

Society of Actuaries in Ireland

Current Topics Paper 2020

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Date | MARCH 2020

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1. Foreword

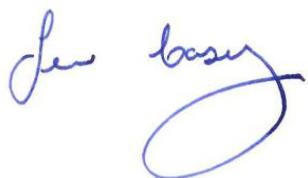
Welcome to the Society of Actuaries in Ireland 2020 Current Topics paper. This continues a series which started with the first Current Topics paper in 2001 and it serves a number of purposes:

- It gives a group of newly qualified actuaries an opportunity to prepare and present their first paper for their professional peers;
- It consolidates in one document the issues facing actuaries in our main areas of practice;
- It provides an external audience with a useful overview of the key current issues in the insurance, investment and pensions sectors.

The paper was co-ordinated by Ciara O'Brien and Eva McEneaney and the contributors are:

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A huge amount of work has gone into producing the paper and I would like to thank everybody involved for their time, energy and commitment.



Sean Casey

President of the Society of Actuaries in Ireland

The following Paper is for general information, education and discussion purposes only. Views or opinions expressed do not necessarily represent the views or opinions of the Society of Actuaries in Ireland and they do not constitute legal or professional advice.

2. Overview

The ‘Life & Healthcare’ section outlines recent market developments, and captures a snapshot of the status of the market for each sector. The key regulatory focal points of IFRS 17 and the Solvency II 2020 Review are discussed in depth, and an outline of topical developments in the life reinsurance space has been included. Regarding healthcare, SláinteCare and details on the risk equalisation system are presented, alongside an update relating to the domestic private health insurance market at this time.

The Pensions and Investment section of the paper covers recent government policy on private pension provision (Auto Enrolment) along with a market update on the investment landscape for pension scheme assets. It also outlines some investment tools, e.g. fiduciary management, that could be considered by scheme trustees in investment strategy implementation decisions.

The General Insurance section outlines several recent legal environment changes. It also provides an overview of the recent NCID report on private motor insurance in Ireland. There is also an overview of ADAS technology and cyber risk insurance.

The Wider Fields section of the paper focuses on the areas of InsurTech, Data Analytics, Banking and Aviation Finance. The section on Data Analytics contains subsections on R & Python and Artificial Intelligence, while the Banking and Aviation Finance section includes a discussion on the impact of the low interest rate environment on banks and insurers.

Finally, the ‘ERM’ section outlines some of the main topics of interest recently. It gives an overview of the CERA qualification and Diversity and Inclusion. We look at the restructurings and regulatory impacts of Brexit as well as the potential risks emerging from Climate Change.

3. Life and Healthcare

3.1 Introduction and Market Update

The previous Current Topics paper was presented in March 2018, and since then there have been a number of developments in the Life and Health insurance industry.

Regulatory requirements continue to have strong influence on the life insurance landscape in Ireland, with the Packaged Retail and Insurance based Investment Products directive (“PRIIPS”), and the Insurance Distribution Directive (“IDD”) both coming into effect. The General Data Protection Regulation (“GDPR”) also came into effect, bringing with it a new wave of data protection requirements, and demanding a rigorous awareness from the sector of how customer, employee and personal data is managed, processed and stored.

On the horizon and to the fore in many of the industry discussions at this time is the new global accounting standard IFRS17. Understanding the implementation of the new standard is a focal point for European and global life insurance companies, and a discussion of the standard is presented below.

Furthermore, insurance companies are actively feeding into reviews of existing legislation with the Solvency II mandatory review underway in 2020, and the review of the PRIIPs legislation underway also. Given its scope and practical implications for life insurers in the Irish market, the Solvency II interim review (2018) and 2020 reviews are other topics discussed in further detail below.

Alongside traversing the challenges of a changing regulatory landscape, many life companies have also undertaken large-scale transformation projects. More than ever before, innovation is viewed as a key consideration in strategic planning, and ranks highly on the agenda of those life insurers who seek to maintain and grow market position. In particular, the more widespread use of data analytics, and innovation in the areas of distribution and customer engagement, have emerged as key areas for evolution, as the insurance industry has identified it needs to become relevant to an increasingly digitally literate customer base. The vital contribution of life reinsurers in driving a focus on innovation, technological development, and renewed strategic emphasis on transformation, is further discussed later in this section also.

On January 31st 2020, the UK left the EU and in the time leading up to this Ireland saw the establishment of a number of insurance company subsidiaries. These Irish entities were set up to aid in mitigating some of the risks associated with a no-deal Brexit. Although the terms of the UK departure from the EU have been agreed, the new free trade agreement continues to be negotiated. As such, the current transition period will see the UK continue to adhere to EU rules and preserve the existing trade relationship until this period of negotiation ends on 31 December 2020. However, Brexit continues to present much uncertainty to cross border insurance business involving the UK.

In addition to new entrants, the life insurance market has seen the high level of mergers and acquisitions identified in March 2018 continue, with consolidation of insurance companies remaining a feature of many large high-profile transactions.

From a regulatory point of view the CBI indicated in 2019 that there will be an increased focus on recovery planning. The development of a detailed recovery plan follows the lead of the banking sector, and should be in place to create a pre-emptive framework to allow practical responses to stress events. The CBI has highlighted that management actions listed in capital plans in ORSAs are not sufficiently developed, and that the range of scenarios covered in a recovery plan should exceed the range that is required for the ORSA or Solvency II for SCR or MCR breaches.¹

The CBI is expected to introduce a public consultation for a formal recovery planning framework in 2020.

3.1.1 Life Market Overview & Statistics

Using the 2018 Solvency and Financial Condition Reports (“SFCRs”)², we have access to a lot of information to inform the performance within the Irish domestic and cross border markets. From €36.8 billion in 2016, gross premiums written grew strongly into 2017 to reach €39.8 billion. However, 2018 saw a decrease in premiums to €35.1 billion, driven primarily by a handful of the major players streamlining their suite of product offerings.

For gross premiums written directly in Ireland by domestic companies, it is estimated that this volume reached €12.4 billion in 2018. This was down slightly from €12.8 billion in 2017, but still above the 2016 amount of €10.3 billion.³

These amounts exclude UK based insurers that sell into Ireland via a branch, such as Standard Life and Royal London. Royal London set up an Irish subsidiary in 2019 and Standard Life transferred its Irish business to its existing Irish subsidiary, with the expectation being that going forward Irish business will be written through these subsidiaries now based in the Irish market. Both are good examples of cases where Brexit may have been a driver in the decision making of UK based insurers. In addition, AVIVA transferred its Irish business from its UK company to an Ireland head office in 2018 (and also bought Friends First in Ireland).

The cross border market continues to be of great importance to the Irish life insurance industry, as a substantial contributor to premium income as previously discussed in the Current Topics paper 2018. In 2018, cross border business represented over 62% of total premiums into Ireland, totalling €21.9 billion.

Consistent with the previous paper, Italy remains the country where the highest volume of cross-border business is sold, with roughly €13.1 billion in gross premiums written in the Italian market in 2018. The UK has the second highest cross-border premium volume at €3.7 billion.⁴

¹ <https://www.centralbank.ie/news/article/speech-ed-sibley-insurance-ireland-breakfast-briefing-27-september-2019>

² Analysis of Solvency and Financial Condition Reports: Year-end 2018
<http://assets.milliman.com/ektron/Ireland-SFCR-Report-YE-2018.pdf>

³ Analysis of Solvency and Financial Condition Reports: Year-end 2018
<http://assets.milliman.com/ektron/Ireland-SFCR-Report-YE-2018.pdf>

⁴ Analysis of Solvency and Financial Condition Reports: Year-end 2018
<http://assets.milliman.com/ektron/Ireland-SFCR-Report-YE-2018.pdf>

3.1.2 Solvency Coverage Ratios (“SCR”)

The average SCR coverage for an Irish company in 2018 was 189%, which was an increase from an average of 179% in 2017 and similar to the 184% average in 2016. These coverage percentages give an insight into the relative capital held for solvency risk – the percentages are after any dividends (or capital injections) so you cannot fully analyse the solvency drivers over the period.

Consistent with comments from the previous Current Topics paper, most life companies in Ireland are still using the Standard Formula. There are three Irish life insurers using a full internal model, and one using a partial internal model. The use of long-term guarantee measures in Ireland remains limited with only four Irish life insurers using the Volatility Adjustment (“VA”) and one using transitional measures on technical provisions.⁵

It remains the case that these adjustments have a lesser impact on Irish SCRs, as compared to that which they can have for other EU insurers. In particular, the matching adjustment has a large impact in the UK and Spain, the volatility adjustment having a large impact in Germany and the Netherlands, and transition measures notably affect SCRs in Germany and Spain. The distinctions in degrees of impact when these adjustments are employed is driven primarily by the variation in product design across each jurisdiction – for example, the UK has a large portion of annuity business, with the result that the matching adjustment is key and can have a very substantial impact when employed.

3.1.3 Mergers and Acquisitions in the Life Insurance Market

Over the last number of years, the market has seen a greater prevalence of M&A activity. There are a number of potential drivers for this - closed book consolidators attempting to realise value in target books, private equity money funding consolidation of businesses, and companies making acquisitions to access new markets and existing stores of data.

To conclude the M&A updates previewed in the last Current Topics paper, LCCG is now known as the Utmost Group having acquired Generali Pan Europe in 2017, and the acquisition of Friends First by Aviva was finalised in 2018, the entity now being known as AVIVA Life & Pensions Ireland.

Further M&A activities of note in Ireland & Europe were:

- Athora acquired Aegon Ireland in 2018, with the combined entity now known as Athora Ireland.
- Phoenix Group acquired Standard Life Assurance in 2018.
- Phoenix Group are expected to acquire ReAssure in 2020.

3.2 IFRS 17

IFRS 17 is an International Financial Reporting Standard issued by the International Accounting Standards Board in May 2017. It establishes principles for the recognition, measurement, presentation and disclosure of insurance contracts issued. It will replace IFRS 4, an interim standard issued in 2004. It aims to increase transparency across insurance companies at both local and global level and allow easier comparison with other industries.

⁵ Analysis of Solvency and Financial Condition Reports: Year-end 2018
<http://assets.milliman.com/ektron/Ireland-SFCR-Report-YE-2018.pdf>

IFRS 4 allowed entities to use a wide variety of accounting practices for insurance contracts, reflecting national accounting requirements and variations of those requirements. The differences in accounting treatment across jurisdictions and products made it difficult for investors and analysts to understand and compare insurers' results. Most stakeholders, including insurers, agreed on the need for a common global insurance accounting standard. Long-term and complex insurance risks are difficult to reflect in the measurement of insurance contracts. In addition, insurance contracts are not typically traded in markets and may include a significant investment component, posing further measurement challenges. Some previous insurance accounting practices permitted under IFRS 4 did not adequately reflect the true underlying financial positions or the financial performance of these insurance contracts. To address these issues, the IASB undertook a project to make insurers' financial statements more useful and insurance accounting practices consistent across jurisdictions.

IFRS 17 uses a current value approach to measuring future cash flows related to insurance contracts with profits recognized over the period in which services are provided. The profits or losses earned from providing insurance services are reported separately from financing activities. Detailed disclosures explain how items like new business, experience in the period, cash inflows and outflows, and changes in assumptions affected the performance and the carrying amount of insurance contracts. These changes are aimed at increasing the transparency of insurers' financial positions and performance, and are intended to make their financial statements more comparable with both other insurers and other industries.

IFRS 17 has been in development for over 20 years, it began in 1997 as an IASB project to undertake a comprehensive review of accounting for insurance contracts. IFRS 4 was issued in 2004 as an interim standard with a final standard to be issued under IFRS 4 Phase II – now IFRS 17. An interim standard was issued because the IASB recognized the urgent need for improved accounting practices across insurers but there were still many areas of disagreement between the IASB, insurers and users of financial accounts. The IASB issued a discussion paper in 2007 and the first exposure draft in July 2010. A second targeted revised exposure draft was published in June 2013. Deliberations were finalized in February 2016 and the last set of amendments made in February 2017 with the final standard issued in May 2017. Since its issue there have been a number of amendments made to the standard resulting from industry feedback with the effective date already proposed to be delayed by one year to 2022, and with discussion underway for a potential proposal to delay it by a further year to 2023.

IFRS 17 currently applies to annual periods beginning on or after the first of January 2021 with comparative balance sheets needed for both year-end 2020 and 2021. Earlier application is permitted if IFRS 15 and IFRS 9 are also applied. It requires a fully retrospective implementation on transition to all in-force contracts with simplifications permitted where sufficient data is unavailable.

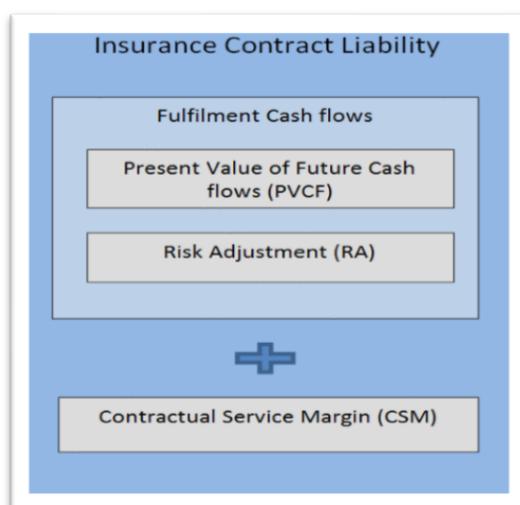
3.2.1 Scope, Measurement of Contracts and Key Areas

IFRS 17 covers insurance and reinsurance contracts only. An insurance contract is defined in the standard as "A contract under which one party (the issuer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder." This definition is consistent with the definition in IFRS 4, and there are only some minor changes to the guidance. The definition of reinsurance contracts in IFRS 17 is consistent with the definition in IFRS 4.

There are some exclusions to the scope of business covered including warranties issued by manufacturers, retirement benefit obligations and some more recent proposed changes that are outlined in section 4 below. The standard does allow flexibility for some insurance contracts, for example Financial Guarantee Contracts may be covered by IFRS 17 or IFRS 9.

There are three approaches to the measurement of contracts under IFRS 17 depending on the type of contract written. These are:

1. General Measurement Model (GMM) – this is the default approach which must be used in the measurement of insurance contracts. Examples of contracts for which this approach should be used are Whole Life, Term Assurance, Warranty Cover.
2. Variable Fee Approach (VFA) – this approach must be used for insurance contracts with direct participation features i.e. the insurer has an obligation to pay policyholders an amount that is equal to the fair value of the underlying items, less a variable fee for service. This relates to unit-linked, variable annuity and with-profits business for example.
3. Premium Allocation Approach (PAA) – this is optional simplification of the General Measurement Model which may be used if it can be reasonably expected that doing so would produce a reasonable approximation of the general model, or the coverage period of each contract in the group is one year or less e.g. one year motor insurance.



General Measurement Model (GMM)

The general model measures an insurance contract liability as the sum of the following building blocks:

1. Fulfilment cash flows:
 - An unbiased and probability-weighted estimate of future cash flows.
 - A discount adjustment to present value to reflect the time value of money and financial risks.
 - A risk adjustment for non-financial risk.

2. A CSM representing unearned profit to be recognised as service is provided to the insurance contracts in the group.

Fulfilment Cashflows

The PVCF is based on an unbiased probability weighted estimate of future cashflows using current assumptions. The cashflows should be discounted using market rates to convert them into present values.

The following cashflows should be included in this calculation:

- Premiums and related cash flows that arise within the contract boundary.
- Claims and benefits paid to policyholders, plus associated costs.
- Surrender and participating benefits.
- Cashflows resulting from options and guarantees.
- Costs of selling, underwriting and initiating that can be directly attributable to a portfolio level.

- Transaction- based taxes and levies.
- Policy administration and maintenance costs.
- Some overhead costs such as claims software etc.

The following cashflows must be excluded from the PVCF calculation:

- Investment returns.
- Payments to and from reinsurers.
- Cashflows that may arise from future new business.
- Acquisition costs not directly attributable to obtaining the portfolio of contracts.
- Cashflows arising from abnormal amounts of wasted labour.
- General overhead.
- Income tax payments and receipts.
- Cashflows from unbundled components.

Cashflows should be discounted at rates which reflect the time value of money, characteristics of the cash flows and liquidity characteristics of the insurance contracts. These rates must be consistent with observable current market prices (if any) for financial instruments with cash flows whose characteristics are consistent with those of the insurance contracts and exclude the effect of factors that influence such observable market prices, but do not affect the future cash flows of the insurance contracts.

The Risk Adjustment is then added to the PVCF, this should reflect an entity- specific assessment of the uncertainty around the amount and timing of the future cashflows. It reflects all the non-financial risks associated with the insurance contracts and should not reflect any financial risks or risks that do not arise from the insurance contracts. In theory, it measures the compensation that the entity requires for it to be indifferent/neutral to fulfilling a liability that has a range of possible outcomes arising from non-financial risk; and will generate fixed cash flows with the same expected present value as the insurance contracts. It is the compensation that the entity requires for bearing uncertainty about the amount and timing of cash flows that arise from non-financial risk.

Possible approaches to assessing the RA are:

- Cost of Capital Approach
- VaR or Tail-VaR Approach
- Provisions for Adverse Deviation Approach

Separating the Insurance and Investment Components

IFRS 17 requires an entity to separate a distinct investment component from an insurance contract and to account for the distinct investment component applying IFRS 9. An investment component is defined in IFRS 17 as “The amounts that an insurance contract requires the entity to repay to a policyholder even if an insured event does not occur.”

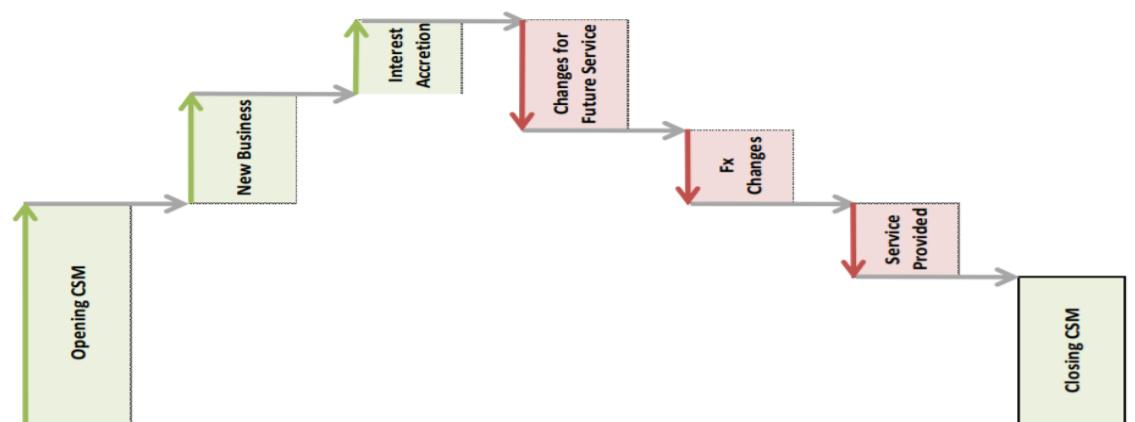
This can cause some difficulties in implementation, where systems managing IFRS 9 and IFRS 17 need to be integrated to manage reporting in an efficient manner. Options on contracts can mean that a contract that initially has only an investment component could have an insurance component in future, and vice versa. The insurance company must assess at the contract inception whether there is a distinct investment component. If there is an investment component but it is not distinct then the company is prohibited from separating them.

An investment component is distinct if the investment and insurance component are not highly correlated and a contract similar to the investment component is or could be sold in a similar market. In practical terms this means that if the company cannot measure one component without considering the other, then they are not considered to be distinct. The reasoning in the standard is that if there is a similar product to the investment component on the market, then it is measurable and would be considered distinct.

Contractual Service Margin (CSM)

The CSM is a new concept under IFRS 17 and is a mechanism for profit deferral at a group level. It is set up at initial inception to offset initial risk adjusted profits. It is then reduced over time to provide a steady release of profits to the P&L in line with the service provided. The release of CSM in a period is based on the number of coverage units provided in that period. It cannot be used to offset losses and these are recognized when incurred and tracked using a Loss Component. Interest is accreted to the CSM using locked-in interest rates.

The CSM is adjusted by changes in estimates and is allocated to profit or loss on basis of the passage of time. The following is an example of how the CSM might be expected to change from one period to the next:



A key thing to note is that the CSM is a group level calculation and is measured by unit of account. The cash flows and risk adjustment measured should be measured for contracts in a group and combined to give risk adjusted profit for that group. The CSM is then generated for the group to offset risk adjusted profit.

Cohort Requirements

IFRS 17 recognises that it does not make sense for insurance companies to measure profitability on a policy by policy basis, and so introduces the concept of aggregation of contracts into cohorts. The intention of this grouping is to ensure that insurance companies do not have to complete calculations at an impractical seriatim level, but that there is sufficient granularity in the results so that useful information is not lost.

Contracts are to be grouped in three ways:

1. By contracts of similar risk profile
2. By whether a contract is onerous at inception, has a significant chance of becoming onerous, and remaining contracts
3. By issuance period, where the period is not more than a year

A contract is assigned to a cohort at inception, and it is the cohort level at which the CSM calculation takes place. The approach to assigning cohorts and the selection of coverage units to accrete the CSM can have significant effects on the timing of reported profit.

The Variable Fee Approach

The VFA is a modification to the GMM for valuing insurance contracts with payments that vary with return on underlying items, e.g. Unit-linked (with insurance risk), With-profits. It was developed to address concerns of artificial volatility in the P&L under the GMM approach for such contracts. The application of the VFA is not optional, the requirements to classify an insurance contract as one with a direct participation feature are prescribed.

Similar to the GMM the VFA uses a building block approach with fulfilment cashflows made up of the PVCF and RA plus a CSM. It treats returns on the assets underlying these contracts as part of the fee that the entity charges the policyholder for the services provided.

The CSM at inception is the same as general model but its' subsequent measurement differs from general model in the following ways:

- There is no explicit interest accretion to the CSM under the VFA, the VFA is adjusted for changes in the effect of discounting on the fulfilment cashflows.
- For VFA, changes in FCFs due to discount rates and financial risks relate to future service and adjust the CSM. The GMM does not include these.
- Under the GMM, each component of the subsequent measurement of the CSM must be reported separately. Under the VFA some/all of them can be combined.
- Under the VFA, an exception is permitted to not allocate a change in future service to the CSM where risk mitigation is in place which impacts P&L, this is not allowed for under GMM.

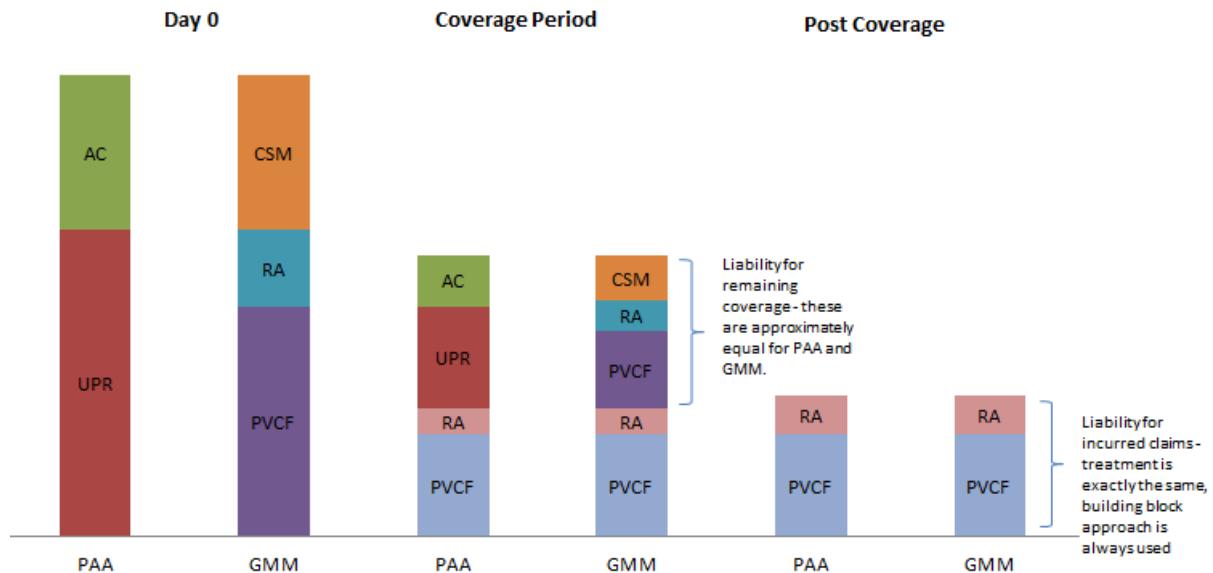
The Premium Allocation Approach

The Premium Allocation Approach (PAA) is a simplified approach to measuring the Liability for Remaining Coverage only. The key simplification is to exempt the insurer from calculating the CSM, the main component of the liability for remaining coverage. It does not apply to the Liability for Incurred Claims for which the General Measurement Model always applies. The primary impact of the PAA is that it allows non-life insurers to continue to use their process and systems for calculating unearned premiums amounts.

The PAA may be used if:

1. It would be a reasonable approximation to the building block approach and the coverage period at initial recognition is more than one year.
2. The coverage period at initial recognition is one year or less.

Below is an example of how the PAA and GMM would be expected to compare for a group:



| Coverage Period | Premium Allocation Approach | General Measurement Model |
|---|---|---|
| Day 0: | Includes concept similar to UPR and DAC (however new definition of directly attributable expenses). | Consists of discounted present value of future cashflows, Risk Adjustment and (CSM). |
| During the coverage period (e.g.: 6 months from inception) | Unexpired Risk: consists of UPR and unamortised acquisition costs. Expired Risk: modelled using the General Measurement Model. | Unexpired Risk: CSM is only applicable for unexpired risk and other elements are same as expired risk. Expired Risk: modelled using the General Measurement Model. |
| End of coverage period | No unexpired risk and only future cashflows which are modelled using GMM. At this point the technical provisions are equal between PAA and GMM. | No difference as compared to PAA |

Transition

The IFRS 17 transition requires that companies calculate a CSM or Loss Component for each group of contracts as at the transition date. There are three potential approaches to this

1. Fully Retrospective Approach
2. Modified Retrospective Approach
3. Fair Value Approach

The standard states that option 1 should be used, unless it is impracticable to do so. The fully retrospective approach would be the most resource heavy and data intensive approach, and companies if they are not following this approach must be able to justify why they have not done so.

The Modified Retrospective Approach offers a number of specific alterations to the Fully Retrospective Approach to allow for cases where historic data may not be available. In the General Model there are a number of permitted modifications, and the Variable Fee approach a prescribed modified approach is set out.

The third option is the Fair Value approach. This is where the CSM is calculated as the difference between the fair value of the liabilities and the fulfilment cashflows at the transition date.

3.2.2 Proposed Changes to the Standard

IFRS 17 has a fundamental impact to an insurance company's product design, profit reporting, and operational processes, and so has undergone an understandably high level of scrutiny from industry. Through the feedback received a number of changes have been proposed by the accounting standards board. At the time of writing, these have not been formally included in the standard, with a target date of summer 2020 for their final inclusion.

The key changes proposed are:

1. Deferral of effective date from 2021 to 2022

A delay in the standard has been proposed to allow appropriate time to implement the changes to the IFRS 17 standard. IFRS 9 has been delayed in line with IFRS 17.

Even with this proposed delay there is a lot of discussion surrounding a further optional delay, but this has not yet been confirmed by the accounting standards board.

2. Additional scope exclusions

In an effort to reduce the implementation cost for some companies, certain types of insurance contracts have been excluded from the scope of IFRS 17. These are loan contracts with an agreement from the company to compensate the borrower if an uncertain future event occurs, and credit card contracts that provide insurance coverage for purchases made using the credit cards.

3. Allocation of acquisition costs to expected contract renewals

In cases where the company pays non-refundable commissions for new contracts that it expects policyholders to renew in the future IFRS 17 currently requires such commissions to be attributed fully to the initial contact. Sometimes the commission exceeds the premium for the initial contract and this causes the contract to become onerous. The proposed amendment allows allocation of part of the acquisition expenses to future renewals.

4. Attribution of profit to service relating to investment activities

In order to reflect the fact that many contracts combine insurance coverage and service relating to investment activities, and that the timing of the coverage for the insurance and investment activities may differ, a change has been proposed to alter the timing of profit generated by insurance contracts which also have service related to investments.

5. Extension of the risk mitigation option

A change has been proposed to allow the risk mitigation option when the company uses reinsurance contracts held to mitigate financial risks of insurance contracts with direct

participation features. The risk mitigation option allows companies to choose to recognise changes in financial risks in profit and loss, instead of adjusting the unearned profit on the balance sheet as normally required by the variable fee approach.

6. Reduced accounting mismatches for reinsurance

The current approach requires the loss on an insurance contract to be recognised immediately through the P&L but the gain on a corresponding reinsurance contract can only be recognised over time, leading to a mismatch. A proposal has been made so that the gain on the reinsurance contract in that case can also be immediately recognised, providing certain conditions are met.

7. Simplified balance sheet presentation

The level at which insurance contracts must be displayed in the balance sheet has been changed. This is to reduce the impact of implementation.

8. Additional transition reliefs

The board have proposed some simplifications to the transition approach. This will allow liabilities for claims settlements acquired in a business combination to be treated as liabilities for incurred claims rather than liabilities for remaining coverage. In addition, there are further simplifications regarding use of risk mitigation.

3.2.3 Comparison between SII and IFRS17

EIOPA have carried out an assessment to analyse similarities and differences between IFRS 17 Insurance Contracts and the measurement of technical provisions under Solvency II. The objective of this analysis was to assess potential efficiency gains of applying SII inputs and approaches for the implementation of IFRS 17 by European insurers.

The analysis targeted key areas of IFRS 17, for which the application of Solvency II's valuation elements may be particularly useful. Those areas and the conclusions made are as follows:

1. Initial recognition of obligations

The point in time at which insurance obligations are recognised under both frameworks is conceptually similar. However, IFRS 17 introduces a simplification, which may lead to differences in some cases. The practical impact of such differences is not expected to be significant.

Expected profits at inception are recognised in the reconciliation reserve of that period under Solvency II and are allocated over the lifetime of the contract according to the service provided under IFRS 17. This is reflective of the different objectives of regulatory and accounting frameworks. The accounting framework needs to present the entity's performance, including the allocation of gains and losses to specific reporting periods.

2. Definition and allocation of expected cash flows, with a particular focus on grouping/aggregation of contracts and contract boundaries

Cash flows and expenses included in the valuation of SII technical provisions are expected to be consistent with IFRS 17 in most cases.

In principle, the SII approach to determine the relevant level of aggregation for expected cash flows and other inputs is anticipated to be consistent with IFRS 17. However, further disaggregation by ‘annual cohorts’ to group according to profitability is needed for IFRS 17.

The SII requirement to identify homogenous risk groups can be considered as a basis for IFRS 17’s requirements on grouping contracts.

The contract boundaries have been found to be similar in principle, however differences for certain contract types cannot be ruled out.

3. Discount rates, assessing in particular the risk-free rate

IFRS 17 allows for both a top-down and a bottom-up approach, adjusting for illiquidity whilst taking into account all market inputs. SII sets out a bottom-up approach without an explicit measure of illiquidity. It converges to an ultimate forward rate (UFR) after the last liquid point.

SII’s techniques and approaches for the volatility adjustment (VA) and matching adjustment (MA) may be used, taking into consideration IFRS 17-specific assumptions. The SII extrapolation method may need to be adjusted for IFRS 17, if relevant market inputs were found to make a significant difference.

4. Risk adjustment for non-financial risks (versus SII risk margin)

The approach to determining the risk margin in Solvency II is conceptually different from the risk adjustment in IFRS 17 (transfer vs entity-specific). Nevertheless, for the practical implementation of IFRS 17, SII’s risk margin’s underlying principles, inputs and processes may be considered for IFRS 17, subject to potential adaptation.

5. Recognition and valuation of reinsurance and its risk-mitigating effects

There are different approaches as to considering effects from reinsurance held: SII takes a ‘net approach’ for determining the risk margin of insurance contracts and allocates reinsurance cash-inflows to corresponding insurance contracts, whereas IFRS 17 presents ceded reinsurance as a separate reinsurance asset.

The concept of reinsurance contracts’ contract boundaries are different and the application of the different concepts may lead to differences in the valuation of reinsurance held between the two frameworks.

3.2.4 IFRS 17 Disclosures and Impact to Systems

Disclosure Requirements

IFRS 17 contains both quantitative and qualitative reporting requirements, a number of which are new additions from IFRS 4.

For contracts measured under the PAA these include but are not limited to;

- How an entity has satisfied certain aspects of the requirements
- Accounting policy choices about whether to recognise acquisition cash flows as expenses when they are incurred

For contracts not under the PAA these include but are not limited to;

- Analysis of insurance revenue
- Analysis of contracts initially recognised in the period
- Analysis of when a company expects to recognise the remaining CSM in P&L

The level of aggregation of reporting has already been in focus and this is reflected in the change proposed already mentioned in Section 4 above.

Impacts to Systems

IFRS 17 has highlighted the need to integrate a number of systems within the insurance company. In order to generate the disclosures, data is needed from the various administration systems, modelling systems, and end user computing solutions that a company may have.

IFRS 17 will lead to changes in a company's actuarial modelling systems and processes in order to generate appropriate FCFs, and for company's using a model other than the PAA then a CSM calculation is required.

In particular cohort management is a major data issue, where contracts must be assigned to a cohort and recorded within that cohort going forward.

Many companies have identified the need for an actuarial sub-ledger where it already did not exist in the insurance company in order to allow them appropriately explain the figures posted to the financial statements.

3.3 Solvency II 2020 Review

Since January 2016, the European Union (EU) (re)insurers are governed by the Solvency II (SII) regulatory regime. The SII regime is a risk-based approach to insurance supervision. Since its implementation, the insurance industry has better aligned its capital to the risk it runs. Since implementation of the SII regime, reviews have been undertaken to ensure that the regime remains fit for purpose.

On the 11th of February 2019, the European Commission (EC) issued a call for advice for the review of the Solvency II Directive to the European Insurance and Occupational Pensions Authority (EIOPA). The EC sought EIOPA's Technical Advice on four main areas of the SII Directive, namely, Long Term Guarantee Measures (LTG), Standard Formula Solvency Capital Requirement (SCR), Minimum Capital Requirement (MCR) and Group Supervision. The EC's call for advice also states that the scope of the review may extend to Delegated and Implementing Regulations as appropriate.

The call for advice comprises 19 separate topics. Broadly speaking, these can be divided into three parts.

1. The review of long-term guarantee measures.
2. The potential introduction of new regulatory tools in the Solvency II Directive, notably on macro-prudential issues, recovery and resolution, and insurance guarantee schemes.
3. Revisions to the existing Solvency II framework including in relation to freedom of services and establishment; reporting and disclosure; and the solvency capital requirement (SCR).

The fundamentals of Solvency II are not in question in this review.

On the 25th of June 2019, EIOPA published its first Consultation Paper (CP) on its proposals for the SII 2020 review. The CP included four separate papers, focusing on:

- General issues on supervisory reporting and public disclosure
- Individual Quantitative Reporting Templates (QRTs) for the submission of information to the supervisory authorities
- Solvency and Financial Condition Report (SFCR) and Narrative Supervisory Reporting
- Financial Stability Reporting

The proposals outlined in this initial CP are discussed in sections 3.3.1 to 3.3.4 of this paper. EIOPA requested interested stakeholders to provide any feedback on these proposals by 18th October 2019.

On 15th October 2019 EIOPA published a second Consultation Paper, covering a wider range of issues. EIOPA's proposals in this CP are discussed in sections 3.3.5 to 3.3.14 of this paper. EIOPA requested interested stakeholders to provide any feedback on these proposals by 15th January 2020.

During March 2020, National Supervisory Authorities (NSAs) will select various (re)insurers to complete information requests to inform the holistic impact assessment of EIOPA's proposals. These information requests will be completed by end March 2020. The publication of EIOPA's Opinion on the 2020 SII Review is due in June 2020.

Given the depth of and quantity of information detailed in EIOPA's CPs, this paper outlines only some of EIOPA's proposals as detailed in the CPs and does not detail the areas which were reviewed by EIOPA and deemed as not requiring any updates.

3.3.1 Quantitative Reporting Templates

EIOPA has proposed that for QRT reporting, the total set of QRTs should be split into two parts:

- A set of core QRTs reported by all (re)insurers, unless exempted, and containing the key figures needed to assess the risk and solvency situation of the (re)insurer.
- A set of additional QRTs for which companies would be exempted from reporting unless their business is above predefined risk-based thresholds. The risk based threshold shall reflect the nature, scale and complexity of the risk exposure of the risk area covered by each template.

EIOPA has also proposed updates to a number of Quantitative Reporting Templates (QRTs), including:

- Basic Information S.01.02: New fields.
- Balance Sheet and Information on Premiums, Claims and Expenses: Removal of QRTs S.04.01 (Activity by Country), S.05.02 (Premiums, Claims and Expenses by Country), S.12.02 (Life and Health SLT Technical Provisions by country) and S.17.02 (Non-Life Technical Provisions by country). These are replaced by S.04.03 QRT. This will list all branches and

countries, and provide information from an underwriting and risk perspective on Premiums, Claims, Expenses and Technical Provisions (TPs).

- Assets: Deletion of QRT S.06.01 (Summary of Assets). New fields will be added to QRT S.06.02, including Custodian LEI code, changes to Complementary Identification Codes (CIC) and items relevant for ECB add-on, among others. A new QRT S.06.04 (Collective Investment Undertakings - look through approach), is also proposed.
- Technical Provision: Split of some fields into more detailed data and revision of QRT S.14.01 (Life Obligation Analysis) including a requirement for more granular data on the number of contracts and premiums.
- Own Funds: New threshold request for QRTs S.23.03 (Annual movements on own funds) and S.23.04 (List of items on own funds).
- SCR and MCR: New standardised (partial) internal model QRT and requirement for (partial) internal model firms to also complete standard formula QRTs
- Variation Analysis: Deletion of QRTs S.29.01 (Excess of Assets over Liabilities) and S.29.02 (Excess of Assets over Liabilities – explained by investments and financial liabilities). Replacement of QRTs S.29.03 (Excess of Assets over Liabilities – explained by technical provisions) and S.29.04 (Detailed analysis per period – Technical flows versus Technical provisions) with new QRTs S.29.05 (Variation of the best estimate in life insurance) and S.29.06 (Analysis of changes of best estimate for non-life business).
- Reinsurance: Easing of thresholds for S.30 QRTs (Facultative covers for non-life and life business basic data, Facultative covers for non-life and life business shares data, Outgoing Reinsurance Program basic data, and Outgoing Reinsurance Program shares data).
- Other proposals: addition of a cyber risk underwriting template and introduction of a product-by-product information template for non-life business.

3.3.2 Solvency and Financial Condition Report

EIOPA intends to ensure the Solvency Financial Condition Report (SFCR) is useable and readable by all stakeholders, taking into account the different levels of expertise of professional and non-professional readers. Therefore, EIOPA proposes to split the SFCR into two sections aimed at different audiences, as follows:

Policyholders – this section must be presented in a concise, simple, objective, balanced and non-promotional form. The information should be in simple language; and

Non-policyholders – this section should target professional readers. It should contain more detailed and structured information than currently provided in certain parts of the SFCR, and a reduction in the amount of information in other areas. EIOPA proposes to include information that is more harmonised across SFCRs. EIOPA also proposes potentially adding additional QRTs and/or additional information on sensitivities and Own Funds over the year to this section of the SFCR.

Currently the SII Directive does not require an external audit of any of the quantitative information presented in the SFCR. EIOPA proposes to introduce an auditing requirement in the SII Directive. This should ensure that as a minimum the Solvency II Balance-Sheet is subject in all Member States to external auditing by a qualified auditor. The output should be an audit opinion published together

with the SFCR. The NSA of a Member State can determine if they want to impose additional requirements.

EIOPA also proposes an extension of the annual reporting and disclosure by 2 weeks to accommodate this audit requirement. The deadline for SFCR disclosure should not be sooner, in any case, than the disclosure of regular Audited Annually Reported Financial Statements in case of listed (public) companies.

Appendix 2.1 outlines the proposed updates to the SFCR in greater detail.

3.3.3 Financial Stability Reporting

EIOPA proposes the following amendments to the guidelines:

- Add new table in S.23.02 to the FS entry points
- Addition of modified duration calculation in S.38.01.10
- Addition of Net Premiums Earned in S.05.01.13
- Addition of Technical and non-technical account result, other income and other expenses, taxes, dividends and others in S.39.
- Request the S.02.01 in a semi-annual frequency
- Delete Macaulay Duration from S.38.01.10
- Delete S.14 (Life Obligation Analysis)
- Delete S.40 (Profit or Loss Sharing)

3.3.4 Insurance Guarantee Schemes Across EU Member States

An Insurance Guarantee Scheme (IGS) provides protection to policyholders when insurers cannot meet their contractual obligations. Several EU Member States currently have an IGS in place. However, there are no consistent EU rules for this.

EIOPA proposes that:

- Every Member State should have a national IGS.
- An IGS should be set up to protect policyholders in the event of insolvency of an insurer.
- The IGS should not interfere with the supervisory process.
- The IGS should cover all policies issued by its domestic insurers, both domestically and abroad.
- A harmonised level of cover should be introduced across Member States.
- Member States should ensure that IGSs have sufficient systems in place to calculate their liabilities, and those IGSs should be funded by insurers.
- Clear and comprehensive disclosures should be made to consumers about the existence of IGSs.

3.3.5 Long Term Guarantee and Equity Risk Measures

Extrapolation

EIOPA is proposing various updates to the extrapolation methodology in order to mitigate the risk of underestimating TPs. EIOPA also wants to remove inappropriate risk management incentives aided by a mismatch between TPs and market consistent value of liabilities.

EIOPA proposes if no changes are made to the current extrapolation approach, the following would occur:

- Underestimation of TPs, undermining policyholder protection:
Given the current low interest rate environment, differences between the Ultimate Forward Rate (UFR), which is the limit of the forward interest rates for long bonds, and swap rates at later durations can lead to a large difference between the observed level of swap rates and the extrapolated rates. Therefore, there is potential that TPs are underestimated.
- Unsuitable risk-management incentives:
Where the extrapolated risk-free interest rates differ from the market rates, (re)insurers need to decide whether they hedge the risk as it is reflected in their solvency balance sheet or whether they hedge the risk that actually exists in the financial markets. Whether this makes a difference depends on whether the (re)insurer has liabilities with maturities exceeding the Last Liquid Point (LLP), which is the point where relevant financial instruments are deemed to be insufficiently deep, liquid and transparent. Beyond the LLP, the risk free interest curves are extrapolated to the UFR. Where the hedging is based on the extrapolated risk-free interest rates, it reduces the volatility of SII own funds, at least in the short term, but may leave the insurer exposed to the risks of financial markets in the long run.
- Volatility in Own Funds:
Deviations in the interest rate curve from market data increases volatility of Own Funds when (re)insurers are closely matched. There are concerns that undertakings in that situation may exhibit procyclical investment behaviour when interest rates fall. The undertakings could buy long-term swaps in order to improve their matching and reduce their interest risk charge. This could put further pressure on the swap rates.

EIOPA was asked to provide evidence, for all currencies of the Union, on criteria to determine the LLP, in accordance with the following criteria:

- The depth, liquidity and transparency (DLT) of swap and bond markets in each currency;
- The ability of (re)insurers to match with bonds the cash-flows which are discounted with non-extrapolated interest rates in a currency;
- The cumulative value of bonds with maturities larger than or equal to that maturity in relation to the volume of bonds in the market.

The EC requested that where EIOPA recommends any changes to the LLP, it must also provide a comprehensive impact assessment on the volatility of Own Funds and solvency coverage ratios, as well as on financial stability.

Pillar 1 Proposals

- The DLT assessment for the Euro has shown that the Euro swap rates are deep, liquid and transparent up to a maturity of 50 years. The LLP currently used in the extrapolation of risk-free rates for the Euro is 20.

- Possible change to extend the starting point for the extrapolation of the risk-free interest rates for the Euro i.e. extending the LLP from 20 years currently to 30 or 50 years.
- Possible change to the extrapolation methodology that would take into account market information beyond the LLP, which is referred to as the First Smoothing Point (FSP) in the alternative extrapolation methodology. This option would not only affect the risk-free interest rate term structure for the euro, but for all currencies.

Pillar 2/Pillar 3 Proposals

EIOPA has proposed various requirements under Pillar 2 and Pillar 3, depending on which extrapolation method is chosen for Pillar 1.

- The LLP stays at 20/moves to 30 for the euro:

Where (re)insurers do not meet its SCR or MCR obligations if the LLP is moved to 50, (re)insurers could be compelled by their NSA to provide evidence that their dividend payments or other voluntary capital distributions do not put policyholders and other beneficiaries at risk. The NSA would have the power to limit or prevent dividend payments or capital contributions where necessary.

(Re)insurers should perform prescribed sensitivity analyses on the extension of the LLP for the euro to 50 and include the results in in the Regular Supervisory Reporting (RSR). The results of this analyses should also be reported in the Solvency Financial Condition Report (SFCR) to improve transparency.

- An alternative extrapolation methodology is used

Where (re)insurers do not meet its SCR or MCR obligations if the FSP (LLP under other methodologies) is moved to the latest DLT maturity for swaps, (re)insurers could be compelled by their NSA to provide evidence that their dividend payments or other voluntary capital distributions do not put policyholders and other beneficiaries at risk. The NSA would have the power to limit or prevent dividend payments or capital contributions where necessary.

(Re)insurers should perform prescribed sensitivity analyses on the extension of the FSP to the latest DLT maturity for swaps (for the euro this is a move of the FSP from 20 to 50) and include the results in in the Regular Supervisory Reporting (RSR). The results of this analyses should also be reported in the Solvency Financial Condition Report (SFCR) to improve transparency.

Matching Adjustment

The matching adjustment (MA) is currently not being used by (re)insurers in Ireland, but is being used by (re)insurers elsewhere in the EU.

The EC asked EIOPA to assess the quantitative impact on the solvency coverage position of (re)insurers of both of the following aspects of the approach to applying the MA.

- A reconsideration of the current approach of assuming no diversification between the risks within a MA portfolio and the non-MA parts of the business.

For Standard Formula firms, assets in MA portfolios are treated as a ring-fenced fund in the calculation of the SCR. This lack of diversification disincentivises Standard Formula firms from using the MA. This creates an inconsistency between (partial) internal model (PIM) firms and standard formula firms, as the same ring-fenced restrictions do not apply to PIM firms.

EIOPA has made the argument that assets used to back the SCR and other non-MA assets can be used to cover losses that occur on the MA portfolio. Therefore, EIOPA proposes to remove the restriction on diversification benefits for matching adjustment portfolios.

- A review of the eligibility criteria for assets to be used in the MA portfolio. EIOPA proposes to introduce a look-through approach to assess whether the assets underlying the restructured assets in the MA portfolio are adequate. The following are the proposed eligibility criteria:
 - o The underlying assets must have a sufficiently fixed level of income.
 - o The assets in the MA portfolio must have sufficiently fixed cashflows, that remain fixed under different scenarios.
 - o There can be no additional MA benefit gained from underlying assets with financial guarantees.
 - o The underlying assets should be subject to adequate governance and controls.
 - o These eligibility criteria will not apply to firms currently using the MA.

In order to avoid market disruption, EIOPA proposes that the look-through approach will not be applied retrospectively.

Volatility Adjustment

EIOPA has identified weakness in the calibration of the volatility adjustment (VA), including:

- Over or undershooting effect of the VA. A change in bond spreads directly influences the market value of the assets and the solvency position of an undertaking. Exaggerated bond spreads may lead to artificial volatility in a (re)insurer's solvency position.
- Application of the VA does not take into account the illiquidity characteristics of liabilities.
- Cliff effect of country specific increase. SII currently includes a country-specific increase of the VA which is activated whenever the country risk-corrected spread meets certain criteria. When the risk-corrected spread of a country increases, (re)insurers based in that country experience a decrease in asset values until the country risk-corrected spread is triggered.
- Misestimation of Risk Correction of VA
- VA almost always positive
- Underlying assumptions of VA unclear
- Risk Free interest rates with VA not market-consistent

EIOPA has considered a number of changes in its calculation, including the introduction of an “undertaking-specific application ratio”.

EIOPA is currently considering two approaches:

Approach 1

The VA is calculated using an undertaking-specific application ratio. EIOPA would provide a set of risk-corrected spreads based on market indices differentiation between asset type, credit qualities, durations and currencies. The VA is then derived from these risk-corrected spreads, multiplied by an undertaking-specific application ratio.

Under this approach, the VA is split into the following components:

- A permanent VA reflecting the long-term illiquid nature of insurance cash flows and its implications on undertaking’s investments decisions. This is calculated as the product of the general application ratio (65%), an undertaking specific application ratio, and the risk-corrected spread of a representative portfolio; and
- A macro-economic VA that would only exist when spreads are wide during a financial crisis that affects the bond market. The macro-economic VA would mitigate the effect of temporary exaggerations of bond spreads, thereby contributing to avoid pro-cyclical behaviour of undertakings.

Approach 2

The VA is derived from the risk-corrected spread of the undertaking’s own investment portfolio. This is calculated as the product of the general application ratio, an undertaking-specific application ratio and the risk-corrected spread of the undertaking’s own investment portfolio.

For Approach 2, a macro-economic or country VA would become obsolete as the risk-corrected spread of the undertaking’s own portfolio would already reflect any potential crisis in the bond markets which the undertaking is exposed to.

EIOPA is also considering the approval process for use of the VA. Currently the SII Directive includes a Member State option to require supervisory approval to use the VA. Ireland is amongst 10 countries which imposes this approval process. In EIOPA’s view, the question whether the use of the VA should be subject to supervisory approval should be harmonised across all Member States. EIOPA will decide on whether the VA should be subject to supervisory approval once the final design of the VA is decided upon.

Long-Term and Strategic Equity Measures

EIOPA has proposed the following updates to the Equity Risk sub-module:

- Phasing out of the Duration Based Equity Risk sub-module (DBER): In March 2019, guidance on the treatment of long-term equity investment (LTE) was included in the Delegated Regulations. EIOPA proposes that it is unnecessary to maintain both DBER and LTE, and therefore proposes that DBER should be phased out.

- Where (re)insurers use the lower capital requirement for strategic equity investments, the use of this lower requirement should be justified.
- The reduced risk charge of 22% introduced in the Delegated Regulations in March 2019 is too low. EIOPA proposes an update to this stress, but no specific charge has been proposed yet.
- LTE risk measures should apply only to well diversified LTE portfolios.
- Controlled intra-group equity investments should be excluded from the sub-set of equity investments.

Transitional Measures and Risk Management and Disclosure of LTG Measure

As at the end of 2017, 168 (re)insurers from the EEA applied the transitional measures (TMs), 139 of which meet the SCR without TMs.

EIOPA proposes that the disclosure on the use of the transitional could be strengthened as follows:

- The SFCR should set out the reasons for the use of the TM. In case the (re)insurer does not comply with the SCR without the TM, this fact would be sufficient reason. Where (re)insurers comply with the SCR without the TM other reasons should be provided.
- The SFCR should include an assessment of the dependency of the (re)insurer on the TM. In case of a dependency, the (re)insurer should describe the measures it has taken to remove the dependency by the end of the transitional period.
- The part of the SFCR addressed to policyholders should include the following information: the impact of the TM on the (re)insurer's solvency position, the reason for applying the TM, the prospect to reduce any dependence on the TM by the end of the transitional period.

EIOPA proposes that (re)insurers should only be allowed to start applying TMs on the risk-free interest rates and on TPs in the following cases:

- A (re)insurer newly falls under Solvency II because it has passed the thresholds of Article 4 of the Solvency II Directive.
- A (re)insurer transfers a portfolio that is subject to the transitional to another (re)insurer.

Currently, (re)insurers who cannot cover their SCR without TMs are obliged to submit a phasing-in plan to their NSA and regularly report about the progress they have made. NSAs are permitted to set a capital add on where the (re)insurer's risk profile deviates significantly from the assumptions underlying the SCR.

EIOPA proposes to allow the application of a temporary capital add-on, where the NSA believes that a phasing-in plan submitted by a (re)insurer is unrealistic, but that a different phasing-in plan would be realistic.

EIOPA proposes that the risk management around the use of LTG (Long Term Guarantee) measures could be strengthened as follows:

- (Re)insurers applying the VA should fall under the requirement to establish a liquidity risk management plan, and in this plan they should analyse whether the liquidity planning indicates any liquidity constraints which are not consistent with the use of the VA.
- (Re)insurers applying the VA should report various economic (spread) sensitivities in the RSR.

- The requirement to report on the impact of a forced sale of assets for firms using the Matching Adjustment or the Volatility Adjustment has been removed.
- The requirement for a policy for the application of the VA should be replaced with the requirement that the written policy on risk management should reflect on the use of the VA.
- Where non-application of MA, VA and the TMs and a more market-consistent extrapolation of risk-free interest rates results in non-compliance with the SCR, (re)insurers should – upon request from their NSAs – provide evidence that their dividend payments or other voluntary capital distributions do not put their policyholders or beneficiaries at risk. The NSAs should be able to limit or withhold the capital distribution to ensure that the solvency position of the (re)insurer concerned is sustainable.

EIOPA proposes that the disclosure on LTG measures could be strengthened as follows:

- By defining and prescribing minimum information requirements. Consideration should be given to the inclusion of the LTG-measures in the part of the SFCR which is addressed to policyholders.
- By including the impact of the LTG measures should also show the impact on the SCR and MCR ratios in the SFCR QRT.
- (Re)insurers should disclose in their SFCR the outcome of a sensitivity analysis regarding the ultimate forward rates (UFRs) used in the extrapolation of risk-free interest rates. The sensitivity to assess is a fixed downward shift of the UFRs by 100 basis points. (Re)insurers should disclose the impact of that shift on their financial position, including on the amount of TPs, the SCR, the MCR, the basic own funds and the amounts of own funds eligible to cover the SCR and the MCR.

3.3.6 Technical Provisions

Best Estimate

(I) Contract Boundaries/Future Management Actions

EIOPA have proposed some amendments to the specific wording of Delegated Regulations which are not detailed in this paper. Some of the updates include edits to Article 18 of the Delegated Regulations to aid interpretation of contract boundary requirements.

Future Management Actions are proposed to be defined as “any action that the administrative, management or supervisory body of an insurance or reinsurance undertaking may expect to carry out under specific future circumstances”

(II) Expected Profits in Future Premiums

EIOPA has identified that the current definition of Expected Profits in Future Premiums (EPIFP) does not reflect the real impact of future premiums. Therefore, it is proposed to amend the Delegated Regulations to reflect that:

- The gross expected profit or loss included in future premiums shall be calculated as the difference between the TPs without a risk margin calculated in accordance with Article 77 of that Directive and a calculation of the TPs without a risk margin under the assumption that the premiums relating to existing insurance and reinsurance contracts that are expected to

be received in the future are not received for any reason other than the insured event having occurred, regardless of the legal or contractual rights of the policyholder to discontinue the policy

- Profit-making homogeneous risk groups shall be used to calculate gross expected profits in future premiums and loss-making homogeneous risk groups shall be used to calculate gross expected losses in future premiums
- The impact of reinsurance contracts and special purpose vehicles (SPVs) on the gross expected profit or loss included in future premiums shall be calculated as the difference between the amounts recoverable from reinsurance contracts and special purpose vehicles calculated in accordance with Article 81 of Directive 2009/138/EC and a calculation of the amounts recoverable from reinsurance contracts and special purpose vehicles under the assumption that the premiums relating to existing insurance and reinsurance contracts that are expected to be received in the future are not received for any reason other than the insured event having occurred, regardless of the legal or contractual rights of the policyholder to discontinue the policy.
- The net expected profit or loss included in future premiums shall be calculated as the difference between
 - (a) the sum of the gross expected profit or loss included in future premiums calculated for the homogeneous risk groups;
 - (b) the impact of reinsurance contracts and SPVs on the gross expected profit or loss included in future premiums.

(III) Expenses

EIOPA has identified differences in the allowance for new business when setting expense assumptions for cashflow projections. Currently, Article 31(4) states that expenses should be projected assuming that new business will be written, however it is sometimes considered that this is not adequate, for example, in the case where the (re)insurer is not writing new business.

EIOPA proposes to amend Article 31(4) of the Delegated Regulations as follows:

“Expenses shall be projected taking into account the decisions of the administrative, management or supervisory body of the undertaking with respect to writing new business”.

Risk Margin

EIOPA has considered arguments from a number of stakeholders in relation to potential issues with the Risk Margin calculation. However, having considered these arguments no changes are proposed to the calibration of the Risk Margin.

3.3.7 Own Funds

“Double leverage” occurs when a parent entity in a group provides tier 1 (T1) capital support to a subsidiary which is financed by externally issued parental non-T1 capital. An area which may deserve attention from the NSA is the case where the parent (re)insurer shows a ratio of the parent company’s T1 own funds investment in its subsidiaries compared to its own T1 items above 100%, that is, “excessive” double leverage.

In this situation, transactions which take place for the purposes of financing undertakings of the group may pose risks not only to the solvency position of the parent company but can also represent constraints for the financed undertakings. In particular, where a parent undertaking issues senior debt and those proceeds are used to finance an insurance company of the group (e.g. through the issuing of a Tier 1 subordinated debt), and the latter does not make distributions or cannot redeem the subordinated debt (e.g. due to a breach of its SCR), the parent undertaking may be unable to fulfil its obligations related to the senior debt.

EIOPA proposes that the Solvency II Directive should clarify that group supervisor should assess the level of double leverage and take actions when double leverage is excessive (e.g. where the leverage ratio is above 100%). This can be seen as an extension of Article 258 of the Solvency II Directive, which allows group supervisor and supervisory authorities to adopt all necessary measures where – in particular – the intragroup transactions “are a threat to the financial position of the insurance and reinsurance undertakings”.

There are no other proposed changes to the calibration of Own Funds.

3.3.8 Standard Formula Solvency Capital Requirement

Interest Rate Risk

EIOPA believes that the current shocks provided in the Delegated Regulations do not meet the requirement of Article 101(3) of the Solvency II Directive. Based on strong evidence, and agreement among stakeholders, EIOPA has identified that the current calibration severely underestimates interest rate risk, and has identified the following flaws:

- Interest rate movements have been much stronger than those provided by the stresses in the Delegated Regulation.
- The current approach does not stress negative rates, although reality has proven that rates can continue to decrease.
- Internal model users measure of interest rate risk significantly deviates from the current standard formula.

There is a wide agreement among stakeholders that the current approach has severe flaws. EIOPA proposes to model interest rate risk with a relative shift approach, parameters of which vary in function of maturity.

The increased term structure for a give currency shall be equal to:

$$(m) = (m) \cdot (1 + s_{m^{up}}(\theta_m)) + b_{m^{up}}; \text{ where}$$

$r_t(m)$ denotes the risk-free interest rate in the corresponding currency, m denotes the maturity and $s_{m^{up}}$ and $b_{m^{up}}$ are the calibrated maturity dependent up-shock components.

The decreased term structure for a give currency shall be equal to:

$$r_t^{\text{down}}(m) = r_t(m) \cdot (1 - s_{m^{\text{down}}}(\theta_m)) - b_{m^{\text{down}}}; \text{ where}$$

$r_t(m)$ denotes the risk-free interest rate in the corresponding currency, m denotes the maturity and $s_{m^{\text{down}}}$ and $b_{m^{\text{down}}}$ are the calibrated maturity dependent down-shock components.

The shock components proposed are detailed in Appendix 2.2 of this paper.

Given the material impact that the change of the calibration would have EIOPA proposes a gradual implementation.

EIOPA has proposed a relative shift approach as:

- it is a simple and transparent approach,
- the shifted approach is a purely data-driven approach,
- it is a risk-sensitive approach applicable to any yield environment,
- it can well cope with low and negative interest rates

Counterparty Default Risk

(I) Simplified Calculation of the Risk-Mitigating Effect of Derivatives, Reinsurance Arrangements, Special Purpose Vehicles and Insurance Securitisations.

The calculation of the risk mitigating effect for reinsurance, SPV, securitisation and derivatives is considered the most burdensome part of the counterparty default (CPD) risk module.

EIOPA proposes an additional optional simplification for the computation of the risk-mitigating effect of derivatives, reinsurance arrangements, SPVs and insurance securitisations, as below:

The total risk mitigating effect is calculated as:

$$RM_{Total} = BSCR^{*, without} - BSCR^*, \text{ where}$$

$BSCR^{*, without}$ is the Basic Solvency Requirement (BSCR) without CPD risk that would result if no derivatives, reinsurance arrangements, special purpose vehicles and insurance securitisations were in force.

$BSCR^*$ is the current BSCR if the CPD risk module is excluded.

The risk mitigating effect of the derivative or reinsurance arrangement, SPVs and insurance securitisations is calculated by

$$RM_i = (|EAD_i| / \sum |EAD_i|) * RM_{Total}, \text{ where}$$

$|EAD_i|$ denotes the absolute value of the exposure at default of the derivative, reinsurance arrangement, special purpose vehicles and insurance securitisations towards counterparty.

(II) Other Counterparty Default Updates

EIOPA proposes that the hypothetical SCR for the fire, marine and aviation risk for the purpose of determining the risk mitigation effect in the counterparty default risk module should be calculated on the basis of the largest gross risk concentration for the fire, marine and aviation risk.

EIOPA proposes that the Loss Given Default (LGD) for forborne and default loans should be included as Type 2 Exposures. The LGD for these loans should be calculated as follows:

$$LGD = 6.67 * \max (\text{Loan} - \text{Recoverables}, 36\% * \text{Loan})$$

EIOPA proposes that a requirement for partial guarantees could be that the guarantor requires the insurance or reinsurance undertaking to first pursue the obligor itself. This would make it easier for firms to recognise partial guarantees on mortgage loans.

Basis Risk

Based on the current wording of Article 210, NSAs may find it difficult to object to reinsurance arrangements where reinsurance significantly reduces the SCR, but where there is limited risk mitigation. EIOPA proposes that the below principle from CEIOPS's advice is included in the Delegated Acts:

"The risk mitigation technique shall effectively transfer risk from the undertaking. The undertaking needs to be able to show the extent to which there is an effective transfer of risk in order to ensure that any reduction in SCR or increase in available capital resulting from its reinsurance arrangements is commensurate with the change in risk that the insurer is exposed to."

The SCR shall reflect the economic substance of the arrangements that implement the technique. In principle, this would be through:

- a reduction in requirements commensurate with the extent of risk transfer, and
- an appropriate treatment of any corresponding risks that are acquired in the process. "

This inclusion will provide NSAs with legal basis to object to risk mitigation deemed to pose material basis risk.

3.3.9 Minimum Capital Requirement

Calculation of the Minimum Capital Requirement

The 2018 review of the Solvency II Capital Standard Formula ("SCR Review") led to the sigma parameters for premium and reserve risk being updated. The alpha and beta parameters used in the non-life Minimum Capital Requirement (MCR) calculation are directly linked to these sigma parameters.

EIOPA proposes the following updates to the alpha and beta parameters for MCR calibration:

| Segment | Alpha_old | Alpha_new | Beta_old | Beta_new |
|------------------------------------|-----------|-----------|----------|----------|
| Motor vehicle liability | 8.5% | 8.5% | 9.4% | 9.4% |
| Motor other classes | 7.5% | 7.5% | 7.5% | 7.5% |
| Marine, aviation, transport | 10.3% | 10.3% | 14.0% | 14.0% |
| Fire and property | 9.4% | 9.4% | 7.5% | 7.5% |
| Third-party liability | 10.3% | 10.3% | 13.1% | 13.1% |
| Credit & suretyship | 17.7% | 16.0% | 11.3% | 17.7% |
| Legal expenses | 11.3% | 5.2% | 6.6% | 7.8% |
| Assistance | 18.6% | 20.3% | 8.5% | 6.0% |
| Miscellaneous | 18.6% | 18.6% | 12.2% | 12.2% |
| NPR property | 18.6% | 18.6% | 15.9% | 15.9% |
| NPR casualty | 18.6% | 18.6% | 15.9% | 15.9% |
| NPR MAT | 18.6% | 18.6% | 15.9% | 15.9% |
| Accident | 4.7% | 5.4% | 4.7% | 4.7% |
| Sickness | 13.1% | 13.1% | 8.5% | 8.0% |
| Workers Compensation | 10.7% | 10.3% | 7.5% | 9.0% |
| NPR Health | 18.6% | 15.9% | 15.9% | 15.9% |

Non-Compliance with the MCR

EIOPA proposes to strengthen the clarity on what is to be expected by insurance undertakings by ‘immediately’ and by ‘observed’ with insurance undertakings with non-compliance of MCR in Article 139(1):

“Insurance and reinsurance undertakings shall inform the supervisory authority immediately and not in the quarterly reporting as specified in Article 129(4) where they observe that the Minimum Capital Requirement is no longer complied with, even if the exact level of non-compliance is not yet determined or where....”

EIOPA also proposes some additional clarifications on when (re)insurers need to submit a realistic finance scheme to their NSA. The proposed update that the finance scheme should be submitted within one month from the observation of non-compliance with the MCR or from the observation of risk of non-compliance.

The CP also outlines EIOPA’s proposals regarding the practices for restriction or prohibition of the free disposal of assets, the withdrawal of license processes and the supervision by NSAs after license withdrawal. These proposals are not outlined in this paper.

3.3.10 Reporting and Disclosure

Regular Supervisory Reporting

(i) Frequency of Regular Supervisory Reporting

EIOPA proposes to introduce Level 3 tools to promote supervisory convergence regarding the frequency of the Regular Supervisory Report (RSR) by keeping the minimum requirement for

submission of full RSR once every 3 years but discuss a possible mandatory assessment by NSAs and communication of the frequency of the RSR to undertakings.

(ii) Content of Regular Supervisor Reporting

EIOPA believes that the RSR has room for improvement both in terms of simplifications to promote further application of proportionality principle as well as to avoid duplications and overlaps within the RSR and between the RSR and other supervisory reports. Please refer to Annex 7.1 of the CP as published on 15th October 2019 for detail on EIOPA's proposed improvements for both the structure and the content of the RSR.

Group Reporting and Disclosure

(i) Proportionality

The proportionality principle is one of the overarching principles of Solvency II. The lack of consistency in the application of the proportionality principle at solo levels leads to situations where (re)insurers belonging to a group are exempted from certain reporting requirements by one NSA while other less relevant solo entities are not exempted by different NSAs. As a result, under the current Directive, the group cannot be exempted as not all solo undertakings are exempt.

EIOPA understands there are national specificities associated with the different application of the proportionality principle that results in this situation arising. However, EIOPA believes that it leads to non-proportionate outcomes at the level of some groups.

EIOPA proposes in the area of groups to amend Article 254 of the Solvency II Directive to allow for exemption of groups reporting without the condition of exemption of all solo insurance undertakings belonging to that group.

(ii) Group Templates

When analysing the Group QRTs, EIOPA focused on the following questions:

- Were the QRTs used and if yes whether regularly or ad-hoc;
- What is the main use by the NSAs;
- Can regular reporting be eliminated;
- Can regular reporting be reduced, e.g. with a threshold;
- Can different granularity in a different template replace this information;
- If template is proposed to be kept, is there any information that is missing;
- If the information reported according to the actual framework provides all necessary information for supervisors.

Based on the above, EIOPA has made a number of proposed changes to the Group QRTs, which are detailed in Appendix 2.3.

(i) Group Solvency and Financial Condition Report

EIOPA proposes amendments regarding the content of the group SFCR in line with the proposal at solo level, as outlined in Section 2 of this paper.

EIOPA proposes the following amendments to the Group SFCR:

- Introducing an auditing requirement in the Solvency II Directive for the group and for the single SFCR. This should ensure that as a minimum the group Solvency II Balance-Sheet is subject in all Member States to external auditing by a qualified auditor. The output should be an audit opinion published together with the SFCR. Each Member State/NSA could on top of this minimum requirement request additional auditing requirements.
- Removing the translation requirement, thus not requiring the translation of the summary into the official language or languages of the Member States where any of the (re)insurance subsidiaries of the participating (re)insurance holding company or mixed financial holding company has its head office.
- Extend the deadline by 2 weeks of the Group SFCR to accommodate the proposal for audit of the SII Balance sheet,
- Align the deadline of the policyholder section of a Single SFCR with the solo SFCR deadline,
- Align the deadline of the other financial users sections of a Single SFCR with the deadline of the groups SFCR.

3.3.11 Proportionality

The proportionality principle is one of the overarching principles of Solvency II framework. All Solvency II requirements should be proportionate to the nature, scale and complexity of the risks undertakings face or may face.

EIOPA proposes to revise Article 4 thresholds by:

- doubling the thresholds related to the TPs;
- allowing a Member-State option to set the threshold referring to premium income between the current €5m and until a maximum of €25m.

Proportionality in Pillar 1

EIOPA is considering two different approaches to enhance proportionality in the framework by introducing further simplifications to the calculation of the SCR standard formula:

- Introduce a set of simplified calculation of capital requirements for immaterial risks. This involves taking any existing immaterial capital requirement and replacing it with a simplified requirement that is easy to calculate, is at least the size of the original capital requirement, and is dependent on the risks of the (re)insurer.
- Introduce an integrated simplified calculation of capital requirements for immaterial risks, which follows a three-step procedure:
 1. Identify all immaterial risks by a regular calculation of the BSCR, including a calculation of the SCRs for all immaterial risks. Immaterial risks can then be identified as described by the EIOPA supervisory statement.
 2. Derive the SCR relating to immaterial risks using a new calculation of the BSCR.
 3. Reassessment of the immateriality of the risks identified in Step 1.
- Currently EIOPA has indicated no preference for either of these two options.

Proportionality in Pillar 2

EIOPA proposes the following amendments, provided they are justified in accordance with the proportionality principle:

- A person may be a key function holder and a Board member.
- A person may be responsible for more than one key function.
- A person may be responsible for a key function as well as an operational function, excluding the internal audit function.
- (Re)insurers should routinely assess the effectiveness and formation of the Board.
- The assessment of the significance with which the risk profile of the (re)insurer deviates from the assumptions underlying the SCR, and calculated using the standard formula, should only be provided every two years, and following any significant change.
- The stress and scenario testing in the ORSA should take proportionality into account.
- More flexibility should be introduced with respect to the frequency of the review of written policies. The remuneration policy should also be added to the list of written policies.

3.3.12 Freedom to Provide Services and Freedom of Establishment

EIOPA is asked to assess whether the current supervisory powers at the disposal of the home NSA and EIOPA are sufficient to prevent failures of insurance companies operating cross-border through freedom to provide services (FoS) and the freedom of establishment (FoE).

EIOPA proposes to further enhance cooperation between home and host supervisors, in the phase of authorisation and during the ongoing supervision:

- Cooperation between home and host supervisors and timely and effective information exchange are sometimes hindered during the authorisation process. Some recent cases indicated that some (re)insurers had not been authorised by the home supervisor to take up business in a certain Member state or decided to withdraw their application after discussion with the supervisor on the conditions for authorisation. The same (re)insurers then decided to submit the application to the NSA of another Member State with the intention to operate exclusively (or almost exclusively) in the Member State that originally refused the authorisation.

EIOPA proposes to require companies seeking authorisation to declare if there had been a formal or informal request for an authorisation to establish an insurance or reinsurance undertaking or other financial undertaking or intermediary in another Member State or third country which has been rejected or withdrawn and the reasons for the rejections or withdrawal.

- It is a common practice that (re)insurers communicate their intention to pursue their activities under FoS in several other Member States, but often after that, they do not commence the cross-border activities. Where the cross-border activities commence only some years after the notification to the host supervisor or in the case the activity changes materially from the original plan, the host supervisor becomes aware of activity pursued in its territory with some delay.

EIOPA proposes to require (re)insurers to inform the home supervisor immediately in the case of any material change in the business pursued by the (re)insurer under FoS. The home supervisor is required to inform the host supervisor concerned without delay.

- Collaboration platforms are set up when EIOPA and relevant NSAs see the benefit in increasing cooperation in the case of material cross-border business.

EIOPA proposes that in the case where NSAs fail to reach a common view in a collaboration platform, EIOPA may issue a recommendation. Where this recommendation is not followed within two months, the NSA should state the reasons it has not been followed, and the steps it intends to take.

EIOPA proposes that the home NSA should notify EIOPA and the host NSA where it identifies deteriorating financial conditions or other emerging risks, posed by an (re)insurers carrying out FoS or FoE activities that may have a cross-border effect. The host NSA shall also notify EIOPA and the home NSA where it has serious and reasoned concerns with regard to consumer protection.

- EIOPA proposes that home NSAs should cooperate with host NSAs to clearly understand the risks that the host NSA faces. This includes cooperation on systems of governance, outsourcing arrangement and distribution, business strategy and claims handling, and consumer protection.
- EIOPA proposes that host NSAs may require the information which they are authorised to request to be supplied to them by the home NSA or the (re)insurer in a reasonable timeframe and in the official language of the State.
- EIOPA proposes to improve the information exchange between home and host NSAs via the EIOPA hub.

3.3.13 Macroprudential Policy

In EIOPA's view, the financial crisis revealed that either no appropriate tools existed, or micro prudential measures were used for addressing identified system-wide risks, which were not successful or sufficient in the financial sector. In EIOPA's view, systemic risk and macroprudential policy in insurance are less developed in comparison with the banking sector, which may manifest itself in upcoming crises.

EIOPA proposes that the macroprudential perspective should be incorporated into the current prudential framework. This would supplement the current micro prudential approach in a consistent and coherent way.

EIOPA proposes that a general article covering macroprudential objectives, policy and surveillance is included in the Directive. This article should define the macroprudential objectives and refer to the need for NSAs to identify and measure systematic risk. It should also broaden the toolkit of authorities, including capital, liquidity, exposure, and pre-emptive based tools and measures.

EIOPA proposes that any new proposals should supplement provisions that already have a certain macroprudential impact, in particular, those that refer to LTG measures and measures on equity risk.

Some of the new proposals are:

- Capital surcharge for systemic risk: NSAs would have the power to impose capital surcharges to mitigate specific systemic risk.
- Concentration thresholds: NSAs would have the power to define soft concentration thresholds on the level of risk taken by (re)insurers and would have the ability to intervene accordingly.
- Expand the use of the ORSA to include the macroprudential perspective: This would allow NSAs to easily obtain the macroprudential information they require.
- Expand the Prudent Person Principle to take into account macroprudential concerns: (Re)insurers would be encouraged to take macroprudential concerns into account when considering their investment strategy.
- Pre-emptive recovery and resolution planning: A pre-emptive recovery plan involves the (re)insurer detailing the steps it would take to restore its financial position following deterioration. Resolution plans deal with how an NSA would resolve the (re)insurer. EIOPA has proposed that these plans should be required by certain (re)insurers, or by all.
- Systemic Risk Management Plans (SRMP): Certain (re)insurers should produce a SRMP.
- Liquidity Risk Management Planning and Reporting: (Re)insurers are required to produce a Liquidity Risk Management Plan (LRMP) which identifies potential liquidity stresses and how a firm will deal with them.
- Temporary Freeze on Redemption Rights: NSAs should have the power to temporarily freeze the right of policyholders to lapse or surrender their policies in exceptional circumstances.

3.3.14 Recovery and Resolution

In July 2017, EIOPA published an Opinion on the harmonisation of recovery and resolution frameworks for (re)insurers across Member States. In the Opinion, EIOPA called for minimum harmonised and comprehensive recovery and resolution framework for (re)insurers to deliver increased policyholder protection and financial stability in the EU. The proposals suggested in the CP are based on the 2017 Opinion and have been elaborated further where necessary.

Recovery and resolution refer to different stages of a crisis management process and should be seen as part of a continuum of supervisory or resolution activities. In simple terms, recovery relates to the situations where undertakings are in “going concern”, whereas resolution refers to situations where they have moved into “gone concern”, i.e. an undertaking is no longer viable or likely to be no longer viable.

EIOPA have made proposals regarding recovery and resolution in the following areas:

Pre-Emptive Recovery Planning

Certain (re)insurers should be required to develop and maintain recovery plans in a pre-emptive manner. The requirement should capture a very significant share of each national market in the EU. The exact market coverage level requires further work and needs to be carefully determined.

Early Intervention Powers

NSAs should have the power to:

- Require additional or more frequent reporting;
- Require management of a (re)insurer to implement measures as set out in the pre-emptive recovery plan;
- Require management of a (re)insurer to identify measures to overcome problems and implement those measures within a specific timeframe, where there is no pre-emptive recovery plan in place;
- Require the undertaking to limit variable remuneration and bonuses; and
- In case of life undertakings, suspend or limit the right of policyholders to surrender their contracts on a temporary basis.

Resolution Measures

Member States should have in place an officially designated administrative resolution authority for the resolution of (re)insurance undertakings. The objectives of resolutions are:

- To protect policyholders, beneficiaries and claimants;
- To maintain financial stability by preventing contagion and by maintaining market discipline;
- To ensure the continuity of functions of undertakings whose disruption could harm the financial stability and/or real economy; and
- To protect public funds.

Resolution Planning

- Resolution authorities should be required to develop and maintain resolution plans and conduct resolvability assessments in a pre-emptive manner for undertakings.
- The requirement should capture a significant share of each national market in the EU.
- Resolution authorities should be given the power to require the removal of identified material impediments to the resolvability of undertakings where duly justified.

Resolution Powers

EIOPA proposes that National Resolution Authorities should have a set of common resolution powers, including:

- Prohibiting the payment and allowing the recovery of variable remuneration;
- Withdrawing the license to write new business and put all or part of the insurance business contracts into run-off;
- Selling or transferring the shares of the undertaking in resolution to a third party;
- Selling or transferring all or part of the assets and liabilities of the undertaking under resolution to a solvent undertaking or a third party;
- Creating and operating a bridge institution to which the assets and liabilities of the undertaking in resolution is transferred;
- Overriding any restrictions to the (partial) transfer of the assets and liabilities of the undertaking in resolution under applicable law
- Temporarily restricting or suspending policyholders' rights to surrender their insurance contracts;

- Staying rights of the reinsurance undertakings of the ceding undertaking to terminate or not reinstate coverage on the sole ground of the ceding undertaking's entry into resolution;
- Staying the early termination rights associated with derivatives and securities lending transactions;
- Imposing a moratorium with a suspension of payments to unsecured creditors and a stay on creditor actions to attach assets or otherwise collect money or property from the undertaking in resolution;
- Ensuring continuity of essential services and functions by requiring other entities in the same group to continue to provide essential services to the undertaking in resolution;
- Taking control of and managing the undertaking in resolution.
- Restructuring, limiting or writing down liabilities, and allocating losses to shareholders, creditors and policyholders.

EIOPA proposes that these resolution powers should be subject to adequate safeguards, including:

- The hierarchy of claims should be respected, while providing the flexibility to depart from the general principle of equal treatment of creditors of the same class;
- Creditors, including policyholders, should not incur a loss greater than they would have incurred in a winding-up under normal insolvency proceedings.

Cross Border Cooperation

EIOPA proposes to establish cross-border cooperation and coordination arrangements between national resolution authorities for crisis situations.

Triggers

EIOPA proposes that adequate triggers for early interventions should be introduced at the EU level. These triggers should be judgment-based and allow for sufficient supervisory discretion to assess the situation and decide on the need for early interventions.

The triggers should contain relevant qualitative and quantitative factors, but should not result in a new, pre-defined intervention level.

3.4 Life Reinsurance

3.4.1 Underwriting

As insurers try to increase efficiency and improve customer experience there has been a move toward more automation for both medical underwriting and claims underwriting. Insurers aim to balance gathering sufficient information to assess the risk, while ensuring the customer experience is as frictionless as possible. In recent years, reinsurers have been offering their support for online underwriting engine rules development and have been seeking to develop machine-learning approaches to help the industry in this area.

During medical underwriting, a life insurer traditionally would gather information on a long list of medical and health related factors on an applicant that can be used to predict their future mortality and morbidity experience. This was an expensive process for insurers and applicants in terms of both application processing times and costs. In recent years, companies have also faced the challenge of

trying to keep the number of underwriting questions as short and succinct as possible in order to maximise the customer experience of the application process.

To compensate for this, insurers with the aid of reinsurers are turning to other data sources such as existing customer databases, industry databases and nonmedical data. Advances in data science techniques have enabled them to identify new indicators of risk and reduce the number of application questions to be asked during underwriting.

Machine learning can be used to speed up underwriting for standard applications based on non-insurance data. Insurers/reinsurers do this by first gathering all known information about past and existing customers including non-medical information and claim experience to date. The machine-learning model is then trained using this aggregate data to identify the key individual risk factors and/or combination of risk factors that determine the likelihood of an applicant making a claim. By comparing the cost of collecting a data factor against the cost of increased claims resulting from not collecting that factor, the insurer can optimise the number of questions asked during the underwriting process.

Through the use of machine learning techniques insurers can set out an optimal list of factors to identify and accept potential customers at standard pricing rates. Combining this with automated underwriting solutions the insurer can maximise the customers that can be accepted immediately with no human intervention, thus improving the customer experience of the underwriting journey, reducing medical evidence costs and improving completion rates. It also allows human underwriters to focus on more complex applications where their skillsets are most needed. In recent years, there has been a large increase in the number of insurers/reinsurers engaging in this area with most companies highlighting it as a key part of their development plans.

Data science is also being applied by companies within the underwriting of claims to help optimise the process for valid claims. Traditionally during claims underwriting, underwriters need to read many reports before deciding whether to accept or reject a claim. This can be slow, intensive on resources and open to errors. However, data science techniques such as text mining can be used to help speed up the process.

Text mining can be used to comb medical reports and application forms. References to pre-existing or non-covered conditions along with potential non-disclosure of material medical information can be highlighted immediately instead of valuable underwriters' time. Through these methods, automated solutions can be set up to process straight forward claims much more quickly and provide insights to underwriters on more complicated claims. Text mining is an evolving technology with a number of reinsures in the UK currently partnering with universities to help develop the field further.

3.4.2 Partnerships in Reinsurance

As advances in data science, the rapid increase of the InsurTech market and the creation of new digital and cloud-based solutions become bigger features of the insurance industry, reinsurers have been among the first to ride this wave of change. A natural alignment of interests exists between start-ups needing a forum for their beta testing, reinsurer's with stores of data, entrepreneurs eager to digitize the consumer experience on the front end, reinsurer's seeking to harness their market

visibility by streamlining the pain points within the distribution chain and customers seeking a personalised easy-to-access end product. This, in turn, has led to an increase in innovation within the insurance industry driven, at least in part, by the establishment of partnerships.

In particular, the increased prevalence of partnerships in recent years has been very evident in the reinsurance sector. The relationships between reinsurer and cedent often bring to the fore some of the most pronounced challenges in the direct insurance market at a given time – notably retention at early durations, engagement with younger policyholders and onerous costs of traditional underwriting in more recent times. Reinsurers can then leverage such insights when selecting the partners with whom they wish to establish links, choosing those of greatest relevance to their clients' apparent needs.

The global dimension to reinsurance also affords promising start-ups a diverse and established platform through which they may trial their proposition, and access to international regulatory, product development and consumer protection ecosystems, outside of the market in which they have developed the proposition, which may offer a better 'testing ground' for their offering.

One of the largest examples, where the merits of partnerships though new technology are currently being harnessed within the industry today, is within the B3i network which includes many of the major global reinsurers. This venture seeks to generate market-wide efficiencies in the areas of data quality and friction points of the value chain through the implementation of distributed ledger technology (Corda) within company applications. Collaboration is core to the B3i initiative, which sidelines competitive barriers and leverages the merits of partnership to advance the distributed ledger technology proposition for participants. This type of partnership model is being used to ensure that a rapid, efficient and suitable solution is delivered by those most familiar with the nuances of what the technology could seek to achieve in the insurance space. There are over 40 companies involved with the initiative at this time, and B3i is wholly owned by 20 participants from the insurance sector globally, at least 7 of whom are reinsurers⁶. Several of the current network participants have offices in Ireland.

Partnerships are also transforming the reinsurer's role in distribution and product development, with many of the alliances formed targeting these two aspects of consumer experience as focal points for rejuvenation. Associations such as that recently announced between a subsidiary of Swiss Re – iptiQ Americas – and Samsung Electronics Ltd⁷, which seeks to develop solutions to enhance policyholder engagement with a view to promoting better health outcomes for insured lives, have meaningful positive impacts on the insured population, and attempt to remedy the protection gap in countries by appealing to younger lives. In the distribution space, reinsurers are also trying to reach new markets via partnerships. One example of this is Hannover Life Reassurance Company of America who has partnered with Ladder Life⁸, offering a comprehensive suite of support - such as automated underwriting and underwriting consulting - to this InsurTech venture, which promotes a consumer-centric buying experience via the use of technology.

⁶ <https://b3i.tech/who-we-are.html>

⁷ <https://www.reinsurancene.ws/swiss-res-iphiq-and-samsung-partner-to-close-26trn-lh-protection-gap/>

⁸ <https://www.reinsurancene.ws/hannover-re-backs-insurtech-start-up/>

As well as taking part in technology, distribution and product related partnerships, both reinsurer's and insurers are also proactive in seeking out new suitable partners and embracing new areas of research. One example of this has been the Swiss Re Behavioural Research Unit partnering with GroHealth⁹ in investigating the need to embed behavioural economics into digital health applications to promote and inspire positive behavioural change. Elsewhere, Zurich have recently launched their second Innovation Championship, which encourages expressions of interest from entrepreneurs and creative thinkers who may be new to the insurance industry. Such deliberate intentions to identify promising associates in transforming the role of the reinsurer highlights the strategic motivation underlying these partnerships, and strongly suggests more links of this kind are likely to emerge as this wave of change continues.

3.4.3 Product Developments - Longevity Swaps

Pension scheme de-risking continues to be a hot topic for both trustees and sponsors, as average pension scheme deficits across the market remain high. Longevity risk - that is, the risk that members of a pension scheme live longer than expected resulting in a shortfall of reserves - is a significant exposure to these schemes. Large rises in life expectancy over the past few decades combined with the continued uncertainty around future longevity improvement trends have increased the desire by pension scheme stakeholders to minimise this risk through the use of insurance and reinsurance markets.

The longevity risk within these pension schemes can be very large. The capacity of direct writers to take this risk onto their balance sheets is small relative to reinsurers, resulting in a large amount of these transactions being reinsured. Indeed in 2019 there were at least 10 reinsurers active in the UK market bidding for longevity risk deals worth over £500 million. Many reinsurers have also indicated to the market that they have an appetite for deals in excess of a £1 billion with the view that longevity risk is a natural hedge for the mortality risk on their books.

Due to the scale of their exposure to longevity risk, reinsurers often employ extra resources to work on better understanding longevity trends. Reinsurers have access to much larger data sets for this analysis. For these reasons, reinsurers are often seen as the experts in the insurance industry for assessing longevity trends.

In recent years, a popular vehicle used by reinsurers to reinsure longevity risk is through longevity swaps. A longevity swap involves an insurer making a fixed series of premiums to a reinsurer. These premiums are based on a best estimate of payments that will be paid to members. In return, the reinsurer makes a variable series of payments based on the actual premium paid by the insurer to members of the pension scheme. If the actual premiums paid to members turns out to be higher than expected, due to those members living longer than expected, then the shortfall is paid by the reinsurer.

Longevity swaps are not a new concept for the reinsurance industry but with the low interest rate environment dampening the market for asset share arrangements and the management of pension scheme deficits a hot topic for companies, 2019 has been a record-breaking year in the longevity swap market with a number of multibillion transactions recorded worldwide. Some of the larger

⁹ <https://www.swissre.com/reinsurance/life-and-health/solutions/diabetes.html>

deals that have been completed in the last year include Canada Life Reinsurance entering into a long-term longevity reinsurance agreement with Aegon in December 2019 to provide coverage for €12 billion of its in-force liabilities and Pacific Life Re announcing in January 2020 the completion of a £10 billion longevity swap with Lloyds Banking Group. 2020 is expected to be another busy year in both the longevity swap and reinsurance markets as schemes continue to explore their de-risking options.

3.5 Healthcare

3.5.1 Introduction and Market Update

Since the last Current Topics Paper was completed in 2018, there have been several developments in the Irish Healthcare system and the Private Health Insurance (PHI) market. In particular, implications of the SláinteCare Report on the future of the Health system will alter the PHI market to some degree. Also, there has been debate on the type of Risk Equalisation system that should operate in Ireland.

PHI Market

The PHI market is the largest domestic non-life insurance market in Ireland with total premiums of €2.7 billion¹⁰ in the year 2018.

PHI operates under the long-established requirement of community rating. This means that all consumers should be charged the same premium for the same product, regardless of their risk profile. This is different to most other forms of insurance where risk rating would be used in pricing, but it is common in health insurance markets.

Recent statistics¹¹ for Ireland showed the PHI market split between the three main providers as: VHI (50%), Laya (26%) and Irish Life Health (20%). Historically VHI was the only provider up to 1997 when the market was opened to competition. This has meant that VHI have the largest market share and share of older insured lives relative to the others, although the differences are reducing over time.

To understand the PHI market more, it is useful to consider the underlying health system in Ireland.

The Irish Healthcare System

The current Irish healthcare system is sometimes called “two-tier”. This is because there is both a ‘public’ system and a ‘private’ system in operation. Taxes mostly fund the public system. But user charges typically apply in both systems, with higher charges applying in the private system.

There is entanglement between the two systems as private treatment, as well as public treatment, can occur in a public hospital. Here the patient can elect at admission to be treated either publicly or privately, with different charges applying. Treatment can occur quicker for private patients (see

¹⁰ Premiums gross of tax relief for open and restricted undertakings combined, see HIA Annual Reports and Accounts 2018, Appendix A <https://www.hia.ie/publication/annual-reports-accounts>

¹¹ HIA Annual Report and Accounts 2018, 4% provided by Restricted undertakings, see Appendix A <https://www.hia.ie/sites/default/files/HIA%20Annual%20Report%202018.pdf>

report¹² on waiting lists, page 47). Conversely there are private hospitals that mostly treat private patients but, in some cases, public patients can be treated in a private hospital. (The National Treatment Purchase Fund can provide funding to private hospitals for public patients who are long waiters.)

Types of PHI Plans

PHI can be used to cover costs associated with treatments in both the public system and the private system (the exact cover will depend on the policy plan). But PHI is mostly used to cover costs for private treatment. Consumer research has shown that there exists a “strong belief that PHI allows people to skip queues and ensures they receive a better level of service.” (HIA Consumer Survey¹³ 2017)

Various levels of cover exist with different plans to suit varying customer needs and different budgets. Entry plans would mostly cover only public hospitals. Mid-market plans would cover public hospitals with some cover in private hospitals (limitations may apply on the type of room and procedures covered). Advanced plans would have more comprehensive cover in private hospitals (e.g. single rooms and more procedures may be covered). In addition to the hospital benefits, plans can also provide varying amounts of refunds on ‘day-to-day’ health expenses, e.g. GP visits and consultations.

Main PHI Market features:

1. High uptake for voluntary insurance (almost 46%¹⁴ of Irish population have PHI)
2. High average premium, c. €1,200¹⁵ per year.
3. Employer paid or supported schemes popular
4. Tax incentives apply on premiums (tax relief at source)

These features can help explain the large size of the market.

Contracts last for 12 months and must then be renewed or switched to continue cover. Premium rate changes are common in the market as the claims environment changes.

¹² See Report of the Independent Review Group established to examine Private Activity in Public Hospitals <https://www.gov.ie/en/publication/28ddfd-report-of-the-independent-review-group-established-to-examine-private/>

¹³ <https://www.hia.ie/publication/consumer-surveys>

¹⁴ As at June 2019 for open and restricted undertakings combined, see page 11 See HIA Report on returns for year to end June 2019 <https://www.gov.ie/en/publication/054f70-report-to-the-minister-for-health-on-an-evaluation-and-analysis-of-r/>

¹⁵ Average gross premium paid in 2018, see page 16 of HIA Annual Report and Accounts 2018

<https://www.hia.ie/sites/default/files/HIA%20Annual%20Report%202018.pdf>

Market Regulation:

The market is regulated with the Health Insurance Authority (HIA) providing market and product regulation; while the CBI oversees prudential regulation (where applicable) and conduct of business rules.

A role of the HIA is to monitor the operation of the Health Insurance Acts in the market. The relevant law here imposes four significant rules on providers of health insurance which make the market unique:

1. Open Enrolment (*Insurers must accept all applications for insurance*)
2. Minimum Benefits (*Contracts must provide at least a prescribed minimum level of benefit*)
3. Lifetime cover (*Insurers cannot decline cover*)
4. Lifetime Community Rating (*Everybody pays the same premium for the same plan for the same starting age¹⁶*)

Combined, these are intended to ensure the availability of affordable health insurance for all, regardless of age and health status.

Some of these features may also explain the size of the market. E.g. Lifetime Community Rating encourages people to join the PHI market at a younger age. Also, the community rating based on plan means all persons pay the same price for a given plan. The existence of more affordable plans with lower levels of cover could appeal to younger people and suit their needs. So, in result younger people are facilitated and encouraged to have PHI cover. This helps ensure the sustainability of the market overall.

A further point is that, on average, older people pay more for PHI than younger people. This is because older people typically buy more expensive plans with comprehensive benefits that are important to them given their age.

Risk Equalisation:

A risk equalisation system is in place to support the market and this is operated by the HIA. The process of risk equalisation helps spread some of the higher claim costs of the older and/or less healthy policyholders across all the insurers in the market, in proportion to each insurer's market share. In the absence of an effective risk equalisation system, there is a threat to the existence of a community rated market when significant differences in risk profiles exist between competing insurers.

The risk equalisation system works by collecting a premium levy (or contribution) based on age and type of cover from all PHI policies into a fund. The fund is then allocated across policies as credits (which vary by age, gender and type of cover) and to a smaller extent as hospital utilisation credits (where a policyholder undergoes private treatment in hospital).

¹⁶ Some exceptions apply.

3.5.2 SláinteCare Report

The SláinteCare Report¹⁷ of 2017 was the main output of the Oireachtas Committee on the Future of Healthcare. This committee was tasked with the goal of achieving cross-party, political agreement on the future direction of the health service; and devising a ten-year plan for the reform.

Description and Recommendations

The committee performed its work by receiving submissions on healthcare reform from interested parties, having public hearings, facilitated workshops and consideration of evidence with support from an expert team from the Trinity Centre for Health Policy and Management.

Broadly, the report laid out the ten-year vision for a modern patient-centred single-tier health care system with universal access for all. This includes removing private practice (or treatment) from public hospitals.

Some of the main recommendations include:

- Primary Care Expansion (free GP, improved diagnostics)
- Investment in Public Hospitals (including the elimination of private practice from public hospitals)
- Legislation for a universal entitlement to health and social care (with maximum waiting times and accountability rules for hospitals)
- An expanded national Health and wellbeing programme
- Reducing and removing charges for hospitals, prescriptions and drugs
- eHealth (national electronic health record system, telehealth solutions)
- Reform of health workforce planning (to achieve integrated care and better use of resources)

A main aim is “to ensure healthcare is delivered at the lowest level of complexity” possible. E.g. treating a condition at an earlier stage in a community setting would be cheaper than tackling the condition later in a hospital setting. Removing charges for services would be thought to bring forward the presentation and diagnosis of illnesses. Moving to a better model of service delivery should prove more efficient and eventually cheaper though investment is needed to help achieve the necessary reform.

Funding for the proposed new system will involve a mixture of general taxation and specific ring-fenced funds. A further point noted in the report is that private insurance will no longer fund private practice in public hospitals. Further, savings that will arise from reduced tax-relief costs as people move from PHI to avail of improved public health provision will be ring-fenced to SláinteCare work.

Removal of Private Care¹⁸ from Public Hospitals

Following on from the SláinteCare Report, the government commissioned research to analyse “the separation of private practice from the public system with a view to identifying any adverse and unintended consequences for the public system in the separation”.

¹⁷ See ‘The Sláintecare Report’ <https://www.gov.ie/en/publication/0d2d60-slaintecare-publications/>

¹⁸ Note private care, treatment, practice and activity are used interchangeably. Different reports use different terms, but all refer to medicine in the private system as explained in the introductory section.

The first output was a Report of the Independent Review Group¹⁹ established to examine Private Activity in Public Hospitals.

This endorsed the SláinteCare aim to remove private practice from public hospitals with the main argument being equity and fairness. The report states “People should be able to access care when they need it in a timely manner. Those who use public hospitals should not be disadvantaged by lack of financial resources”.

The report made a number of recommendations on contracts to offer to consultants working in public hospitals. It stated that all new consultant appointments should be to a Sláintecare Consultant Contract, which allows only public activity in public hospitals. Also it said that Consultants holding 2008 (or earlier) contracts under which the consultant can conduct private activity on a public hospital site should be offered a “contract change payment” to move to the new Sláintecare Consultant Contract.

Impact on Private Health Insurance

Another output commissioned was an actuarial report produced by Deloitte²⁰ for the Department of Health. This report considered the impact on the Irish PHI market if private practice was removed from public hospitals, as envisaged in the SláinteCare Report.

Some of the main conclusions from the report are mentioned below.

Impact on the Size of the Market

Deloitte note that the decision to retain or buy PHI will depend on several factors, with both confidence in the revised public health system and accessibility to private hospitals (geography) being important.

But it is likely that less people will buy PHI if private practice is removed from public hospitals. Thus, the market would reduce in size. There are a few reasons to this.

Some basic PHI policies only cover public hospitals and these would become effectively redundant after the change. People who live away from private hospitals would in effect no longer be able to use PHI and so would withdraw. Other consumers could withdraw if they believe PHI is no longer necessary, this could be true for younger people in better health. Deloitte estimated that in one scenario the market membership could reduce by between 17% and 54%, but more severe scenarios were considered too.

Impact on Average Premium

The change in the market membership will influence the average cost of claims per member and this will ultimately drive the average premium.

¹⁹ See ‘Report of the Independent Review Group established to examine Private Activity in Public Hospitals’
<https://www.gov.ie/en/publication/28ddfd-report-of-the-independent-review-group-established-to-examine-private/>

²⁰ See ‘Report on the possible impact of the removal of private practice from Irish public hospitals’
<https://www.gov.ie/en/publication/28ddfd-report-of-the-independent-review-group-established-to-examine-private/>

Deloitte estimated that a much-reduced market size, with many young people gone, could mean average premiums being up to 32% higher than present.

Changes in the PHI market

One possibility if the market size reduces dramatically is that a health insurer withdraws due to reduced profit potential. This could make the whole PHI market unsustainable.

Alternatively a full and successful implementation of SláinteCare could mean a smaller but more dynamic PHI market that would not be market regulated by the Government with community rating and risk equalisation. PHI could turn into a risk-rated product for supplementary medical needs for people on mostly higher incomes, as is currently the case in both the UK and (a sector in) the Netherlands.

Practical Considerations of SláinteCare

SláinteCare is a 10 year plan of change and reform but since its original publication the government has only proceeded with limited implementation. There are many considerations, decisions and actions remaining. Some of the outstanding aspects are listed below:

- Government commitment to immediate higher funding for hospitals and primary care facilities.
- The definition of healthcare benefits to be provided universally.
- Government commitment to legislating for entitlements (which will have to be subsequently provided by the state)
- Phasing of the implementation with multi-year specific plans.
- Timeframe and budget for the removal of private care from public hospitals.
 - o There will be high costs in buying out existing consultant contracts. Especially those who could move to a private hospital, e.g. cardiac consultants.
 - o But the alternative is some two-tier arrangement continuing for years to come (until all the consultants retire). Either outcome could be difficult politically.
- Eliminating private care from public hospitals could leave no private alternative for some treatments, e.g. maternity cover or children's medicine. This removal of choice may upset people accustomed to the treatment before.
- The role for the National Purchase Treatment Fund is not clear. It could be used to clear waiting lists in a transitional phase. But following full implementation of SláinteCare it may not be consistent with the principle of "public money is only spent in the public interest/for the public good".

3.5.3 Debate on Risk Equalisation and Regulation

In September 2018 the SAI organised a seminar on Risk Equalisation and Regulation in Private Health Insurance²¹. This involved international actuarial and health experts who presented research on the Irish and international PHI markets. Some recommendations for change and considerations for thought were suggested by the speakers.

²¹ <https://web.actuaries.ie/events/2018/07/risk-equalisation-and-regulation-private-health-insurance>

Tools Available in Regulation

Risk equalisation and risk sharing are the two main mechanisms used to regulate the market.

Risk equalisation²² is a tool that is used to provide for cross-subsidies between consumers in the market depending upon their risk characteristics. A predictor of future healthcare costs would be constructed to determine credits payable to insurers in advance of insurance.

Risk sharing is a tool for sharing the actual claims costs of insurers between the direct insurer and the other insurers in the market (through the regulator). It occurs after insurance happens.

If risk equalisation is used in conjunction with risk sharing, then the combination can improve the overall effectiveness of the system of transfers in place. A reason for this is that it is difficult in advance to predict healthcare costs. Also, a large amount of healthcare costs can be associated with a small share of the population. Such skewness in costs is hard to capture in a risk equalisation only system of transfers. Including risk sharing on top of risk equalisation allows for a better fit overall.

Further, looking to international markets shows that sophisticated risk equalisation systems exist that use many different types of information as predictors. Examples would be

- Demographic/socioeconomic (age, gender, smoker status, income, education)
- Disease (diagnosis, prescriptions)
- Prior costs

The Irish Case

The Irish PHI market is well established with a risk equalisation system in place based on age, gender and type of cover. There are also elements of risk sharing in place with the hospital utilisation credits (based on duration in hospital) and an over-compensation mechanism in place.

It would seem the next step would be to improve and refine the predictors used in risk equalisation. Bringing in information on medical conditions for PHI consumers would likely improve the overall effectiveness of the system.

A diagnosis related groups (DRG) system as used in Australia could be an example to follow. The DRG system would involve claims data being classified using the International Statistical Classification of Diseases (ICD-10) and coding for the procedure carried out. In Australia there is a central agency that performs the ‘coding’ on behalf of the hospitals, and the coded hospital data is shared with the insurers. There is a statutory requirement on private hospitals to provide the coded data to insurers. There is also a data protection system in place to safeguard the information. The extra information in the DRG data is then used in setting contributions and credits in the risk equalisation system.

There would be practical issues and costs involved if such a system were adopted in Ireland. Some examples would be the need for a legal basis for the coding to have to occur for private hospitals, the set-up and running costs of the coding arrangement and the need to explain the reason for the arrangement and how member data is protected. A significant lead-in time would also be needed to collect enough data to be credible for use in a risk equalisation system.

²² The term ‘risk equalisation’ is used in a strict sense in this section for the tool as defined. Elsewhere in the document it is used generically to refer to the overall system (with can use multiple tools).

3.5.4 The Future of the Irish Risk Equalisation Scheme

Each five years the Irish government seeks approval from the EU commission for continuation of the Risk Equalisation Scheme (RES) for another five years. The last approval covered the scheme for years 2016-2020. In intervening years calibration changes to the RES are made.

The EU commission approval protects the Irish government against legal dispute, in particular, the risk of health insurers challenging the legal basis of the RES in Irish and EU courts. This occurred when the scheme was first introduced.

The approval process falls under state aid rules for the internal market. The RES involves money being transferred between insurers in the market (as explained earlier) which could be seen as distorting competition. Resources of the state are involved as there is an implicit guarantee by the government to fund credits even if contributions are insufficient. Also one of the insurers, VHI, is state owned.

In 2016 the EU commission judged that Irish PHI qualified as a service of general economic interest. This means broadly that PHI fulfils a special healthcare role in Ireland. After consideration of the PHI market and its regulatory structure, the EU commission²³ deemed the RES allowable in the EU until 2020, with some conditions attaching.

Extension Beyond 2020

The Irish Government will need to seek approval with the EU commission for the RES to continue for 2021-2025. This new iteration of the RES will likely build on the current scheme but with some refinements to improve the overall effectiveness of the operation.

The approval process would involve discussions between the EU commission and the Irish Government, principally the Department of Health. The health insurers in the market can also give their views to the EU commission. The HIA would not be involved in the decision making but its role as the independent regulator in the market would be a consideration in assessing the effectiveness of the system.

Perceived weaknesses in the current system could be addressed by improvements to the system and some of these changes may be demanded by the EU commission.

Designing and maintaining an effective risk equalisation system is a difficult task and it may always be a work-in-progress. It is not clear what the EU commission will consider in changes to the RES but some possible issues are mentioned below.

Possible Changes

Introduction of a health status item as a risk adjustor for credits, on top of age/gender/type of cover, to improve the connection between lives covered and claim costs. This would be thought to make the system more risk sensitive as it would involve medical information, not just age, which should correlate better with morbidity.

²³ See https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_41702

Improved risk sharing in the scheme, especially for high cost claims. This would tend to improve the ‘goodness of fit’ of the scheme (as mentioned in the SAI seminar section earlier). A High Cost Claimants Pool (HCCP) as used in Australia may be an example to follow.

Revision to the age ranges covered by premium credits. Currently all lives pay a premium contribution but only lives aged 65 and over get a premium credit. Extending credits to lives aged 60-64 may help equalise risks more and discourage insurers from attempting to avoid this cohort.

Consider relating the premium contribution (stamp duty) to the premium amount. Currently rates are set based on age and type of cover, but after that a high premium policy and a lower premium policy will both fund the same contribution to the RES. Though the policies will have different levels of cover. Implications on premium levels for different cohorts may need to be assessed too.

Changes on product regulation could occur: (1) the definition of minimum benefits to be covered by PHI could be reviewed, as it has not been updated in many years. Revising the basket of benefits could help improve the quality of products being offered to consumers (2) a reduction in the number of products available for sale in the market. This would simplify the landscape for consumers and restrict the ability of insurers to target certain cohorts using tailored offerings. The 2018 HIA Annual report stated that over 300 plans existed in the market at End 2018 and that over 1,000 plan revisions occurred during 2018. These market practices could be indicative of insurers trying to target certain groups.

Revision of the over-compensation test. This is a feature of the system to prevent any insurer making excess profits over a 3-year period from risk equalisation transfers. The current test defines a particular profit metric and a ‘reasonable profit’ figure. These features may be revised. Also greater transparency may be brought on the outcome of the test, though there would be commercial sensitivity issues to be balanced.

3.5.5 Conclusion of the Healthcare Section

As described in the earlier sections, the next few years could see significant policy decisions being made with long term implications on the health system and the PHI market. Indeed, health was a topical issue with the public and political parties during the February 2020 general election. The future looks set to be interesting for healthcare actuaries, whether working in industry or advising state organisations.

4. Pensions and Investment

Please note that the details here were as at the time of writing in February 2020. Some of the actions or dates mentioned may have changed in the intervening period.

4.1 Introduction and Market Update

Pension provision has become the unexpected issue of the February 2020 general election campaign in Ireland. Longstanding plans to increase the state pension age have dominated the debate highlighting concerns and challenges facing the private sector workforce. The Pensions and Investment section of the paper will cover some of the recent government policy updates on private pension provision along with a market update on the investment landscape for pension assets.

We also discuss fiduciary management and related investment overlays that are available to pension schemes to help them implement their investment strategy, and outline issues for pension Trustees to consider in the assessment of tools.

4.1.1 Market Update (Pension Policy and Design)

Since the last Current Topics Paper was completed in 2018, there have been a number of developments in matters relating to Pensions. In the sections below we provide a market description and bring the reader up-to-date from where the last paper finished.

Market Statistics

The CSO compiled estimates of all Irish Pension Liabilities as at 2015, and it showed total accrued liabilities of €436.3bn which would equate to 167% of Irish GDP in 2015. A further breakdown is given in the table below:

| Funded Schemes | | Unfunded Schemes | |
|----------------------|---------|-------------------------|----------|
| Defined Contribution | €32.2bn | Public Service Pensions | €114.5bn |
| Defined Benefit | €58.6bn | State Pension | €231.0bn |
| Funded Schemes Total | €90.8bn | Unfunded Schemes Total | €345.5bn |

The funded schemes, for private sector workers, amounted to over €90bn of liabilities. It was split 65% Defined Benefit (DB) and 35% Defined Contribution (DC) which reflects the historical popularity of DB schemes with DC being the dominant pension type over the previous 15 years. Broadly, the liability figures can be taken as a proxy for the associated asset values.

More recent figures for the DB schemes show

| Number of Schemes | Assets | Liabilities |
|-------------------|---------|-------------|
| 582 | €65.6bn | €58.2bn |

based on 2018 data from the Pensions Authority.

These schemes would account for 105,526 active members, with a similar number of pensioner members and 420,337 deferred members who have left service of the employer.

It has been commented that there is a large number of quite small asset sized schemes within the 582 total with very few (<10) with assets over €1bn.

Comparable statistics with asset values are not published for DC schemes. But at end 2018 there were 72,096 DC schemes covering 351,657 active members. Here there were 63,001 schemes of 1 person only and just 43 schemes which each had over 1,000 members.

IORP II Directive

As detailed in last time's paper, the EU IORP II directive aims to bring a higher standard of governance, systems of control and member protection to pension schemes. It is also likely to expand the remit of the Pensions Authority.

The IORP II directive was due to be transposed into Irish Law in January 2019, however this implementation was delayed. Work is said to be at an advanced stage in the Department of Employment Affairs and Social Protection and implementation is expected later in 2020, although no firm date has been given.

The directive contains a provision that allows Member States to apply a derogation to small schemes, (essentially meaning that the full extent of the directive would not apply to small schemes). However, the government has indicated that it does not intend to apply this derogation on the basis that it is not in line with the objective of improving the governance standard of pension arrangements for all citizens. The Minister for Employment Affairs and Social Protection has stated that "while the Directive provides for the possibility of derogation from specific Articles for smaller schemes, I believe that members of smaller schemes should get the same protections and oversight as members of large schemes. Money saved for pension purposes should be properly protected to ensure that people have adequate income for their retirement years"

In some other EU countries exemptions have been made for smaller schemes. There has been some debate in Ireland questioning if the planned implementation of IORP is proportionate, especially for smaller schemes. In particular, the Society of Actuaries in Ireland (SAI) issued a press release²⁴ on the matter. It urged some caution on applying the full requirements to small schemes immediately.

The Association of Pension Trustees in Ireland (APTI) made an application to the High Court in March 2019 which sought various reliefs against the transposition of IORP II into Irish Law for single member pension schemes. APTI are concerned about the impact that the directive would have on single member schemes, in particular, the investment restrictions and considerations imposed by Article 19 of the directive. Court proceedings commenced in October 2019 but were adjourned to allow the Minister to consider further. It appears that the path is open for the Minister to enact IORP II into Irish law now. But legal challenge could possibly occur after enactment.

Social Welfare, Pensions and Civil Registration Bill 2017

As explained in the last current topics paper, this bill proposes to give more power to Trustees to demand contributions in a wind-up or funding proposal situation. It would place more obligations on

²⁴ <https://web.actuaries.ie/news/19/08/new-pension-directive>

Employers. It would also give additional powers to the Pensions Authority to direct a funding agreement on the employer which would then be a debt.

The bill could be viewed as bringing regulations somewhat in line with the UK system which has existed for several years. But some Irish business groups would be of the view that the change would “destabilise the future efforts of many employers and trustees to support and deliver on the pension promise made to scheme members” (IBEC, May 2019).

The bill was first published in May 2017 but was still at committee stage when the Dáil was dissolved in February 2020. It will be for the incoming government to decide if, and how, to proceed.

Product Innovation Debate in Pensions

There has been recent commentary on the design and structure of pension schemes and products. Some of this relates to how benefits can be taken at / after retirement and a number of the issues were covered in the SAI ‘ARF vs Annuity’ debate²⁵ a number of years ago. It is also related to the low interest rate environment which make annuities relatively expensive to provide and seemingly expensive to purchase.

Tontines

Former Pension Scheme Actuary and current actuarial lecturer Finbarr Kiely has explored a type of tontine²⁶ overlay to an ARF (or pension drawdown product) which would provide some longevity pooling for members for their given individual fund value. It would help members alleviate somewhat the risk of living longer than expected by providing an enhanced income through a longevity credits arrangement.

Group Pension Drawdown schemes

Past president of the SAI Colm Fagan has proposed a continuation of a group DC²⁷ pension scheme for retired members which would pool investment and mortality risks. It could provide higher expected investment returns for members by taking advantage of the equity risk premium. But it would change the investment risk for members by investing more adventurously than is observed by looking at existing ARF investments that are mostly cash based. A smoothing of asset returns could be employed to protect the fund but this would involve restrictions on members’ contributions and withdrawals.

A longevity pooling arrangement could also apply in the fund but this would involve members giving up income and possibly capital for the protection. Successful implementation of this proposed product would likely require significant scale e.g. large retiree populations or groupings of schemes, to encourage high take-up of the solidarity mechanisms for investment and mortality risk.

²⁵ <https://web.actuaries.ie/events/2014/04/sai-agm-followed-evening-meeting-annuity-vs-arf-approved-retirement-fund-big>

²⁶ <https://web.actuaries.ie/events/2018/12/tontines-dc-pension-drawdown>

²⁷ <https://web.actuaries.ie/events/2017/11/new-approach-drawdown-group-dc-pensions>

Group DC schemes

President of the SAI Sean Casey²⁸ has suggested that actuaries should use their knowledge of behavioural economics in designing group pension schemes. Examples would be the use of auto enrolment policies to ‘nudge’ people to join schemes, setting the default contribution rate to be relatively high and arranging members to agree in advance to increased contributions to coincide with future pay rises. These techniques would tackle coverage and adequacy issues in group pension schemes.

4.1.2 Market Update (Investments)

Market Update

Both DB and DC pension schemes have benefited from a prolonged period of strong investment returns across all asset categories. Growth oriented investments such as equity and property have experienced a 10+ year Bull Run following the 2008 financial crisis. This, coupled with a significant reduction in yields on debt instruments has driven up the capital value of pension investments.

Strong asset performance is a positive development for pension schemes however the current market environment represents significant challenges going forward. Many market analysts suggest that a prolonged period of strong performance indicates a market correction is looming. De-risking to less volatile, liability matching investments would help reduce the severity of a market crash however the current historically low, and in some cases negative, yields on traditionally secure investment make this a difficult or unviable alternative for the majority of schemes.

Defined Benefit Investments

The closure of the vast majority of Irish pension schemes to new entrants and many more to future accrual over recent decades has led to rapidly maturing DB pension populations. Traditional funding approaches and the introduction of the statutory funding standard reserve in 2016 would suggest that this should have resulted in significant increases to the EU sovereign bond holdings for Irish pension schemes. While statistics published by the Pensions Authority show increased allocations to these bonds, this change has been marginal in reality.

The more evident trend has been for schemes to reduce their equity holdings in favour of other investments. The aggregate allocation of Irish DB funds to equities in 2018 was 28%; in comparison, the allocation was 42% in 2014.

Diversifying Investments

The largest shift in DB investments has been the inclusion of non-traditional ‘other assets’. Multi-Asset Credit; High Yield Debt; Infrastructure; etc. have become a common feature of DB asset portfolios. While the move is expected to reduce the impact of a 2008 type downturn it has also impacted the scope for increasing allocations to bond investments.

²⁸ <https://web.actuaries.ie/news/19/10/sai-presidents-address-2019>

This generally viewed reduction in downside risk is not however reflected in the funding standard reserve calculation. As a result, this can restrict the ability for some Trustees to diversify where sufficient headroom is needed over the longer term.

Liability Driven Investments (LDI) are also gaining traction in the Irish DB market. The characteristics and benefits of LDI were discussed in the 2018 current topics paper. A similar challenge to EU bonds exists for this type of investing, as historically low long term interest rates restrict the availability of LDI for some schemes due to scale / cost issues. (Note the regulatory impact of holding LDI instruments for statutory solvency purposes should be considered.)

EU Bond Yields

Government and corporate bond yields and future inflation expectations have continued to fall towards the end of the decade. Bond yields and inflation expectations in the Euro zone reached record lows in August 2019. For example, Ireland could borrow money for 10 years at a zero rate of interest at that time.

Many Irish defined benefit schemes incorporate a level of “yield reversion” in their funding bases and Funding Proposals (where applicable), that is, they assume that interest rates will be higher in the future resulting in higher future yields and lower future annuity premiums. The current yields on Euro-zone bonds may indicate a reduction or even a removal of the expectation that yields will revert. If this reversion can no longer be assumed or fails to transpire over the long term, additional or alternative funding arrangements may be required.

Prolonged low bond yields can also make transfer options an attractive alternative to DB pension scheme members who have not reached their normal retirement age. (Enhanced transfer values were covered in the 2016 Current Topics Paper.)

Low bond yields also have an impact on the company accounts of some DB scheme sponsors. International Accounting Standards require DB pension liabilities and accrual to be measured by reference to corporate bond yields. In recent years, this has led to a significant increase on the liability held on sponsor’s balance sheets which places increased scrutiny on DB plans, particularly where schemes are open to future accrual.

Defined Contribution Investments

The vast majority of private pension accrual in Ireland has been provided on a DC basis for a number of years. As a result, the capital accumulated in individual retirement accounts has grown significantly making investment growth or decline much more significant in nominal terms.

The array of investment options available to members has increased as the market has developed and similar to the DB market, there is a general trend for diversity across the investment classes. At the same time, the vast majority of members still end up in the scheme’s default investment strategy. There have also been developments in the typical glide paths for DC pension investments with varying retirement ages and the use of ARFs gaining traction. The challenge with setting default investment strategies is whether they should be on a glide path targeting cash (for smaller funds), annuities or ARFs. There are now some sophisticated approaches being used to ‘tailor’ the glidepath

depending on the profile and likely needs of the member; but increasingly there is a move towards ARFs given than annuities have fallen in popularity due to the low yield environment.

Diversifying Investments

Diversified investments provide popular characteristics for DC investors. Where capital has accumulated in retirement accounts but the period to a target retirement age remains significant, Trustees and members may look to reduce downside risk while maintaining the long term return.

This reduction in anticipated return may result in a smoother journey (without peaks and troughs) but can also be coupled with higher investment charges which Trustees and members should be vigilant towards.

Bond Yield Challenges for DC Members

While the regulatory and balance sheet issues associated with low bond yields are not a feature of DC schemes, many of the fundamental challenges are consistent. Low yields result in higher annuity costs which reduce lifetime incomes for members who avail of this option at retirement. This is likely to increase further the use of ARFs as a vehicle to provide retirement provision and the investment time horizon of members.

Low yields on bonds also limit the potential return on DC pension pots. Reduced investment returns will lead to lower retirement benefits which may call into question the adequacy of benefits for younger members. The majority of DC pension schemes were designed in a different interest rate environment and thus the benefit expectations are likely to be adversely impacted if low yields persist.

Potential Market Corrections

Prolonged periods of market growth can often be followed with significant corrections. One potential signal of a downturn emerged during 2018 through the US Government bond curve inverting for the first time since 2007. The yield curve has inverted before every U.S. recession since 1955, suggesting that bond markets have served as a good investor signal that an economic downturn is on the horizon. Arguably, equity markets have had weaker signalling power historically, tending more to react to events as they materialise.

An “inverted yield curve” is an investment market phenomenon where the interest rates (or “yield”) paid on short-term bonds is higher than the yield paid on long-term bonds. This occurred again for US Government bonds in August 2019 when the yield on 2 year bonds was higher than the yield on 10-year bonds.

Many investors view an inverted yield curve as a signal of a weakening economy and an elevated risk of a recession. A recession typically results in falls in stock markets and other growth assets as well as increased defaults on corporate bonds and other credit assets.

However, the link between an inverted yield curve and a recession is not a causal relationship. While an inverted yield curve has preceded recent recessions, the time lag between the emergence of the inverted yield curve and the commencement of the recession has varied significantly and there can often be a 18 month plus gap between the curve inverting and an economic downturn.

Many economists and market commentators are also wondering if “this time is different” and if the recent inversion may not be a sign of an impending recession. Inverted yield curves may have lost their predictive powers given the large scale intervention of central banks in government bond markets to push down interest rates, often referred to as “quantitative easing”, since the global financial crisis in 2008.

What Action Can be Taken?

Market corrections or future bond yields cannot be controlled or predicted to any great degree of accuracy. That being said, there are steps that sponsors and trustees could consider either to help them understand, prepare for and/or mitigate the potential impact of either prolonged negative yields or even a recession. Scenario analysis can serve as a very useful tool to understand the potential impact of a recession on the scheme’s financial position, and to help in risk mitigation planning.

Schemes Could Consider

Increasing allocation to Euro zone Government bonds: Traditional funding approaches and the funding standard reserve would suggest that schemes move to matching assets (bonds and cash). However, in today’s low yield environment, this may not be affordable, practical or pragmatic for many schemes. Additional contributions may be required to fund this approach.

Broadening the definition of defensive assets: Consideration of other low volatility investments would serve to reduce the investment risk while maintaining some level of yield.

Improving the diversification of growth assets: A large number of pension plans have taken steps to reduce their exposure to stock markets. These steps may adversely impact the anticipated investment return; however this may be outweighed by a reduction in the potential severity of a downturn.

Contingent Assets (DB only): The use of a contingent asset to meet short term funding standard deficits can protect against the need for holding additional or matching capital to meet funding standard reserve requirements.

Developing a strategic cash flow management plan (DB only): Pension schemes must generate cash from their assets to pay member benefits. To reduce the risk of becoming a forced seller of growth assets during a temporary downturn, schemes can consider constructing a liquid defensive asset reserve. The scheme can meet its cash flow requirements from this reserve, so long as it lasts, thereby avoiding the need to sell growth assets at depressed levels and allowing time for a potential market recovery.

Implementing an equity protection strategy (DB only): Larger schemes can use derivative contracts such as put options to limit the downside risk of large falls in their growth assets while continuing to participate in market upside.

4.2 Pensions Public Policy

Pensions Roadmap

In February 2018, the Government published its ‘Roadmap for Pension Reform 2018 – 2023’. The key goals of the Roadmap are to “create a fairer and simpler contributory pension system where a person’s pension outcome reflects their social insurance contributions, and in parallel, create a new and necessary culture of personal retirement saving in Ireland, whilst keeping the State Pension as the bedrock of the Irish pension system.”

Strand 1 – Reform of the State Pension

There are three main objectives of Pillar 1 (the State pension) in the Irish Pension System – to protect against poverty (at a minimum), to ensure sustainable financing, and to ensure equity between current and future pensioners. To meet these objectives, the Government has proposed a number of reforms to the current State Pension.

The first of these reforms is to set a formal benchmark for the State Pension of 34% of average earnings (the current level of State pension satisfies this target). In order to maintain this benchmark in the future, there is a further proposal to link future State Pension Contributory increases to changes in CPI and average wage levels. These proposals were due for Q3 2018, although they are yet to be finalised.

It is not clear how future indexing will be linked to both average earnings and CPI, although it may be that a system such as the one in the UK will be considered where the State Pension increases at the greater of the two measures. Linking the State Pension to increases in earnings will allow standards of living to be maintained for those who rely on the State Pension; however, it also has a significant impact on the cost as seen in the Actuarial Review of the Social Insurance Fund²⁹ 2015 (carried out by KPMG). The proposed future indexation supports the objective of protecting against poverty, but it may be at odds with the objective of ensuring sustainable funding.

Note the proposal to formally link the pension increase amount to an inflation measure could be seen as a way to take politics out of the decision. Currently increases are decided yearly through the government budgetary process. Though, perhaps it could be interpreted as the minimum increase required with the government retaining the power to grant higher increases. A further point would be that formal inflation linking of the state pension may bring focus on the relative value of other social welfare payments, e.g. unemployment benefit. An extension could be policies to improve, maintain or change the equity and fairness between different social welfare recipients.

The State Pension faces significant funding challenges in the future. The State Pension is funded on a Pay As You Go basis. Currently there are about 4.9 people working for every pensioner – this is expected to reduce to 2.3 people working to every pensioner over the next 40 years.

There is a proposal to introduce a Total Contributions Approach (“TCA”) to make the rate of State pension received directly proportional to the number of social insurance contributions made, while removing anomalies in the current systems for workers who have taken career breaks for caring

²⁹ <https://www.gov.ie/en/press-release/bc2427-minister-doherty-welcomes-publication-of-the-actuarial-review-of-the/?referrer=https://www.welfare.ie/en/downloads/actrev311215.pdf>

duties. Legislation was due for Q1 2019 to implement TCA by Q3 2020. This 2019 legislation has not been progressed significantly but the impact on the implementation date is not clear.

Also addressing the sustainability issue, the State Pension age has been increased to age 66 in 2014, with further increases to 67 and 68 due in 2021 and 2028 respectively. The government have stated that there will be no further increases to the State pension age prior to 2035. Changes after this point will be linked to increases in life expectancy with a review due in 2022, and future reviews taking place every 5 years thereafter. There will be a 13 year lead in period for any future increases to the State pension age. At the time of writing, the State Pension Age has become a topical election issue in the February 2020 general election. There has been suggestion of stopping the increases at age 66 (or potentially reducing the age back to 65). This issue is discussed further in the section on strand 6.

Regarding future funding, the Government has proposed to move to a system where social insurance contributions are funded on an actuarial basis with annual reviews. A working group was established by the Minister for Finance to present options for the amalgamation of USC and PRSI and to publish a consultation paper on an appropriate funding approach.

Supplementary Pensions (Strands 2 - 6)

Ireland has 1% of the EU population but over 50% of the EU's pension schemes. (A large reason for this is because Ireland classifies single person arrangements, written under trust, as a pension scheme. Whereas they would be treated as individual or non-group arrangements in other countries.) Practically 100% of public sector workers have a supplementary pension. However only 35% of the private sector workforce has supplementary cover.

The Roadmap notes three key challenges faces supplementary pension schemes:

1. The low level of coverage;
2. The disproportionately high number of schemes, which it says leads to increased administration costs thereby reducing the value of pension funds;
3. Increasing longevity and the continuing low interest rate environment, which may undermine the sustainability of defined benefit schemes.

The Roadmap suggests some potential solutions to these key challenges:

1. An Automatic Enrolment system to improve the coverage level;
2. Reform and simplify existing pension structures to reduce administration costs and improve governance;
3. Legislate for measures to support defined benefit scheme sustainability.

Strand 2 – Building Retirement Readiness: A New Automatic Enrolment Savings System

The Government plans to introduce an automatic enrolment ("AE") system by 2022. A Strawman proposal was released in August 2018 and this formed the basis of a national consultation process, which concluded in March 2019.

Many aspects of the design have now been confirmed or confirmed in principle, with a few aspects yet to be decided. These design features were published in a progress report by the Minister for Employment Affairs and Social Protection in October 2019 and are as follows:

Confirmed

- The system will begin by 2022 and will coexist with private pension provision
- AE will be a Defined Contribution (“DC”) model
- Members will retain the right to opt out (though some restrictions will apply)
- Members will have the option to choose from a specified range of retirement savings products
- Employees, Employers and the State will all contribute to the Member’s account (the exact form of the state contribution is undecided)

Confirmed in principle

- Current and new employees aged between 23 and 60 earning more than €20,000 per annum (across all employments) will be automatically enrolled. Those outside of these criteria may opt in.
- Employees currently in a pension scheme / contract, which meets the prescribed minimum standards, will not be required to be automatically enrolled for that employment.
- There will be no waiting period for joining.
- Initial employee contributions will be 1.5% of qualifying earnings per annum, increasing by 1.5% every three years to a maximum of 6%.
- Employers will be required to make matching (tax deductible) contributions, but will be limited to qualifying earnings of threshold of €75,000 (which will be reviewed over time)
- Membership (and contributions) will be compulsory for 6 months at which point there will be an opt-out window of 2 months, where members will receive a refund of their personal contributions. Further 2-month opt-out windows will be available 6 months after each increase in the contribution rates, i.e. in the middle of years four, seven and ten.
- A limited number of “Saving Suspension periods” will also be available for the temporary ceasing of contributions (including Employer and State contributions).
- Members will be automatically re-enrolled every 3 years, where the above opt out options will again be available after 6 months.
- Early access may be provided on the grounds of ill health and enforced workplace retirement.
- A Central Processing Authority (“CPA”) will be established by the State and will be responsible for sourcing, on a competitive basis via an open tender, a limited number of Registered Providers to provide a defined suite of retirement savings options.
- The CPA will establish minimum standards for service delivery and product features required of all providers, e.g., the number of investment fund options for members, service response times, etc.
- Employees will be automatically enrolled with the Central Processing Authority by their employer on commencement of employment.
- Employees (rather than employers) will be responsible for selecting a provider and a savings fund option. In the absence of any savings decision, the enrolled employee will be automatically allocated to the default fund of one of the Registered Providers on a carousel basis.
- The initial contract period for service delivery by AE Register Providers will operate for a period of ten years.
- The CPA will seek to set annual administrative, management and investment charges of no more than 0.5% of assets under management. The charges cap will apply to all providers.

- Member account portability between employments will be facilitated by a ‘pot-follows-member’ approach.
- Each Registered Provider will be obliged to offer a similar range of ‘standard choice’ savings fund options including a default fund.
- These products may incorporate a ‘lifestyle’ or ‘target date fund’ investment approach and will be defined by reference to risk profile.

The aspects of design that are still under consideration are:

- The scope and role of the CPA – this area has been prioritised and proposals were due before the Government by the end of 2019
- The nature and functions of the Registered Providers – proposals due in Q1 2020.
- The investment framework and the funds to be offered (including the default) – proposals due in Q1 2020
- The decumulation or pay-out phase – proposals due in Q1 2020
- The State financial incentive – proposals due in Q1 2020. The Strawman proposal gave an illustration of a State matching contribution but the issue of how this incentive would interact with the current marginal rate tax relief was a key issue in the consultation process.
- Phased introduction – it is likely that the AE introduction in 2022 will follow approaches taken by other countries where larger companies adopted first, followed by smaller companies etc., or by limiting investment options in early years and expanding later, or restricting transfers in for a number of years. These options are currently being considered and will be finalised before legislation is published.

Strand 3 – Improving Governance and Regulation

As mentioned previously, Ireland has a disproportionately large number of (small) pension schemes. The government believes this impacts the standards of the governance, the professional fees incurred, as well as schemes not benefitting from economies of scale. These issues are likely to lead to worse outcomes for members.

The solutions, as recommended by the 2016 Pensions Authority’s consultation paper on pension reform, and the Citizen’s Assembly on the future of pension provision in Ireland, are:

- Revised regulatory framework with higher governance standards.
- Empowering the regulator to take a prospective, risk-based approach to supervision, intervention, and enforcement.
- Rationalising the number of different types of pension vehicles in Ireland.
- Reducing the large number of pension schemes in operation, in favour of larger multi-employer arrangements or pension contracts.

In addition to the IORP II directive (which will make progress towards many of the proposals above), the Government have proposed to introduce additional regulatory powers and requirements, such as:

- A new authorisation process overseen by the Pensions Authority requiring trustees to demonstrate compliance with new fitness and probity and governance requirements.
- A personal fitness and probity benchmark requirement for trustees.
- Professional standards and CPD requirements for trustees.

- Trustee boards must be composed of at least two trustees with a requirement for at least one trustee to have a trustee qualification and at least one trustee to have 2 years' experience acting in a trustee role.
- Power for the Pensions Authority to remove a trustee deemed unfit.
- New governance codes and standards to be published by the Pensions Authority.
- DEASP to identify further powers / measures to enable the Pensions Authority to take any necessary pre-emptive actions.

An Interdepartmental Pensions Reform and Taxation Group has been established to lead a set of actions to:

- Identify and progress measures to remove anomalies in the treatment of different retirement arrangements (including taxation treatment) and develop recommendations on options available to rationalise the number of individual pension vehicles that currently exist.
- Review costs of funded supplementary pensions to the exchequer including an assessment of the economic and social benefits delivered and an evaluation of equity in the distribution of tax expenditure on pensions.

In addition, this Group will consider if the arrangements in respect of ARFs can be improved. It has previously been noted by the Pensions Authority that there is a lack of regulation at the point where a consumer chooses a drawdown product, as their sale is not currently regulated as a pension product. Separately, the Pensions Council³⁰ has identified a wide variation in charges associated with ARF products. The Group will undertake a broad review of the ARF option and consider whether regulatory oversight of this product is fit for purpose. This review will include a review of ARF criteria set out in tax legislation, identifying measures to address the information gap between providers and consumers, and the potential to facilitate group ARF products.

Strand 4 – Measures to Support the Operation of Defined Benefit Pension Schemes

The number of defined benefit schemes in Ireland has continued to fall in recent years, although there are still approximately 470,000 active members expecting to receive pensions from a defined benefit scheme - 75% of whom are in the public sector.

Considering funded defined benefit schemes (which are predominately in the private sector) 15% of defined benefit schemes do not meet the regulatory Funding Standard according to recent data returns³¹. Almost all of these have however agreed a Funding Proposal designed to restore the scheme to full regulatory funding over a defined period.

The Government's objectives in relation to defined benefit pension scheme policy is to help employers and trustees maintain the sustainability of schemes while safeguarding the delivery of promised benefits and limiting the number of scheme closures. To help with these stated objectives, the Government has committed to advancing the provision of the Social Welfare, Pensions and Civil

³⁰ The Pensions Council is a state consumer advocacy group that advises the Minister on matters relating to policy on pensions, see <https://www.pensionscouncil.ie/en/News/The-Pensions-Council-has-published-a-report-on-Approved-Retirement-Fund-ARF-charges.html>

³¹ https://www.pensionsauthority.ie/en/news_press/news_press_archive/the_pensions_authority_publishes_a_set_of_statistics_for_defined_benefit_db_schemes.html

Registrations Bill 2017 and implement measures to respond to ongoing difficulties in defined benefit schemes and provide for improved levels of protection for scheme members and beneficiaries.

The general scheme of the Social Welfare, Pensions and Civil Registrations Bill 2017 as originally proposed were:

- To shorten the period for submission of Actuarial Funding Certificates and Funding Proposals from 9 months of effective date to 6 months of the effective date.
- To include a 12-month notice period for employers wishing to cease contributions to a scheme, during which time a Funding Proposal may be agreed for schemes that do not meet the Funding Standard.
- To give the Pensions Authority the power to impose a Schedule of Contributions on employers in certain circumstances where a Funding Proposal is required, but has not been agreed or submitted. The contributions would be deemed as a debt on the employer.

As mentioned in the introductory section this bill has not been enacted yet.

The Government has also committed to identifying and investigating other measures to support these objectives, which may include:

- More frequent provision of information to the Pensions Authority to allow closer monitoring.
- Requiring employer to provide more information to trustees to better plan for future viability of the scheme.
- Providing for early notification to the Pensions Authority of any scheme difficulties or changes that may affect the scheme.
- Giving increased power to the Pensions Authority to direct schemes and employers to develop sustainable proposals.

The Government has also stated that it will arrange for further consultation with sectoral representatives to identify and appropriate and sustainable Funding Standard reform options. One area in particular where the Society has expressed concerns is on the valuing of pensioner liabilities under the Funding Standard, which are required to be valued assuming that annuities are purchased for these members. Scheme Actuaries are required to estimate this annuity purchase cost. But these estimates for a valuation purpose can over-state the costs which would be charged by insurers in a competitive exercise. Another area is the ability for LDI instruments to be allowed for in the funding standard reserve³².

Strand 5 – Public Service Pensions Reform

The Roadmap noted that Ireland has already undergone significant reforms in the area of public service pensions over the last number of years, including more recently, the introduction of the Single Scheme and linking the Single Scheme's minimum retirement age to the State Pension age. In order to continue to improve the sustainability of public service pension arrangements, and to

³²A recent clarification from the Pensions Authority on this is below

https://www.pensionsauthority.ie/en/Trustees_Registered_Administrators/FAQs/FAQs_on_the_Funding_Standard_Reserve.pdf

provide greater flexibility in retirement to public servants, the Government will implement further two changes.

The first change will be to introduce legislation to increase the compulsory retirement age to 70 for public servants hired before 1 April 2004. Compulsory retirement remains at age 65 for these members at present, although interim arrangements are in place to allow them to retire and be re-hired until they reach State Pension age.

The second change was to convert the Pension Related Deduction, introduced in March 2009 as part of the Financial Emergency legislation, into a permanent Additional Superannuation Contribution. This change was introduced with effect from 1 January 2019.

Strand 6 – Supporting Fuller Working Lives

In recent years, as a result of people living longer healthier lives, many people are choosing to work beyond the “normal” retirement age. The Government has committed to supporting those who wish to continue working past their current normal retirement age. The Government have proposed steps to provide this support.

The Government will seek to allow the deferral of the State Pension until actual retirement age. An actuarial uplift would then be applied to the State Pension to reflect the later payment date. Furthermore, the Government will consider allowing those without a full Social Insurance contribution record to continue contributing until their actual retirement date in order to increase their contribution record.

There is currently no default retirement age in Ireland. Instead, retirement ages are agreed between employers and employees in their contracts of employment. The Equality (Miscellaneous Provisions) Act 2015 confirmed that in setting any mandatory retirement age it must be objectively and reasonably justified by a legitimate aim.

Given the complex issues involved, many employers and representatives have indicated that it is difficult to engage on this topic in the absence of an overarching guidance or framework. To this end, the Workplace Relations Commission have published a Code of Practice around the issue of longer working lives. The Irish Human Rights Equality Commission subsequently published guidance for employers on the use of fixed term contracts beyond normal retirement ages.

The Government has stated that it will convene an Interdepartmental Group to review mandatory retirement practices to ensure increasing flexibility is evident, and if this is not the case, it will consider the merits of restricting the capacity to use mandatory retirement provisions relative to the State Pension age.

Presently, various tax and pension legislation imposes different retirement ages on different retirement arrangements, for example, an occupational pension scheme generally must have a normal retirement age between 60 and 70, whereas a PRSA can be accessed between age 60 and 75, and a buy-out bond can normally be accessed between 50 and 70. The Interdepartmental Pension Reform and Taxation Group are to review legislation with a view to standardising the upper age limit of the various retirement arrangements.

Conversely, not all people will want to work for longer, or be physically able to do so (especially for manual work). In this regard, increasing the state pension age will cause problems for some. It has been observed that some people ‘retire’ at their originally planned age and seek Jobseekers’ Benefit during the period to the state pension age. This situation has problems as the Jobseekers’ Benefit is designed for those available for work and actively seeking employment, not people simply waiting for the state pension age. Also, the benefit would be at a lower level and is means tested after a certain time. The situation would also be a cost to the state, which increasing the state pension age is attempting to tackle. The SAI³³, and others, have suggested introducing flexibility to the state pension to allow a recipient to draw a reduced state pension early, i.e. a reduced level of state pension but commencing before state pension age.

Published documents and consultations

‘A Roadmap for Pensions Reform 2018 – 2023’³⁴ was launched by the government in March 2018. The SAI published its ‘Initial Views on the Government’s Roadmap for Pensions Reform 2018-2023’³⁵ in June 2018.

In August 2018 the Minister for Employment Affairs and Social Protection launched the Consultation Process³⁶ for an Automatic Enrolment Retirement Savings System. This requested comments on a ‘Strawman’ proposal³⁷ document.

The SAI published its ‘strawman’ response³⁸ in November 2018.

In October 2019 the Minister for Employment Affairs and Social Protection published³⁹ the ‘Summary of progress in the design of an Automatic Enrolment Retirement Savings System for Ireland and next steps’.

Further Comments and Considerations on the Proposed Auto-Enrolment (AE) System

Overall Design of System

*“The policy objective of the AE system, then, is to encourage long term saving amongst **those who may otherwise** suffer an unwanted and significant reduction in living standards at retirement.”*

From ‘Update and next steps’ (October 2019)

In general, the simpler the system the more effective it will be at accumulating funds at retirement for members. It should also mean that it is easier for the membership to understand and help

³³ <https://web.actuaries.ie/news/20/01/society-statement-state-pension-policy>

³⁴ <https://www.gov.ie/en/publication/abdb6f-a-roadmap-for-pensions-reform-2018-2023/>

³⁵ <https://web.actuaries.ie/sites/default/files/story/2018/06/180628%20Initial%20Views%20on%20Pensions%20Roadmap.pdf>

³⁶ <https://www.gov.ie/en/press-release/fbf98c-minister-for-social-protection-launches-the-consultation-process-for/?referrer=https://www.welfare.ie/en/pressoffice/pdf/pr220818.pdf>

³⁷ <https://www.gov.ie/pdf/?file=https://assets.gov.ie/69522/92c139a0d2c247f09c4d4078e7bf30be.pdf#page=1>

³⁸ <https://web.actuaries.ie/sites/default/files/story/2018/11/181104%20Response%20to%20AE%20Strawman%20final%20%28002%29.pdf>

³⁹ <https://www.gov.ie/pdf/?file=https://assets.gov.ie/69534/1a522f0c8c1b42a1bb99abc3ef7ead3e.pdf#page=1>

achieve buy-in for the system. Fewer available options will also mean lower costs from easier administration.

Demands on the member should be kept low. This is sensible if the target market is people who don't have experience of making investment or retirement planning decisions. And where financial advice is not provided or has a cost associated with it. So default choices should be well-designed to achieve the policy objective for the typical member. (This would be the policy idea of Nudges⁴⁰, as popularised by Nobel Prize winning economist Richard Thaler.)

Target Membership

A wider definition will be easier to implement as there will be fewer exclusions to handle. Though employees who don't meet the definition will be allowed to 'opt-in' if they so wish. This alternative way of joining introduces more complexity to the system.

The fixed earnings threshold in the current definition would discriminate against lower earners and part-time workers. There is likely to be a gender impact here as women, on average, would be more affected than men.

Existing members of pension schemes will not be automatically enrolled in the new system. These workers would typically be employees of medium-to-large sized employers. These employers would likely have to change the rules on membership and contributions of their existing occupational pension scheme to avoid completely the AE system. E.g. make entry compulsory when employment begins. In the run-up to AE, pension providers and advisors would likely work with employers to try to get all eligible employees to join the existing occupational pension scheme.

The end result may be that AE is only used in companies and industries that have not traditionally been active in the pensions market. E.g. small-to-medium sized enterprises and/or companies in sectors such as manufacturing, retail and hotels.

An alternative outcome would be a 'dual system' where a company would maintain an occupational pension system and an AE scheme. In which case, a new employee would have to decide which particular scheme to join. This would likely be a complex decision which would require financial advice, especially if different systems of tax relief or financial incentives apply.

Will AE cause an end to occupational pension schemes?

It would seem the proposed AE is aimed at those who have never been in a pension scheme before and those on lower-to-medium salaries. For many employees in occupational schemes it would seem more advantageous for them to stay in (or join) occupational schemes rather than move to AE. Reasons would be higher employer contributions that would be possible (AE only has matching contributions starting at 1.5% while existing employers may contribute more), the ability for employees to contribute more and higher tax relief at the marginal rate (if current system maintained).

⁴⁰ See the book *Nudge: Improving Decisions About Health, Wealth, and Happiness*, by Richard H. Thaler, and Cass R. Sunstein

Will AE change tax relief for occupational schemes?

This is part of a much wider debate. But arguably any reduction in tax relief here would mean reduced pensions adequacy for existing members (lower financial incentive), which would undermine the general government policy of improving adequacy.

Investment Options

Each registered provider will provide a range of fund options including a default fund (for those who elect not to exercise choice).

If AE applies mostly to workers on lower incomes who have not previously made any pension provision, then it is likely most will not choose a fund option and so will end up in the default fund (in absence of obtaining financial advice).

A well-designed default fund would help ensure members accumulate an adequate fund for their needs in retirement. Key components of the fund design would be

- Exposure to a range of asset classes to achieve diversification and reduce investment risk
- Significant exposure to assets expected to achieve real return over the long term
- Regard to environmental, social and governance (ESG) issues.

(from the SAI submission to the ‘AE Strawman’ consultation)

A fund with in-built life styling (i.e. moving from higher risk assets to lower risk assets as the member approaches retirement) would help ensure the fund remains appropriate throughout the term. Arguably this would be the simplest and best solution for the typical member as no attention or decision-making would be required in the working phase of life.

Multiple life style strategies and target date funds exist in Ireland and abroad. AE providers could use variants of these or launch their own suite of age-grouped funds. Alternatively, an AE provider could overlay mechanical rules based on the member’s age onto the default fund. This would be an individualised default fund in effect – but it may be complex and/or expensive to operate.

Setting the default fund using a static and more conservative investment approach (i.e. a low risk fund) would likely result in worse outcomes for members. This occurred with the KiwiSaver default fund in New Zealand. Here, research has shown that many members ‘lost out’ on investment returns as they were inappropriately invested in the conservative default fund.

The Swedish default fund⁴¹ is often quoted in literature as an interesting example, e.g. Nudge by Thaler. This fund is accepted as being well designed as it is well diversified in asset classes and it has high exposure to real assets. It is managed by a government agency using a mixture of active and passive management with out-sourcing to private investment managers.

It is constructed as a mix of a global equity fund and a fixed income fund. It uses a simple life styling based on member age. Up to the age of 55, 100 percent is allocated to the equity fund. From the age of 56 to 75 the allocation is annually rebalanced toward the fixed income fund until reaching an allocation of 2/3 fixed income fund and 1/3 equity fund at the age of 75.

⁴¹ <https://www.ap7.se/english/ap7-sa%CC%8Afa/>

The Swedish fund has lower fees than most commercial alternatives in its market. This was a design feature to help the fund succeed at outset and was achieved by the government subsidising the cost of investment management. The Swedish case had one default fund with numerous commercial fund options too. In the Irish case, each provider will have a different default fund and there will be a maximum fund management charge. It does not appear that the Irish government will be specifically subsidising the providers for investment management services. The multiple providers in the Irish case would likely mean lower economies of scale than in the Swedish fund.

The Swedish fund has used currency hedging as a risk management tool to support its global asset exposures. In more recent times, it has made use of leverage⁴² (or gearing). These techniques would increase investment fund management costs and may justify a higher annual management charge than the 0.5% limit suggested for a well-designed fund. Though arguably leverage is not an appropriate feature of a defined contribution fund, especially for non-professional investors. Leverage may be something to prohibit from default funds for the Irish case.

Roles of CPA and Registered Providers

The larger the role of the CPA in background administration, the more attractive the role of the Registered Providers becomes as less operational work is needed. Though the limit on the annual fund management charge may be a critical issue for providers in considering to tender or not.

The underlying regulatory environment of the AE product is still to be defined. This will have an impact of the types of financial institutions interested in the market. Established players like life insurance companies and pension consultancies would have expertise in pensions. The advantage of these being involved in the market would be that they would be able to offer advice to members approaching retirement and offer post-retirement products too. Alternatively, new players with no history in the Irish pensions market may be interested. These entrants could provide low cost internet-style solutions to members as they save for retirement but they may not be interested in advice or product provision after retirement.

Insurance contract and master trust structures have been mentioned as possible vehicles for the AE system. A single product type with specified standards and regulations would be fair to all providers and simplest for consumers to understand. (Different standards would allow for product innovation but would be more complex for consumers to understand. Arguably this scenario would cause a need for financial advice which would increase costs.)

The structure of the capped management charge would need to be considered – could this be considered a guarantee for an insurance company, with capital to be held because of it?

The data provided by the CPA to a Registered Provider and the rules around a Registered Provider contacting members could be important. The more engagement that can occur between the Registered Provider and the member on the journey to retirement, the more valuable the member is to the Registered Provider.

In the New Zealand case some providers did not enter at the start and instead entered the market years later when the landscape was clear, the scale was bigger and funds were larger. It would seem

⁴² <https://www.nobelprize.org/uploads/2018/01/thaler-lecture.pdf>

this could happen in Ireland given the proposed structure involving a carousal basis for funds and the initial 10 year contract for registered providers.

Decumulation Options

This feature is undecided but it will impact on a number of design points.

Will different or the same options be available at retirement in AE, as in occupational schemes?

It seems that the range of options available would be the same as for other pension arrangements. But as mentioned earlier, the Interdepartmental Pensions Reform and Taxation Group is currently reviewing retirement options for consistency and possible rationalisation.

If a draw down product is the destination of accumulated funds in AE, then it could be a reason to extend the investment horizon beyond retirement age for the savings phase. This could justify a riskier asset mix being followed and would link back to the choice of default fund. For example, this could mean that a long term focussed diversified growth investment mix would be appropriate for most of the savings phase, and there would be less need for lifestyling approaching retirement date. This could simplify the design of the default fund.

Master Trusts

One of the stated objectives of the current strategy of the Pensions Authority is to reduce the number of small schemes in favour of larger multi-employer arrangements in order to achieve economies of scale and to improve scheme governance. One such multi-employer arrangement, which has gained popularity over the last number of years in the UK, is a Master Trust.

A Master Trust is a trust based pension scheme that includes employees from multiple, unconnected employers. A Master Trust has a trustee board, which is responsible for the governance of the Master Trust, and that trustee board is unconnected to any of the employers whose employees are participating in the Master Trust.

Why might the use of Master Trusts increase in the coming years?

Aside from the Pensions Authority desire to move more occupation pension schemes to these kind of arrangements, the increased governance requirements arising out of the implementation of the IORP II Directive will make the running of a standalone pension scheme far more onerous going forward. Employers, particularly those who sponsor smaller defined contribution schemes, may seek to reduce costs by moving to Master Trust arrangements where the increased costs are shared between many employers.

Up to now, Master Trusts in Ireland have not been popular as it can be prohibitively expensive to wind up an occupational pension scheme, which is normally required before a move to a Master Trust arrangement can be facilitated. Legislation is pending which is expected to make this transfer process easier and less costly.

What influences the decision to move to a Master Trust?

Reduced scheme running costs for employers is one aspect that would encourage a move to a Master Trust arrangement. Master Trusts will also be subject to the highest level of regulatory supervision and reporting and as a result are expected to provide “best in class” governance solutions. Master Trusts will also be able to benefit from economies of scale, which may result in lower charges for members, particularly those who were previously in a small occupation pension scheme.

As Master Trusts are a multi-employer arrangement, some employer may be concerned by a loss of control over the scheme, as they will have a reduced ability to influence the scheme. For example, employers may have previously informed investment decision or had input to member communication material such as member booklets.

Master Trusts are seen by many to be the future of defined contribution pension provision and it will be interesting to see their development over the coming years as increased pressure is put on employers and schemes to move to such arrangements.

4.3 Investment Trends for Pension Schemes

4.3.1 Fiduciary Management

What is Fiduciary management?

Fiduciary management can be referred to using various terms such as

- Implemented consulting
- Delegated consulting
- Outsourced CIO (*Chief Investment Officer*)

Although fiduciary management has become more established in the Irish market place in recent years, there is no universal definition for this term. That said it is evident that there are common themes which run through solutions offered by fiduciary managers. In more general terms, it can be viewed as an approach to asset management that involves an asset owner appointing a third party (i.e. the fiduciary manager) to manage their asset portfolio on an integrated basis through a combination of advisory and delegated investment services with a view to achieving the asset owner's overall investment objectives.

In principle, the fiduciary management model can be applied to the investments of any asset owner. In practice, the model is predominantly used in relation to the management of institutional assets. With respect to pension schemes, fiduciary management is essentially a governance system through which trustees delegate the day-to-day investment decision-making and implementation of investment strategy.

How has fiduciary management evolved?

The increasing complexity of asset management is the primary driver for the emergence of fiduciary management as an asset management model. Fiduciary management has greatly evolved in the market place since it was first adopted by the Netherlands in the early twenty first century. Fiduciary management was first developed as a solution to assist Defined Benefit pension schemes to meet

their long-term funding objectives with schemes opting to delegate all aspects of decision making to fiduciary managers. However, trustees are now seeking assistance with specific aspects of their investment portfolios rather than full scheme governance.

It is increasingly gaining popularity as a risk management solution for Defined Contribution schemes also. Fiduciary management is becoming commonplace in the UK pension landscape, with Irish schemes following suit. According to the “KPMG UK Fiduciary Management Survey 2019”, pension fund assets under fiduciary management in the UK stood at £172 billion at 30 June 2019. LCP conducted a similar survey in Ireland and estimated the size of the Irish DB fiduciary market as €10-12 billion as at 30 September 2018 (total DB assets are estimated to be approximately ~€60 billion). The survey noted that the Irish fiduciary management market is relatively small at present but is expected to grow over time as the market develops and more companies begin to offer fiduciary services.

Fiduciary Management Approaches

Traditionally, investment consultants advise pension scheme trustees on their investment strategies and fund managers were responsible for ensuring these strategies were implemented. Fiduciary management has altered the approach with trustees opting for either a “Full” or “Partial” fiduciary approach. The difference between these two approaches is the level of delegation over the schemes assets and the degree to which the implementation of the schemes strategy is transferred to the fiduciary manager.

Under the “Full” approach, the fiduciary manager will advise the trustees on all elements of the investment strategy, from manager selection to strategic asset allocation, and implement this on their behalf. In comparison, under the “Partial” approach, the traditional investment advisory strand is retained with only a subset of the investment portfolio assigned to the fiduciary manager to control with greater discretion.

Fiduciary Management Capabilities

Fiduciary management enables trustees to outsource the day-to-day management of a pension scheme to the fiduciary manager. It is ultimately the trustee’s decision on what part of the investment process they will retain and what part they will delegate to the fiduciary manager.

For example, they can delegate:

- Appointing and terminating investment managers
- Making tactical asset class decisions and deviations based on prevailing market environment
- Portfolio construction exercises to optimise the risk / return efficiency of the portfolio
- Determining and managing the split of growth and matching assets
- Incorporating an asset class de-risking methodology

Under a fiduciary management framework the fiduciary manager will appoint multiple underlying specialist fund managers, which are typically external to the fiduciary manager, on the trustee’s behalf to manage each section of the investment portfolio. The portfolio is usually broken down into different sections and these sections will be appointed to the respective managers, for example equity, fixed income, alternatives.

It is the fiduciary manager's responsibility to supervise the investment managers it selects to manage its client's investments. The fiduciary manager will have the necessary infrastructure in place to monitor the underlying fund manager's performance along with research capabilities to select a variety of managers. The fiduciary manager will usually intervene if a particular manager does not deliver the funds target returns by terminating the manager. They will also decide on the most appropriate form of action if there are reputational issues linked to a certain manager.

Example: In July 2018, the suspension of one of GAM's (a Swiss asset manager) leading absolute return bonds fund portfolio managers, Tim Haywood, sent shock waves to investors who requested redemptions in excess of 10% of the fund's assets (€6.4bn in total assets). An internal investigation of the manager found him in breach of conduct due to serious failure to achieve the standard of care and skill required for his position. His suspension led to the liquidation of the Absolute Return Bond Fund, an exodus of clients and share price collapse. If GAM were appointed to manage investments by a fiduciary manager, the fiduciary manager would be responsible for deciding on how to proceed with the underlying investment manager in the event of such reputational scandal.

Why are Pension Schemes opting to delegate investment management to fiduciary management?

There are a number of reasons for the growing demand for fiduciary management among pension scheme trustees.

Fiduciary management can establish an effective governance framework by introducing the expertise of fiduciary managers to the decision making process. Typically, trustees are less involved in implementing the scheme's investment strategy which reduces the time and resources required to evaluate ideas and managers.

It should be noted that the trustee remains ultimately responsible for the scheme, even when a fiduciary manager is hired. Therefore, they should not be overly reliant on the fiduciary management system for making investment decisions or gain a false sense of security in relation to the management of the scheme.

Smaller schemes in particular, may lack resources in terms of technology and resources to deal with the increasing complexity of investment strategies. Fiduciary management does not translate into a loss of control for Trustees as they work in tandem with the selected manager to set an effective strategy and monitor this over time. Ultimately, it is the trustee's decision on which parts on the investment process they will delegate.

It is important for trustees to consider the overall fee for fiduciary management when considering which part of their investment process to delegate. For example, in addition to a basic service fee trustees may be charged separately for each element of investment management process it delegates along with incurring fees for the external fund managers the fiduciary manager hires. Fees should be set out to trustees prior to entering a contract with a manager to ensure there are no subsequent conflicts.

One attractive benefit of fiduciary management for pension scheme trustees is that it can improve the timeliness of implementation of the scheme's investment strategy. Quicker execution can enable schemes to take advantage of positive market conditions and implement changes to investment managers, for example as soon as an under-performing manager is identified.

Whilst fiduciary management offers many benefits to pension schemes, it also introduces additional conflicts for stakeholders, particularly trustees in terms of scheme governance. Once these conflicts are identified, they can be managed effectively by all stakeholders to ensure the successful outcome of the fiduciary management system.

Fiduciary Management Regulation

In the UK, the Competition and Markets Authority (“CMA”) conducted an extensive market investigation of the supply and acquisition of investment consultancy services and fiduciary management services to and by institutional investors and employers in the UK. The investigation was spurred by the fact that a number of firms in the UK offer both investment consulting advice and fiduciary management services to pension scheme trustees. In such instances, it was unclear to the CMA if clients were carrying out a competitive hiring process.

This investigation began in 2017 and the CMA published a final report on the subject in December 2018, which included the announcement of a range of reform plans to ensure a fairer market. Trustees, fiduciary management firms and investment consultants are now required to submit annual compliance statements to the CMA confirming they are following the reformed rules.

In Ireland, neither the Central Bank nor the Pensions Authority have implemented regulation around investment consultancy and fiduciary management services however it's likely that this may be an area of interest in future as fiduciary management continues to grow in the Irish market place.

4.3.2 Dynamic De-Risking

Background

As detailed in the market update section of this paper, maturing Schemes and traditional funding approaches would have been expected to have higher levels of bond assets for DB pension schemes in Ireland.

Many schemes are implementing frameworks whereby opportunities to de-risk the asset portfolio will be executed. One such solution is a dynamic de-risking framework. Dynamic de-risking has been a feature in some other pension markets such as the UK and the Netherlands.

What is Dynamic De-Risking?

Dynamic de-risking is essentially a risk management framework offered by fiduciary managers for DB pension schemes to assist in achieving their long-term objectives; this is sometimes referred to as the schemes “end-game”. The end-game for a pension scheme is typically either a self-sufficient run off strategy whereby the scheme can fund all pension payments or a buy out with an insurance company or often a combination of the two.

Dynamic de-risking is seen as a journey plan to aid trustees in reversing scheme deficits and meeting their liabilities in the quickest and most efficient way. A dynamic de-risking framework targets a desired outcome within a certain time horizon by setting out a roadmap using funding level triggers. The dynamic de-risking framework is specific to each scheme and constructed to meet the schemes individual objectives. The trigger points define the funding levels at which point the asset portfolio shifts to a more conservative allocation.

As a scheme's funding level reaches these pre-determined triggers, de-risking moves will be implemented at each trigger point to preserve the gain in funding level and reduce funding level volatility by reducing the allocation to "risky" assets in favour of more "secure" assets. The dynamic de-risking solution effectively links the risk of a pension scheme to its funding level. The funding level is essentially dictated by both market interest rates and asset values.

A number of funding level trigger points are put in place; these set out a target growth allocation at each trigger band. Once the scheme reaches the required funding level for the subsequent de-risking trigger, it will de-risk immediately to the target growth allocation at that trigger band. The speed of implementation of the de-risking step will be determined by the sophistication of the fiduciary manager's infrastructure.

The funding level will be constantly monitored, usually on a daily basis, although this may differ based on the selected fiduciary manager's approach to dynamic de-risking. The assets will be based on the most up to date market valuations and liabilities will be measured on an economic basis using the most up to date market swap or bond yield curve. This ensures the calculated funding level is consistent with current market conditions.

It is the responsibility of the fiduciary manager to intervene and propose a potential revision to the de-risking strategy if challenging market conditions prevail over a longer than expected time period.

How to Construct a Glide-Path

Firstly, an assessment will be carried out of the scheme's current position and its long term objectives. This will be used to determine the overall level of de-risking required for the scheme to reach its end-game.

Trigger points will be identified and these will define the funding levels at which point the scheme will implement a de-risking move to reduce the proportion of the portfolio invested in growth assets. Assets are usually classified into two categories; growth or matching. Growth assets will consist of equity, real assets, hedge funds and growth fixed income. In contrast, matching assets will consist of liability-matching bonds, both sovereign and corporate.

The effectiveness of the glide-path will be tested using forward-looking analysis, running deterministic or stochastic projections of future asset and liability positions. These projections will capture the future accrual of benefits and the future employer / employee contributions and will incorporate a variety of market conditions that affect both the assets and liabilities such as inflation, deferred revaluation, salary and pension increases. The liabilities will be measured on an economic basis using either a market swap or bond yield curve at the date of the analysis, which will help to generate more realistic outcomes.

The distribution of possible outcomes will be analysed to determine if the glide-path is appropriate for the scheme. If not appropriate, the trigger points will be revised to enhance the glide-path's probability of success.

Benefits for Trustees

Dynamic de-risking enables schemes to react quickly to changes in market conditions and capture opportunities to de-risk. This removes the need to wait for approval to implement de-risking steps. If there is a time-lag between the positive market conditions occurring and the implementation of the de-risking step, market conditions may reverse and it may no longer be opportune for the scheme to de-risk.

By reducing the level of investment risk over time in line with the schemes funding level, dynamic de-risking can reduce the need to source additional contributions from the sponsor.

A dynamic de-risking framework can be derived such that it works alongside a schemes Funding Proposal to ensure the scheme remains on track to meet the funding standard liabilities and risk reserve by the specified completion date.

Considerations for Trustees

Whilst de-risking dynamically can improve a scheme's funding level in the short-term, long-term features of the scheme should also be considered such as longevity. A market based funding level does not capture how longevity will change over time.

It is important to note that dynamic de-risking does not mitigate all risks. Actual market conditions may differ from those assumed in the forward-looking projections which may hinder the probability of success of a particular glide-path. Therefore, it is important that trustees are fully informed and educated on the concept of this solution.

Trustees should be aware that de-risking can negatively impact investment return as it acts to reduce the growth asset allocation whilst simultaneously increases the exposure to more secure assets. The higher allocation to secure assets will act to preserve capital in stressed market conditions.

4.3.3 Other Investment Themes

Public vs. Private Assets

There are a number of business model differences between public and private market companies. Public companies usually have higher capital requirements with larger investor base. Growth of public companies tends to be slow and stable and investments can be managed both actively and passively. In contrast, private markets usually require less capital with fewer, larger investors. Growth for private market companies is usually more rapid. There can however be liquidity risk attached to private market investments, thus offering investors higher expected returns to compensate for the potential illiquidity of these investments.

The demand for public and private market investments has changed significantly over the last number of years with a marked shift in capital allocation towards private companies. This trend is driven by a number of factors such as a changing regulatory environment, major advances in technology and the alternative sourcing of finance.

The increased listing standards, corporate disclosure requirements and governance practices for public corporations have resulted in many companies viewing public markets as excessively onerous. This greater level of disclosure has also translated into higher costs of securing and maintaining a public listing, thus making public markets less attractive for companies.

The market power of entrepreneurs in accessing capital for their start-up businesses has increased in today's world, mainly due to deeper private markets. This is to the extent that it is possible for many start-ups to avoid public market financing entirely. Private debt providers are offering direct financing to privately owned companies, in place of traditional bank financing, with increasing frequency. Given that businesses can raise more money than ever before privately, many companies are staying private for longer.

A major consequence of these factors is that there are a diminished number of new small capitalisation public companies and therefore, limited options for public market investors to access growth opportunities. Given the shift towards private markets, public market investors do not necessarily have access to the types of investments they did historically. Listed corporations increasingly represent more mature, slower growing companies which poses challenges for expected returns. In contrast, private corporations tend to foster innovation and new ideas. As a result, investors are opting to exit public markets in favour of private investment.

Private Market Investments

Private market assets have developed rapidly over the last 20 years with private equity funds commanding the bulk of assets under management. The need for return, income and diversification has brought private assets to their current prominence. To target these goals effectively, investors have moved to a broader perspective that compares private assets on the basis of their risk-return and cash flow characteristics. Private markets now play a key role in institutional portfolios and as vital sources of equity and debt financing for companies, real estate and infrastructure.

Investors and company management are shifting their attention to non-financial considerations, including corporate and environment sustainability with ESG principles becoming an integral part of private market offerings. The desire to embrace sustainability has led to an increased number of private companies coming to the market, dedicated to addressing the environmental or social aspects of sustainable development in their investment process. There are increasing opportunities to invest in infrastructure projects which offer attractive real returns over the lifetime of a particular project, a steady income stream to assist in matching real liabilities whilst also considered an ESG investment benefitting the wider socio-economic environment.

The Future of Private Markets

Given the increased supply of private market investments, private markets may experience lower returns over the next number of years. As the liquidity of the market increases, the illiquidity premium is likely to decrease. However, private markets are likely to continue to offer increased diversification opportunities to investors.

5. General Insurance

5.1 Cost of Insurance

The issue of the rising cost of insurance is one which has had significant media coverage over recent years, and has incited considerable anger amongst insurance customers. Insurance costs hit national headlines in 2016 with large increases in motor premium. Over the past 12 months the conversation has been mainly focussed on the cost of liability insurance for businesses.

Media coverage has been dominated by stories of people and businesses being quoted premiums significantly above those charged in previous years; and businesses at risk of closure due to their inability to find insurance coverage be it at any cost, or an affordable one.

Numerous insurers have left the Irish liability market, and others have signalled their intention to leave in the coming months. In December 2019, Minister for Children and Youth Affairs Katherine Zappone, announced funding of €7 million to childcare providers to help them deal with extra insurance costs arising from the withdrawal of Ironshore Europe from the market⁴³.

January 2020 brought reports of nursing homes being the latest sector to suffer from insurance sourcing issues, with similar issues in previous years from businesses in the leisure sector, crèches, restaurants and hotels.⁴⁴

Cost of Insurance Working Group (“CIWG”)

The CIWG was established by the Minister for Finance in 2016, in response to volatility in the pricing of non-life insurance in Ireland – particularly motor and liability insurance. The CIWG published its Report on the Cost of Motor Insurance in January 2017, which made 33 recommendations within six broad themes:

- Protecting the consumer
- Improving data availability
- Improving the personal injuries claims environment
- Reducing costs in the claims process
- Reducing insurance fraud and uninsured driving
- Promoting road safety and reducing collisions.

At the time of writing, the most recent report is the Ninth Progress Update Cost of Insurance Working Group, published in July 2019.⁴⁵

On the Motor component, 31 of the 33 recommendations, or 69 of the 71 actions, have either been completed, are categorised as “ongoing” and in which work is continuing, or have been concluded insofar as the direct involvement of the Cost of Insurance Working Group is concerned.

⁴³ <https://www.irishtimes.com/news/social-affairs/creches-scramble-for-insurance-cover-as-premiums-double-1.4119119>

⁴⁴ <https://www.independent.ie/business/personal-finance/latest-news/fears-for-elderly-as-insurance-crisis-threatens-nursing-homes-38866628.html>

⁴⁵ <https://www.gov.ie/en/publication/54bb3b-cost-of-insurance-working-group-ninth-progress-update-q2-2019/>

It notes that “the Personal Injuries Assessment Board (Amendment) Act 2019 (No. 3 of 2019) commenced in April. This Act will strengthen the functioning of PIAB in a number of ways, including dealing with issues of non-attendance at medicals and failure to provide details of special damages or loss of earnings. Laws amending the Civil Liability and Courts Act 2004 took effect to make it easier for insurers or businesses to challenge cases where fraud or exaggeration is suspected. “

Also noted in the report is the commitment by An Garda Síochána to tackle the issue of insurance fraud. Garda Commissioner Drew Harris has made the decision for operational reasons that a divisional focus is preferable to the establishment of a centralised insurance investigation unit.

On the Employer/Public Liability component, the progress is stated as 13 of the 14 recommendations, 27 of the 28 actions due by the end of Q2 2019 have been completed, are “ongoing” or completed insofar as the Working Group is concerned.

One of the earlier recommendations from the CIWG lead to the creation of the Personal Injuries Commission, chaired by Justice Nicholas Kearns, which held its first meeting in February 2017.

The key findings of the First Report (published in December 2017) of the Personal Injury Commission suggested that adopting a standardised and internationally recognised approach to diagnosis, treatment and reporting on soft tissue injuries, by practitioners who are appropriately competent and trained, will improve the personal injuries environment in Ireland.

The Second and Final Report of the PIC, was published in September 2018, and deals in the main with the benchmarking of Irish personal injury award levels, and an examination of alternative compensation and resolution models in other jurisdictions. A widely reported excerpt from this revealed that the average compensation award for whiplash injuries in Ireland is approximately 4.4 times higher than in Britain. It also supported the creation of the Judicial Council “that provides a unique opportunity to seek and obtain such guidance for judges in measuring general damages for personal injury, ranging from the least to the most serious”. Following the publication of the Second and Final Report, the work of the PIC was considered to be concluded.

5.2 National Claims Information Database (NCID)

The establishment of the National Claims Information Database (NCID)⁴⁶ was one of the recommendations made by the Cost of Insurance Working Group (CIWG), which was established by the Minister for Finance in 2016. This is a follow-up on the First and Second Motor Insurance Key Information Reports that were published by the CIWG in 2017 and 2018 respectively.

The NCID is a repository for aggregate claims data. The purpose of the NCID is to increase transparency around the cost of claims. Aggregate data is collected from insurers, including premium, policy and claims data. This allows the Central Bank to publish an annual report containing analysis of the cost of claims, the cost of premiums, how claims are settled, how settlement costs vary depending on how claims are settled, and an analysis of the various types of cost that make up settlements.

Private motor insurance was selected to be the initial class of insurance in scope of the NCID.

⁴⁶ <https://www.centralbank.ie/statistics/data-and-analysis/national-claims-information-database>

The CIWG also recommended that the Central Bank produce a study on the merits and feasibility of including Employers' Liability and Public Liability data in the NCID, and the Central Bank will publish the results of this study in early 2020, following consultations in 2019 with the insurance industry, and other relevant parties.

Data was collected on the number and cost of private motor insurance claims relating to accidents that occurred between 2009 and 2018. Data was collected separately for different types of claims:

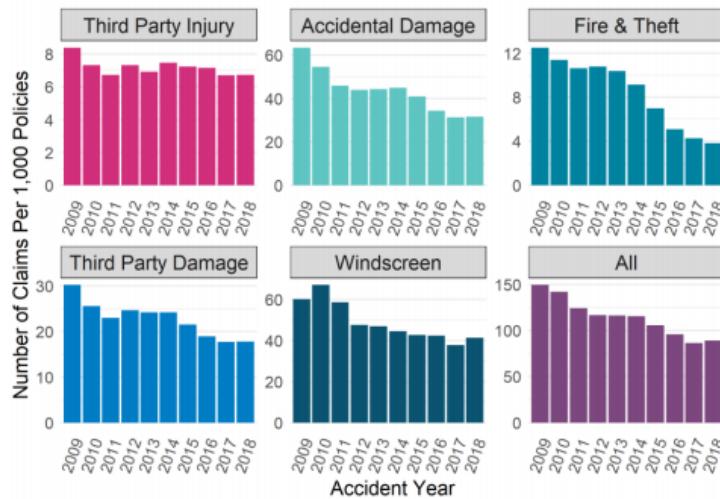
- third party injury
- accidental damage
- fire & theft
- third party damage
- windscreens

Data was also collected on premiums and the number of polices between 2009 and 2018.

As the data has been projected to ultimate, it should be noted that there is uncertainty in the result. Generally, the ultimate result for an accident year will become more certain as it matures and there is generally statistical volatility in projecting a point estimate.

5.2.1 Frequency

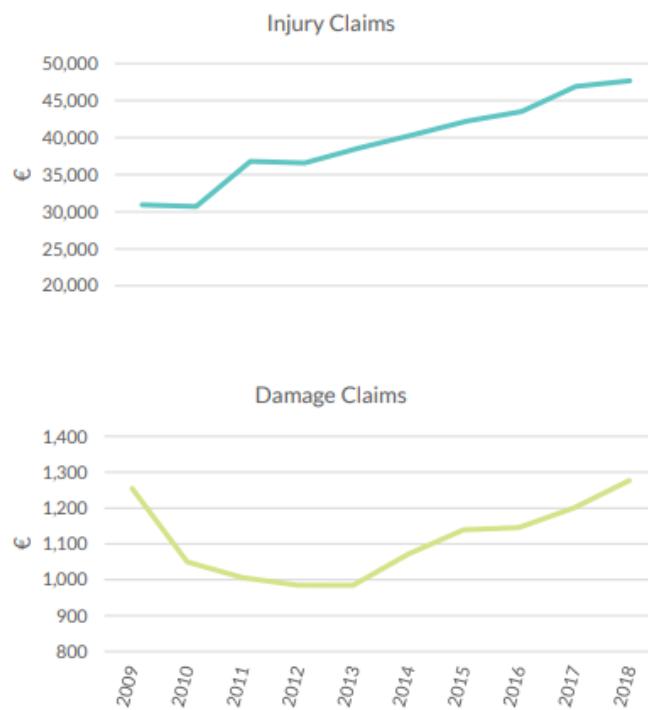
Figure: Number of claims per 1,000 policies by claim type for accident years 2009-2018



Between 2009 and 2018, the frequency of claims has decreased for all claim types. The overall frequency reduced by 40%. This was mostly driven by a reduction in damage claims of 43%. Injury claims frequency reduced by 20%, from 8.4 claims per thousand policies in 2009 to 6.7 claims per thousand policies in 2018.

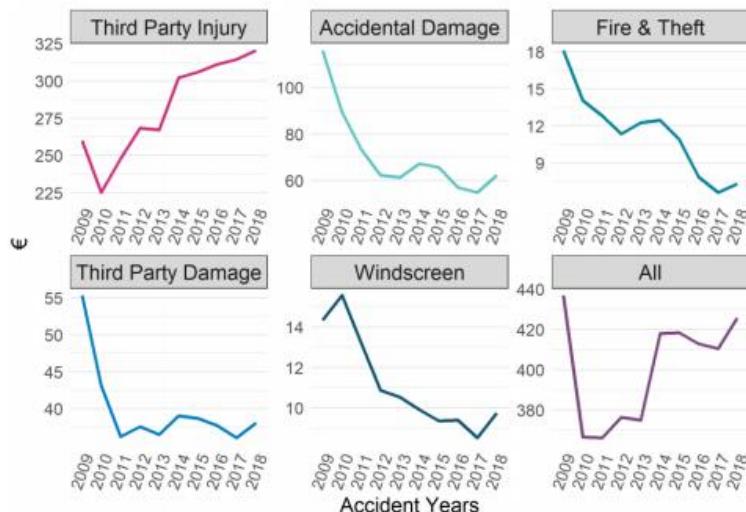
5.2.2 Severity

Figure: Average cost per claim of injury and damage claims for accident years 2009-2018



This shows the average ultimate developed cost per claim over the period for injury and damage claims, by accident year. Overall, the average cost of a claim increased by 64%, from €2,922 in 2009 to €4,779 in 2018. The average cost of an injury claim increased by 54%, from €30,936 in 2009 to €47,674 in 2018. The average cost of a damage claim was similar in 2018 to its value in 2009 (€1,277 and €1,255 respectively). However, there was a 22% decrease in the average cost of a damage claim from 2009 to 2013, followed by a 30% increase to 2018.

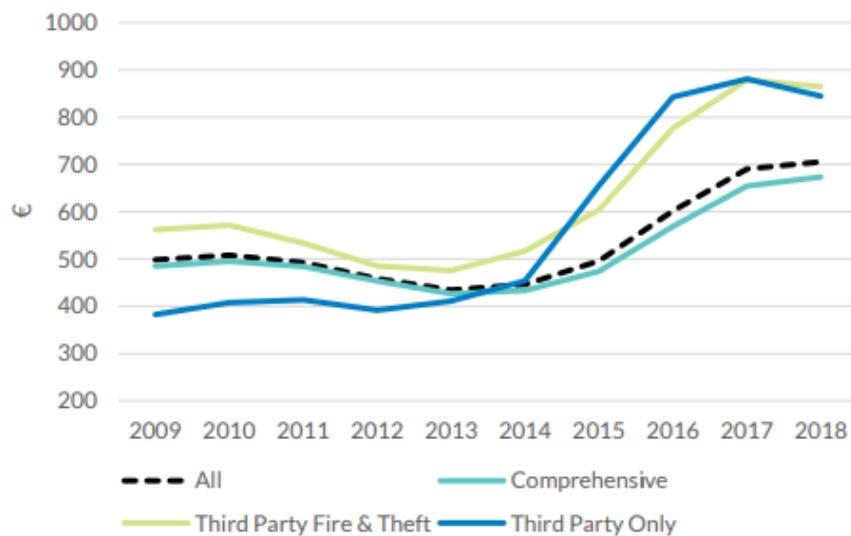
Figure: Average cost per policy of each claim type for accident years 2009-2018



The overall increase in injury claims costs was 23% from 2009 to 2018. The cost per policy of all damage claims decreased by 42% from 2009 to 2018. This was mainly driven by accidental damage and third party damage claims, which reduced in frequency by 46% and 31% respectively.

5.2.3 Premium

Figure: The average cost of insurance premiums for different levels of cover for accident years 2009-2018

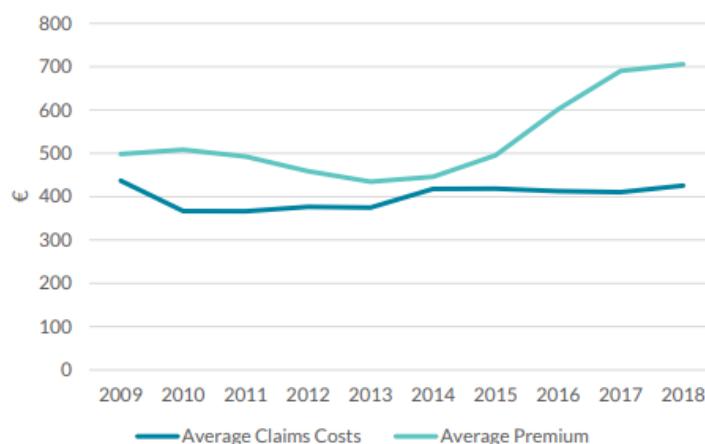


This shows the average premium per policy for different levels of cover. Comprehensive cover accounted for at least 80% of policies in each year since 2009. For this reason, the average premium paid for all levels is significantly weighted by the price of comprehensive policies.

Overall, average premiums increased by 42% from 2009-2018. This was split into two distinct periods: a period of falling premiums from 2010- 2013, when premiums decreased by 14%; and a period of increasing premiums from 2013-2018, when premiums increased by 62%.

5.2.4 Profitability

Figure: Comparison of the average cost of premiums per policy and the average cost of claims per policy for accident years 2009-2018



Between 2009 and 2018, the average annual gross earned premium increased by 42%; the average cost of claims per policy reduced by 2.5% over this time. 2013 was the lowest point for average premiums over this ten-year period, having decreased by 13% from €498 in 2009 to €435 in 2013. Premiums started to increase again in 2013, increasing by 62% to an average of €706 in 2018.

Average claims costs reduced by 14% from €437 in 2009 to €375 in 2013, and increased by 14% to €426 in 2018. Both of these changes in claims costs were realised mostly in a single year (i.e. in 2010 and 2014).

Over the last 10 years, claims costs have been on average 75% of premiums earned. Other expenses such as claims handling expenses, management expenses, MIBI cost, MIICF levy, commission and reinsurance costs must be paid for. This is typically somewhere in the 20%-30% range, depending on the insurer and their structure. It is reasonable to assume in some years private motor insurance was loss making. The NCID report noted that on average, private motor in Ireland resulted in a 9% profit for insurers in 2018.

Figure: The ratio of ultimate claims costs to premiums (loss ratio) for accident years 2009-2018



The relative trends in claims costs and premiums observed over the last ten years are indicative of an underwriting cycle. This cycle, with peaks and troughs in premiums, reserves and profitability, is a feature of all insurance markets. The pricing of insurance risks will generally depend on the position in the insurance underwriting cycle. The cyclical nature of property and casualty (liability) insurance is well recognised. Insurance markets tend to move between hard and soft markets, as illustrated below. A hard market is characterised by higher premiums, stricter underwriting criteria and (relative) profitability. A soft market is characterised by lower premiums, looser underwriting criteria and (relative) unprofitability. An underwriting cycle lasts a number of years, typically 6-9 years. The NCID report notes that the Irish Private Motor underwriting cycle is particularly pronounced.

Figure: The Underwriting Cycle



5.2.5 Claims Settlement Channels

An analysis of trends in the settlement of claims was also performed, with the following key insights and findings highlighted:

- Over half of all injury claimants settled directly in each of the four years 2015-2018; 33% settled through litigation in 2018, up from 29% in 2015; and 14% settled through PIAB in 2018, down from 17% in 2015.
- Directly settled injury claims had an average compensation of €11,674 and average legal costs of €1,385 from 2015-2018. It took on average 1.7 years for claims to be fully paid.
- Injury claims settled through PIAB had an average compensation of €22,631 and average legal costs of €753 from 2015-2018. It took on average 2.5 years for claims to be fully paid.
- Injury claims settled through litigation had an average compensation of €45,390 and average legal costs of €23,031 from 2015-2018. It took on average 4.4 years for claims to be fully paid.
- Injury claims settled through litigation, and which cost less than €100k, had an average compensation of €23,199 and average legal costs of €14,684 from 2015-2018.
- 99% of damage claims were settled directly in each year 2015-2018.

5.3 Legal Environment Update

5.3.1 Periodic Payment Orders

On the 26th September 2018 changes to the *Civil Liability (Amendment) Bill 2017* were confirmed and effective as of 1st October 2018, Irish courts are empowered to make awards of damages in cases of catastrophic injury by way of periodic payment orders (PPOs).

A ‘catastrophic injury’ has been defined under the bill as:

- a personal injury which is of such severity that it results in a permanent disability requiring the person to receive life-long care and assistance in all activities of daily living or a substantial part thereof.
- where ‘activities of daily life’ include activities such as dressing, eating, walking, washing and bathing.

The legislation provides for the adjustment on an annual basis of a payment under a PPO in line with the prevailing rate under the Harmonised Index of Consumer Prices (HICP). This is subject to a review after a 5-year period, to determine its suitability for use in PPOs.

The first PPO award, a medical negligence claim, was settled in February 2019, with a 13-year-old girl due to receive €610k annually, on a claim related to the circumstances of her birth. Since then, the High Court has put in place 6 PPOs⁴⁷, all relating to medical negligence.

On the 14th November 2019, Ms Justice Deirdre Murphy in a High Court judgement (Hegarty v HSE)² said “the legislation is regrettably, a dead letter. It is not in the best interests of a catastrophically injured plaintiff to apply for a PPO under the current legislative scheme.”

Background to the Case

This High Court proceeding related to a four-year-old boy who suffered a hypoxic brain injury in the immediate aftermath of his birth at in an Irish hospital in late 2014, leaving him with cerebral palsy and requiring lifetime care. The hospital, represented by the State Claims Agency, had admitted negligence.

An interim €1.6m settlement was reached in October 2016 and an assessment of the remainder of the boy’s claims was adjourned to November 2019.

The minor plaintiff’s solicitors suggested a further interim payment was more appropriate than a periodic payments order. The State Claims Agency’s position was that, because of the 2017 Act, it would no longer deal with catastrophically injured plaintiffs on the basis of interim payments but only on the basis on PPOs.

The president of the High Court, Mr. Justice Peter Kelly, who manages the wards of court list, directed a preliminary hearing on issues concerning whether the courts can proceed other than by way of the statutory PPO insisted on by the State Claims Agency. Such issues were arising in many cases and it was necessary to have them determined in this “test case”, he said. This lead to the trial, which focused on four questions.

⁴⁷ <https://wwwirishtimes.com/news/health/medical-negligence-cases-set-to-cost-record-374-million-next-year-1.4088074>

² https://beta.courts.ie/view/judgments/e3fb19c3-20f5-4536-af8a-48eb79556b39/45b2b9b3-c69e-4b61-a1fc-fe38705c33b3/2019_IEHC_788_1.pdf/pdf

Judgement

1. Whether the legislation ousts the inherent jurisdiction of the court to assess damages for the ward's needs for three years from next October without imposing the PPO regime under the 2017 Act, whether by reference to the best interests of the ward or otherwise?

This question is asking whether the new legislative regime created by the *Civil Liability (Amendment) Bill 2017* ousts the common law jurisdiction of the High Court to make a lump sum award either by way of final payment or by way of interim payment. The court affirmed that the answer to this question is no; the power conferred on the court to make a Periodic Payment Order is discretionary.

2. If jurisdiction is not ousted, a determination as to what are the best interests of the plaintiff herein (interim three-year assessment or PPO)?

The court found the evidence that the indexation of periodic payments by reference to the HICP will result in under compensation of a plaintiff to be overwhelming. The court concurred with the experts' view that the annual amount needs to be linked to a wage based index to ensure full compensation for future care needs. Five experts comprising of actuaries, economists and an independent financial advisor gave unanimous evidence on the unsuitability of the HICP as the indexation measure.

Justice Murphy stated in her judgment "*It is clear, on the basis of the expert evidence before the court, that no competent financial expert would recommend a periodic payment order linked to the harmonised index of consumer prices to provide for the future care needs of a plaintiff. In its current form therefore, the legislation is regrettably, a **dead letter**. It is not in the best interests of a catastrophically injured plaintiff to apply for a PPO under the current legislative scheme*".

The court noted however, that there is "*one potential chink of light*" within the statutory scheme. Subsection, s. 51(3), envisages the possibility of agreement between parties on the terms of a Periodic Payment Order. Such an agreement, in principle, allows for the use of a means of adjustment of the periodic payment order by an index other than the HICP. By agreement, parties could adopt an index measure would take account of the fact that wage inflation tends to be higher than general inflation.

In the event of such an agreement, the parties can apply to the court for a Periodic Payment Order in accordance with the terms which have been agreed by the parties. If the court were satisfied that it met the best interests of the plaintiff and complied with the other provisions relating to the exercise of its discretion, the court could make a Periodic Payment Order in accordance with the terms agreed by the parties. The judge stated "*if the parties can agree between themselves to apply a different indexation, this can be applied by the court. In any other situation, the court is bound by the Act to apply the HICP index to a Periodic Payments Order. It is perhaps unlikely, that any public body would agree to apply any index other than that set out in the legislation, but insurers, who have experience of the operation of PPOs in the UK since 2003, might view the matter differently. Time will tell.*"

3. Whether the court is precluded by the 2017 Act from fixing an increase other than the amount specified in the HICP?

The Courts response to this question was “Yes”.

The power to review the index used is conferred on the Minister. The first review shall not take place for at least 5 years from commencement i.e. October 2023, at the earliest. Whenever the first review occurs, further reviews are directed every 5 years thereafter. If upon review, the Minister forms the opinion based on criteria set out in the section, that an alternative index would be more suitable, he is empowered to make regulations specifying the appropriate index. This is not an unfettered power, because the section requires that before altering the index, the Minister must obtain the consent of the Minister for Finance. Even then, a change in indexation is not guaranteed, because any proposed change must be laid before each House of the Oireachtas and if a resolution annulling the regulations is passed by either House, the regulations shall be annulled.

4. Whether and to what extent the court retains a jurisdiction to identify a means by which indexation of the recurring payment can be achieved that would avoid the risks of the recurring compensation falling behind having regard to wage and medical inflation?

The courts have no inherent jurisdiction in relation to PPOs.

The court’s jurisdiction at common law remains as it was prior to the enactment of the Civil Liability (Amendment) Act 2017:

- Make a lump sum award
- Award an interim payment
- Approve payments on account

Implications for Irish PPOs

It remains to be seen if anyone will agree to a PPO settlement with a rate other than the HICP. In any event, it is clear the courts will only approve PPOs (that are in the best interests of the plaintiff) where the index is linked to the cost of carers wages, and also reflects inflation in assistive technology and other medical aids and equipment. Time will tell if the Minister waits until the original timeframe of October 2023, or acts sooner in reviewing the indexation rate.

5.3.2 The Non-Life Insurance (Provision of Information) (Renewal of Policy of Insurance) (Amendment) Regulations 2018

On 1 November 2019, the Non-Life Insurance (Provision of Information) (Renewal of Policy of Insurance) (Amendment) Regulations 2018 (the “Amendment Regulations”) came into effect⁴⁸.

This has the following impact on Non-Life Insurance:

- Extending the renewal notification period from 15 working days to 20 working days for all non-life insurance policies
- Requiring insurers, upon quotation and / or renewal (whichever is applicable) of motor insurance policies, to also provide the total premium for each policy option (i.e. third party, comprehensive, third party, fire and theft, or a combination thereof) available from that

⁴⁸ <http://www.irishstatutebook.ie/eli/2018/si/577/made/en/print>

- insurer. However, it must be noted that these information requirements do not apply to a policy of motor insurance that is a mid-term adjustment of an existing policy; and
- Introducing additional information requirements for renewals of private motor insurance policies which include providing, on the same page as the renewal premium, the premium paid in the previous year or where any mid-term adjustments were made to the policy during the year, an annualised premium figure for the previous year and a statement indicating that the annualised premium figure shown may not reflect the actual premium paid in the previous year.

5.3.3 Consumer Insurance Contracts Act 2019

The Consumer Insurance Contracts Act was signed into law on 26 December 2019 by President Higgins⁴⁹. The act will fundamentally alter the relationship between policyholders and insurers when it comes into force. As at the date of writing, no commencement order relating to the Act has been published, however it is expected to be introduced in early 2020. The act will apply to both life and non-life insurers.

The areas that are impacted by the act include:

- Changes to the definition of insurable interest
- Changes in the pre-contractual obligations of the policyholder, including the replacement of the utmost good faith (*uberrima fides*) principle. This means the policyholder will not be required to disclose information not specifically requested by the insurer
- Changes to the renewal process, including the requirement to provide premium and claims history for up to 5 years
- Changes to interaction between insurer and insured during the claims process

Insurable Interest

The principle of insurable interest as it currently applies to the Irish insurance market will be altered as follows:

- Insurance companies will no longer be permitted to decline a claim where a consumer does not have or did not have at the time when the contract was entered into an interest in the subject matter of the contract.
- Where the consumer is required because the contract of insurance is also a contract of indemnity to have an interest in the subject matter, the interest required will not extend beyond a factual expectation either of an economic benefit from the preservation of the subject matter or an economic loss on its destruction damage or loss that would arise in the ordinary course of events.
- An insurer cannot decline a claim by reason only that the name of the person who may benefit under the contract is not specified in the policy document.

The latter provision is very broad and clearly envisages someone other than the policyholder being entitled to claim for the proceeds under the policy, once they can show they have been economically disadvantaged by the damage to the subject matter.

⁴⁹ <https://www.oireachtas.ie/en/bills/bill/2017/3/>

Pre-Contractual duties

The act significantly increases the responsibility of the insurer prior to the policy being issued.

- The principle of utmost good faith (*uberrima fides*) is replaced, and any duty of disclosure of a consumer (including any duty on the consumer to volunteer information) that applied prior to the commencement of this section (whether that principle or duty arose at common law or under an enactment).
- The pre-contractual duty of a consumer is confined to providing responses to questions asked by the insurer and the consumer shall not be under any duty to volunteer any information over and above that required by such questions.
- Where the insurer requests the consumer to provide information, the insurer shall be under a duty to ask specific questions on paper or on another durable medium and shall not use general questions.
- An insurer shall be deemed to have waived any further duty of disclosure of the consumer where it fails to investigate an absent or obviously incomplete answer to a question.

The increased responsibilities of the insurer will make it difficult to deny a claim based on lack of disclosure prior to entering into the contract. Insurers may also consider investing in their pre-contractual processes in order to mitigate losses from this change.

Proportionate Remedies for Misrepresentation

The remedies available to an insurer for misrepresentation depend on whether the misrepresentation is deemed to be:

- a. Innocent
 - b. Negligent
 - c. Fraudulent
- In the case of innocent misrepresentation, the insurer will be required to pay the claim made, and shall not be entitled to avoid the contract on the grounds there was a misrepresentation.
 - In the case of negligent misrepresentation, the remedy available to the insurer shall reflect what the insurer would have done had it been aware of the full facts and shall be based on a compensatory and proportionate test. If the insurer:
 - o Would not have entered into the contract it may avoid the contract and refuse all claims but shall return the premiums paid.
 - o Would have entered into the contract but on different terms the contract is to be treated as if it had been entered into on those different terms if the insurer so requires.
 - o Would have entered into the contract but would have charged a higher premium, the insurer may reduce proportionately the amount to be paid on a claim.
 - Where fraudulent misrepresentation is involved, the insurer shall be entitled to void the contract of insurance.

Renewal of Contract of Insurance

The obligations of the insurer at renewal have been updated as follows.

- In the case of a contract of non-life insurance, the insurer, when issuing a renewal notice to a consumer, shall provide the consumer with a schedule outlining the following:
 - o any premiums paid by the consumer to the insurer in the preceding five years on foot of the contract, and
 - o a list of any claims, including, if such have been made, third party claims, that have been paid, on foot of the contract, by the insurer to the consumer (or, as the case may be, to the third party or parties concerned) in the preceding 5 years, except, where the contract concerned is a health insurance contract.
- Where there has been any mid-term adjustment made to the contract in any of the previous five years, the information to be provided is:
 - o the provision of an annualised premium figure for the relevant year or years, excluding fees or charges applied as a result of that adjustment, and
 - o a statement indicating that the annualised premium figure shown may not reflect the actual premium paid in the relevant year or years.
- the reference to any mid-term adjustment made to the contract, is a reference to any alteration lawfully made to the provisions of the contract, at any time during its currency, that results in a change in the amount of the premium charged or in the application of any fee or other charge.

Duties of Consumer and Insurer at Renewal

- The duty of disclosure shall not be taken to imply that a consumer who has on a previous occasion discharged that duty of disclosure is under an obligation at renewal of the contract of insurance to provide the insurer with any additional information, whether concerning matters that have changed or otherwise, unless the insurer has expressly required the consumer to do so.
- Where an insurer intends that the consumer is to provide additional information at renewal concerning a particular matter, it shall either:
 - o ask the consumer a specific question on paper or on another durable medium regarding the matter, or
 - o request the consumer on paper or on another durable medium to update information previously provided concerning that matter, which the insurer shall specifically describe and shall provide to the consumer a written copy of the matter previously disclosed.
- Where the insurer requests the consumer at renewal to provide information to the insurer, the insurer shall be under a duty to ask specific questions, on paper or on another durable medium, and shall not use general questions.
- The consumer shall be under a duty to respond honestly and with reasonable care, to any requests by the insurer at the renewal of the contract of insurance and, if the consumer

does not provide any new information in response to the insurer's request and where the consumer continues to pay the renewal premium, it shall be presumed that the information previously provided has not altered.

- The renewal by the insurer of the contract of insurance shall not, in itself, be taken to remedy any previous breach of any duty of disclosure arising under this Act.
- The insurer shall, within a reasonable time before renewal of a contract of insurance (and in any event no later than 20 working days before renewal), notify the consumer on paper or on another durable medium of any alteration to the terms and conditions of the policy, using plain intelligible language in doing so.

Claims Handling-Duties of Insurer

- Not to decline a claim as a result of non-compliance by the consumer with a specified notification period that does not prejudice the insurer.
- Engage with the consumer as regards a claim to include providing an opportunity to the consumer to submit to the insurer relevant evidence which could inform the insurer's determination as regards the claim.
- Inform the consumer of the amount for which a claim has been settled or otherwise disposed of and the reason or reasons for it being settled or so disposed of.
- Not to fail to engage in a meaningful manner with the consumer or third party as respects correspondence on the matter.
- Where it is not possible to quantify the total value of the claim within a reasonable time but where part of the total value has been quantified, the insurer shall pay that part to the consumer within a reasonable time.

Representations by consumer and terms that reduce the risk being underwritten (replacing insurance warranties)

- Any term in a contract of insurance which purports to convert any statement into a warranty including by means of a declared "basis of contract" clause or by any comparable clause shall be invalid.
- Any contract term that imposes a continuing restrictive condition on the consumer during the course of the contract shall be treated as a suspensive condition in that upon a breach of such a condition the insurer's liability is suspended for the duration of the breach but if the breach has been remedied by the time a loss has occurred the insurer shall be obliged to pay any claim made under the contract of insurance.

Rights of third party to claim against the insurer

- Where an insured person incurs a liability to a third party and the insured person has died, or cannot be found or is insolvent or for any other reason it appears to a court to be just and equitable to so order, the rights of the insured person under the contract shall be

transferred to and vest in the third party even though the third party is not a party to the contract of insurance.

- A third party shall be entitled to issue proceedings directly against the insurer to enforce the terms of the contract without having first established the liability of the insured person but before the terms of the contract can be enforced against the insurer in the proceedings the third party shall be required to establish the insured person's liability.
- The insurer has the same defences to an action brought by the third party as the insurer would have in an action by the insured person.

Unfair or Onerous Terms

- In addition to applying to a consumer as defined the European Communities (Unfair Terms in Consumer contracts) Regulations 1995 shall apply to a consumer within the meaning of this act.

Effect of Failure to Comply with the Act

- A court of competent jurisdiction may in its discretion where an insurer is in breach of any duties under this act order that the sum otherwise payable in a claim under a contract of insurance shall be increased in proportion to the breach involved.

5.3.4 Personal Injuries Guidelines Committee

Following the work carried out by the Personal Injuries Commission, on 23 July 2019 the Judicial Council Act was signed into law. It will establish, for the first time, a Judicial Council, a body to represent the Irish judiciary and to formalise many of its operations.

The Judicial Council will have several functions. It will

- facilitate education and training for judges
- provide a mechanism for investigating complaints against judges
- establish sentencing guidelines
- guidelines for awarding damages in personal injuries claims

Of most interest from creation of the Judicial Council, to the general insurance industry, is the creation of the Personal Injuries Guidelines Committee, and the Guidelines that it will issue in due course.

On 17 December 2019, The Judicial Council was formally legally established, in a joint ceremony between Chief Justice Frank Clarke and the Minister for Justice Charlie Flanagan, at Dublin's Four Courts, with the signing of the commencement order for its creation. Election to membership of the board took place at the first Judicial Council meeting, on 7 February 2020. At this first meeting, the Judicial Council proposed 28 April 2020⁵⁰ as the date on which to officially establish the Personal Injuries Guidelines Committee, who then have 6 months to submit a draft of the personal injuries

⁵⁰ <https://judicialcouncil.ie/news/establishment-of-the-committees-of-the-judicial-council/>

guidelines to the Judicial Council. Based on this timeline, Q4 2020 should see the publication of the first draft of personal injuries guidelines.

In late November 2019, the Chief Justice named the members designate of the Personal Injuries Guidelines Committee of the Judicial Council as follows⁵¹:

- Ms Justice Mary Irvine, Judge of the Supreme Court (chair)
- Mr Justice Seamus Noonan (Court of Appeal)
- Mr Justice Donald Binchy (High Court)
- Mr Justice Senan Allen (High Court)
- Ms Justice Jacqueline Linnane (Circuit Court)
- Mr Justice Séán O Donnabháin (Circuit Court)
- Judge Brian O'Shea (District Court)

The chair of the committee designate, Ms Justice Mary Irvine, convened the first meeting for early December 2019. The Chief Justice said "the purpose of designating the membership of the Committee at this stage is to allow it, prior to its formal establishment, to do such planning and preliminary work as is appropriate". "This will enable the Committee, when established, to hit the ground running." The Chief Justice reiterated the total independence that the law ascribes to the committee. He said that, in the light of some recent publicity, and having consulted with senior judiciary, it was incumbent on him to emphasise "the total independence which the law gives to that committee subject only to such directions as the Judicial Council itself may give". The Chief Justice was clear that the committee will set its own agenda, and not be "railroaded" by government or business agendas.

In a statement on the Judicial Council website⁵², it is noted that "*the Committee Designate is exceptionally cognisant of the need to ensure that the guidelines which it produces are anchored in reality. It is aware of the fact that there are many interest groups and indeed individuals who feel that the cost of insurance in this jurisdiction is prohibitive and that this is having a significant effect on their ability to trade profitably and in some cases to trade at all. Likewise, the Committee Designate is mindful of the position of those who consider that it is the level of the awards of damages made by the judiciary in personal injuries cases that has necessitated the significant increase in the premia payable by policy holders, in respect of certain types of insurance, in recent years.*

Only a very small minority of the claims made seeking damages for personal injuries ever become the subject matter of an award of damages by a court. It is those awards that are core to the role of the Committee. The vast majority of claims are settled without recourse to the courts either as a result of an offer of settlement made by an insurance company or an award made by The Personal Injuries Assessment Board.

However, insofar as the awards of damages made by the judiciary might be said to guide the level of settlements made by insurance companies or the awards made by PIAB, it is vital for the Committee to obtain as much data as is necessary to ensure that that the guidelines which it prepares will, once

⁵¹ <https://www.lawsociety.ie/gazette/top-stories/ms-justice-mary-irvine-to-chair-personal-injuries-guidelines-committee2/>

⁵² <https://judicialcouncil.ie/personal-injuries-guidelines-committee/>

applied, provide for a system of compensation wherein the awards made will be proportionate to the injury sustained and just and fair to both parties including those who sustain injuries through the wrongful acts of third parties whose actions are not indemnified under any policy of insurance.

In carrying out its functions, the Committee Designate will be aided by its ability to compare the awards made by courts in this jurisdiction in recent times with those that would likely have been made in respect of the same injuries had the claim been made in other jurisdictions during the same period, once satisfied that the comparator countries enjoy a relatively similar standard of living to that which pertains in Ireland.”

Section Relevant to Personal Injuries Guidelines Committee

- The Council shall
 - o establish a committee to be known as the Personal Injuries Guidelines Committee
 - o at the first meeting of the Council, specify the date upon which that Committee shall stand established which shall be a date not later than 3 months following that first meeting.
- The functions of the Personal Injuries Guidelines Committee shall be to prepare and submit to the Board for its review—
 - o draft personal injuries guidelines in accordance with section 90, and
 - o draft amendments to the personal injuries guidelines in accordance with that section.
- The Council may issue directions to the Personal Injuries Guidelines Committee.
- The Personal Injuries Guidelines Committee shall submit the first draft of personal injuries guidelines to the Board not later than 6 months after the date on which the Committee stands established
- The Personal Injuries Guidelines Committee may, from time to time, review the personal injuries guidelines and shall—
 - o review those guidelines within 3 years of the first guidelines being adopted by the Council, and at least once thereafter in every 3 year period beginning on the completion of the first review, and
 - o submit the outcome of each review under this subsection to the Board.
- Where the outcome of a review includes a recommendation for amendments to the guidelines, the Personal Injuries Guidelines Committee shall prepare a draft of such amendments and shall submit the draft amendments to the Board for its review at the same time as the outcome of the review is submitted to it.
- The Personal Injuries Guidelines Committee, and any person authorised by it to act on its behalf, may, for the purpose of performing its functions
 - o require any person to provide it with such records, documents or information as it may reasonably require for that purpose,

- consult with such persons as the Committee considers appropriate, including the Personal Injuries Assessment Board,
 - conduct research on damages for personal injuries including—
 - the level of damages awarded by courts in the State and by courts in places outside the State, and
 - settlements of claims for damages for personal injuries,
 - organise conferences, seminars and meetings relevant to those functions.
- The Personal Injuries Guidelines Committee shall prepare and submit to the Council, for inclusion in the annual report of the Council, a report in writing of the activities of the Committee during the period to which the annual report relates.

Personal Injuries Guidelines

- Personal injuries guidelines adopted by the Council, including any amendments adopted shall contain general guidelines as to the level of damages that may be awarded or assessed in respect of personal injuries and without prejudice to the generality of the foregoing, the guidelines may include guidance on any or all of the following:
 - the level of damages for personal injuries generally;
 - the level of damages for a particular injury or a particular category of injury;
 - the range of damages to be considered for a particular injury or a particular category of injuries;
 - where multiple injuries have been suffered by a person, the consideration to be given to the effect of those multiple injuries on the level of damages to be awarded in respect of that person.
- The Personal Injuries Guidelines Committee in preparing draft personal injuries guidelines or draft amendments to personal injuries guidelines shall have regard to
 - the level of damages awarded for personal injuries by—
 - courts in the State, and
 - courts in such places outside the State as the Committee or the Board, as the case may be, considers relevant;
 - principles for the assessment and award of damages for personal injuries determined by the High Court, the Court of Appeal and the Supreme Court;
 - guidelines relating to the classification of personal injuries;
 - the need to promote consistency in the level of damages awarded for personal injuries;
 - such other factors that the Committee or the Board, as the case may be, considers appropriate including factors that may arise from any records, documents or information received, consultations held, research conducted or conferences, seminars or meetings organised
- the Board, in reviewing those draft guidelines or draft amendments, may have regard to such of the matters set out as it considers appropriate for the purposes of its review.

5.3.5 Law Reform Commission - Issues Paper on Capping Damages in Personal Injuries Actions

On 11 December 2019 the Law Reform Commission published its Issues Paper on Capping Damages in Personal Injuries Actions⁵³.

The Issues Paper is a project that forms part of the Commission's Fifth Programme of Law Reform. The recent Reports of the Costs of Insurance Working Group (CIWG) and of the Personal Injuries Commission (PIC) recommended that the Commission should examine whether it would be constitutionally permissible, or otherwise desirable, to provide for a statutory regime that would place a cap or tariff on some or all categories of damages in personal injuries cases.

Recent developments in Irish law on damages for personal injuries that led to this paper

The Commission's project is primarily about legislation that could cap what is called "general damages", which is the sum of money awarded for an injured person's "pain and suffering", in other words, an amount that compensates for the actual physical or mental pain suffered by the person. How much is awarded will depend on whether the injury is temporary or permanent, and whether, for example, the person will never be able to play sport again or continue a full intimate relationship. General damages are completely separate from what are called "special damages", which is the sum of money awarded for things like loss of wages or, in a very complicated or catastrophic injury, the ongoing future cost of medical care and medical equipment.

The Issues Paper notes that in Ireland, the courts have, through case law since 1984, developed and adjusted a maximum cap for general damages for the most catastrophic type of injury. This cap now stands at €500,000, which would apply, for example, to a case of person with complete quadriplegia (complete loss of the use of all arms and legs) and who remains fully conscious of the loss that this involves.

Since 2015, the Court of Appeal has developed a three-point scale to ensure that awards of general damages are proportionate to the injuries suffered, and that they also take account of the upper limit of €500,000 for catastrophic cases. The Court of Appeal has stated that: "minor injuries attract appropriately modest damages, middling injuries moderate damages and more severe injuries damages of a level which are clearly distinguishable in terms of quantum from those that fall into the other lesser categories". The Issues Paper points out that this three-point scale approach to proportionality does not mean the courts impose a definite amount or absolute cap in a specific category of injuries, but it provides a range of bandwidth for the three different categories. This mirrors the approach already applied in the Book of Quantum, and in similar Judicial Guidelines on General Damages published since the 1990s in England and Wales, and in Northern Ireland.

The Issues Paper also points out that the three-point approach of the Court of Appeal has had the effect that, in a number of instances, it has reduced High Court awards in respect of what it regarded as minor injuries, in some instances reducing the award by 50%. In other instances, the Court of Appeal has increased awards where it considered that the injuries were at the more severe end of the scale. In summary, all these developments have emphasised the need for the test of proportionality to be applied.

⁵³ [https://www.lawreform.ie/_fileupload/Issues%20Papers/LRC%20IP%20%2017-2019%20Capping%20Damages%20In%20Personal%20Injuries%20Actions%20\(Full%20Text\).pdf](https://www.lawreform.ie/_fileupload/Issues%20Papers/LRC%20IP%20%2017-2019%20Capping%20Damages%20In%20Personal%20Injuries%20Actions%20(Full%20Text).pdf)

Complementing this case law on general damages, since 2003 legislation has provided for the publication by the Personal Injuries Assessment Board (PIAB) of wide-ranging guidelines for the award of general damages, called the Book of Quantum (the most recent edition dating from 2016). The Book of Quantum will be replaced by Guidelines to be published under the auspices of a Committee of the Judicial Council being established under the Judicial Council Act 2019.

Relevant constitutional issues for legislation on capping damages

The Commission's Issues Paper examines in detail the constitutional provisions that it considers would be relevant to any legislation on capping damages. The key constitutional rights identified in the Issues Paper are:

- the right to bodily integrity (the right to be free from any law that would adversely affect a person's health),
- property rights (especially the right of access to courts and to an effective legal remedy where a person's rights are affected),
- the right to equality before the law (which includes that a person will not be subject to any arbitrary or irrational treatment by the law).

The Issues Paper also identifies that legislation on capping damages could be open to constitutional question, if, in relation to the right to bodily integrity or property rights, it did not pass a test of proportionality. This is a test that means that any limits on these rights must not be arbitrary, must limit the rights as little as possible and that the limits must be proportional to a legitimate objective. Separately, capping legislation could also be at risk of a constitutional challenge if it either:

- a. delegated the capping power to a Minister without providing sufficient guiding principles (this is called the "non-delegation" principle); or
- b. involved an interference with the proper powers of the judiciary, that is, breached the appropriate separation of powers between the Oireachtas and the judiciary.

Possible capping models

Model 1

Model 1 proposes a cap set by primary legislation that would take a similar form to how sentencing occurs in most criminal cases, in which the courts impose sentences using a proportionality test, on a scale from zero (an entirely suspended sentence) to the maximum permissible sentence for the particular offence.

Model 1 is also similar to the three-point scale applied in the case law on damages developed since 2015 by the Court of Appeal, the approach used in the Book of Quantum, and also in similar Guidelines published in England and Wales and Northern Ireland.

Model 2

Model 2 proposes a scheme that combines elements of the New South Wales Civil Liability Act 2002 and the England and Wales Civil Liability Act 2018 under which general damages are capped and all awards for lesser injuries are indexed to the cap.

Model 2 is similar to Model 1 in one respect, in that it allows the courts the discretion to determine the severity of the plaintiff's injuries, and accordingly within which category those injuries should fall. However, Model 2 differs in a significant respect from Model 1, in that, once the court determines the severity of the plaintiff's injuries, it is usually required to award the corresponding percentage of the cap. In this way, the "caps" provided for in Model 2 operate like a tariff style system, under which the court determines the level of injury, and the Oireachtas would be providing for a fixed sum for general damages that should accompany that level of injury.

Model 2 also reflects the England and Wales Civil Liability Act 2018, which provides for Regulations to be made setting fixed general damages tariffs for whiplash injuries in road traffic cases. The Lord Chief Justice for England and Wales must be consulted before formulating the tariffs in such Regulations under the 2018 Act. The England and Wales 2018 Act differs from the New South Wales Civil Liability Act 2002 because the Regulations made under the 2018 Act provide for a "judicial uplift", that is, that the courts may in their discretion and subject to specified criteria award a sum for whiplash injuries greater than the tariff. Such a "judicial uplift" could meet constitutional requirements by allowing the courts to retain a certain level of discretion. However, this may conflict with the general purpose of a fixed tariff approach, in that there is the risk that uplifting may become the rule rather than the exception.

Model 3

Model 3 proposes that either Models 1 or 2 (or any other method of capping) could be enacted, but in which the Act would delegate determining the details of the cap to, for example, a Minister or some other Regulation-making body.

This is similar to the approach in the Civil Liability (Capping of General Damages) Bill 2019, a Private Member's Bill which passed Second Stage in the Seanad in March 2019. The 2019 Bill bears some similarities to the England and Wales Civil Liability Act 2018, in that it provides for a delegated Regulation-making power rather than setting a specified amount in the Bill itself. And it has the advantage that it sets out some principles and policies on which the Minister for Justice and Equality is to determine the tariff for general damages in particular categories of injuries.

On the other hand, it mirrors the New South Wales Civil Liability Act 2002 and differs from the England and Wales Civil Liability Act 2018 in that it appears to provide for a mandatory cap without any possibility of an exceptional "judicial uplift"; and nor does it contain any provision for any advance consultation with the judiciary.

Model 4

Model 4 could be described as involving an approach that is closest to the current position, in that it proposes that the courts should continue to determine the level of awards of general damages through case law, as supplemented by the significant new provisions for Personal Injuries Guidelines under the Judicial Council Act 2019.

The Commission's Issues Paper invites all interested parties to give their views on which of these models they think could meet the constitutional criteria identified in the Paper, by March 2020. The Commission will consider the views in the submissions received, and will then prepare and publish its Report, which will contain the Commission's final conclusions and recommendations. The Issues

Paper emphasises that the Commission is a statutory advisory body, so that the ultimate task of reforming the law, including in terms of assessing the relevant constitutional provisions, is a matter entirely for the Government and the Oireachtas.

A Deeper Look at Model 1

In the Press Release attached to the publication of the Issues Paper, it is stated that “It can also be assumed that this is the approach likely to be taken in the Personal Injuries Guidelines to be published under the Judicial Council Act 2019”⁵⁴.

Model 1 is broken down into two parts:

1. a legislative cap set by primary legislation, that is, an Act of the Oireachtas, which classifies types of injury into separate categories of severity; and
2. guidelines which assist the court in determining the category or severity of the injury, and the appropriate amount of damages to award for that particular injury.

In this Model, the power to cap is derived from the Oireachtas and is also exercised by the legislature. Accordingly, immediate constitutional concerns that arise will be related to independence of the judiciary. Model 1 attempts to apply the principles which can be gleaned from the case law surrounding sentencing in criminal law, and that is that the legislation setting out the cap should do no more than state the “general rule”, and the cap should be rationally connected to the severity of the injury.

The cap set by Model 1 would look something like maximum penalties in criminal law as prescribed by legislation. Under Model 1, the Oireachtas would enact primary legislation, an Act which would distinguish between types of injury, for example head injuries, spinal injuries, injuries to the eyes etc. The legislation would then break that type of injury into categories, running from minor to severe similar to the way in which offences in criminal legislation are categorised based on the seriousness of the offence. The following table demonstrates how this might look:

| [Type of Injury] | |
|-------------------------|----------------------------------|
| Injury Category | Maximum Award/Award Range |
| Minor | €X |
| Moderate | €2X |
| Severe | €3X |
| Catastrophic | €4X |

Categorising injuries and caps in this way would align with recent statements made by the Court of Appeal that “minor injuries should attract appropriately modest damages, middling injuries moderate damages, severe injuries significant damages” and extreme or catastrophic injuries damages which are likely to fall somewhere in the region of [the cap].

The guidelines to accompany the Model 1 Act could take a form similar to those currently employed in England and Wales in the context of sentencing for criminal offences.

⁵⁴ https://www.lawreform.ie/_fileupload/press%20releases/Press%20Release%20LRC%20IP-2019%20-%20Capping%20Damages%20in%20Personal%20Injuries%20Actions.pdf

The purpose of these guidelines would be to assist the courts in determining within which category the injury should be classed and up to what value of the cap the injury should be valued at. These guidelines might look like something as follows:

| Type of Injury | | |
|-----------------|----------------|-----|
| Injury Category | Starting Point | Cap |
| Minor | €Y | €X |
| Moderate | €2Y | €2X |
| Severe | €3Y | €3X |
| Catastrophic | €4Y | €4X |

Step 1 would be to determine which category the injury falls. This might be based simply on the level of physical damage caused, as is done in the current Book of Quantum. The Book of Quantum, classifies a minor head/skull injury as one which did not cause any loss of consciousness, while a severe head/skull injury is one where there was a loss of consciousness for more than 24 hours.

Step 2 would be to determine the starting point for damages for that particular category of injury. Taking the example from the table above, the starting point for a minor injury would be €Y while the most that can be awarded will be €X.

Once the starting point has been determined, the object of step 3 would be to determine what award within the level of the cap might be appropriate. The court would start at the starting point and increase or decrease the award taking into account various factors. These factors may be things such as the length of recovery. Where the length of time taken to recover is longer, the award may be higher. Where there is a greater loss of amenity for that particular individual, the award may be higher, whereas where there is no loss of amenity the award may fall below the starting point. Other factors may include ongoing pain and suffering evidenced by ongoing pain management, and any psychological trauma.

5.4 Advance Driver Assistance Systems

Advanced driver-assistance systems (ADAS) is the collective term for the enhanced features and technology integrated into many modern vehicles that aid and increase driver and vehicle safety while driving or during parking.

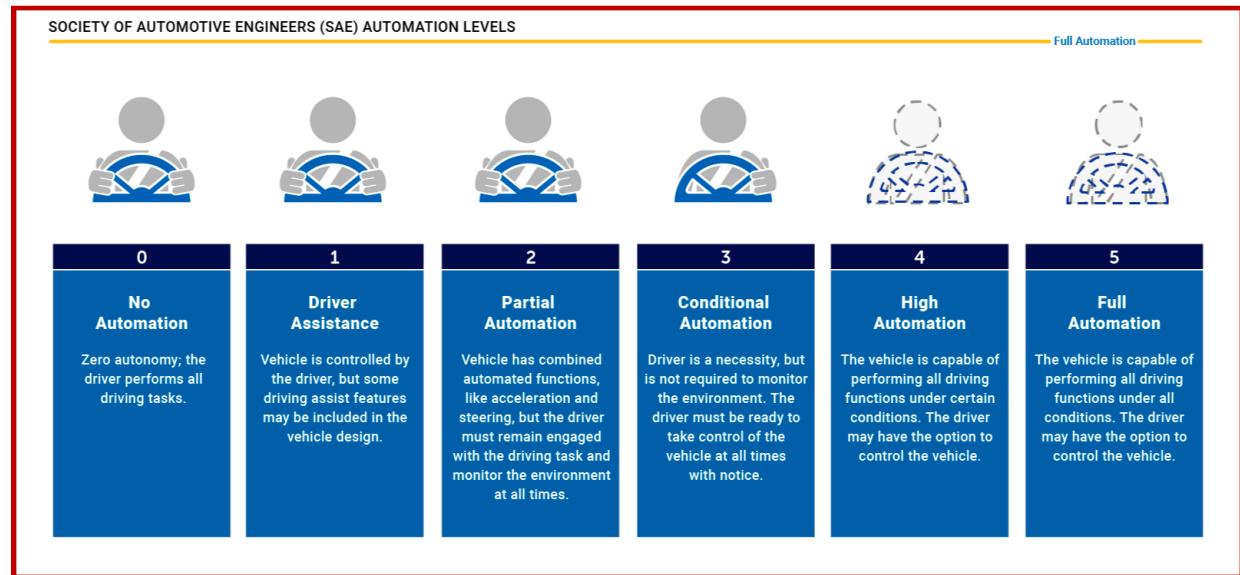
These technologies are one of the fastest growing segments in automotive electronics. One of the reasons for the rising demand for ADAS is an interest in road and traffic safety, both at the level of the government and the individual. What was once a virtual futuristic idea – cars that more or less drive themselves – has now become a reality, thanks to the convergence of ADAS and telematics. While thinking of advanced features, one automatically thinks of driverless cars, but in reality a lot of people already have ADAS features available in their car that they don't realise is considered a driver assistance system; such as collision avoidance systems, automatic braking, reversing cameras, parking sensors, hill assist, lane departure warnings and incorporation of GPS/traffic data, etc.

There are a few options on the market for retro-fitting features to existing vehicles. Mobileye⁵⁵, a subsidiary of Intel that develops ADAS technology, entered the Irish market last year, acting as a "third eye" continuously reading the road ahead, and has functionality including lane departure

⁵⁵ <https://www.mrwindscreen.ie/news/adas-ie-new-aftermarket-collision-avoidance-technology/>

warning, forward collision warning, headway monitoring and warning, low speed urban collision warning, intelligent headlamp control, speed limit indicator and pedestrian collision warning (including bicycles). It remains to be seen if the private motor market will be interested this aftermarket installation, or if it will be limited to commercial vehicles and fleets.

There are different levels of autonomy, as defined by the US National Highway Traffic Safety Administration (NHTSA)⁵⁶:



5.4.1 Studies to Date (USA)

The studies referred to in this article are based on research from the Insurance Institute for Highway Safety (IIHS)⁵⁷ in the US.

Front crash prevention systems, were found in 75% of model year 2018 vehicles as an option, resulting at a level of approximately 10% of vehicles overall on the road, expected to rise to 30% by 2023. Some front crash prevention systems can recognize pedestrians, cyclists and animals. These systems use advanced algorithms coupled with sensors and cameras to spot non-motorists who are in, or about to enter the vehicle's path. Even if a front crash prevention system doesn't avoid a crash altogether, it may still reduce the impact speed, making a crash less severe. The Insurance Institute for Highway Safety concluded in a recent study that automatic braking could reduce front-to-rear crashes with injuries by 56%.

Lane departure warning has not brought down insurance claim rates, but has reduced rates of single-vehicle, sideswipe, and head-on crashes reported to the police.

Blind spot detection uses sensors to monitor the side of the vehicle for vehicles approaching blind spots. In many systems, a visual alert appears on or near the side mirrors if a vehicle is detected. An audible alert may activate if the driver signals a turn and there is a vehicle in the blind spot. Some systems also may activate the brake or steering controls to keep the vehicle in its lane. Blind spot

⁵⁶ <https://www.forbes.com/sites/jensen/2017/02/09/states-must-prepare-for-human-drivers-mixing-it-up-with-autonomous-vehicles/#1fba4b8636f3>

⁵⁷ <https://www.iihs.org/topics/advanced-driver-assistance>

detection has been shown to reduce lane-change crashes by 14%. This research has also found that blind spot detection lowers rates of insurance claims covering damage to other vehicles.

There are many different technologies designed to help drivers back up safely. Rear-view cameras display what is behind the vehicle, projecting a much larger field than is visible in mirrors or even by looking directly out the back windshield. Effective May 2018, rear-view cameras are required on new vehicles in the US, in order to reduce reversing crashes, in which young children are frequently the victims.

Some camera systems, as well as systems that use radar or ultrasonic sensors, warn the driver if there are objects in the way when the vehicle is in reverse. Systems with rear automatic braking automatically apply the brakes to keep the vehicle from backing into or over an object. A rear cross-traffic alert system detects vehicles approaching from either side that may cross the path of a backing vehicle, warns the driver, and may automatically brake to prevent a collision. These rear crash prevention systems, particularly those with rear automatic braking, are preventing crashes reported to the police.

Appropriate driver responses and acceptance of crash avoidance technologies are critical to their success. If drivers don't trust the systems or find them annoying or not useful, they may disable them. Similarly, if drivers experience warnings but don't understand them, are overwhelmed by them, or don't take an appropriate corrective action, then the systems will be ineffective. Systems need to be turned on to be effective.

Observations at dealerships of seven automakers in the US in 2016, found that front crash prevention systems were activated in 93% of the vehicles observed that arrived for service, and nearly 100 percent of the blind spot detection and rear-cross traffic alert systems were turned on. Activation of lane departure warning and lane keeping-support systems were much lower at 52%. Lane departure systems that warned by vibration were more likely to be activated, than those that beeped; and lane keeping assistance systems were more likely to be turned on than warning-only systems.

Interpreting warnings from multiple systems may be confusing or even distracting for some drivers. Many drivers involved in lane departure crashes are asleep or otherwise incapacitated, which can limit their ability to respond to lane departure warning and lane-keeping support systems.

Partial automation may require additional training. Drivers need to know when automation is available, how to use it and how to take control when automation is no longer available or if it fails. Experimental studies have shown that drivers can lose sight of what automated systems are doing, fail to notice when something goes wrong, and have trouble taking control again. One concern is that drivers might rely on crash avoidance systems too much, and feel freer to look away from the road or take other risks.

In addition to driver challenges, the technology itself can have limitations. For example, lane departure warning systems use sensors to register lane markings or the road edge, which may be problematic on roads that aren't well marked or are covered with snow. Sensors may not function well in low light or inclement weather. Some systems only work at certain speeds.

Crash avoidance technologies can also have the unintended consequence of increasing some crash types with reducing others. Highway Loss Data Institute (HLDI) research on the effects of front crash prevention on police-reported crashes in the US found that vehicles with forward collision warning and automatic braking had a 20 percent higher rate of being rear-ended than vehicles without the systems. However, vehicles with forward collision warning alone or low-speed autobrake had lower rates of being rear-ended than vehicles without.

5.4.2 ADAS and Insurance

The introduction of ADAS technology poses several challenges for insurers. There is no quick way for an insurer to know what cars have what ADAS features. They are not recorded against the Vehicle Identification Number (“VIN”) by the manufacturer, and while some come as standard on certain cars, many are optional extras. There are those which the car owner doesn’t realise they have, or has possibly even disabled. Even if the customer does know about their features, it is not a common question on the motor proposal form. It is therefore very difficult to reflect the impact of these systems in the premium charged to the policyholder.

Having ADAS technology has obvious benefits in reducing accident frequency if used correctly, and not disabled or ignored. Insurers will need data on ADAS enabled cars and their claims history in order to be able to price for this. In the US, insurers are experiencing a lack of data, so that issue is further magnified in a small country like Ireland.

ADAS will not prevent others from crashing into you, and windscreens will still be vulnerable to chips and cracks. Windscreen repairs will increase in cost as the ADAS technology is often built into the windscreen, meaning that these will need to be re-calibrated and could result in a private motor windscreen costing in excess of €1,000, significantly more than the average cost today.

General car repairs will increase. All of this technology is not cheap, and the technology is often specific to each car manufacturer, meaning that garages may not have the required knowledge or tools to replace or repair. This is expected to have an increase in claim severity, which could potentially outweigh the reduction in frequency. In addition, average severity will increase for insurers as the driver assistance systems will likely prevent many of the lower cost accidents.

All of this is too early to say exactly what the impact will be, due to a lack of data, and the ability of insurers to capture what cars have what technology.

There is also the issue where some car brands have created the technology in such a way that the insured has to turn on the ADAS features with a button, each time they start the car, in a way to remove the product liability from the manufacturer. The insurer may know that the car had ADAS technology, but how do they know if the driver actually enables it? What happens if the driver forgets to turn it on for a particular journey that results in accident that the ADAS could have potentially prevented? Other drivers of the car may not be aware that they are required to turn the technology on. How does the insurer know if the driver reacted to the ADAS warning, where it is a sound, visual cue, seat vibration, etc., and not the car automatically reacting? Under the Road Traffic Act in Ireland, the insurer would still be required to cover the accident, even if the activation or use of the ADAS was part of the policy conditions. All of this is a data consistency problem for the pricing actuary.

All of the issues will be worked out in time, and I think it is safe to say that it will be some time before we can rest in the backseat, and have the car drive for us.

5.5 Cyber Risk and Insurance

5.5.1 Introduction to Cyber Risk

Brief History

1834 - First recorded history of Fraud Using Technology⁵⁸

In 1790s France had a national telecommunications network, consisting of series of towers being placed at 8-10 kilometres distance, and transmitting messages using telegraphic codes using symbols which were read by the next tower in the chain using telescope. This process allowed the message to travel around 500 KM in an hour which was faster than available techniques at the time. The towers were used to send official messages only.

In 1830s two brothers used this structure to their advantage and devised a way to receive stock/bond market information from Paris to Bordeaux, which was much faster than the normal practice through which information was received from Paris to Bordeaux stock exchange. The practice was caught after almost two years in running, but no charges were framed due to lack of law.

1988 – Morris Worm⁵⁹

Robert Morris, is titled as the first person to design a program (referred as Morris Worm) which spread through internet affecting around 10% of the computers connected in 1988. It was referred by Mr. Robert as an experiment going out of control, which caused delays and millions in damage. Mr. Robert was charged under the 1986 ‘Computer Fraud and Abuse Act’ and received a fine, probation and community service.

However, the above incident was enough for the users of cyber technology to consider the risk seriously. The Department of Defence (US) was quick to form the first Computer Emergency Response Team.

Where We Are Today - 2019

Today ‘Cyber Risk’ is one of the major risks being faced by institutions no matter the nature of business i.e. financial, retail, public service or any other entity.

Cyber Risk is being faced by every entity in one way or another through loss of business data, leak in customer data, regulatory limits etc.

⁵⁸ <https://www.1843magazine.com/technology/rewind/the-crooked-timber-of-humanity>

⁵⁹ <https://www.fbi.gov/news/stories/morris-worm-30-years-since-first-major-attack-on-internet-110218>

Understanding Cyber Risk

What is Cyber Risk?

Cyber risk can be defined as⁶⁰

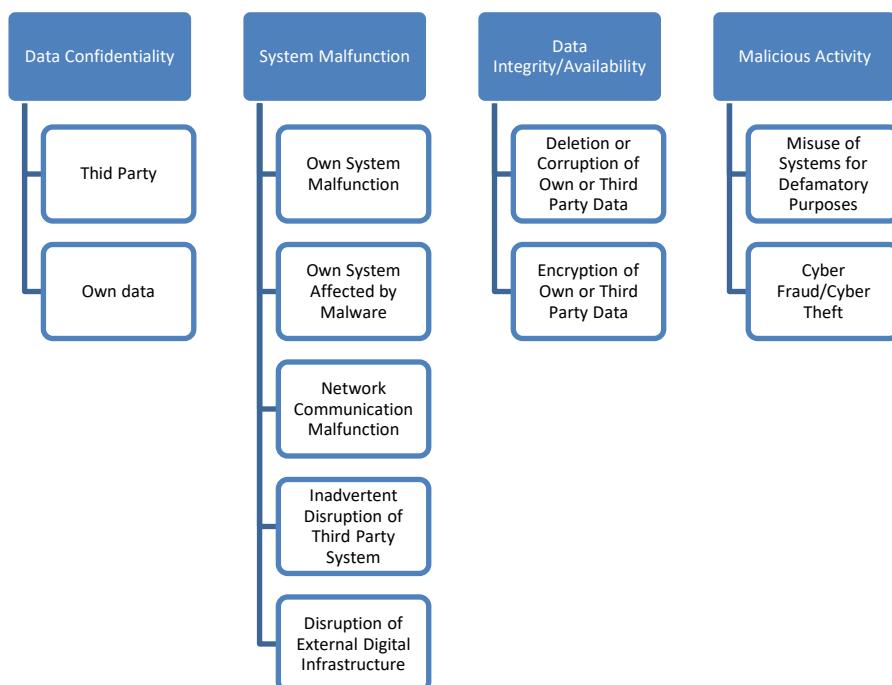
“risks that emanate from the use of electronic data and its transmission that compromises the confidentiality, availability and integrity of data and services”

The above definition provides some clarifications such that

- use and transmission of data are both included as cyber risks
- risk can arise as a result of error (which can be human) or intentional (third party or hackers etc.)

Types of Cyber risks

Cyber Risks can broadly be categorized and sub-categorized as follows⁶¹:



1. Data Confidentiality: The two classifications for Data Confidentiality breach are

- Third Party Data Breach
 - Third Party Data breach is loss or theft of customer's personal information such as name, address, telephone, health data, bank account or credit card details etc.
- Own Data Breach
 - Own Data breach is loss of trade credits or confidential financial information

Risks: The above may result in loss in reputation, cost on recovery, compensation as well as fines imposed by regulator.

⁶⁰ <https://www.thecroforum.org/wp-content/uploads/2015/01/Cyber-Risk-Paper-version-24-1.pdf>
https://www.genevaassociation.org/sites/default/files/research-topics-document-type/pdf_public/cyber-risk-10_key_questions.pdf

⁶¹ Adopted from <http://www.oecd.org/publications/enhancing-the-role-of-insurance-in-cyber-risk-management-9789264282148-en.htm>

2. **System Malfunction**: System Malfunction can be categorised as follows:
 - Own System Malfunction
 - The company system becomes inoperable and unresponsive due to some reason
 - Own System affected by Malware
 - A malware is responsible for system malfunction
 - Network Communication Malfunction
 - Systems are working fine but cannot communicate interrupting business etc.
 - Inadvertent Disruption of Third Party Systems
 - Company system is hacked and are used to target third parties
 - Disruption of External Digital Infrastructure
 - Disruption to own business due to third party system disruption
- Risks:** The above may result in business interruption cost, loss in reputation, cost on recovery etc.
3. **Data Integrity/Availability**: The two classifications for Data Integrity/Availability are
 - Deletion or Corruption of own or third party data
 - Data deleted or corrupted due to human error or malicious attack
 - Encryption of own or third party data
 - Data unavailable until ransom is paid to third party (attacker)
- Risks:** The above may result in ransom cost, response cost, business interruption cost, loss in reputation, cost on recovery etc.
4. **Malicious Activity**: The two classifications for Malicious Activity are
 - Misuse of System for Defamatory Purpose
 - Spreading fake or defamatory news
 - Cyber Fraud / Cyber Theft
 - Financial loss caused by intrusion to the company systems
- Risks:** The above may result in financial cost, response cost, reputation cost etc.

5.5.2 Cyber Risk Insurance

Cyber risk insurance protects a business liability and individuals from internet data breach risks. It generally covers sensitive customer information such as credit card numbers, social security numbers, account numbers, and driver's licence numbers. The policy covers any financial loss that is related to damage and information loss from the business networks and IT systems. A lot of policies include 1st and 3rd party cover. Insurance cover exists for coverage of both or either type of risks.

Insurance for First Party Covers:

- Damage or loss to digital assets some of which include software programmes or data
- Cyber extortion: this is where a 3rd party may threaten to release data or damage if money is not paid to them
- Business interruption from network downtime
- Reputational damage that may arise from a data breach that will result in the loss of customers or property

- Theft of money or assets through theft of equipment or electronic theft
- Customer notification expenses when there is a legal requirement to notify them of privacy or security breach

Insurance for Third Party Covers:

- Loss of data to the third party, including a failure of software or systems, and payment of compensation to customers
- Liability for Multi-Media, defence civil damages and costs that arise from defamation, to cover investigation, privacy breach, and publication negligence in print media or electronic
- Privacy and security breaches: the investigation, and civil damages and defence costs associated with them

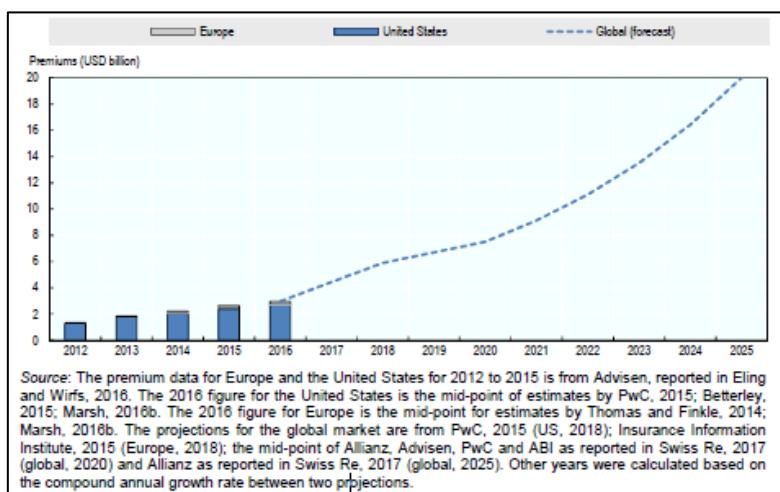
There are other cover policies available under a cyber-liability policy, some of which include various crimes such as funds transfer fraud, computer fraud, and cyberterrorism. Insurance providers tailor specific policies to specific industries.

Market Size

There are a few grey areas when it comes to estimating the size of the cyber insurance market due to the following reasons:

- Captive insurers figures are reported with lower granularity
- Multiple forms or line-of-business a policy can be implemented
- Collection of data between different jurisdictions

Size & Expected Growth of Cyber Insurance Market⁶²



Currently, United States accounts for 85%-90% of cyber insurance market, while 5%-9% is cyber insurance business is written in Europe where Germany and France are major markets. Figures exclusively related to Republic of Ireland are not available. Although not many cyber policyholders

⁶² <http://www.oecd.org/publications/enhancing-the-role-of-insurance-in-cyber-risk-management-9789264282148-en.htm>

are based in UK, approximately 25% of global cyber underwritten premium is through Lloyd's, as per Ms. Inga Beale Chief executive of Lloyd's insurance market⁶³.

It is expected that the cyber risk market will show exponential growth during the next few years due to:

- Recognition of Risk by businesses
- GDPR in Europe
- More Global business

Major Cyber Incidents/Claims

A few cyber Incidents to-date are provided for reference and to realize the potential impact:

Equifax – Sep-17⁶⁴

Equifax announced in Sep-17 regarding a data breach resulting in loss of customer data including Name, Social Security Number, Birth Dates, Addresses and Driver's License Number of more than 140m customers. Credit Card data of around 200,000 customers was also accessed.

Costs:

- 30% drop in share price
- Around USD 200 million in potential claims costs
- Resignation of CEO and other top management
- Payment of up to USD 700m⁶⁵
- Standalone Cyber Insurance coverage was USD 125m

WannaCry – May-17⁶⁶

First incident related to WannaCry malware was reported on 12th May 2017 which encrypted data and demanded ransom payments for release in data. One of the major institutions effected was National Health Services (UK) resulting in delays and cancellations in hospitals.

Costs:

- 200,000 thousand computers effected in over 150 countries
- Ransom payments made were around USD 125k
- The losses were estimated from USD hundreds of millions to 4 billion⁶⁷

Yahoo – 2016⁶⁸

The data was breached in 2013 & 2014 but the information became public in 2016. The breached data included username and password of around 3billion users.

⁶³ <https://www.ft.com/content/acac3a5e-b255-11e6-a37c-f4a01f1b0fa1>

⁶⁴ <https://epic.org/privacy/data-breach/equifax/>

⁶⁵ <https://www.huntoninsurancerecoveryblog.com/2019/07/articles/cyber/equifaxs-hefty-700m-bill-is-a-powerful-reminder-to-close-cyber-do-coverage-gaps/>

⁶⁶ <https://www.theverge.com/2017/5/14/15637888/authorities-wannacry-ransomware-attack-spread-150-countries>

⁶⁷ <https://www.cbsnews.com/news/wannacry-ransomware-attacks-wannacry-virus-losses/>

⁶⁸ <https://www.wsj.com/articles/yahoo-triples-estimate-of-breached-accounts-to-3-billion-1507062804>

Costs:

- Investigations and fines from regulators
- Decline in acquisition value
- Consumer Class action law suits

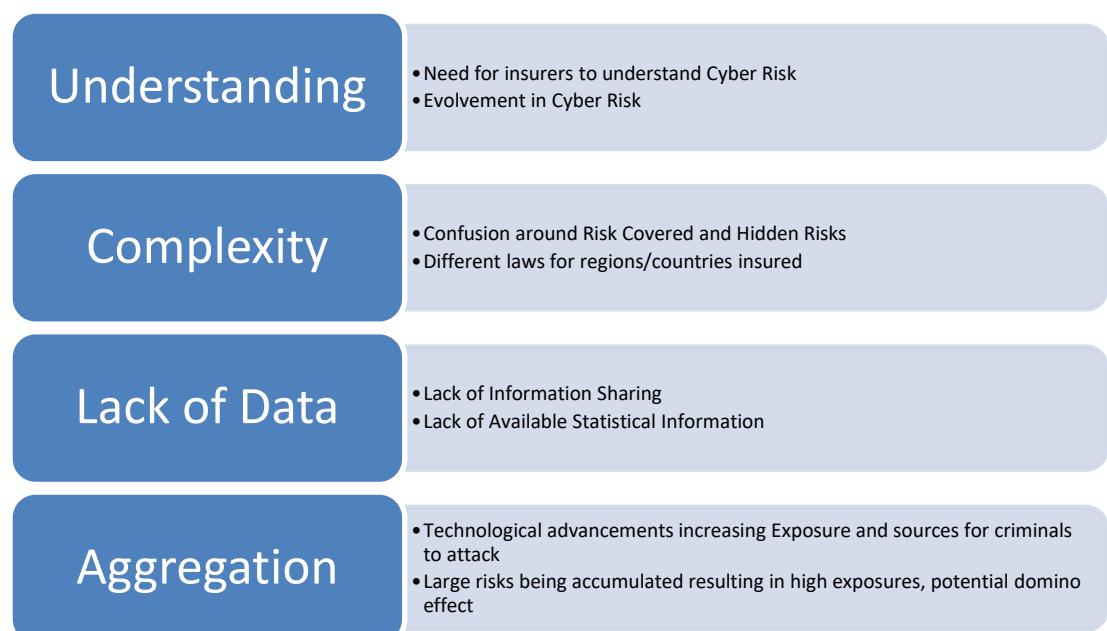
5.5.3 Cyber Risk Challenges

“Cyber is uncharted territory. It’s going to get worse, not better, there’s a very material risk which didn’t exist 10 or 15 years ago and will be much more intense as the years go along.”

Warren Buffet at Berkshire Hathaway 2018 Annual Shareholders Meeting

Insurability

Insurers need to be aware of and able to answer certain questions before deciding to venture into the Cyber Insurance underwriting such as⁶⁹



As briefed above, it is difficult that an insurer will be able to successfully underwrite the risk without fully understanding the risk and technologies involved as well as taking into account data issues or aggregation of risks.

The cyber risk can be underwritten as a stand-alone policy (or specific endorsement to current policy), or cyber risk can be covered in traditional policies. However, if the insurance company does not want to underwrite cyber risk, it is important that cyber risks be exclusively excluded in the policy wordings. ‘Silent cyber’ risk refers to potential cyber-related losses stemming from traditional property and liability policies that were not specifically designed to cover cyber risk. Silent cyber has

⁶⁹ Adopted from https://www.genevaassociation.org/sites/default/files/research-topics-document-type/pdf_public/cyber_insurance_as_a_risk_mitigation_strategy.pdf

been an active area of discussion in recent years, as most traditional insurance policies weren't designed with the potential of cyber risk in mind.

5.6 Alternative Risk Transfer (ART)

With emerging risks of greater global and potentially catastrophic impact, the demand for capital is ever-increasing. The great unknowns of cyber and climate change risk now sit alongside the traditional non-life risks such natural catastrophe, marine and motor on the non-life reinsurer balance sheet, with the result that diversification and capacity are becoming focal points in managing exposure. As a response, there has been a dramatic increase in the use of alternative forms of risk transfer involving structured solutions – for example, special purpose vehicles and support from capital markets through the issue of insurance linked securities. Although traditional reinsurance solutions – stop loss, excess of loss, quota share – are still widely employed in the non-life space, the additional capacity and capital base diversification associated with the use of ART is desirable, particularly in managing a changing frontier of non-life risks. At the end of 2019Q3, Aon reported alternative reinsurance capital accounting for circa 15% of total reinsurance capital.

One such form of ART, is a Special Purpose Vehicle (“SPV”). SPVs are separate entities, distinct from the parent or holding company, with their own balance sheet which does not roll up to that of the parent entity. SPVs are often used for the purpose of isolating particular risks, or can be used to separate risks in order to avoid consolidation back to the parent company balance sheet, perhaps for reasons relating to the risk appetite of the parent company.

There has been a great deal of activity in this space in recent times, with many of the major global reinsurers – several of whom have offices in Dublin – executing large transactions involving such vehicles. In early 2020, Swiss Re sponsored a catastrophe bond⁷⁰, covering US named storms and hurricanes as well as extreme mortality exposures, under its Matterhorn Re vehicle. This is the second such bond issued by the reinsurer this year, with approximately \$275million sought in retrocessional protection for this bond through capital markets. The form of this transaction involves the SPV issuing notes to capital markets investors, with the proceeds from these investments repurposed to collateralise underlying reinsurance agreements between the SPV and Swiss Re themselves.

In addition to SPVs, Insurance Linked Securities (ILS) are a form of financial instrument whose values directly relate to insurance loss events. ILS investors offer an additional, and increasingly vital, alternative capital source to the reinsurance market, and deliver not only a return to investors but also added benefits of diversification across the nature of the underlying risk, geography and duration. S&P recently reported investors becoming more discerning in this space, however, ILS issuance had reached a record high of \$41 billion by the end of 2019⁷¹.

Although ART is becoming somewhat more prevalent on the life side, there is established involvement on the non-life side given the more compatible characteristics from a structural perspective. The duration of the risk, the comprehensible nature of the profile of this risk, capability to monitor the development of the risk over time, and the variety of geographies, causes and coverage periods that can be considered by ILS investors when selecting a contract, make this an

⁷⁰ <https://www.artemis.bm/news/swiss-re-targets-275m-of-hurricane-mortality-cat-bond-cover/>

⁷¹ <https://www.reinsurancene.ws/despite-slowdown-alternative-capital-remains-integral-to-reinsurance-sp/>

attractive instrument in which to invest. Relatedly, the liquid market for non-life risks makes for a familiar and trusted market for ILS investors to enter into. Equally, regulatory familiarity with SPV facilitates greater ease of transaction, and acts as further incentive when reinsurer's consider employing these ART mechanisms to extend their capacity and risk appetite.

6. Wider Fields

The traditional areas for actuarial employment would be insurance (life, health, general), pensions and associated consultancy roles. However, there are increasing numbers of actuaries finding use and demand for their analytical and numerical skills outside of these traditional areas, i.e. into wider fields. This section of the current topics paper touches on the following wider fields areas of actuarial interest: InsurTech, data analytics, banking and aviation finance.

6.1 InsurTech

InsurTech Overview

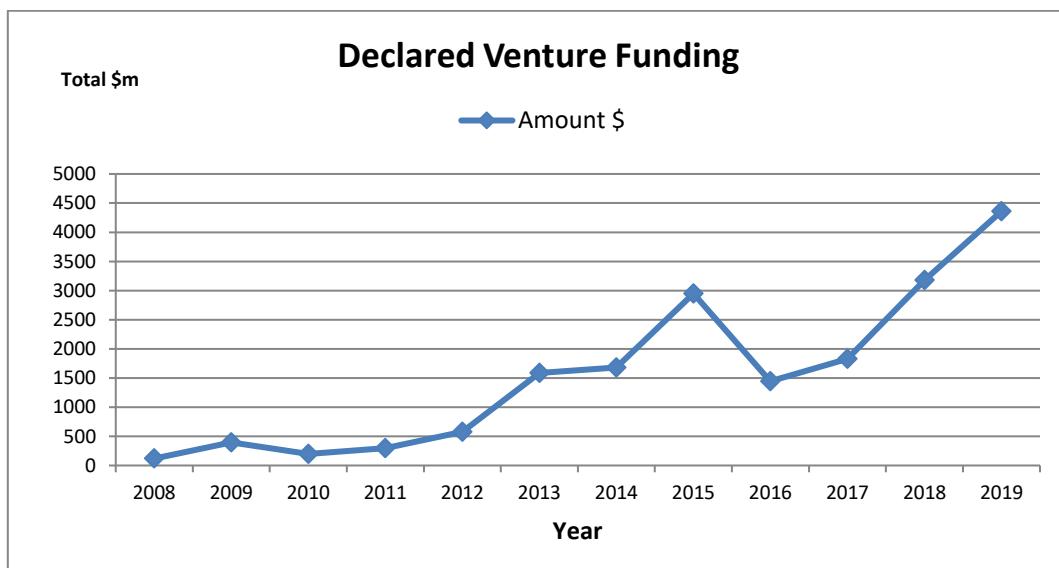
A little before 2010 the term InsurTech first emerged. A combination of the words insurance and technology, it is commonly defined as the use of innovative and disruptive technology solutions to improve and change the insurance industry.

An InsurTech can refer to a number of different company types. It can be a full stack insurance company, an agent or broker where technology is used to build or sell insurance products in a new manner. It can also refer to technology solution providers such as platform, administration system providers or data solution providers.

Current InsurTech Market

The number of InsurTech start-ups registered peaked around 2016 (*VentureScanner, CBInsights*). Since then there has been a significant drop off in the number of new companies.

Venture funding has not followed the same trend. After a slight drop off in 2016 and 2017, declared funding levels have increased steadily since 2018 and are currently at record levels, with the amounts in the chart below only covering funding up to Q3 2019.



This trend in funding has been driven by higher value investments in a smaller number of companies.

Three key market examples of these companies are Root Insurance, Lemonade and Hippo.

Root Insurance

Root was founded in 2015 and targets the US auto insurance industry. It uses smartphone technology to evaluate driver behaviour, and provides personalised insurance quotes based on that drivers perceived safety levels. This is all managed through the Root smartphone app, and allows users purchase a policy, cancel their existing policy, add other drivers from the household and access their insurance information all remotely via the app.

In September 2019 Root announced a \$350m funding round, and this brings total investment to over \$500m, giving Root a market value of \$3.65 billion.

Lemonade

Lemonade is one of the best known InsurTech companies. Based in the US and set up in 2016, Lemonade offers renters and home insurance policies primarily to the US market. It has recently entered the German market. Lemonade mirrors a lot of what traditional insurers do, but has created a very clean sales channel through its smartphone app. This means that there is minimal human interaction required in the sales process. In particular through the use of AI Lemonade markets a highly accelerated claims process.

This allows it to offer policies that are marketed as 80% cheaper than the industry's average, with acquisition costs that are 10 times lower.

A recent funding round of \$300m valued the company at over \$2 billion.

Hippo

Hippo is a US company that also sells property insurance. Launched in 2017, Hippo's approach is to use data driven analysis to more accurately price homeowner insurance.

This real time underwriting approach uses public datasets such as municipal building records and satellite imagery in order to develop a detailed profile of the customers' property. This results in the customer receiving a tailored quote with more accurate premium costs.

In addition, Hippo has focused on using the internet of things and smart technology to mitigate claims, with technology such as monitored smoke alarms and water leak detectors used to allow early intervention and prevent damage to property taking place.

Hippo has raised over \$200m in funding with a current valuation in excess of \$1 billion.

Traditional Insurance – Collaboration or Competition

InsurTech has been widely embraced by the insurance industry and insurers generally have a much more collaborative approach to technology than other sectors of the financial world. There have been a large number of deals where traditional insurers have invested in their own InsurTech initiatives, have purchased InsurTech companies, and have created joint ventures to explore new technology-based opportunities.

For example, Allianz, Swiss Re, Zurich and AON combined to launch B3i, a blockchain enabled reinsurance solution, and most insurance companies have now launched labs and start-up

accelerator programs such as Lloyds Lab and LumenLab. This further fosters InsurTech growth and reinforces the partnership model between traditional insurers and the InsurTech community.

However, there are some notable disruptive InsurTech exceptions such as Lemonade. Lemonade did generate some controversy and receive a lot of negative commentary from traditional insurance on launch, but these cases where InsurTech is a competitor to traditional insurers are in the minority.

This positive approach to new technology by the insurance industry should allow it to secure its future amongst a rapidly changing environment where new insurance products are required to support the rapid pace of technological and social advancements.

6.2 Data Analytics

The first part of this section on Data Analytics discusses data analytics from a high-level perspective and gives some insurance and actuarial applications of data analytics. In particular, there is specific section on R and Python which are two programming languages that are being increasingly used by actuaries. The last section is on artificial intelligence (AI) and the various concerns of explainability and ethics which arise from this technology. In the discussion of artificial intelligence a focus on insurance and actuarial issues is maintained.

Introduction

Data Analytics or Data Mining is a term used to describe the processing and scrutiny of large volumes of data, typically in an efficient manner, to yield informative insights. These insights can then lead to 'data-driven' decision making.

The quantity of data being collected has vastly increased in the last few decades. Furthermore, there is also technology to analyse this data efficiently, meaningfully and affordably. Examples of Big Data sets were discussed in the 2018 SAI current Topics paper [21].

This growth in the area of Data Analytics has provided opportunities for actuaries to apply their analytical and numerical skills. Indeed, many employers of actuaries (insurers, consultants, FinTech, banking, etc.) now have dedicated data science teams and training programmes [17, 13, e.g. the UK's Government Actuary's Department]. This cross-over between data science and actuarial skills then provides the actuary with further career opportunities within both insurance companies and wider fields.

Applications

Data Analytics has found applications in insurance and actuarial work more widely in a variety of areas, for example [e.g. cf. 7, 24]:

- Identifying target markets, i.e. policyholders upon whom to concentrate sales efforts
- Pricing and premium calculation, via better risk selection
- Underwriting automation
- Propensity modelling, to better understand policyholder behaviour, e.g.
 - o identify policyholders likely to lapse and the firm can then make pre-emptive interventions
 - o Identifying cross-selling opportunities amongst existing policyholders
 - o Fraud Detection [e.g. at policy application and claims stages]

- Claims handling automation [i.e. enabling faster claim pay-outs to policyholders]
- Health care improvements [e.g. machine reading of x-ray scans leading to better treatment decisions and hence lowering mortality]
- Anti-Money Laundering
- Reduce expenses and costs
- Free-up employee's time to spend on more value adding activities [e.g. less time on data manipulation and modelling and more time on analysis of results]
- Automation of processes and calculations [e.g. pricing [7], reserving [33], capital calculations]

Given the current extent of data analytics within insurance and the likelihood of technologies continuing to develop, it would appear that competitive pressures will impel insurers to continue to embed and further utilise data analytics. For example, if a number of insurers were to use artificial intelligence techniques to identify the optimum premiums to charge policyholders then other insurers would need to follow suit in order not to suffer from relatively suboptimal pricing on their policies.

We note that Data Analytics is not confined to these insurance or traditional actuarial examples. Further uses of data analytics were outlined in the 2016 SAI Current Topics paper [22], e.g. analysing x-ray charts/medical reports, analysis of car driving habits from telematics, et al.

There are however some concerns and issues surrounding the ever increasing use of and complexity of data analytics:

- The more complex a model becomes then while this may give better results, the operation of the model will become more difficult to explain, i.e. difficulties in sense checking results
- Potential for things to go wrong and delays in realising and correcting for this, this is another consequence of the complexity of the model [impact on policyholders from problems with financial services can be severe, i.e. financial exclusion/policyholder detriment]
- Need to up-skill staff as newer technologies are more complex and different than more traditional technologies, e.g. training in concepts of machine self-learning and the potential issues with such technologies.
- Data analytics techniques are easier to apply in Non-Life insurance than Life insurance [this is typically connected to the long term nature of life insurance, the relatively fewer customer interactions, policyholder reticence in switching from their current life insurer]. However the adoption of data analytics in life insurance could enable life insurers to interact with policyholders more regularly via lifestyle or wellbeing programs, activity trackers, etc.
- Data-use liability [i.e. should firms use data for purposes that policyholders do not expect or explicitly approve of could leave them open to liability law suits, e.g. use of policyholder's social media data or changes in regulations]
- Breakdown of concept of pooling of risk [i.e. insurance relies on the concept of pooling of risks and community rating. As pricing models use ever more rating factors to determine premiums this could lead to "bad" risks more easily identified and quoted much higher insurance premiums]
- Increased power of data analytics may drive desire to update models ever more frequently (real-time models) [4]

Some of these bullet points are expanded in subsequent sections (on AI explainability and ethics in AI) of this paper.

Data Analytics Overview

Data Analytics typically has the following components:

1. Data gathering, cleansing and manipulation
2. Data analysis and modelling
3. Interpretation and use
4. Refine model and return to Step 1

There is a variety of programmes and systems used in data analytics: SQL, MS Access, MS Excel, Visual Basic, R, Python, Matlab, SPSS, SAS, C++, etc. Common visualisation tools for producing graphs are MS PowerBI, Tableau, and Qlik. The attractiveness of all of these programmes will depend upon the nature, scale and complexity of the tasks to be performed.

Many of these programmes are inter-connectable, e.g. PowerBI can accept data from SQL and R, within R code one can execute SQL code, R add-in within Excel, etc.

Useful resources for data science for actuaries include [19, 15, 20]:

- SAI Data Analytics Library
- IFoA website has a section on Data Science
- stackoverflow.com

In particular the IFoA are also launching a Certificate in Data Science in 2020. This certificate will cover Data Visualisation, Machine Learning, AI and Ethics, and the relevance of these to both the future of and newer areas of actuarial work. This follows similar initiatives by other professional bodies, e.g. AICPA.

R & Python Overview and Applications

R and Python have found particular popularity amongst actuaries. These programming languages are both free and open source. One essentially only needs a computer with an internet connection to use these programming languages. They are supported by various packages (in CRAN for R and PyPI for Python) which can be written by anyone.

Some common uses of R and Python are to:

- Automate tasks, e.g. performance of a calculation or production of a report
- Manipulate large data sets, e.g. R package: bigmemory
- Perform a variety of different analyses, e.g. statistical tests, machine learning, Monte Carlo simulations, model fitting, regression, GLM, etc. e.g. R packages: caret, randomForest, glm2
- Produce graphics, e.g. R package: ggplot2
- Create documents, reports and presentations, e.g. R package: rmarkdown
- Creating web apps, Python in particular, integrates all of the above
- Network Analysis, e.g. R package: visNetwork

Some examples of machine learning libraries in Python include:

- NumPy (scientific computing)
- TensorFlow (text analytics)
- scikit-learn (machine learning, statistical modelling)
- Python Pandas (eases the coding by making Python like Excel)

Thus, both R and Python have uses in all of the aforementioned areas of data analytics, i.e. manipulation of large data sets, statistical analysis & modelling, visualisation and communication.

There are a number of packages in R that are specific to insurance. The ChainLadder package can be used for claims reserving using claims triangles techniques, other packages e.g. cplm and actuar may also be of benefit for various actuarial tasks, see [e.g. cf. 10, 11, 12, 25 and 23, SAI Newsletter] for more R specific uses in insurance.

To what extent these insurance or actuarial packages will find wide spread use in industry is an open question. For example, if a firm is and has been using actuarial software for years and this software has been developed by teams of highly skilled full time professionals over decades then such a firm may be reluctant to move away from existing systems to more recent and less well known R solutions. Although we do note that a programme such as Python is easy to integrate with existing systems and so there may be room for it to be used alongside existing systems.

It is a further point of interest that the IFoA have now incorporated R into some of their actuarial exams (from the curriculum 2019 onwards). Thus, future cohorts of student and qualified actuaries will already be familiar with this particular language. This could result in R being used more widely as it may be quicker and cheaper to re-write legacy systems in R from existing actuarial staff rather than requiring expensive specialist knowledge for developments or amendments to legacy systems.

There are a number of free, high quality resources for learning R and Python:

- coursera.org
- udemy.com
- codeacademy.com
- w3schools.com

Relative merits of R versus Python

It should be noted that R and Python are considered less user friendly and require more technical programming knowledge than programmes like Excel. In general, while R can perform various statistical tests, it will not however teach the user the underlying concepts of such techniques, e.g. if ones wishes to calculate an odds ratio (e.g. to understand policyholder renewal sensitivities to certain premiums levels) then this calculation can be done in R, but R will not teach you what an odds ratio is.

While R and Python have captured the imagination of actuaries for coding, none-the-less, from a wider field's perspective it is interesting to consider R and Python's places in terms of popularity among other languages. In a survey of the most popular computer programming languages Python achieved a score of 41.7% while R achieved 5.8% [20]. The reason for R's low place in this survey may be due to a more limited audience to whom the language appeals, e.g. R is useful for niche actuarial calculations. On the other hand Python's relatively higher ranking speaks to the wider

applicability of Python, e.g. for web applications. If one were solely to look at actuarial type calculations then one would expect the relative popularity of R and Python to be much closer.

R is a statistical programming language (i.e. a somewhat niche language) whereas Python is a high level generalist programming language. Generally speaking, R is better for prototyping as there are more readily available libraries that one can put to use quickly, whereas Python is usually better for production, being faster, easier to connect with other systems, etc.

While Python may arguably be less relevant to actuarial science, one of the reasons for its recent rise in popularity is linked to the ubiquity of neural networks: R is too slow to train them and so Python is a good compromise between user friendliness and speed.

Also, a point of note is that each R package can have its own coding standards. Python however has coding standards given by PEP 8.

Many data scientists learn both languages, while those working with very large datasets may abandon both to focus on other languages such as Scala.

Artificial Intelligence

Artificial Intelligence (AI) refers to the use of computers algorithms to perform tasks in a manner resembling human intelligence. This form of technology can analyse both structured (e.g. data in tables) and unstructured data (e.g. emails), thus it is highly powerful. Along with a number of the aforementioned insurance applications of data analytics, applications of AI exist in language translations, decision-making, speech recognition, chat bots, image recognition, driverless cars, financial trading, chess, Jeopardy! quiz show, etc.

Existing AI technologies are ultimately limited in scope in what they can perform [17], i.e. they are still far from replicating genuine human intelligence. However such technologies have large potential to disrupt existing insurance operations, e.g. role of insurance for driverless cars.

Machine Learning is a subset of AI which uses algorithms to perform specific tasks across large data sets using non-traditional techniques, e.g. often relying on computer code to identify trends and patterns within the data, with limited human instruction, [cf. 32, and 31 for machine learning in motor insurance pricing]

We now briefly describe some of the types of machine learning algorithms:

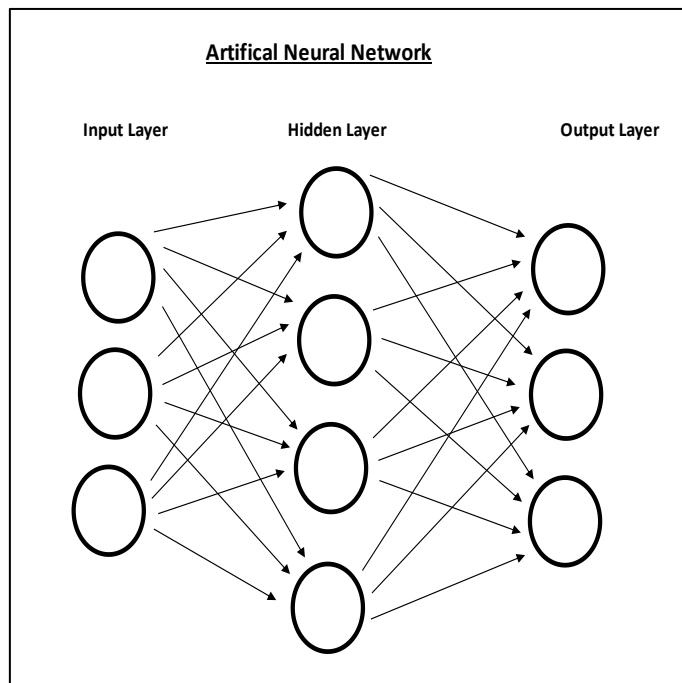
- Supervised algorithms: these algorithms have some human intervention in the model development, typically where the desired outputs from the model are already known. These models have training data (which is used to construct the model) and test data (used to validate the model). The training and test data both contain input and desired output information, e.g. inputs could be policyholder data and historic claims while the desired output data could be future claims experience. The algorithm then builds a model using the training data, e.g. working out correlations within the input data that best fit a model to give the desired claims experience. This model would then be judged on how well the results from inputs of the test data compare against the test data desired outputs. It is of interest to note that the inner workings of the model that gets constructed do not have a bearing on the ‘success’ of the predictive ability of the model, i.e. it is of no relevance to the success of the model if the model where to find/use a correlation that a human may disagree with. Indeed the model that gets

built may be so complex that to understand what the primary drivers of the outputs are may be exceedingly difficult.

- Unsupervised algorithms: these are contrasted with supervised algorithms in that they do not have human intervention. These algorithms describe and categorise inputted data. They analyse the inputted data to find patterns, trends and structures within it. The input data is then ultimately grouped according to the structures within it that the algorithm has discovered.
- Association learning: algorithms that discover association rules and relationships within large data sets, e.g. investigation of sales correlations, customer analytics, etc.

Some common machine learning models include:

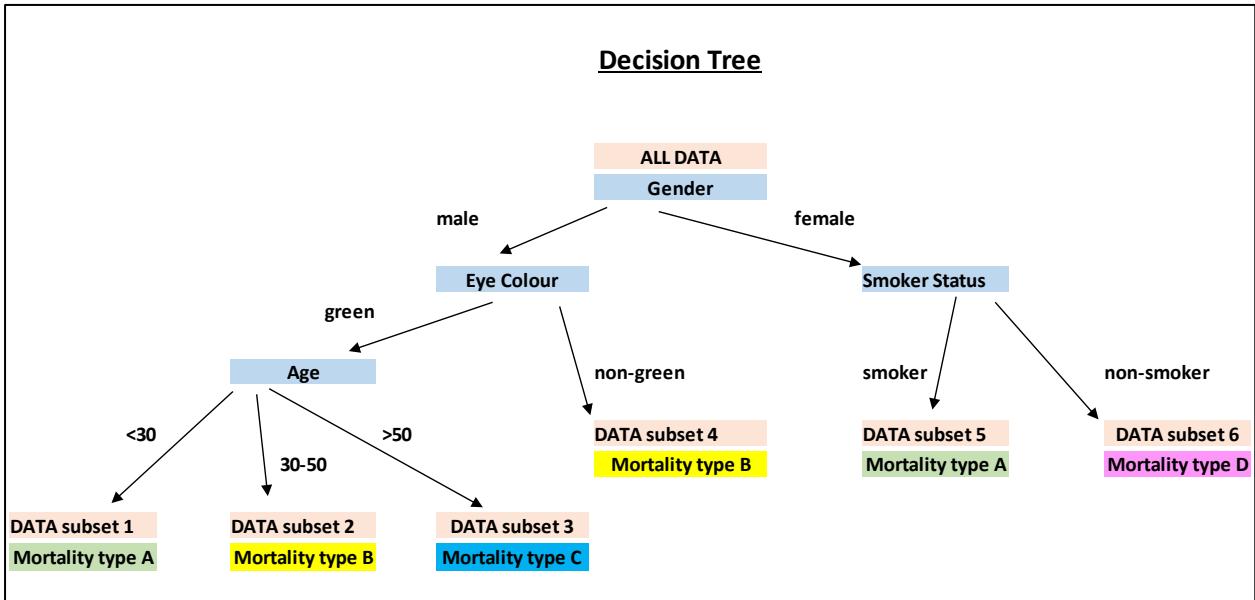
- Artificial Neural Networks (ANN): These models are inspired by the human brain. They consist of various layers (an input layer, hidden layers, output layer) each consisting of various nodes. The information flows through the input layer, through the hidden layers and into the output layer. Within the hidden layer the model works out the weighted-path that achieves outputs that best match the desired output. These models work efficiently over large data sets, whereby the model is refined by repeatedly passing the information through the layers such that the model can train itself by learning from the relative success of weighted-paths from previous runs. cf. [7]



Deep Learning is where the ANN has multiple hidden layers. These additional layers can make the model very opaque.

- Decision trees: these are supervised models. They can be used to split data into subsets such that each subset is defined by a number of characteristics that best describes some outcome, e.g. if one wished to break up a large set of policyholders into groups that have distinct mortality, a decision tree could be implemented to perform this split and tell the significance of the parameters which give the split. The model takes input data and then splits the data on the basis of some characteristic, e.g. for policyholder data the model might first split accordingly to

gender. Each of the two data subsets is then split again on the basis of some other characteristic. The model will continue to split the data according to the branches of the decision tree. Ideally once all of the splitting along the tree branches is complete the resulting data subsets will be somewhat homogeneous, i.e. further splitting would not yield any further useful split of the data. Once the data has all been classified into groups it could then be input into another model for decision making.



- Random Forests: These models compute multiple decision trees to obtain different ways in which data can be split up, with respect to some attribute of interest. The output of the Random Forest model is the mode or median of the individual trees. Random Forests may be preferred to Decision Trees as Decision trees models usually over-fit to their training data and random forests are a way to reduce the overfitting.
- Bayesian networks: Probabilistic models which rely on conditional dependencies. These are models require some initial prior assumptions and observed data. If these prior assumptions are useful then the model can run very efficiently, however if the prior assumptions are not accurate then it will take the model longer to overcome this initial bias and for the model to rely more on observed data.
- Naïve Bayes classifier: a simplified Bayesian network that uses independence assumptions between features of the model. It is popularly known for being used to classify emails as spam or not. The independence assumptions simplify the underlying calculations of the model whilst, arguably, not compromising model accuracy too much. For example, suppose one wished to classify policyholders into various categories, e.g. whether or not the policyholder will claim in the following year. Given each policyholder's characteristics one would then compute a probability of them claiming and a probability of them not claiming in the following year. The relative size of each of these probabilities will be used to classify/predict that if the policyholder claims in the following year.
- Vector Support Machines: These are supervised models, where the input data is classified into one of two categories. The model considers the input data as points in space and then classifies each of them point according to which of two regions it lies in that space. The dividing line in the space to classify the data is computed by the model from its training data.

- Regression analysis: similar to a Bayesian network but with no prior assumptions, e.g. simple linear regression, generalised linear model (GLM), etc.

As alluded to earlier in the paper, the above types of machine learning have found particular use in pricing and underwriting of non-life insurance. These modelling techniques are distinct from more traditional computer programs in that the algorithms learn from past experiences (their training data), e.g. ANNs themselves work out what correlations to apply, without the need for human direction.

We now discuss two particular issues with the use of AI: explainability and ethics.

Explainable AI (XAI)

The various machine learning techniques outlined in the previous section can yield outcomes that are very difficult to explain. This is the case with ANN models which are often very opaque with the inner workings of such models often described as a ‘black-box’. However this problem of explainability is also present in more transparent models. For example, it is easy to explain how a Random Forest model works. However, it is not so easy to explain how the input to a Random Forest model generates a specific output.

It is understandable then that there is a concern that AI algorithms can be unfair, give undesired discriminatory outcomes and develop biases. To address these concerns there is a desire then to make AI fairer, more trustworthy, transparent and accountable. Thus having AI programmes that are explainable should further these ends [e.g. cf. 18, 1, 26, 27, 28, and 8].

Where AI systems are used in insurance (e.g. pricing algorithms) then one might expect the actuary, as a skilled communicator of complex ideas, to become involved in explainability considerations. Indeed the actuary has professional responsibilities (the Actuaries’ Code) around clear communication of their actuarial work. Indeed one can imagine CROs and other internal users who rely on ‘black-box’ algorithms to be interested in these explainability problems.

One regulatory initiative to address concerns of citizens on the use and protection of their personal data by businesses has been the EU’s General Data Protection Regulation (GDPR) [34]. GDPR is an EU regulation that came into effect on 25th May 2018. GDPR has a number of articles concerning automated processing including: giving individuals the right to object to decisions made purely by automated processing (where those decisions have a legal or significant effect); right to know if automated processing has been used on their data; right to an explanation of the “logic involved” in the automated decision-making process. This “right to obtain an explanation” is then of acute concern for machine-learning algorithms, e.g. those used in pricing and underwriting, cf. [34: GDPR Articles 13-15]

The imposition of explainability on AI made decisions may lead to a restriction on innovation and use of AI. This is of concern given that AI technology has the potential to enhance social and economic benefits [e.g. in medicine and insurance]. It is argued that focus should instead rest on the outcomes of AI rather than the reasoning process for AI decisions. It may also be an infringement of the ability of insurers to run their businesses effectively if they are required to disclose too much information about the models that they are using, [8, 30].

Some techniques used to explain the ‘black box’ of AI algorithms are:

- Graphs and other visualisations of the model’s structure:
 - o heat-maps which highlight with different colours the part of input images, or words of a text, which mostly contribute to the prediction of the model
 - o display relationships between different parts of the inputs
 - o visualise the structure of the model via a flowchart
 - o display the contribution of the input features to the model's prediction with scatterplots and bar charts
 - o interactive interfaces that utilize different types of charts (tag clouds, bar charts, etc.)
- Textual explanations, whereby the AI model outputs the reasoning process behind its results
- Lists of "if, then" rules that mimic the reasoning process followed by the AI algorithm
- Use of simpler models or stop using black-box models and use models that are already known to be interpretable, [18]. There may be a trade-off in sophistication/performance of models and the explainability of models, e.g. results of Decision Trees may be easier to explain than ANN.
- Reduce complexity of inputs, e.g. use of Principal Component Analysis to reduce number of inputs into model
- Make AI code publically available, this would be transparent but such code may be very difficult to understand by the customer
- Human intervention
- Integration of black-box models with explanatory methods, such as LIME models (Local Interpretable Model-agnostic Explanations) for example, which automatically generate explanations of the model’s logic
- Pre-deployment certificates and algorithmic auditing, to give some confidence on the use of black-box models

Regulators and governmental bodies have taken an interest in the need for further monitoring and development of guidelines on data analytics. Indeed explainability of AI was listed as the first recommendation in a report of an expert group on regulation, innovation and finance to the European Commission [9]. The Dutch Regulator, De Nederlandsche Bank (DNB) has issued guidelines and a call for a discussion on the use of AI by financial firms [6].

The EU-US Insurance Dialogue Project [8] is an initiative to enhance understanding between EU and US insurance regulatory bodies for the benefit of consumers. One area they have focused on is Big Data and its use in the insurance sector. Their report on Big Data has a conclusion that insurers should share information with policyholders about how their data is used, whilst also respecting the insurer’s intellectual property rights.

The potential significance of AI decisions and the interest from regulatory bodies suggests that the development of codes of conduct and governance on the explainability of AI is an area which requires further development [e.g. cf. 2].

Ethics in AI

As AI research continues to advance and as AI capabilities grow a number of ethical concerns have begun to emerge. In order for society to be more trusting of AI it seems necessary to understand how these ethical issues can emerge and what framework can be used to deal with them [cf. 7, 8,

29]. Before listing some areas for ethical concern in insurance we remark that identifying and addressing ethical concerns is hampered as concepts of what is and is not ethical vary over time, between counties and indeed between individuals.

Biasedness of the data upon which to train a model is an issue that has the potential to cause serious issues for existing AI technologies. For example, new policyholders by their nature have less data (claims experience, typically younger) than existing policyholders. This inherent data bias may demand different pricing for new and existing policyholders. In general, much human data may be biased and this then becomes a difficulty for an AI programme if these biases are not properly understood.

If the data upon which an AI is trained has biases built into it and then the resulting AI model will inherit these biases, indeed such an AI model may exacerbate them. Suppose an AI model identified a certain policyholder type and the premium to charge them which yielded a generous profit margin. This could lead to the insurance company aggressively targeting sales on this cohort of policyholders, leading large amounts of sales to these policyholder types. Should subsequent experience prove that the premium charged was insufficient then the insurer has found itself with lower profits (or losses) than it would have had in the absence of an AI model. Thus AI models could amplify such problems for insurers.

Similar data biases can lead to undesirable outcomes with the use of AI programmes to screen CVs, predictive policing, etc. [cf. 23]. Solutions to data biases are to better understand the biases in data, de-bias the data, build algorithms that take account of the bias or that are ethically designed. AI programmes will ultimately be biased towards the data upon which they are trained.

Sources of data: In order to better price insurance policies it is necessary to have as much data on policyholders as possible. In particular we note that an AI algorithm can process vastly more data systematically and efficiently than a human. If insurers were to purchase additional policyholders data from third parties, e.g. social media or large tech companies, or if such companies were to enter the market themselves then there is an ethical question as to whether the policyholder has consented to the use of their data in this way. Indeed as many social media accounts are publicly accessible there is an ethical question as to what data insurance firms could directly gather and to what use this data could be put, e.g. AI monitoring social media profiles of policyholders who have made personal injury claims.

Price Optimisation: this is a practice whereby insurers calculate the level of premium to charge an individual on attributes other than those related to their risks, e.g. for two policies with the same risk characteristics an insurer might quote two different premiums if it has managed to identify that one policyholder is more or less likely to accept/renew a quote than the other. This would typically result in the policyholder who is more likely to shop around being offered a lower premium than the policyholder who is less likely to shop around or not renew their insurance policy. The adoption of AI, with its ability to calculate the significance of vast numbers of correlations, makes price optimisation ever more achievable than before.

There is an ethical concern with AI that the group of policyholders who get charged higher premiums due to price optimisation may contain within it vulnerable groups, e.g. the elderly. Any financial exclusion which resulted from such price optimisation could have serious policyholder detriment,

e.g. a person unable to shop around not being able to afford car insurance. Investigations on Price Optimisation have been conducted by UK's FCA and the US NAIC, with the latter resulting in the outlawing of price optimisation in a number of states. The ill effects of price optimisation could be partially remedied via premium caps for vulnerable customers, removing the ability to reject policyholders for certain insurance covers, e.g. motor third party, health insurance. One could extrapolate the idea of price optimisation to claims optimisation whereby insurers use AI to identify policyholder less likely to contest the determination of claim pay-outs of insurers.

It is worth noting that where an AI model has been used in price optimisation it is very possible that any resulting customer detriment may be entirely unintentional and unknown. Thus explainability of the AI algorithms is increasingly important and this raises questions as to how such a machine can be held accountable.

Micro-segmentation: AI could lead insurance closer to personalised premiums which means the concept of pooling of risk, which is fundamental to insurance, breaks down. The concept of pooling risks allows for the good risks to compensate for the bad risks. However if insurers can increasingly identify good and bad risks then this would result in lower premiums for the better risks and increased premiums for the worse risks. While such a shift in pricing may be theoretically more equitable (i.e. more accurately charging premiums based on the relevant underlying risk) it could lead to greater financial exclusion of policyholders deemed to be bad risks (and also more risk taking behaviour of individual policyholders deemed good risks, i.e. moral hazard).

Influencing policyholder behaviour: The collection and AI processing of health data on policyholders, e.g. monitoring of physical activity, it is argued can incentive physical activity of policyholders in return for lower insurance premiums. However such positive correlations between level of physical activity and healthiness are not true for certain groups of individuals. For instance a person with a serious underlying health problem might be better medically advised not to engage in vigorous physical activity, such individuals would thus be penalised by having relatively higher insurance premiums.

Accountability: to what extent can an AI algorithm be truly held to account for its results or decisions? Consider a report or summary produced by an AI algorithm (this is already existing technology). Would a human manager, e.g. HoAF, stand over this and sign-off such reports produced by AI? Can they be truly certain the AI has captured all of the necessary points in the report or are there serious issues of bias in the training data? This is not a situation too dissimilar to the issue of delegation (e.g. a senior actuary or director relies upon the work of others to guide them, be it to produce reports or perform calculations). With reports produced by humans there is some human accountability. Accountability of a self-taught AI programme is a different issue, i.e. does accountability rest with the programmer, the choice of data upon which the model was trained, those who approved the use of such technology within the organisation, etc.

Consider the situation where an autonomous vehicle is faced with a decision to either collide with a pedestrian or swerve to avoid the pedestrian, resulting in injury to the vehicle occupant. Exactly how these ethical issues can be resolved by AI technologies is a matter of on-going enquiry.

Regulatory Initiatives

It is unclear if some of these ethical concerns of customer detriment and financial exclusion can be addressed within the free market or via regulatory intervention. For instance, regulators may consider the relative merits of principles based and rules based regulation, i.e. to what extent firms should obey the spirit rather than the letter of the regulation. Also, ethical concerns may be shaped by company ownership models, would mutual insurers (companies owned by their policyholders) address ethical concerns differently from a propriety company (companies owned by shareholders) [16].

A number of insurance regulators have already considered or are considering the question of ethics in AI, e.g. EIOPA, European Commission, EU-US Insurance Dialogue project, De Nederlandsche Bank.

The Institute and Faculty of Actuaries (IFoA) and the Royal Statistical Society (RSS) have collaborated to produce a practical ‘Guide for Ethical Data Science’. The guide identifies five ethical themes relating to data science and AI:

1. Seek to enhance the value of data science for society
2. Avoid harm
3. Apply and maintain professional competence
4. Seek to preserve or increase trustworthiness
5. Maintain accountability and oversight

This guide is available for download from both the IFoA and RSS websites. The IFoA also has some professionalism skills videos on ethical issues arising from data science.

Actuaries must adhere to professional guidance in addition to legislation. As such it may be argued that professional guidance may impose greater ethical obligations and requirements than legislation, potentially putting a greater restriction on the actuary’s freedom to act or exercise judgement relative to other professions.

The question of ethics in AI is much wider than applications to insurance or actuarial work. Predictions of AI developments have ranged from utopian to dystopian futures [3, 5]. In particular a quick introduction of disruptive technology could lead to mass unemployment (with consequences for accidental unemployment insurance claims) with the introduction of a universal basic income (a separate area of actuarial interest) [14] put forward as a remedy.

6.3 Banking and Aviation Finance

6.3.1 Banking and IFRS 9

The International Financial Reporting Standard (IFRS) 9 was developed by the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB). It was implemented from the beginning of 2018, replacing the previous standard IAS 39.

The new IFRS 9 is forward looking – it recognises credit losses before they occur. The framework was designed in respond to the latest financial crisis in 2008. It aims to promote risk management and consistent standard and treatment of risks across the banking industry.

IFRS 9 encourages the interaction between finance and risk functions at the entity level, and works towards improving the overall data management and risk management processes within the banks.

In addition, a March 2019 report from the NOVA School of Business & Economics summarises the benefits of the new accounting regime as below:⁷⁴

- Improve incentives to enhance the credit appraisal processes, the monitoring of under-performing exposures and credit impairments, as well as the capital and business planning;
- Promote transparency and the enhancement of market disclosures to the stakeholders;
- High-quality implementation of the process.

The main differences between IAS 39 and IFRS 9 are summarised in the table below:

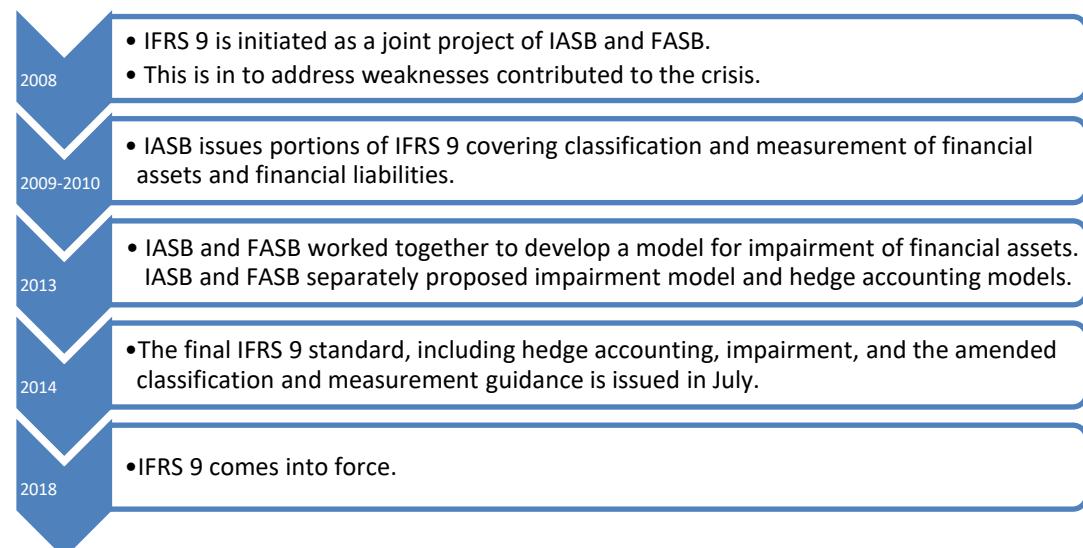
| IAS 39 | IFRS 9 |
|---|---|
| Recognise after credit loss has occurred | Forward looking - early recognition of credit loss |
| Rule based | Principle based |
| Complex and difficult to apply | Classification based on business model and nature of cash flows |
| Multiple impairment models | One impairment model |
| For FVO liabilities, own credit gains and losses are recognised in profit or loss | For FVO liabilities, own credit gains and losses are presented in OCI |
| Complicated reclassification rules | Business-model driven re-classification |

Table 1 Differences between IAS 39 and IFRS 9

Its main topics can be summarised as:

- Classification and measurement of financial instruments;
- Impairment of financial assets;
- Hedge accounting.

For most of the entities, IFRS 9 is effective for years beginning on or after January 1, 2018, with earlier adoption permitted. However, in late 2016, the IASB agreed to provide entities whose predominate activities are insurance related the option of delaying the implementation until 2021.



EBA Roadmap

In July 2019 the European Banking Authority (EBA) published its new IFRS 9 roadmap. It provides a comprehensive overview of planned monitoring activities on IFRS 9 implementation. At the same time, the EBA also launched an IFRS 9 benchmarking exercise on a sample of institutions which was aimed to:

- Analyse the different modelling practices followed by institutions;
- Determine how IFRS 9 implementation impacts the amount of expected credit losses.

In the roadmap EBA clarifies its intention to continue monitoring and promoting a consistent application of IFRS 9 as well as working on the interaction with prudential requirements.⁷²

EBA's Review of Initial Implementation

In December 2018 the EBA published some initial observations on the post-implementation impact of IFRS 9 on European banks. The report is based on institutions' supervisory reporting. It compares the results with the forecasts of the previous impact assessment reports and highlights the future work and areas of ongoing scrutiny for the EBA.⁷³

Main Observations

Based on the data collected from the sample of banks, it shows the actual negative Day 1 impact on:

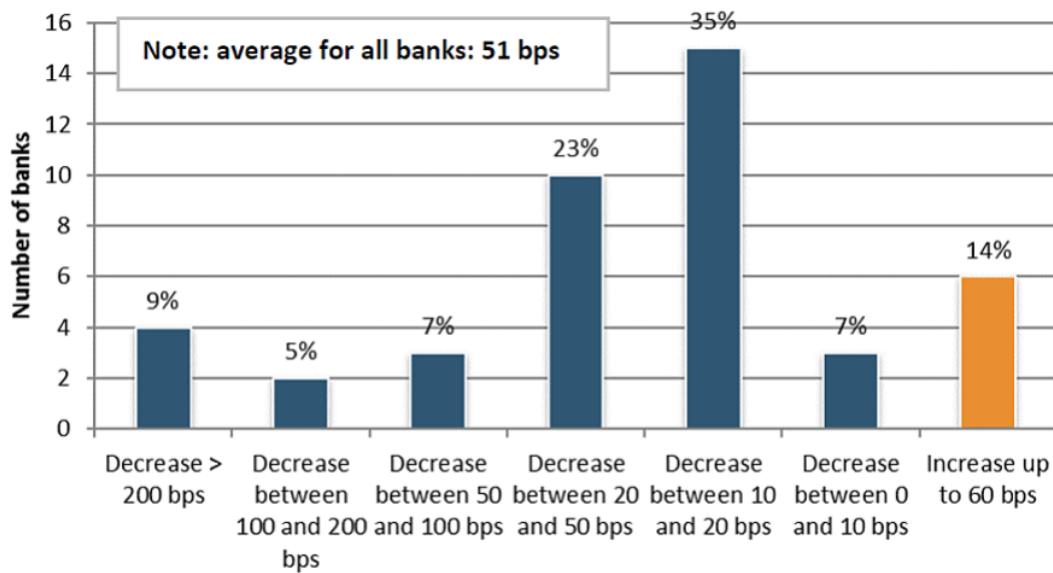
1. CET1: decrease by 51 bps on simple average compared to 42 bps in the second impact assessment report from July 2017), and
2. Increase in provisions: 9% on simple average compared to 13% in the second assessment report from July 2017.

The findings broadly confirm the previous estimates from the banks. 51bps is a significant impact on target capital, given that banks usually target CET1 capital in the range of 12-16%.

⁷² <https://eba.europa.eu/eba-publishes-its-roadmap-on-ifrs-9-deliverables-and-launches-ifrs-9-benchmarking-exercise>

⁷³ <https://eba.europa.eu/eba-provides-preliminary-assessment-on-post-implementation-impact-of-ifrs-9-on-eu-institutions>

Figure: Impact on CET1 ratio without application of transitional arrangements (reference date: 1 January 2018)



Source: EBA - European Banking Authority

In relation to the use of transitional arrangements mitigating the impact of IFRS9 on CET1 capital, the average CET1 impact resulting from the add-back of provisions for all the banks in the sample applying these transitional arrangements corresponds to 118 bps.⁷⁴

In addition, the EBA notes that the post-implementation review of IFRS9 is just starting. The effective impact of the standard, closely linked to the current and expected macroeconomic circumstances, as well as its implementation, will need to be reviewed through time. For this purpose, the EBA has developed a set of indicators using the supervisory reporting data that it intends to monitor on an ongoing basis.

Similarities between IFRS 4 and IFRS 9

In both IFRS 9 and IFRS 4, insurance contracts are subject to the requirement that embedded derivatives within other contracts are measured separately at fair value. However, in contrast to IFRS 9, IFRS 4 is making an exception for embedded derivatives that meet the definition of an insurance contract.⁷⁵

Basel II/Basel III

Most banks subject to IFRS 9 are also subject to Basel III Accord capital requirements. In order to calculate credit risk-weighted assets, the banks use either standardised or internal ratings-based approaches. The new IFRS 9 provisions affect the P&L that in turn needs to be reflected in the calculation for impairment provisions for regulatory capital. The infrastructure to calculate and report on expected loss drivers of capital adequacy is already in place. The data, models and

⁷⁴ The Impact of IFRS 9 on EU Banks and the Challenges Ahead (Moody's - Mar 2019), <http://blog.exed.novasbe.pt/en/articles/the-impact-of-ifrs-9-on-eu-banks-and-the-challenges-ahead>

⁷⁵ "IASB issues IFRS 9 Financial Instruments – classification and measurement" (PDF). Ernst & Young. July 2014. Retrieved 2014-08-31.

processes used today in the Basel framework can, in some instances, be used for IFRS 9 provision modelling, although significant adjustments may be required.⁷⁶

It is therefore not surprising that, according to a Moody's Analytics survey conducted with 28 banks, more than 40% of respondents planned to integrate IFRS 9 requirements into their Basel infrastructure.⁷⁶

A key change of IFRS 9 is the incorporation of credit risk data into accounting and therefore financial reporting processes. This requires a new kind of interaction between finance and risk functions at the entity level, and these functions will in turn impact data management processes.

The implementation of IFRS 9 challenges the way risk and finance data analytics are defined, used, and governed throughout an institution. In addition to IFRS 9, Basel Committee recommendations, EBA guidelines and consultation papers, and specific supervisory exercises are all contributing to the change. Firms are demanded to consider a more data-driven and forward-looking approach in risk management and financial reporting.⁷⁶

Challenges

In an October 2019 article, the Accountancy Daily noted that while the UK's major banks are making progress in implementing IFRS 9 Expected Credit Loss accounting (ECL), weaknesses do remain with respect to the firms' controls and management information around reporting impairment allowances.

The Bank of England's Prudential Regulation Authority (PRA) has warned that more needs to be done to ensure consistency and is calling on financial institutions and their auditors to review how they implement the accounting standard.

Bank disclosures related to IFRS 9

A thematic review of the Financial Reporting Council (FRC) in November 2018 highlighted certain areas where bank disclosures tended to be deficient and required improvements⁷⁷:

- Transitional disclosures analysing the principal differences between IAS 39 and IFRS 9;
- Qualitative and quantitative disclosures made by the smaller banks regarding determination of significant increases in credit risk, including linkage to internal credit ratings;
- Disclosure of uncertainty estimate, in particular quantification of sensitivities of expected credit losses to changes in assumptions;
- Discussion of the business model in assessing the classification of financial assets.

6.3.2 Aviation Finance and IFRS 16

The aviation industry has seen continuous growth in recent years – both in terms of revenue as well as the total number of passengers. The International Air Transport Association (IATA) expects the number of passengers to double over the next two decades. This growth goes along with increasing demand for aircraft. Close to 50% of the demand for aircrafts is fulfilled through aircraft leasing. It is

⁷⁶ The IFRS 9 Impairment Model and its Interaction with the Basel Framework, Julien Temim, Moody's Analytics, 2018

⁷⁷ IFRS 9 Thematic Review: Review of Interim Disclosures in the First Year of Application, FRC, November 2018

natural that the aircraft leasing industry is projected to experience continued growth in coming years.

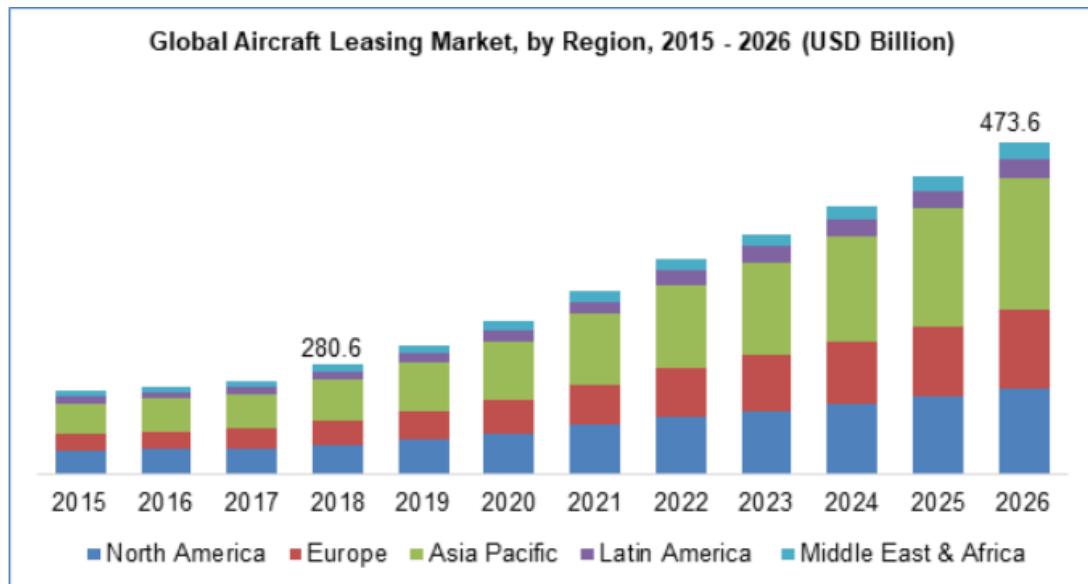


Figure 1 Projection of Global Aircraft Leasing Market

Ireland established itself early as a hotspot for the aviation and aircraft leasing industry. The story started in 1975 when Guinness Peat Aviation (GPA), one of the very first aircraft leasing companies in the world, opened its door for business in Ireland. Although the company collapsed financially in 1992 due to an unsuccessful IPO after the 1991 Gulf War, it fostered numerous talents and laid the foundation for the aircraft leasing industry in the country. The success continued to grow through new enterprises that performed strongly in the young industry which were able to protect and build their market share. Today, 14 of the 15 largest aircraft leasing companies in the world are based in Ireland.⁷⁸

Revenue/high level figures

The aviation industry based in Ireland contributes a significant amount to the country's GDP – about \$660 million – and employs about 5000 people in the country. Significant investments in recent years have fuelled continued expansion and strengthening of Ireland as a hotspot of the aircraft leasing industry. One major reason for Ireland's success in this area is the very competitive tax structure, which consists of:

- A very competitive corporate tax rate of 12.5%;
- Comprehensive double tax agreements signed with 74 countries (73 are in effect)⁷⁹;
- Zero VAT on leases to qualifying international airlines⁸⁰;
- 8-year tax life write off, compared to 20-25 years in other countries⁸⁰;
- Stamp duty exemption⁸⁰.

⁷⁸ <https://simpleflying.com/ireland-aircraft-leasing/>

⁷⁹ <https://www.revenue.ie/en/tax-professionals/tax-agreements/double-taxation-treaties/index.aspx>

⁸⁰ <https://www2.deloitte.com/content/dam/Deloitte/ie/Documents/Tax/crossing%20boarders%20.pdf>

Outlook

The potential of the industry has not gone unnoticed in other parts of the world and nowadays there are more countries trying to increase their share of the market. Especially in Asia, where the aviation industry has by far the fastest growth now and for the foreseeable future, countries like Singapore and China (Hong Kong) are competing. Ireland is trying to maintain its lead through investments and education projects, like the new UCD masters in aviation finance started in 2016. Executives also mention the need to be attractive for top talents to come to the country to work in the industry, citing housing, school education, income tax and work visas as key points in this regard.

Competition from other countries is likely to be the biggest challenge for Ireland in the coming years, while the general growth projection for the industry appears very solid. Brexit is currently not seen as a major risk for the industry. Airlines may feel the impact of Brexit more directly, however the leasing industry is to some extent buffered from these adversities, as airlines must pay the leases on an absolute and unconditional basis as per the “hell or high water” clause⁸¹ in aviation leases and will have to compensate for adversities elsewhere.

In the long run, of course, the aviation industry faces the challenge of finding alternatives to the usage of fossil fuels, for which significant technological advances are required.⁸²

Aviation vs. Insurance

Increasing number of actuaries employed

We have mentioned the high number of jobs that is provided by the industry. At the beginning of 2019, the aviation sector had about 1,500 employees, while the broader supporting economy provides roughly 3,500 jobs.

Beside the high total number of employees, one should also note that this number comprises a big share of high quality jobs. Law firms, tax advisers, auditors, risk managers and actuaries are involved – through direct and indirect employment.⁷⁸

SAI Banking & Aviation sub-committee

With respect to aviation finance, the objective of the committee is to help forge links between the traditional actuarial world and the universe of aviation finance. It has taken several steps towards this goal in the last two years. CEOs of world leading aircraft leasing companies have been invited to give presentations at SAI events; networking events providing insight into the industry have been organised and case studies and papers have been written by committee members.

Aviation Bonds as an Insurance Asset

Overview

Aviation debt securities do offer an attractive yield relative to other asset-backed securities. Considering that the low interest rates in the EUR area may incentivise the search for higher yields, it

⁸¹ <https://www.vedderprice.com/iacg-v-olympici---affirmation-of-as-is-where-is-and-hell-or-high-water-clauses-07-11-2012>

⁸² <https://www.iodireland.ie/news-events/blog/emergence-aircraft-leasing-hubs-asia-threat-or-opportunity>

may therefore appear as an adequate enhancement of portfolios for (re)insurance companies and pension funds. An advantage of aviation bonds is that they are usually issued by special purpose vehicles (SPVs) and furthermore they usually possess strong collateral in the form of aircrafts and aircraft engines, reducing the risk for investors.⁸³

Credit Risk

The aviation debt securities market offers a wide range of credit risk. On the lower risk end, there are debt securities that are guaranteed by the export credit agencies from countries like Germany, UK, France and the US. Examples of investments with a higher credit risk are loans to an SPV. Such an SPV may own one or several aircrafts of which the lease receivables are sold through such securities. Unsecured lending to airlines and aircraft lessors are also available, offering high risk premiums.⁸³

Challenges

There are two major challenges for selling aviation debt securities to insurance undertakings. The first relates to the SCR that such debt security will give rise to if held by the insurance undertaking. The second relates to the structure of the insurance undertaking's asset management operations.⁸³

SII Regulatory Requirements

The most important challenges for insurers considering investment in the aviation sector are liquidity concerns and Solvency Capital Requirements (SCR) related to the investments. In contrast to a private individual considering the purchase of aviation debt, an insurance company has to evaluate not only the risk and return characteristics but also the impact on the SCR, which may pose a significant challenge on the undertaking.⁸³

The SCR charge can be challenging if an insurance undertaking does not use an internal model. Such internal models will typically be available in bigger institutions. In some cases, particularly for smaller institutions, uncertainty related to the SCR impact may be an obstacle towards buying aviation debt. Nevertheless, if the internal model can justify a lower capital charge than the one produced by the standard formula, the investment into such debt can still be an opportunity for an insurer.⁸³

Outlook

Current Trends

- Increased competition in bank debt market globally;
- Lessor domination of capital markets to continue;
- Resurgence of JOLCOs (Japanese Operating Lease with Call Option – which incorporates a fixed purchase option);
- Emphasis on credit ratings and unsecured funding;
- US airlines continue to use EETC market (Enhanced Equipment Trust Certificates – SPV with credit insurance to raise finance);
- Resilience of ABS for lessors;
- Trends with other sources of finance.

⁸³ Selling Aviation Debt Securities to EU Insurance Undertakings (SAI – Dec 2018)

The impact of bank regulatory capital requirements continues to be a relevant point of discussion in the industry. The Aviation Working Group (AWG) asserts that a Basel III/IV proposal to remove the use of the advanced internal rating based (AIRB) approach for certain capital exposures will increase the cost of bank debt⁸⁴.

It is very apparent today that aviation finance is establishing itself more and more as a mainstream business in the world of finance. Various kinds of banks are entering or returning to the business, resulting in an increase in liquidity and competition. Even the market for unsecured debt is picking up and becoming more liquid.⁸⁵

Potential Inhibiting Factors for Future Growth

Even though the overall outlook is positive, there are a few clouds on the horizon which are characterised by a high degree of uncertainty:

- Global macroeconomic slowdown or recession;
- Geopolitical threats like Brexit, trade disruptions and barriers, and armed conflicts;
- Rising interest rates;
- Reduction in quantitative easing;
- Rising oil price;
- Introduction of carbon taxes;
- Rising labour & maintenance cost;
- Strong intensification of competition in the aircraft leasing sector;
- Regulations like Basel III/IV may increase capital requirements for banks, leading to decreased capital available for aircraft lending⁸⁶;
- Climate change catastrophes, such as the Australian bushfire in late 2019 / early 2020;
- Pandemic resulting in reduced and restricted air travel, e.g. COVID 19.

IFRS 16

Overview

The International Accounting Standards Board (IASB) has published a new Standard, IFRS 16 Leases. For lessees the new Standard brings most leases on balance sheet under a single model similar to the existing finance lease model. However, lessor accounting with the distinction between operating and financing leases remain largely unchanged. Subject to EU endorsement, IFRS 16 is effective for periods beginning on or after 1 January 2019, with earlier adoption permitted if IFRS 15 has also been applied.⁸⁷

⁸⁴ <http://www.awg.aero/project/banking-regulation-capital-requirements/>

⁸⁵ <https://web.actuaries.ie/sites/default/files/2019-06/190625%20Aviation%20Finance%20Irelands%20Next%20Step.pdf>

⁸⁶ <https://home.kpmg/ie/en/home/insights/2019/01/aviation-industry-leaders-report-2019-tackling-headwinds.html>

⁸⁷ Aircraft leasing sector - Implications of the new leasing standard (Deloitte), <https://www2.deloitte.com/ie/en/pages/tax/articles/aircraft-leasing-new-leasing-standard.html>

Impact

The new standard, in addition to bringing substantial new assets and liabilities onto airlines' balance sheets, will have an impact on reported profit and performance measures such as return on capital employed (ROCE). Perhaps most significantly the impact on individual airlines will depend on their particular financing and leasing structures and may be very different from the impact on their peers.

Airlines will need to assess early the impact on their results, and if possible on that of their peers. They should aim to develop a plan for explaining this to their shareholders and other stakeholders.⁸⁷

Balance Sheets

The main headline of IFRS 16 is that leases previously treated as operating leases will generally now be on-balance sheet. A lessee will recognise a right-of-use asset and a lease liability, and consequently depreciation and interest expense in the profit and loss account.⁸⁷

The funding structure of airlines across the world differs significantly depending on their credit ratings. Some carriers finance aircrafts through longer term finance lease, while others use shorter operating leases. For carriers with sizeable aircraft operating lease portfolios, the effect is likely to be significant. There may also be properties and other tangible assets held under operating leases, or leases of spares embedded in a maintenance contract. A lessee may elect whether to apply IFRS 16 to leases of intangible assets such as landing slots.⁸⁷

KPIs

To make the results of airlines comparable, analysts have historically used a 7x multiple of the annual aircraft operating lease cost as a proxy for the debt relating to these leases. However, this takes no account of the differences between airlines in their lease structures (e.g. the differences in the duration of the operating leases).⁸⁷

The impact of the change in debt will be particularly significant for return based performance measures, such as ROCE. These are important performance measures for airlines as they require a significant amount of capital for their operations. They are used as a benchmark for whether airlines are generating the returns required by shareholders something, which has been challenging for the industry historically.⁸⁷

For example for airlines where the average remaining term of their leased aircraft is shorter than 7 years, it is likely that their lease obligations, measured under the new standard, could be lower than using the 7x multiple and as a result their ROCE metrics would improve under the new rules. The opposite will be true for those airlines with a longer average term remaining.⁸⁷

Profit or loss volatility from foreign currency leases

Foreign currency lease liabilities will be retranslated at each reporting date, with movements recorded in profit or loss, rather than as an adjustment to the right-of-use asset. This is likely to be particularly relevant for companies with a functional currency other than USD, since many aircraft leases are denominated in the currency. Companies may wish to consider their treasury strategy and whether they are able to apply hedge accounting to address this volatility.⁸⁷

The Discount Rate – a Practical Challenge

Under IFRS 16, the discount rate to be used in measuring the liability for future lease payments is the rate implicit in the lease. Determining the rate implicit in the lease however requires knowledge of the underlying asset's residual value and its fair value. Where the implicit rate is not readily available to a lessee then an incremental borrowing rate is used, i.e. the rate it would pay to borrow the necessary funds over a similar term, and with a similar security. Determining this hypothetical borrowing rate may still present practical challenges and may require a considerable use of judgement.⁸⁷

6.3.3 Impact of Near-Zero or Negative Interest Rates on Banking and Insurance

Banking

History

Before the 2008 global financial crisis, negative interest was a rare occurrence in practice. Even in economic theory, they were playing an ancillary role at most, with some economists even considering the idea of charging negative interest “outlandish”. Before the global financial crisis started in 2008, examples of negative interest rates being applied in banking go back to the period post-WWII, or to Switzerland in 1972. The 2008 global financial crisis marked a turning point triggering lasting changes of the banking sector.⁸⁸

The latest global financial crisis unfolded the trustworthiness among counterparties as one of the key concerns in financial transactions. In the height of the crisis, large financial institutions collapsed while the interdependencies of one institution on another led to a widespread propagation of the default risk.⁸⁹

The credit quality of the counterparty became thereafter an integral part of the market risk. For many, trading became either too risky or too expensive and complex (under the pricing of the credit risk). Since then, the financial crisis infected countries of the hard core of the Eurozone.⁸⁹

In order to avoid that this new environment dominated by the credit-quality brings a halt to the economy, central banks and particularly the ECB applied some exceptional measures, including quantitative easing (“QE”).

⁸⁸ The New York Times, 23. April 2015, Get Paid to Borrow Money (Risks and Limits Apply), P. 16; https://www.nytimes.com/2015/04/24/business/get-paid-to-borrow-money-risks-and-limits-apply.html?_r=0

⁸⁹ “Interest rate derivatives in the negative-rate environment - Pricing with a shift”, Deloitte Belgium, 2016

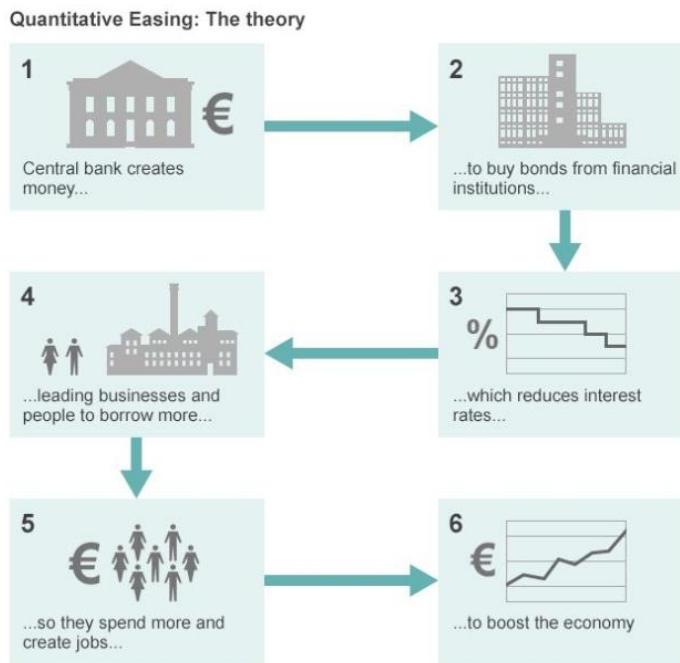


Figure 2 What is QE⁹⁰

The idea of negative rates imposed by central banks is to incentivise banks to lend to the market instead of holding excess reserves at the central banks, thereby reducing financing costs for banks and borrowers, spurring lending and ultimately improving economic growth. In some cases, like Denmark, another desired effect is to curb an appreciation of the currency by making it less attractive for foreign investors.⁹¹

Impact Mechanisms

The negative interest rates have a significant impact on banks' profit margins and profitability due to the nature of banks' balance sheets. The most common interest rate curves used in the banking industries are EURIBOR (Euro Interbank Offered Rate) and LIBOR (London Inter-bank Offered Rate).

For banks, their assets are priced off EURIBOR / LIBOR, i.e. adding a spread over the interest rate. So if the EURIBOR / LIBOR drops, the banks' income will go down.

It is more complicated on the liability side of banks' book. For retail banks, majority of the liability is deposits. If the interest rates go down or go negative, banks can be reluctant to pass on the low or negative interest rate to the customers, and thus the cost does not go down as much as the income. This can be due to several reasons, including:

- Conduct – banks may get criticised for charging negative rates on deposits, resulting in reputational risk;
- Peer pressure – if other banks are not following suit;
- T & C – existing T&C may expose the banks to legal risks if negative rates are placed on deposits;
- System – banks' existing system may not be able to handle the negative interest rates and further developments are required.

⁹⁰ <https://www.bbc.com/news/business-15198789>

⁹¹ <https://www.bloomberg.com/news/articles/2019-01-08/a-decade-of-negative-rates-denmark-may-be-the-first-to-try-it>

Smaller institutions are usually more affected than the bigger ones. For them, a higher proportion of their funding comes from deposits. Other studies focussing on Denmark, Sweden and Switzerland have shown little to no impact on profitability on some banks⁹². This divergence of results could be seen as a hint that banks, especially bigger banks, have enough leeway to diversify their income in order to mitigate the impact. Big institutions have high proportion of market funding which, unlike deposits, are also priced as EURIBOR / LIBOR + spreads.

In addition, QE creates the risk of too much cash in the economy, where supply significantly outweighs demands. This may result in too much cash sitting on banks' balance sheet, further reducing their profit margins.

Resolutions

With their profit margins compressed, banks experience that their profitability is jeopardized, equity capital is reduced and ultimately the overall financial stability of the bank may be compromised. In many cases, banks have refrained from setting negative rates and instead tried to compensate for these impacts elsewhere:

- Increase fees and commissions (on current accounts, credit cards, transaction etc.);
- Become more cost efficient through reducing operating expenses, cost to income ration;
- Improve income outside of the credit departments, including bank assurers.

European banks, which are holding a combined €1.9tn of reserves to satisfy post-crisis regulations, complain that they are carrying the biggest part of the strains in a negative interest environment.

The ECB has acknowledged the banks' problems in a negative interest rate world and has installed a tiering program to compensate banks for some of the costs of their deposits with the ECB. It is expected that this measure will lead to a drop of the interest paid by banks on central bank deposits from €7.2bn in 2018 to around €5bn in 2019.

An interesting question is whether lower interest margins are pushing banks into taking more risks. However, few studies have dealt with this question in detail and there are no conclusive answers as of yet.⁹³

Low Interest Rate Globally

US

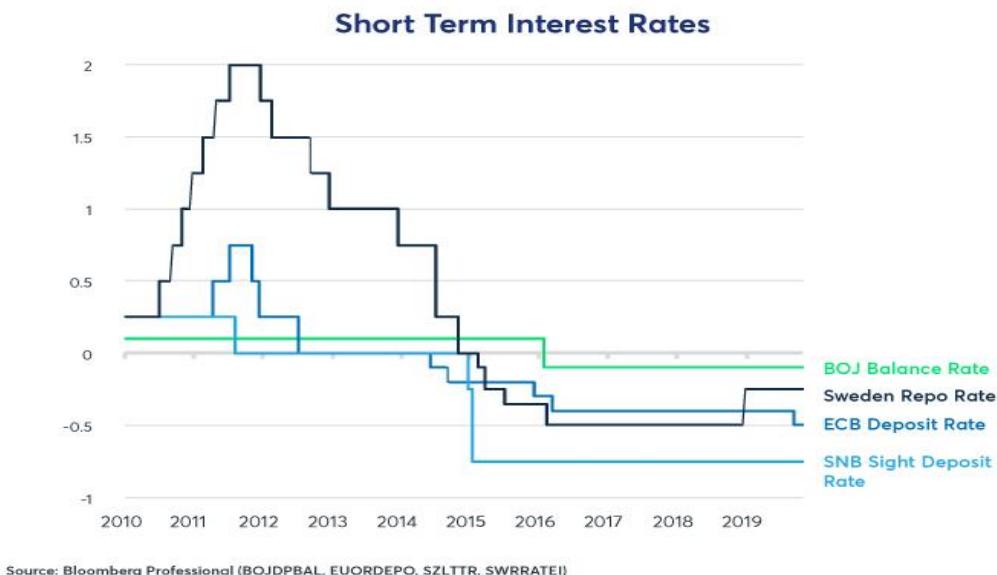
In June 2006, two years before the global financial crisis, the US FED rate had risen to the level of 5.25% from being as low as at c1% in June 2004. The FED began to decrease the rate in 2007 before the crisis, culminating in a level of 0 - 0.25% in December 2008. The FED rate remained at this level for seven years until December 2015. The FED refrained from setting a negative rate, while the range of 0 to 0.25% remains the lowest in FED history.

Euro Zone

⁹² Conversely, Scheiber et al., 2016

⁹³ European banks fear no escape from negative rates, Financial Times, <https://www.ft.com/content/93015730-d960-11e9-8f9b-77216ebe1f17>

Firstly, in a series of ECB decisions from 2008 to 2011 interest rates were gradually lowered and therefore borrowing became cheaper. On June 5th 2014 however, the ECB took this a step further by setting a key interest rate to minus 10 basis points.



Rest of the World

In recent times the central banks of Switzerland, Denmark, Japan and Sweden have also taken the decision to set some of their key interest rates in a negative territory.⁸⁹

Outlook

The quantitative easing policy by the ECB was intended to facilitate economic growth. While interest rates are still kept on a very low level, with slowing economic growth in the EUR area, it appears that a recovery of interest rates to pre-crisis levels is difficult. The ECB had originally planned to raise interest rates, but refrained from this step due to persistently low inflation and mediocre growth. Therefore, significant raise of interest appears unlikely in 2020, and one may constitute that the long-term developments are uncertain at this point of time.

In December 2019, the ECB under Christine Lagarde decided to keep the ECB rate at 0%. She fortified her position that as long as the economy is not picking up significantly and the inflation rate is not closing in on the 2% goal, the interest rate will remain low. At the same time, the ECB continues to purchase government bonds, thereby injecting fresh money into the economy.

Housing Market

A low interest rate environment affects the housing market in several ways. Low mortgage rates increase the demand for homes, both for investors and self-buyers. Furthermore, the low rates impair capital gains from deposits and other important markets. Indeed, the uncertainty of the developments of the stock markets is high after the markets have been performing strongly for a decade now. This pushes many investors looking for returns into the housing market. In other words, as some economists are phrasing it, with the persistent quantitative easing policy from the ECB,

there is so much money in the system that powerful investors “don’t know where to put it”. The ECB has acknowledged and warned in 2019 that an overvaluation of markets, including the real estate markets, is a real risk.

Beyond Monetary Policy

Monetary policy conducted by the central bank also has psychological impact on the markets. Some economists argue that this part of negative rates is sometimes overlooked. Looking at Japan’s economic crisis in the 90s, some economists view that the Bank of Japan’s steps to combat deflation, including eventually the implementation of negative rates, only spurred the distrust from investors and business leaders. It fortified their suspicion that the Bank of Japan may be concealing the severity of the situation and stimulated the spread of bad loans in Japan’s banking system.

If one is looking for it, similar distrust can certainly be found in the Euro area right now as well. The decisions of the ECB are viewed negatively by the press and also by influential economists. Many of them are arguing that the governments should do more to stimulate the economy instead of leaving the field to the ECB.⁹³

Valuation Challenges

We noted above that negative interest rates played a negligible role in economic theory before the latest global financial crisis. In mathematical finance, interest rate models assigning a positive probability to the short-rate (short term interest rate) being negative actually existed before the crisis. However, this particular feature had often been viewed as a weakness of such models⁹⁴.

The Hull-White model for example uses a mean-reverting process for the short-rate, resulting in the short-rate having a normal distribution. In particular, this means that negative interest rates occur with positive probability. In fact any level of interest rate could be breached with positive probability. This model yields closed formulas for simple interest rates derivatives and has been very popular as a result. The allowance of negative interest rates has all but increased its popularity. Unsurprisingly, despite the model was first derived in 1990, it is still highly relevant for practitioners nowadays.

Another model allowing negative interest rates is the Bachelier model which was already conceived in 1900.

The Black-Scholes model was developed as a model for stock prices, however, it can also be used to model reference rates (like LIBOR) and thereby it may be applied to pricing interest rate derivatives. However, as it assumes a lognormal distribution, it cannot be used in a negative interest rate environment. In practice, this has become a problem particularly for the derivation of implied Cap and Swaption volatilities, which used to be commonly based on Black-Scholes (c.f. the term “Black volatilities”). With the interest rates turning increasingly negative, “normal volatilities” based on the Bachelier model emerged and in many instances replaced the “Black volatilities”.

Reference Rates and Benchmark Reform

⁹⁴ Interest Rate Models - Theory and Practice; Brigo, Mercurio; Springer 2006

A fundamental parameter in mathematical finance and pricing theory is the risk free rate used to derive the time value of money, or equivalently to discount the future cash flows. Before the 2008 global financial crisis, the LIBOR reference rates served as the go-to risk free rate. During the crisis, a significant spread between the LIBOR rates and the overnight lending rates in the interbank markets emerged, which are the source of the so called Overnight Indexed Swap OIS reference rates. OIS established itself as the new benchmark for the risk free rate.

Since then, cases of fraud and manipulation have occurred and central banks have recognised the need for the implementation of new secure benchmark rates. These include USD SOFR, GBP SONIA and EUR €STR. They will gradually replace LIBOR-type rates as the new reference rates in the years ahead.

Insurance

Monetary expansion and quantitative easing have helped the European economy to overcome the global financial crisis. However, beside banks, insurers and in particular life insurers have also suffered from the low interest rates.

Impact Mechanisms

Low interest rate environment constitutes one of the main risks for the European insurance industry. This is mainly due to two generic characteristics of insurers', especially life (re)insurers', business models:

- the large amount of fixed-term investments that insurers have on their balance sheet;
- the strong influence of long-term interest rates on the discount rate of insurance liabilities.

Moreover, in Europe, the life insurance business is often characterised by the presence of products embedding financial guarantees, e.g. instruments granting a minimum rate of return to policyholders. During the time of low interest rates, the guaranteed interest rate may no longer be achievable. This business model may represent a threat to the profitability and the solvency of life insurance companies, especially in countries where products with relatively high guaranteed returns sold in the past which still represent a prominent share of the total portfolio.⁹⁵

Given the generally long-term nature of life insurance liabilities and their requirements to wind down assets over a reasonably long time should problems arise, low yields by themselves are unlikely to cause a major disruption in the sector. However, a persistent situation would require major adjustments in the business models, especially for life insurers.⁹⁵

Income Channel

It is typical for the insurance sector to have a high exposure to long-term fixed income assets. This means that the yields of maturing assets are difficult to achieve in the current market. In order to compensate for a stressed "income channel", insurers are looking for higher yields in the market for their investments. This may be achieved through accepting higher credit risks, or investment in assets which better match the liabilities duration. Either way, it will affect insurers' SCR calculation,

resulting in additional reserve requirements. In general, one may conclude that bigger insurers have more means of mitigating the impact of a stressed “income channel” than smaller ones.⁹⁵

Duration Mismatch

Even though insurers typically try to invest in long-term assets, the durations offered in the market are still going to be shorter than the exceptionally long duration of their liabilities, especially for life insurers.

Naturally, life insurers’ liabilities are more heavily affected by low interest rates due to the very long duration of the business. It is worth noting that such a duration mismatch of assets and liabilities became the doom of some banks in the global financial crisis, which only highlights the vulnerability of such mismatches to big interest rate moves.⁹⁵

Overall Impact

Empirical evidence on the impact of long-term interest rates on the insurers’ performance is scarce. Nevertheless, whenever it is tested, it appears that the volatility, rather than the low levels per se, of long-term interest rates increases the financial fragility for insurers.⁹⁵

Reaction

Supervisors and regulators

To address the risk of guarantees not being covered, accounting principles had to be adjusted in some countries. This requires insurers to hold higher reserves, reducing profitability. When the risk of insolvency is considered to be too high, deferred benefits may be considered as last resort measures. There is also a strong incentive to cap or challenge guaranteed rates, as arguably a persistent negative interest rates environment was not considered possible when such policies were designed. However, such strong interventions are still rare. Supervisors have however tried to indirectly dampen the impact of low rates on insurers.⁹⁶

Lapse Experience

The constraints of long-term guarantees held by insurers has led insurers to no longer offer such long term investment guarantees and scale them back where possible. Such scale back of policies may involve incentivising policyholders to sell their policies, resulting in higher lapse experience.⁹⁶

⁹⁵ Euro area insurers and the low interest rate environment (Europa Nov 2015),
https://www.ecb.europa.eu/pub/pdf/fsr/art/ecb.fsrart201511_02.en.pdf

⁹⁶ Interest Rates and Insurance Company Investment Behaviour (AEA – Oct 2018),
<https://www.aeaweb.org/conference/2019/preliminary/paper/DiB8iE8Z>

7. Enterprise Risk Management

7.1 General ERM update

7.1.1 CERA Framework

The CERA credential⁹⁷ provides risk professionals with strong ERM knowledge that drives better business decisions applied in finance and insurance and well beyond. This credential has a strong role to play for actuaries in risk management, not only in finance, insurance and pensions but in non-traditional fields too. It combines actuarial science with the theoretical, practical and professional principles of ERM to equip risk management professionals to empower better business decisions and more profitable business developments.

The CERA Global Association⁹⁸ has a wealth of knowledge on ERM and gives information and guidelines on CERA events across the world.

In order to be awarded the CERA designation with the Institute and Faculty of Actuaries⁹⁹ (IFoA), a trainee or fully qualified actuary must do the following:

- pass, or be exempt from, the SP9 (Enterprise Risk Management) exam
- attend a CERA seminar
- complete an application form for the designation and return it to the CERA Administrator (IFoA)
- the CERA Administrator will contact you to confirm that you have, and can use, the CERA designation

In 2018 the Society of Actuaries in Ireland has joined the CERA Global Association as an Acceding Party¹⁰⁰ and they are currently following steps involved in applying to become an Award Signatory. This would entitle the Society to award the CERA designation directly to members.

There has been growing interest in this area in recent years. The Society of Actuaries in Ireland hold a Risk Management Conference each year where industry leaders can come together and share their insights on risk management topics, thus strengthening the ERM community. The most recent Risk Management Conference took place in October 2019 and covered a range of topics¹⁰¹ such as risk culture, risk management, consolidator businesses, sustainability and climate change as well as the roles of Chief Risk Officer, INEDs and regulators.

⁹⁷ <https://ceraglobal.org/cera-credential/what-is-cera/>

⁹⁸ <https://ceraglobal.org/>

⁹⁹ <https://www.actuaries.org.uk/studying/plan-my-study-route/chartered-enterprise-risk-actuary-cera>

¹⁰⁰ <https://web.actuaries.ie/news/18/10/society-joins-cera-global-association>

¹⁰¹ <https://www.theactuary.com/news/2019/11/november-people-and-society-news/>

7.2 Brexit

7.2.1 Impact of Brexit on Insurance Companies

Brexit (or British exit) which refers to the UK leaving the EU has been a topic of interest especially in the Irish finance industry for quite some time now. The European Union involves 28 countries and allows free trade and free movement of people to live and work in whichever country they choose. The UK would be the first country to leave the EU in an unprecedented move and this will have a significant impact on the finance industry. For Irish companies with business in different countries across the EU and UK, Brexit brings many new challenges and many insurers are assessing their options.

The table below¹⁰² focuses on the potential long-term macroeconomic impact on Ireland where scenarios such as Free Trade Agreements (“FTA”), No Deal (“WTO”) and “EEA” Agreements were considered.

TABLE 2 COMPARISON OF RECENT STUDIES ON THE LONG-TERM IMPACT OF BREXIT ON THE IRELAND

| Study | Scenario | GDP % Change Relative to Base |
|--------------------------------|--------------------|-------------------------------|
| Arriola et al. (2018) | No Deal | -2.3 |
| | EEA | -2.3 |
| Bergin et al. (2017b) | FTA | -2.7 |
| | WTO (No Deal) | -3.8 |
| Copenhagen Economics (2016) | EEA | -2.8 |
| | FTA | -4.3 |
| | No Deal | -7.0 |
| Conefrey et al. (2018) | No Deal | -3.2 |
| Central Bank of Ireland (2019) | Disorderly No Deal | -6.0 |
| | FTA | -2.5 |
| IMF (2018a) | No Deal | -4.0 |
| | Norway Deal | -1.3 |
| | No Deal | -5.7 |

It is clear that there is a range of possible outcomes possible in relation to Brexit. The CBI has been engaging closely with firms, European and UK regulators and the Department of Finance to ensure the Irish financial system will be resilient to the impacts of Brexit.

7.2.2 Deal or No Deal

Some of the main issues facing insurance companies in light of Brexit are the ability to continue to write new business into and from Ireland to UK policyholders and the ability to continue to service existing policies.

Under the EU/EEA framework, passporting rights allow EU-based (re)insurers to:

- Issue contracts cross-border and/or through branches;
- Services contracts sold to customers in the EU/EEA who move, later on, to another EU/EEA country

¹⁰² <https://assets.gov.ie/7229/43fbef9ba6404433be5cf78fe5f0357.pdf>

Post-Brexit, EU Member States will no longer have the right to passport into the UK. (Re)insurers that do business on a passporting basis between the UK and EU/EEA would no longer have authorisation to continue to service existing contracts after Brexit and would breach national law in those host countries where a license is required.

There will be a transitional period if the UK leaves with a deal during which all the current rules stay the same allowing the UK and EU to negotiate their future relationship. European insurance firms operating in the UK can continue to carry out business, write new contracts and service existing contracts for a temporary period until 31 December 2020. During this period, the UK is technically not in the EU, but it is expected to abide by its rules. This will give insurance companies time to prepare and submit applications for UK authorisation and complete any necessary restructuring.

In the event of a no deal Brexit the UK immediately leave the single market and customs union. Companies that have decided to put their UK or EU businesses into run off may not be able to administer these books of business after Brexit. In Ireland, under a no-deal Brexit in accordance with the Central Bank of Ireland¹⁰³ (CBI), this will be a three year run-off regime, which will allow UK-authorised insurers and intermediaries to continue to service their existing Irish customers in order to run off the business. UK firms will no longer be able to write new insurance contracts or continue insurance distribution in respect of new insurance contracts in Ireland unless they obtain authorisation in Ireland.¹⁰⁴ The purpose of this is to protect consumers by ensuring that existing policies can continue to be serviced after Brexit.

In the UK, the PRA has introduced a similar regime called the Temporary Permissions Regime¹⁰⁵ ("TPR"). This will allow EEA firms using a passport to operate for a limited period while they seek authorisation from the PRA if the passporting regime falls away when the UK leaves the EU. The UK Government have also passed the Financial Services Contracts (Transitional and Saving Provision) (EU Exit) Regulations 2019¹⁰⁶ ("FSCR"). This is for EEA firms that do not intend to write UK business after Brexit and intend to run-off existing UK portfolios.

EIOPA, the EU's supervisory authority, also provides guidance on the treatment of cross-border business of UK insurance undertakings where they state that "competent authorities should aim to minimise the detriment to policyholders and beneficiaries, based on the applicable EU and national laws".¹⁰⁷

7.2.3 Planning for Brexit

Insurance companies, in particular those who have used UK-authorised firms to access the EU market, have used the period since the UK's 2016 Brexit referendum to develop and implement contingency plans for a Brexit in which the UK would cease to be part of the EU's single market for insurance. These plans have led to important changes being made in the business models of most companies.

¹⁰³ <https://www.centralbank.ie/docs/default-source/regulation/industry-market-sectors/insurance-reinsurance/solvency-ii/communications/insurance-quarterly-news/the-insurance-quarterly--september-2019.pdf?sfvrsn=4>

¹⁰⁴ <https://www.dlapiper.com/en/uk/insights/publications/2019/09/no-deal-regimes-for-the-insurance-sector/>

¹⁰⁵ <https://www.bankofengland.co.uk/eu-withdrawal/temporary-permissions-regime>

¹⁰⁶ <http://www.legislation.gov.uk/ukdsi/2019/9780111178416>

¹⁰⁷ https://eiopa.europa.eu/Publications/Standards/EIOPA-BoS-19-040_Recommendation_Brexit_final.pdf

For some companies, these plans have involved restructuring so they can continue to serve markets across the UK and Europe in compliance with law and regulation post Brexit, with separate licensed entities in the UK and EU.

These restructurings have involved:

- (a) The set-up of new authorised firms in the EU called “third country branches” where UK undertakings may seek authorisation from the local regulator carry out cross-border business through a branch in a Member State and thus ensure that they can service cross-border business in that Member State.
- (b) The set-up of UK branches such that activities continue and be serviced in the UK.
- (c) Many companies have also considered portfolio transfers or Part VII transfers as part of their restructuring. A Part VII transfer is also known as insurance business transfer schemes. It enables a book of insurance policies to be moved from one legal entity to another. Orderly run-off of existing UK or EU businesses

7.2.4 Brexit in Ireland

Brexit could have a very positive impact on the Irish economy. Most insurance companies write insurance business in Ireland on a freedom-of-services basis. For those UK insurers that want to ensure access to the EU markets, Ireland has become one of the primary relocation destinations¹⁰⁸.

Brexit can be seen as an opportunity for the Irish industry to expand. Ireland appears as a favourable alternative to other EU locations mainly due to its market access, corporate tax regime, labour law and regulatory regime.

According to the 2019 PwC Insurance Ireland CEO Survey 35% of participants with UK operations said that their organisation is considering relocation of some or all of its operations to Ireland post-Brexit¹⁰⁹.

Companies such as Standard Life¹¹⁰ and Aviva¹¹¹ have moved billions worth assets to Ireland in preparation for Brexit. Travelers Insurance Company will transfer its European business to Dublin in a move to protect its services following Brexit¹¹². Canadian financial institution Manulife said its investment management arm had established an office in Dublin to support the company’s clients in the Americas, Europe, the Middle East, Africa and Asia, “as well as provide risk mitigation for uncertainties caused by Brexit”.

7.2.5 Regulation

The CBI is required by EIOPA in its role as a National Supervisory Authority (“NSA”) to ensure that the risks for the solvency position of (re)insurers arising from Brexit are properly identified, measured, monitored, managed and reported. In line with this, the CBI have reminded undertakings

¹⁰⁸ <https://uk.practicallaw.thomsonreuters.com>

¹⁰⁹ <https://www.pwc.ie/publications/2019/2019-pwc-insurance-ireland-report.pdf>

¹¹⁰ <https://www.thetimes.co.uk/article/standard-life-s-irish-transfer-allowed-bjzr7rx8>

¹¹¹ <https://www.ftadviser.com/pensions/2019/02/21/aviva-moves-7-8bn-assets-to-ireland/>

¹¹² <https://www.irishtimes.com/business/financial-services/brexit-drives-two-more-us-insurers-to-dublin-1.4027279>

that they should have robust contingency measures in place to minimise the impact on their customers, investors and markets¹¹³.

Solvency II

Solvency II is a large consideration that needs to be taken into account with Brexit¹¹⁴. A few of the main areas for consideration include:

- Exposure to UK government bonds. The SCR exposures to the UK central government, its central bank and to the three UK regional governments may increase after Brexit, depending on the credit quality rating of the UK government bonds.
- The matching adjustment and volatility adjustment to the risk-free rate may change for sterling denominated assets.
- UK credit rating agencies will no longer qualify as external credit assessment institutions (“ECAs”) after Brexit, and therefore their credit ratings will not be allowed in Solvency II calculations. This may affect the calculation of spread risk, recognition of risk-mitigating techniques and matching adjustment to risk free rates.
- For an insurance group that has a UK parent where group internal models are used to calculate the SCR for both group and its subsidiaries, the internal model for all EU subsidiaries must be re-approved by the relevant NSA.
- Although insurers are not required explicitly to include Brexit scenarios in their Own Solvency and Risk Assessment (ORSA), each company will be impacted to a different degree from various risks the company is exposed to. A holistic approach to realising the risks and impacts specific to the company would lend itself to consideration whether the scenarios in the ORSA are appropriate or whether new scenarios should be considered in light of Brexit.

Solvency II Equivalence

For reinsurers, UK undertakings may not be able to provide reinsurance in some member states unless they take measures to secure market access. If they do not secure this access they may not be able to make payments in full or in a timely manner. An alternative to passporting could be for UK (re)insurers to be granted “equivalence” under the EU’s established third country equivalence regime. Under the current regime, the EU determines whether the insurance regulatory regime of a non-EU country is equivalent to Solvency II for the purposes of group solvency calculation, group supervision and reinsurance. If the UK solvency regime is deemed to be equivalent to Solvency II, then the risk-mitigating effect of reinsurance from UK insurers will be treated in the same manner as reinsurance from member state reinsurers. This is different to other financial services activities where equivalence is not the only requirement to access the single market for most types of insurance, the partial exception in Solvency II is reinsurance.

The London Market Group (Re) insurance companies in the UK are seeking reinsurance equivalence with the EU after Brexit under Solvency II regulations to guarantee London market firms continued access to the EU market. A formal reinsurance equivalence determination with the EU would facilitate the conduct of reinsurance business by UK-based undertakings in the EU by reducing the prospect of barriers to market access at member state level. Over £8 billion (€9 billion) of premium

¹¹³ <https://www.centralbank.ie/news-media/press-releases/european-supervisory-authorities-publication-of-brexit-opinions>

¹¹⁴ <http://www.milliman.com/uploadedFiles/insight/2018/EIOPA-Opinion-Impact-Brexit-Solvency-Positions.pdf>

is currently bought annually to the London Market by brokers on behalf of EU clients, and over £6 billion (€7 billion) of business is underwritten in London by branches of European operations.¹¹⁵

Any reinsurance arrangement between a UK (re)insurer and a subsidiary authorised in the EU will need to take into account an EIOPA opinion of July 2017¹¹⁶ which has recommended that EU supervisory authorities scrutinise the governance arrangements of undertakings seeking authorisation in the EU and their reinsurance arrangements with UK reinsurers (either intra-group or to third parties). EIOPA has recommended that a minimum retention of risks by the EU undertaking should be required, and has suggested a 10% lower limit.

With the uncertainty associated with Brexit, it remains to be seen what the outcome on markets will look like although currency markets are likely to fluctuate in any scenario. Large Irish insurance companies that do business in the UK may seek to invest in derivative hedging strategies such as forwards or options to minimise the risk of loss in unfavourable conditions due to exchange rate volatility. Other smaller companies may choose to directly reduce exposure to foreign UK investment and invest domestically or elsewhere.

7.3 Climate Change

7.3.1 Climate Change and the Finance Industry

Identified as an emerging risk by leading insurers and reinsurers over 20 years ago, climate change is now recognised as an issue of global importance. Climate change has become one of the highest ranked risks for investors¹¹⁷. Climate change represents an impact on the future wellbeing of society.

The Paris Agreement¹¹⁸ is a climate change agreement by the United Nations made in 2015, which aims to keep the global temperature rise in this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C. Evidence from climate science shows that globally, the average temperatures have risen by about 1°C since 1901¹¹⁹ with some of the warmest years occurring in the last two decades¹²⁰. Natural disasters are almost five times more often today than in the 1970s¹²¹.

In May 2019, Ireland became the second country in the world to declare a climate emergency¹²² following the UK.

7.3.2 Implications for the Finance Industry

Climate change has many implications for actuaries and the finance industry. Climate change has the potential to impact the financial stability of the economy, human health and mortality, risks from natural disasters and value of assets held. Continued gradual increase in the global temperature would affect work with extreme weather events, water shortages and severe political and economic turmoil.

¹¹⁵ <https://www.reinsurancene.ws/uk-should-seek-reinsurance-equivalence-with-eu-after-brexit-says-lmg/>

¹¹⁶ https://eiopa.europa.eu/Publications/Opinions/EIOPA-BOS-17-141%20Opinion_Supervisory_Convergence.pdf

¹¹⁷ <https://www.theactuary.com/news/2019/09/climate-change-ranked-the-top-extreme-risk-for-investors/>

¹¹⁸ <https://unfccc.int/process-and-meetings/the-paris-agreement/what-is-the-paris-agreement>

¹¹⁹ <https://science2017.globalchange.gov/chapter/1/>

¹²⁰ <https://public.wmo.int/en/media/press-release/wmo-confirms-2017-among-three-warmest-years-record>

¹²¹ World Meteorological Organization: Atlas of Mortality and Economic Losses from Weather and Climate Extremes 1970-2012 (2015).

¹²² <https://www.rte.ie/news/environment/2019/0509/1048525-climate-emergency/>

The Stern Review of Climate Change¹²³ indicates that in the absence of action, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year forever.

Climate requires society to take intergenerational risk into account where a long term view of actions to be taken in order to balance current needs with that of those in future generations. These actions need to be a combination of government, financial companies and regulators working together to understand climate related risk and the transition to a low carbon economy¹²⁴.

EIOPA used the categorisation¹²⁵ of financial climate change risks introduced by the Bank of England: transition, physical and liability risks.

- Physical risks: risks that arise from climate change that arise from a number of factors and relate to weather events
- Transition risks: risks that arise from the process of adjustment from an economy to a low carbon economy
- Liability risks: risks that arise from people or businesses seeking compensation for losses they may have suffered from the physical or transition risks from climate change

7.3.3 Life Insurance

A changing climate will have possible unknowable impacts on mortality and morbidity. Some diseases could increase in frequency with others reducing. This could lead to changing demographics in certain geographic areas leading to uncertainty around future trends. These changing patterns resulting from climate change would need to be allowed for in the pricing, reserving and capital modelling of the business. There may be adverse selection by policyholders on those insurers that do not allow for climate risks in their pricing models.

Insurers will need to carefully consider the long term demographic assumptions they set to allow for explicit climate change impacts. There will also need to be allowance for climate change within mortality and morbidity models. The World Health Organisation ("WHO") estimated that between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths per year from malnutrition, malaria and heat stress¹²⁶. Extreme high air temperatures will contribute to deaths from cardiovascular and respiratory disease. All populations will be impacted by climate change, although some will be more severely affected than others. Those in developing countries with weak infrastructure are more susceptible along with those living in small island developing states and other coastal regions. Nutrition and hygiene conditions may deteriorate due to natural disasters and rainfall patterns. These have a direct impact on provision of food and supply of fresh water. This would lead to an increase in the likelihood of diseases and reduce average life expectancy.

In order to assess the climate change impacts on mortality and morbidity, demographic modelling has its own layer of complexity¹²⁷ mainly relating to data, time horizon and the choice of parameters and models. There is limited credible data relating to impacts of climate change available. It is also

¹²³ http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/destaques/sternreview_report_complete.pdf

¹²⁴ <https://www.actuaries.org.uk/news-and-insights/public-affairs-and-policy/intergenerational-fairness/issue-1-climate-change>

¹²⁵ <https://eiopa.europa.eu/Publications/Opinions/2019-09-30%20OpinionSustainabilityWithinSolvencyII.pdf>

¹²⁶ <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>

¹²⁷ <https://www.actuaries.org.uk/system/files/field/document/A%20Practical%20Guide%20to%20Climate%20Change%20for%20Life%20actuaries%20-%20Oct%20v7a.pdf>

not clear that the impact of past trends would provide a guide to the future movements in climate change. There is also the difficulty associated with the uncertainty of how climate change will emerge over time. It will be challenging to build a model to analyse the movements over different time periods but also have stable parameters and variables that are suitable for each period. There will be changing correlation between risks from climate change so it will be difficult to choose parameters and models that are robust.

Where it is not possible for insurers to develop quantitative models for scenario analysis for climate change, qualitative methods should be used to explore different possible areas of concern. This can then be developed to take into account regulatory views.

Life insurance companies make large investments to grow people's retirement funds and cover future claims. Climate change would mean that these insurers would need to give greater consideration to Socially Responsible Investing ("SRI") and move to investments in lower carbon assets or Environmental, Social and Governance ("ESG") assets such as renewable energy or green bonds¹²⁸. Failure to do so could mean that where there is a sudden transition ("transition risks") to a low-carbon economy with diminishing markets for certain carbon products, the value of many of the assets in which insurers invest will fall with little warning.

7.3.4 General Insurance

There are few areas of finance that are more exposed to climate change than general insurance. This section discusses the physical risks which may impact insurers and also the wider risks that may be present as we transition from high to low carbon economies.

Physical Risks

Climate change will impact insurers through physical damage to property resulting from the increased frequency and severity of weather events¹²⁹. This will impact the level of physical damage to property and will therefore impact insurers.

Physical risks are front of mind for insurers with a property book of business. As the average temperature of the global climate increases, the distribution of possible weather events shifts. This drives the assessment that extreme weather events occur with increased frequency. Events that were previously considered to be one in 100 year may now become one in 50 years or one in 20 years. There is a question as to whether the world will be insurable after the impacts of climate change are felt.

The global impact of climate change has been an area of intense academic activity. The average temperature of the planet is anticipated to increase, sea levels are expected to rise due to melting glaciers and extreme weather events are expected to increase in frequency. However, these changes will impact certain areas of the globe unequally. Sea level change will impact low lying countries such as the Netherlands and Bangladesh but have little or no impact on landlocked countries. Areas of sub Saharan Africa which have continually teetered on the edge of drought of the past decades will be severely impacted by increasing temperatures, but a positive effect may be seen in areas that

¹²⁸ <https://www.blackrock.com/institutions/en-gb/literature/whitepaper/insurers-and-green-bonds.pdf>

¹²⁹ https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf

are presently too cold to support agriculture. Likewise the increased frequency of extreme weather events is likely to impact regions which currently have an increased exposure to such events.

When considering the impact of climate change, we can't only consider the vulnerability of certain areas; we also need to consider their resilience to adverse events. As the impact of climate change is felt around the globe, reactive measures to limit damage to humans and people will be required. An example of this would be the construction of permanent flood defence structures in low lying areas. These reactive measures will be costly to implement and can only realistically be initiated by government. As the threat posed by climate change becomes more imminent, the ability to react will vary between countries based on many factors including their relative wealth. A possible scenario is that nations of the first world implement programmes that reduce the impact of climate change in a timely manner, while third world nations are left behind.

Nations with both high vulnerability to climate change and weak economies will be most severely impacted by climate change. These nations may be the first uninsurable nations to emerge as the local populations may struggle to pay the high premiums that insurers will require.

In the first world it is hard to imagine that the cost of claims will be reduced due to the course of climate change. Although this could be possible if technologies are developed which significantly reduce vulnerability to weather events. Even in an increasing cost of claims environment, damage to property is likely to be mitigated by investment in physical protections – flood defences for low lying areas, irrigation systems for areas which are exposed to drought – by the governments of these countries. Public awareness of the physical risks of climate change will likely increase the value of insurance to the customer. The size of general insurance market would therefore increase on the back of this. It would appear that global warming could increase the size of the general insurance market in wealthy countries.

Transition Risks

Insurance companies will have to adapt to other trends in the social and economic environment as the impact of climate change becomes more apparent. These changes can broadly be collected under the term 'transition risks' which include any risk faced by companies as we transition to a low carbon economy. These risks are wide reaching. For general insurers it could be as simple as a greater proportion of electric cars on the road, but there are a large number of more severe possibilities.

While it is too soon to know what all of these risks are; the severity of change will be dependent on the speed of change. Transition can either be orderly, characterised by gradual changes in behaviour and the economy, or disorderly. A disorderly transition could have severe impacts on the global general insurance industry as consumers demand greener products.

7.3.5 Pension Funds

As pension funds are major asset owners with a long term perspective, they are expected to play a significant role in the development of sustainable investment. Climate change poses risks to the

investment strategy implemented. Over half of Irish pension schemes are now considering ESG's as part of their investment decision-making, up 40% from 2018.¹³⁰

Fiduciary duty is core to the principles of pension schemes. It exists to ensure that those who manage other people's money act in the interest of beneficiaries rather than serving their own interests i.e. "the prudent person principle". Wider long-term climate change ESG issues will need to be consistent with fiduciary duties with agreement from all stakeholders and ensure that decisions are based on credible assumptions and robust decision-making.¹³¹

In the UK¹³², trustees (depending on their scheme type and size) are required to, by 1 October 2019:

- Update the Statement of Investment Principles (SIP) to take account of financially material considerations including those arising from ESG considerations including climate change
- Update the default SIP to take account of financially material considerations including those arising from ESG considerations including climate change
- Publish the SIP on a website so that scheme members and members of the public can be informed

And from 1 October 2020:

- Produce and publish an implementation statement on the SIP setting out how they acted on the principles they set out, and how they acted on the statement which covered how they would take account of the views which, in their opinion, members hold.

In Ireland, the IORP II Directive¹³³ requires trustees to consider ESG issues. Article 30, the statement of investment policy principles states that member states shall ensure that every IORP registered or authorised in their territories prepares and, at least every three years, reviews a written statement of investment-policy principles. This should include matters such as the investment risk measurement methods, the risk-management processes implemented and the strategic asset allocation with respect to the nature and duration of pension liabilities and how the investment policy takes environmental, social and governance factors into account. The statement shall be made publicly available.

There is an increasing trend of asset managers towards sustainable investment. Irish Life Asset Managers¹³⁴ has said that it will convert its entire book of assets under discretionary control to a responsible investing approach due to the growing importance of ESG factors in delivering sustainable longer term returns. BlackRock¹³⁵ Asset Managers have a number of initiatives to place sustainability at the centre of their investment approach including making sustainability integral to portfolio construction and risk management e.g. exiting investments that present a high sustainability-related risk, launching new investment products that screen fossil fuels, and strengthening their commitment to sustainability and transparency in their investment stewardship activities. They are also aiming to increase transparency to their stakeholders on how they are managing sustainability.

¹³⁰ <https://www.rte.ie/news/business/2019/0708/1060771-irish-pension-funds-diversify-amid-uncertain-outlook/>

¹³¹ <https://www.genfound.org/media/1480/fiduciary-duty-in-the-21st-century-ireland-roadmap.pdf>

¹³² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739331/response-clarifying-and-strengthening-trustees-investment-duties.pdf

¹³³ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L2341&from=EN>

¹³⁴ <https://www.rte.ie/news/business/2019/1105/1088840-irish-lifes-responsible-investing-approach/>

¹³⁵ <https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter>

7.3.6 Capital Markets

The international Energy Agency estimates that over \$1 trillion oil and natural gas assets could be abandoned by 2050.¹³⁶ This poses significant risks to those invested in fossil fuels. A transition to a lower carbon economy may mean that the current business models may be obsolete resulting in collapses in share prices and increase in debt defaults. This will result in market volatility and economic shocks.

In addition to allocating capital towards alternative fuels and green technology, catastrophe bonds are also an option for investors. This is where certain risks are transferred to the investor in a catastrophic event and the money is used to towards counteracting damage caused by climate change.

7.3.7 Regulation

There have been many changes and developments in regulations to allow for and tackle climate change. There has been an increased interest in this area by regulatory bodies in how companies are managing climate change risks and on climate related disclosures.

2019 marked a significant year for the regulatory response to climate change. In April the PRA published its supervisory statement SS3/19¹³⁷, ‘Enhancing banks’ and insurers’ approaches to managing the financial risks from climate change’. This statement is quite far reaching; it outlines how companies should approach governance and risk management in relation to climate change. The PRA expects the board to be aware of financial risks that arise from climate change that impact the company and to oversee and address the response to these risks. This places significant responsibility on the most senior levels of the company.

There is therefore a greater burden being placed on companies regulated by the PRA. New roles and responsibilities will be created as companies deal with the requirement for risk management and monitoring. It is still not clear how the PRA will require companies to disclose the work they have done on climate change, however they do expect to see evidence where appropriate.

The Task Force on Climate related Financial Disclosures (“TCFD”) aims to increase transparency to make markets more efficient, and economies more stable and resilient¹³⁸. This framework allows financial institutions to be informed when making disclosures to their stakeholders of the impacts of climate change¹³⁹.

The chart below ¹⁴⁰shows how the current financial industry is responding to climate change within their analysis or committing to TCFD statements.

¹³⁶ <https://www.telegraph.co.uk/business/2017/03/20/iea-warns-13-trillion-oil-gas-could-left-stranded/>

¹³⁷ <https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2019/ss319>

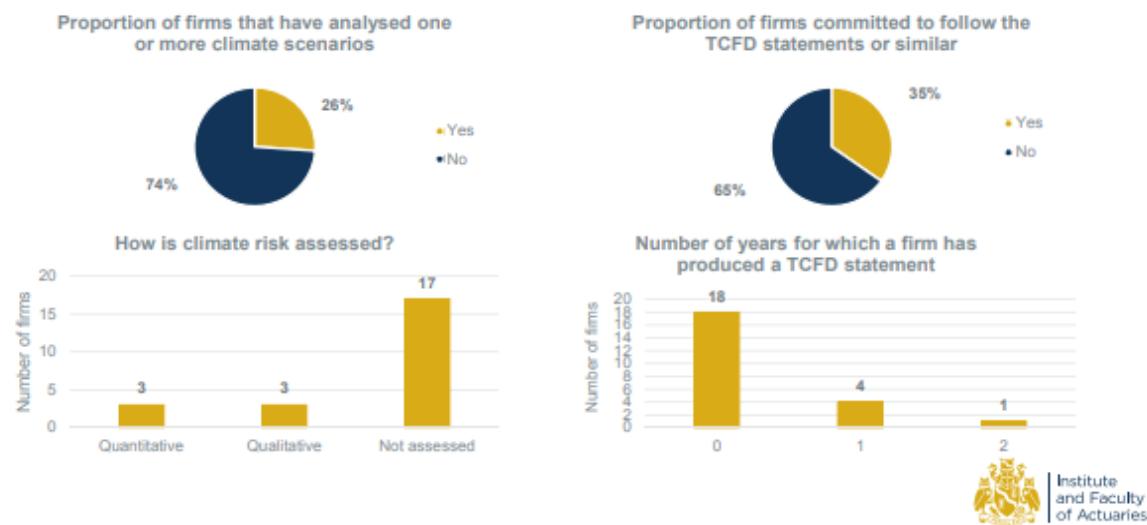
¹³⁸ <https://www.fsb-tcfd.org/>

¹³⁹ <https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-2017-TCFD-Report-11052018.pdf>

¹⁴⁰ https://www.actuaries.org.uk/system/files/field/document/B3_Life%20conference_embedding%20climate%20risk.pdf

Embedding climate change risk – experiences and insights

How is the industry responding?



This shows that more firms have been producing TCFD statements but there are still a number of companies where climate change has not yet been assessed or analysed.

The Principles for Responsible Investment¹⁴¹ (“PRI”) and Sustainable Insurance¹⁴² (“PSI”) is an initiative supported by the United Nations. This initiative sets out how investors can incorporate ESG issues into their investment practices with six voluntary principles.

- Principle 1: We will incorporate ESG issues into investment analysis and decision-making processes.
- Principle 2: We will be active owners and incorporate ESG issues into our ownership policies and practices.
- Principle 3: We will seek appropriate disclosure on ESG issues by the entities in which we invest.
- Principle 4: We will promote acceptance and implementation of the Principles within the investment industry.
- Principle 5: We will work together to enhance our effectiveness in implementing the Principles.
- Principle 6: We will each report on our activities and progress towards implementing the Principles.

Climate change and Solvency II

EIOPA believes that due consideration should be given to sustainability risks with respect to the investment as well as the underwriting policy. In September 2019, EIOPA issued an Opinion on sustainability in Solvency II¹⁴³. This followed a request from the European Commission. The opinion addresses each area of Solvency II and whether it supports or hinders the adoption of climate friendly practices. In a number of areas, such as investment and underwriting practices, EIOPA advises that insurers take into account the impact of their activity on sustainability factors. While the opinion does not directly create any new disclosure requirements for insurers, it will tie into the EU Taxonomy for sustainable activities. The taxonomy will require EU financial firms to make specific

¹⁴¹ <https://www.unpri.org/>

¹⁴² https://www.unepfi.org/fileadmin/documents/PSI_document-en.pdf

¹⁴³ <https://eiopa.europa.eu/Publications/Opinions/2019-09-30%20OpinionSustainabilityWithinSolvencyII.pdf>

disclosures of sustainability factors, in order to allow investors and the general public to make informed climate choices. The burden to insurers will not only be in populating this taxonomy in line with requirements, but also ensuring that their disclosures reflect the changing public appetite for sustainability.

This report outlines that climate change brings challenges to the valuation of assets and liabilities, underwriting, investment decisions and risk measurement. There is a focus on climate change impact into the Pillar 1¹⁴⁴ and Pillar 2¹⁴⁵ aspects of Solvency II. EIOPA have put emphasis on the importance of scenario analysis within risk management. Reinsurance companies are called to incorporate measures that are related to climate change within their business strategy.

In light of the declaration of a climate emergency in Ireland earlier this year, the CBI have released an initial approach to dealing with climate change in their September 2019 insurance quarterly newsletter¹⁴⁶. The newsletter specifically calls out the expectation that the ORSA process should consider the impact of climate change on insurers. It is expected that, following a review of ORSAs submitted in 2020, the CBI will provide feedback to the industry. It is still too early to say whether they will follow the PRA's lead in publishing detailed guidelines for the industry or wait and see what requirements will come down the line from EIOPA. An excerpt quoted from the newsletter reads:

"Where an undertaking has a material exposure to climate related risks, we will expect to see evidence of robust analysis and discussion within the ORSA report. The ultimate aim should be to enable discussion, challenge, and decision making in relation to climate related risks, at board level".

This would imply that companies will need to take into include a material discussion on climate change and the CBI's views when preparing for this ORSA process in the following year.

The Central Bank currently holds €271 million worth of green bonds in their investment portfolio¹⁴⁷. The Central Bank has a strategic plan for 2019-2021 to address the implications of climate change for the financial system¹⁴⁸. These include:

- (a) Climate resilience is seen to be an integral component of the overall resilience of the financial system and economy.
- (b) Customer protection frameworks must assist households in their financial choices driven by climate change
- (c) Engaging and influencing between firms, governments, financial intermediaries and households to influence the design of appropriate policies and financial decisions of certain affected sectors.

In October 2018, the National Treasury Management Agency (NTMA) raised €3 billion through syndicated sale of Ireland's first ever Sovereign Green Bond¹⁴⁹.

¹⁴⁴ <https://eiopa.europa.eu/Publications/Opinions/2019-09-30%20OpinionSustainabilityWithinSolvencyII.pdf>

¹⁴⁵ <https://eiopa.europa.eu/Publications/EIOPA-BoS-19->

¹⁷² Final Report Technical advice for the integration of sustainability risks and factors.pdf

¹⁴⁶ <https://www.centralbank.ie/docs/default-source/regulation/industry-market-sectors/insurance-reinsurance/solvency-ii/communications/insurance-quarterly-news/the-insurance-quarterly---september-2019.pdf?sfvrsn=4>

¹⁴⁷ <https://www.centralbank.ie/news/article/risks-and-opportunities-from-climate-change-sharon-donnelly>

¹⁴⁸ [https://www.centralbank.ie/docs/default-source/publications/economic-letters/vol-2019-no-1-climate-change-and-the-irish-financial-system-\(lane\).pdf?sfvrsn=2](https://www.centralbank.ie/docs/default-source/publications/economic-letters/vol-2019-no-1-climate-change-and-the-irish-financial-system-(lane).pdf?sfvrsn=2)

¹⁴⁹ <https://www.ntma.ie/news/ntma-raises-3-billion-through-syndicated-sale-of-irelands-first-ever-sovereign-green-bond>

Many (re)insurance companies such as Swiss Re, Allianz and Zurich have committed to reducing their greenhouse gas emissions from their investment portfolios to 0 by 2050.¹⁵⁰

7.4 Diversity and Inclusion

7.4.1 Gender Diversity Within the SAI in Ireland

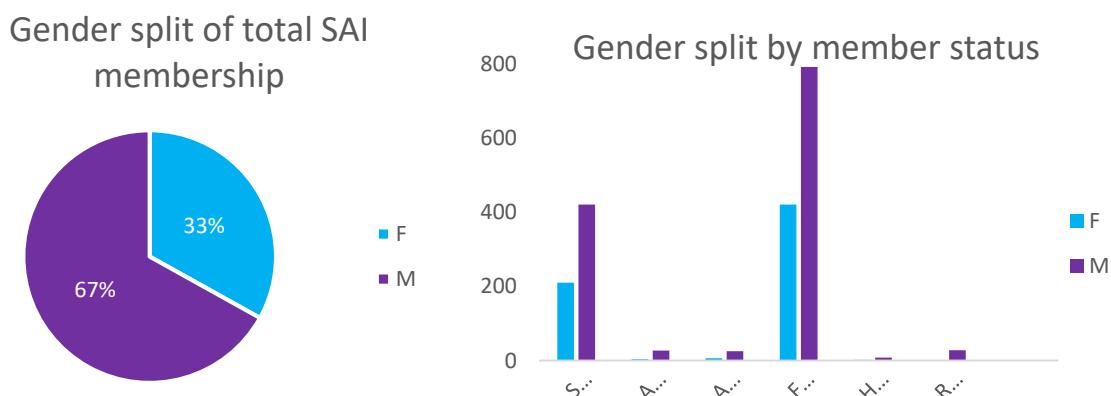
The D&I committee has looked at how we, as a society, perform in terms of gender equality, as the most measurable indicator of diversity within the SAI ("the Society") more broadly.

Three data sets within the Society were analysed:

1. Membership make-up
2. Committee member make-up
3. Event speakers/presenters

1. Membership make-up

- Overall split for Males to Females is 67%:33%
- Similar split for students and fellow members.
- Retired membership (total 28 members) are 100% males, reflecting the virtually all-male membership prior to the late nineteen-eighties.



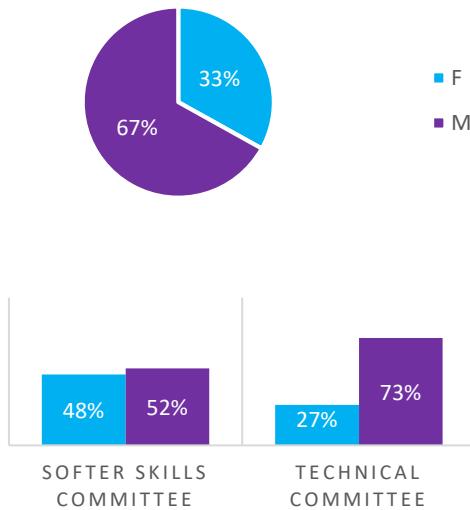
From this analysis we can see there has been an increase in female proportion when comparing Retired members with fellow/ student members. However, we also note that the student gender ratio is 2:1 for M: F. Is this the steady state? It appears there is a need to attract more females into the profession.

¹⁵⁰ [https://www.reinsurancene.ws/swiss-re-allianz-zurich-commit-to-netzero-emissions-by-2050/](https://www.reinsurancene.ws/swiss-re-allianz-zurich-commit-to-net-zero-emissions-by-2050/)

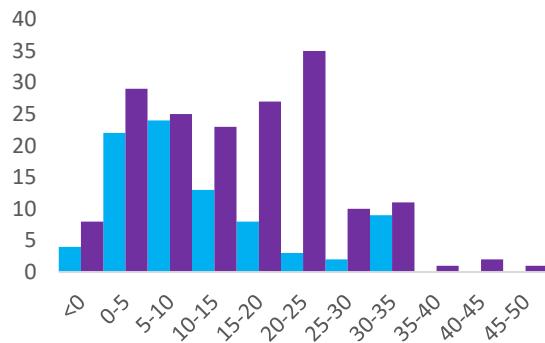
2. Committee Make-up

- Overall split is 67%:33% M: F across all committees.
- Of 21 committees with more than 5 members, 10 committees have 70% or more male members.
- Committee membership by years qualified and gender; reasonable spread over tenure with the gender balance unsurprisingly deteriorating the longer the tenure.

Committee split by Gender



Committee Split by Years Qualified



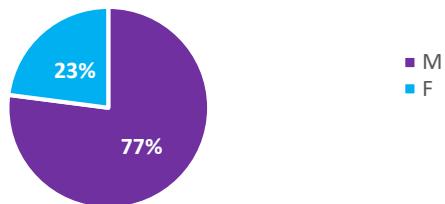
The overall committee membership gender balance is largely consistent with overall membership. When the committees are split between technical and softer skills in nature, there is a shift in the gender gap. We see the softer skills committees attract more females than the technical committees (for the purpose of this analysis, the key practice committees are described as technical, while the softer skills committees include the likes of Member Engagement, Lifelong Learning and indeed D&I). Why is this the case? Are our female members more reluctant to sit on a technical committee or perhaps are they simply more interested in the softer skills?

3. Event Speakers

- Overall speakers for the period January-September 2019: the M:F ratio is 71%:29% which is broadly reflective of the membership (67%:33%)
- Two events which were arguably more soft skills in nature (Professionalism events and Actuarial careers and hot topics) accounted for a significant number of female speakers. Excluding these events, the female ratio decreases with M: F ratio at 77%:23%.
- 11 single speaker events were male only; only 1 female spoke at a solo event.
- The speaker ratio at the Annual Convention was roughly 2:1 M: F

While the M:F speaker ratio is in line with the membership makeup (and separating the underlying issue of attracting females into the profession), the analysis outlined above suggests that our female members of the Society are less inclined to present a) alone and b) on a topic that is more technical in nature. This is not encouraging for younger females in the Society who are looking up to the female leaders in the profession.

2019 SAI Event Presenters Split by Gender
(excluding 2 softer skills events)



8. Appendices

Appendix 1: IFRS 17 Further Reading

SAI IFRS17 Working Group

The SAI have established both Life and Non-Life IFRS 17 Working Groups. The groups have presented a series of talks covering an introduction to IFRS 17 along with deeper dives into each of the measurement models. These presentations are a good source of detailed information on IFRS 17 and in particular highlight key areas to consider during implementation. Both slides and podcasts for are available on the SAI website and these have been used to inform much of this section.

<https://web.actuaries.ie/events/2018/10/introduction-ifrs17>

<https://web.actuaries.ie/events/2019/02/deeper-dive-ifrs17>

<https://web.actuaries.ie/events/2019/09/deeper-dive-ifrs-17-vfa-and-paa>

IFRS Organisation

The IFRS website has a large amount of content to assist with understanding IFRS17. In particular there is a transition resource group (TRG) that has address many of the key issues within IFRS17. In this document we sourced information from:

<https://www.ifrs.org/-/media/feature/supporting-implementation/ifrs-17/webinar-ifrs-17-scope/ifrs-17-scope-slides.pdf>

<https://www.ifrs.org/-/media/feature/meetings/2018/february/trg-for-ic/ap1-separation-of-insurance-components.pdf>

<https://www.ifrs.org/-/media/feature/supporting-implementation/ifrs-17/webcast-ifrs-17-core-requirements/ifrs-17-core-requirements-level-of-aggregation-slides-only.pdf>

<https://www.ifrs.org/-/media/feature/supporting-implementation/ifrs-17/webcast-ifrs-17-transition-to-ifrs-17/ifrs-17-webcast-transition-to-ifrs-17-combined.pdf>

<https://www.ifrs.org/-/media/project/amendments-to-ifrs-17/ed-amendments-to-ifrs-17-snapshot.pdf>

<https://www.ifrs.org/-/media/project/amendments-to-ifrs-17/ed-amendments-to-ifrs-17-basis-for-conclusions.pdf>

EIOPA

EIOPA is the European Insurance and Occupational Pensions Authority and as the supervisory agency with responsibility for Solvency II they completed a review between Solvency II and IFRS 17.

https://eiopa.europa.eu/Publications/Reports/EIOPA-18-717_EIOPA_Analysis_IFRS_17_18%2010%202018.pdf

EFRAg

EFRAg is the European Financial Reporting Advisory Group. It is a private organization whose mission is to promote European views in the IASB (International Accounting Standards Board) standard setting process.

<https://www.efrag.org/Activities/289/IFRS-17---Insurance-Contracts>

Appendix 2: Solvency II 2020 Review Further Reading

Appendix 2.1 Proposed Updates to SFCR

The SFCR part addressing policy holders should comply with the following:

- Only solo information, no information on group level;
- Only to be provided by undertakings which have external policyholders;
- Information to be found on the website of the undertaking, each year on the same area, with information to stay on the website for five years, with link to relevant page where the policyholder information can be found in appropriate policyholder documents;
- Information should be presented in a concise, simple, objective, balanced and non-promotional form that is understandable for an average policyholder;
- Information should be in simple language and in the language of the policyholder;
- Standard tables are an appropriate tool to provide required standardised information
- The document must include a disclaimer that more detailed information can be found in the second section of the SFCR and a link to that section.

Content of the SFCR part addressing policy holders:

- The name and legal form of the undertaking;
- The name and contact details of the supervisory authority responsible for financial supervision of the undertaking;
- A list of the shareholders of qualifying holdings in the undertaking;
- Undertaking being part of a group, need to disclose information on the name of their respective group, legal form and jurisdiction of the group;
- Any significant business or other events that have occurred over the reporting period that have had or may yet have a material impact on the undertaking risk profile, such as run-off or important mergers and acquisitions;
- Quantitative information on the insurance and reinsurance undertaking's underwriting performance at an aggregate level for material line of business where it carries out business over the reporting period and investment performance, including at least main items such as premiums, claims, investment return and profit and loss;
- Statement regarding the consideration of ESG factors in the investment policy of the insurance or reinsurance undertaking.
- A description of the outsourcing policy of the insurance or reinsurance undertaking in cases of outsourcing of any critical or important operational functions or activities directly affecting policyholders such as claims management or others (but excluding sales/distribution). The descriptions must include information on the jurisdiction in which the service providers of such functions or activities are located.

- A description of the material risks the undertaking is exposed to including any material changes over the reporting period, as well as a description of the applied risk mitigation techniques.
- EIOPA will provide a standard text to explain the purpose of the SCR, including the SF and IM calculation, and the MCR and what eligible own funds. Undertakings are asked to include it in the respective part of the report.
- Information whether SCR is calculated with the SF or a IM (partial or full);
- Ratio of the SCR and MCR coverage at the end of the reporting period and last reporting period (with transitionals and LTG measures);
- Regarding any non-compliance with the Minimum Capital Requirement or the Solvency Capital Requirement of the insurance or reinsurance undertaking during the reporting period or at the time of disclosure, the period of each non- 5/60 compliance, an explanation of its origin and consequences, any remedial measures taken, as provided for under Article 51(1)(e)(v) of Directive 2009/138/EC and an explanation of the effects of such remedial measures.
- Any other information regarding the insurance or reinsurance undertaking that may be material for policyholders.

EIOPA proposes amendments in Level 1 Directive and Level 2 Delegated Regulation to address the following regarding the section of the SFCR addressing other users than policyholders:

- Streamline the structure into only 4 areas: Business and performance, System of Governance, Valuation for solvency purposes and Risk and capital management;
- Amend the articles regarding the content of the SFCR and Regular Supervisory Reporting in line with Annex I;
- Regulation needs to clarify requirements on the correction and re-publication of the SFCR. Greater clarity is needed as to when the Article 302 update requirement applies to the SFCR. Better guidance on the term “any major development significantly affecting the relevance of their solvency and financial condition report” is required.

EIOPA proposes to include in a future ITS amendment the following:

- QRTs to be included should not be reduced;
- Number of QRTs extended/standardised tables on new areas – new QRTs/standardised tables for the SCR sensitivities and own funds variation over the year

EIOPA proposes to strengthen the following principles either through Guidelines, Supervisory Statements or other tool deemed adequate:

- No padding with information not explicitly required, no repetition of legal requirements;
- No generic statements but relevant undertaking-specific information;
- More structured formats (graphs, tables) could be prescribed in order to improve readability and comparability (collect good practice examples);
- It need to be explicitly stated, were information is non-applicable.

EIOPA proposed to require the following standardised information in the SFCR addressing other users than policyholders:

- Impact on the SCR coverage ratio and impact on the amount of the Own Funds in million euros of the following key sensitivity tests:

Economic assumptions: Equity markets (-25%), Equity markets (+25%) , Interest rates (-50bps), Interest rates (+50bps), Credit spreads of government bonds (-50bps), Credit spreads of government bonds (+50bps), Credit spreads of corporate bonds (-50bps), Credit spreads of corporate bonds (+50bps), Real estate values (-25%), Real estate values (+25%)

Non-economic assumptions: 10% increase in expenses, 10% increase in gross loss ratio, 10% increase in lapse rates

Undertakings may in addition present a set of sensitivity analysis that in their view better reflects their risk profile, explaining the reasons behind the sensitivities performed.

- Triggers for changes in the amount of Own Funds during the period as a % of the OF and in million euros:
 - Amount of Own Funds at the beginning of the period;
 - Changes due to valuation of the assets;
 - Changes due to new capital issued or redeemed;
 - Changes due to valuation of technical provisions of existing business;
 - Changes due to new business;
 - Changes due to taxation;
 - Changes due to dividends (foreseeable and paid);
 - Changes due to other items;
 - Amount of Own Funds at the end of the period.

When the Changes due to other items represent more than 20% of the variation the undertaking needs to detail the trigger of the changes included in such item.

EIOPA proposes to keep unchanged the templates that are currently disclosed. For S.05.02 this means that a new entry point only for SFCR is needed due to the changes being proposed in the supervisory reporting package.

EIOPA proposes that Level 2 Delegated Regulation requires:

- Information to be found on the website of the undertaking, each year on the same area, with information to stay on the website for five years. Please see also proposal under the document "Individual Quantitative Reporting Templates (EIOPA-BoS-019-305)" requiring the link of address where the SFCRs is available in template S.01.02.
- For the section addressing the policyholders:
 - The document must include a disclaimer that more detailed information can be found in the second section of the SFCR and a link to that section;
 - In the same area of the website links to other available policyholder information should be included. On the other side links to the SFCR for policyholder should be included in other relevant parts of the undertakings website.

Appendix 2.2 Proposed Shock Components for Interest SCR

For maturities between 1 and 20 years the shock components should be as follows:

| Maturity | <i>sm</i> | <i>bm</i> | <i>sm up</i> | <i>bm up</i> |
|----------|-----------|-----------|--------------|--------------|
| 1 | 58% | 1.16% | 61% | 2.14% |
| 2 | 51% | 0.99% | 53% | 1.86% |
| 3 | 44% | 0.83% | 49% | 1.72% |
| 4 | 40% | 0.74% | 46% | 1.61% |
| 5 | 40% | 0.71% | 45% | 1.58% |
| 6 | 38% | 0.67% | 41% | 1.44% |
| 7 | 37% | 0.63% | 37% | 1.30% |
| 8 | 38% | 0.62% | 34% | 1.19% |
| 9 | 39% | 0.61% | 32% | 1.12% |
| 10 | 40% | 0.61% | 30% | 1.05% |
| 11 | 41% | 0.60% | 30% | 1.05% |
| 12 | 42% | 0.60% | 30% | 1.05% |
| 13 | 43% | 0.59% | 30% | 1.05% |
| 14 | 44% | 0.58% | 29% | 1.02% |
| 15 | 45% | 0.57% | 28% | 0.98% |
| 16 | 47% | 0.56% | 28% | 0.98% |
| 17 | 48% | 0.55% | 27% | 0.95% |
| 18 | 49% | 0.54% | 26% | 0.91% |
| 19 | 49% | 0.52% | 26% | 0.91% |
| 20 | 50% | 0.50% | 25% | 0.88% |

For maturities shorter than one year the value of b_m^{up} and s_m^{up} shall be equal to 61% and 2.14% respectively. For maturities shorter than one year the value of b_m^{down} and s_m^{down} shall be equal to 58% and 1.16% respectively.

In case the starting point of the extrapolation for the euro is left unchanged, the following shock components for maturities beyond 20 years should be used:

For maturities between 20 and 90 years, the value of s_m^{up} shall be linearly interpolated. For maturities of 90 years and up the value of s_m^{up} shall be 20%. For maturities between 20 and 60 years the value of b_m^{up} shall be linearly interpolated. For maturities of 60 years and up the value of b_m^{up} shall be 0%.

For maturities between 20 and 90 years, the value of s_m^{down} shall be linearly interpolated. For maturities of 90 years and up the value of s_m^{down} shall be 20%. For maturities between 20 and 60 years the value of b_m^{down} shall be linearly interpolated. For maturities of 60 years and up the value of b_m^{down} shall be 0%.

In case the starting point of the extrapolation for the euro is changed to 30 years the following shock components for maturities beyond 20 years should be used:

| Maturity | <i>sm</i> | <i>bm</i> | <i>sm up</i> | <i>bm up</i> |
|----------|------------------|------------------|---------------------|---------------------|
| 21 | 49% | 0.49% | 25% | 0.87% |
| 22 | 50% | 0.49% | 24% | 0.85% |
| 23 | 51% | 0.48% | 24% | 0.82% |
| 24 | 51% | 0.48% | 23% | 0.80% |
| 25 | 52% | 0.47% | 22% | 0.78% |
| 26 | 52% | 0.46% | 22% | 0.76% |
| 27 | 53% | 0.45% | 21% | 0.74% |
| 28 | 53% | 0.44% | 21% | 0.72% |
| 29 | 53% | 0.42% | 20% | 0.70% |
| 30 | 53% | 0.41% | 20% | 0.69% |

For maturities between 30 and 90 years, the value of s_m^{up} shall be linearly interpolated. For maturities of 90 years and up the value of s_m^{up} shall be 20%. For maturities between 30 and 60 years the value of b_m^{up} shall be linearly interpolated. For maturities of 60 years and up the value of b_m^{up} shall be 0%.

For maturities between 30 and 90 years, the value of s_m^{down} shall be linearly interpolated. For maturities of 90 years and up the value of s_m^{down} shall be 20%. For maturities between 30 and 60 years the value of b_m^{down} shall be linearly interpolated. For maturities of 60 years and up the value of b_m^{down} shall be 0%.

In case the starting point of the extrapolation for the euro is changed to 50 years the following shock components for maturities beyond 30 years should be used:

| Maturity | <i>sm</i> | <i>bm</i> | <i>sm up</i> | <i>bm up</i> |
|----------|------------------|------------------|---------------------|---------------------|
| 31 | 53% | 0.40% | 20% | 0.70% |
| 32 | 53% | 0.39% | 20% | 0.71% |
| 33 | 54% | 0.37% | 20% | 0.71% |
| 34 | 54% | 0.36% | 20% | 0.71% |
| 35 | 54% | 0.35% | 20% | 0.71% |
| 36 | 54% | 0.34% | 20% | 0.72% |
| 37 | 55% | 0.33% | 21% | 0.72% |
| 38 | 55% | 0.32% | 21% | 0.72% |
| 39 | 56% | 0.31% | 21% | 0.73% |
| 40 | 57% | 0.30% | 21% | 0.73% |
| 41 | 57% | 0.29% | 21% | 0.74% |
| 42 | 58% | 0.28% | 21% | 0.74% |
| 43 | 59% | 0.27% | 21% | 0.75% |
| 44 | 61% | 0.26% | 21% | 0.75% |
| 45 | 62% | 0.25% | 21% | 0.75% |
| 46 | 62% | 0.23% | 21% | 0.75% |
| 47 | 63% | 0.22% | 21% | 0.75% |
| 48 | 64% | 0.21% | 21% | 0.74% |
| 49 | 64% | 0.19% | 21% | 0.74% |
| 50 | 65% | 0.18% | 21% | 0.73% |

For maturities between 50 and 90 years, the value of s_m^{up} shall be linearly interpolated. For maturities of 90 years and up the value of s_m^{up} shall be 20%. For maturities between 50 and 60 years the value of b_m^{up} shall be linearly interpolated. For maturities of 60 years and up the value of b_m^{up} shall be 0%.

For maturities between 50 and 90 years, the value of s_m^{down} shall be linearly interpolated. For maturities of 90 years and up the value of s_m^{down} shall be 20%. For maturities between 50 and 60 years the value of b_m^{down} shall be linearly interpolated. For maturities of 60 years and up the value of b_m^{down} shall be 0%.

Appendix 2.3 Proposed Changes to Group QRTs

EIOPA proposes to delete the template S.05.01 at group level.

EIOPA proposes to keep template S.05.02 as it is at group level but to delete “Changes in other technical provisions”.

EIOPA proposes to make the following additions to the list of assets template (S.06.02) and CIC table:

- Include ECB add-on items relevant for prudential supervision purposes;
- Additional item regarding ESG-compliant/sustainable investments;
- Additional data item on applicability of bail-in rules;
- Additional item on RGLA;
- Additional item on cryptocurrencies related investments;
- Additional item regarding Custodian LEI code;
- New CIC code to identify government bonds issued in a different currency;
- Improvements to the reporting instructions and to the definition of CIC codes, with the objective of provide specific clarifications and reflecting the outcome of Q&A on reporting.

At the same pace, EIOPA proposes that changes in the reporting requirements regarding the list of assets should be balanced with use of complementary external financial information by NSAs.

It is proposed to amend the second paragraph of the instructions for Issuer Code in S.06.02.04 to require the LEI code to be reported mandatorily in case of assets issued by EEA insurance and reinsurance undertakings and other EEA regulated undertakings and a code to be provided by the group in case of assets issued by non–EEA undertakings and non–regulated undertakings within the scope of the group, in the meaning of Article 212(1)(c) of the Solvency II Directive.

Changes to the group OF templates may follow after any revision of the Solvency II Directive and Delegated Regulation, in particular with regard to classification and availability of own funds.

EIOPA proposes to delete 23.02.04.03 from template S.23.02. on Excess of Assets over Liabilities – attribution of valuation differences.

EIOPA proposes to amend the table on Calculation of non-available own funds at group level (total) and introduce the following risk-based threshold:

Template is due only when:

- S.23.03 is due (see solo proposal), or
- When RFF exist; or

- When non-available own-funds exist.

Table 11 on “Calculation of non-available own funds at group level (total) - exceeding the contribution of solo SCR to Group SCR” scope is changed and is proposed to cover all non-available own funds instead of only the ones that exceed the contribution. A new column requiring information on the amount exceeding the contribution needs to be added.

EIOPA proposes to make the following change to the solo template: Delete code MCRCFI_QUE_XXX_R1_C1 and request it, as an extra column, in template S.32.01 as different solos could use different approaches for group reporting.

EIOPA proposes to amend S.32.01 as follows:

- Amend C0020 – Identification code of the undertaking – to require the LEI code to be mandatorily used for EEA insurance and reinsurance undertakings and other EEA regulated undertakings (approach to non-EEA undertakings and non-regulated undertakings is kept);
- Add information on direct and ultimate parent(s) and direct subsidiary(ies). The information should include LEI codes where those are available, names, participating interests/voting rights in the EEA undertaking and country;
- Regarding the proposal to have a similar template for individual undertakings, as this related to solo reporting dealt with in the wave 1 this proposal will be considered after the consultation period.
- Add the following three new columns to this template:
 - “Covered by internal model for Group SCR calculations”. The answer shall be a closed list with two options: i) Yes and ii) No.
 - “Uses the group model for solo SCR calculations”. The answer shall be a closed list with two options: i) Yes and ii) No.
 - “Type of VA being used”. The answer shall be a closed list with four options: i) No VA, ii) Constant VA, iii) Dynamic VA; iv) Other for non-EEA entities.

EIOPA proposes that information regarding own funds and SCR (cells C0060 to C0230 in S.33.01.04) should be reported also for all EEA and all non EEA (not only on local basis) insurance and reinsurance undertakings under method 1 to provide supervisory authorities an overview of all solo SCRs and an estimation of the diversification benefits at group level.

EIOPA proposes to keep S.34.01 as it is now, since the information provided is relevant for the assessment of the contributions from undertakings belonging to other financial sectors and non-regulated undertakings in the scope of group solvency. However, the instructions need to be clarified in cases when groups report banking contribution on a sub-consolidated basis.

EIOPA proposed to keep S.35.01 as it now, since it provides useful information to the group supervisor.

EIOPA proposes to clarify the instructions and the scope of S.36.03. and consider alignment with work under development for the FiCo, but considering the different purposes of the SII and FiCo, when the proposal for reporting IGTs in the financial conglomerates is finalised

EIOPA proposes to: Consider amending of S.37.01 in line with the proposal under discussion in the context of ESAs work on the Risk concentration reporting at the level of the financial conglomerate

when the proposal for reporting risk concentrations in the financial conglomerates is finalised considering the different purposes of the templates. The draft template on RC under discussion in that context is simplified and less granular (not by single exposure but by counterparty) with expected benefits for both the groups and the supervisors;

Clarify the instructions and the scope of the S.37.01.

Appendix 3: Data Analytics References

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Appendix 4: Diversity & Inclusion Further Reading

Appendix 4.1 Gender Pay Gap

PwC documents:

<https://www.pwc.ie/about-us/diversity-and-inclusion/gender-pay-gap-report-2019.html>

<https://www.pwc.ie/services/human-resource-services/insights/gender-pay-gap-reporting-in-ireland.html>

<https://www.pwc.ie/services/human-resource-services/insights/gender-pay-gap-reporting-what-can-we-learn-from-the-uk.html>

Research documents:

- <http://www.arthurcox.com/publications/governments-gender-pay-gap-information-bill-2019-published/>
- <https://www.cipd.ie/news-resources/practical-guidance/employment-law/factsheets/gender-pay-gap-information-bill-2019>
- <https://www.centralbank.ie/docs/default-source/careers/policies/gender-pay-gap-report-2018.pdf>
- <https://www.pwc.ie/media-centre/press-release/2019/pwc-announces-gender-pay-gap-figure.html>
- <https://www.actuaries.org.uk/system/files/field/document/IFoA%20gender%20pay%20gap%20report%20WEB%20final.pdf>

Appendix 4.2 Mental Health Awareness in the Industry

Research documents:

- <https://web.actuaries.ie/sites/default/files/190524%20Enhancing%20Mental%20Health%20Outcomes%20for%20Those%20We%20Work%20With.pdf>
- <https://web.actuaries.ie/sites/default/files/Enhancing%20Mental%20Health%20Outcomes%20for%20Those%20We%20Work%20With-%20Michael%20Fitzgerald.mp3>
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