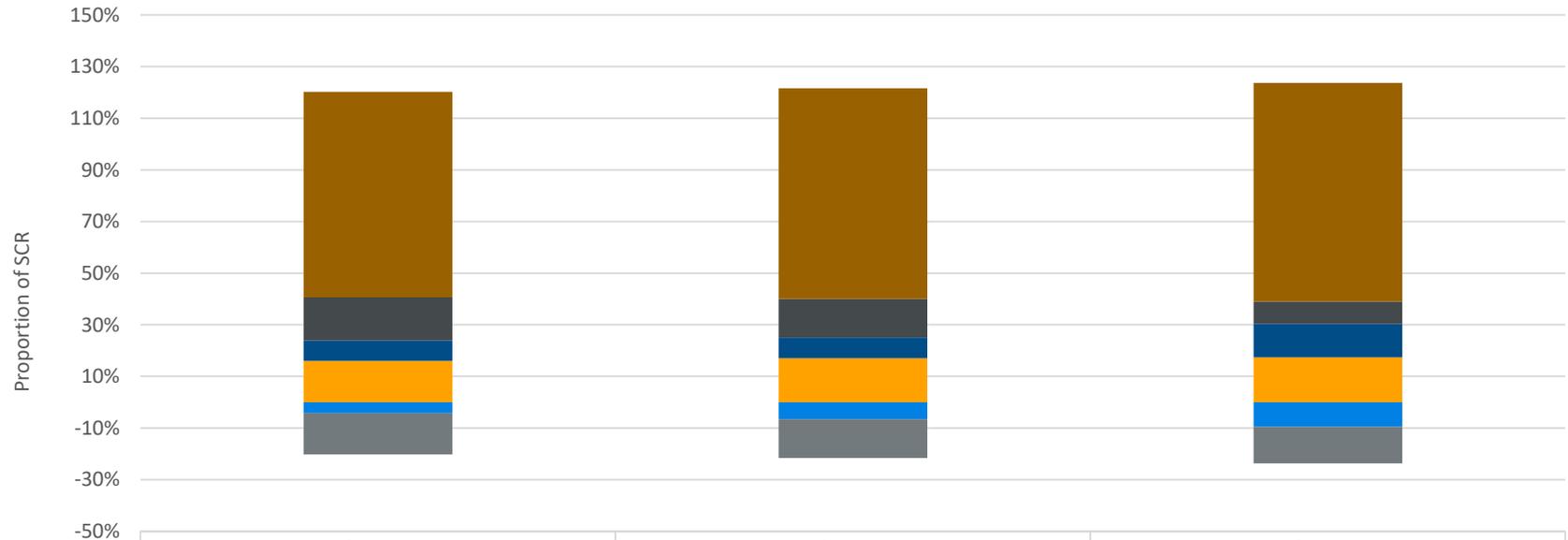
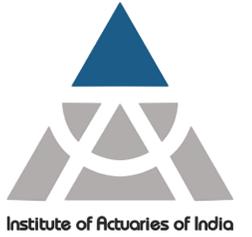
	France 2019	France 2018	France 2017
Health underwriting risk	61%	57%	53%
Non Life underwriting risk	0%	0%	0%
Market risk	60%	59%	65%
Counterparty default risk	7%	7%	8%
Operational risk	10%	10%	10%
Intangible asset risk	0%	0%	0%
Diversification	-32%	-32%	-33%
Loss absorbing - Deferred taxes	-6%	-2%	-3%

The breakdown of the SCR in the Netherlands



	Netherlands 2019	Netherlands 2018	Netherlands 2017
Health underwriting risk	75%	76%	76%
Non Life underwriting risk	0%	0%	0%
Market risk	14%	12%	14%
Counterparty default risk	4%	4%	5%
Operational risk	20%	19%	18%
Intangible asset risk	0%	0%	0%
Diversification	-12%	-11%	-12%
Loss absorbing - Deferred taxes	0%	0%	0%

The breakdown of the SCR in Ireland



	Ireland 2019	Ireland 2018	Ireland 2017
Health underwriting risk	80%	82%	85%
Non Life underwriting risk	0%	0%	0%
Market risk	17%	15%	9%
Counterparty default risk	8%	8%	13%
Operational risk	16%	17%	17%
Intangible asset risk	0%	0%	0%
Diversification	-16%	-15%	-14%
Loss absorbing - Deferred taxes	-4%	-6%	-9%

Conclusions

- Pricing risk by far the largest risk component of RBC for health insurers
 - Some insurers have significant operational risks and, depending on structure of contract may have high market risks
- S2 calibrations show that medical expenses in Europe shows lower pricing risk than other lines of non-life business
 - But very variable by country and nature of business
 - And generally in relatively low medical inflation environments
- USPs have been quite popular for health business, but have downsides