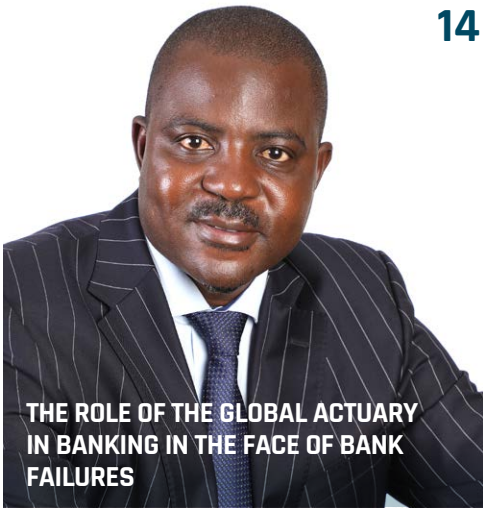
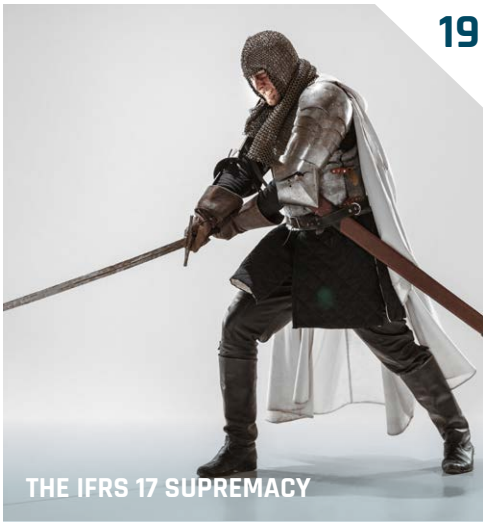
THE EUROPEAN ACTUARY

QUARTERLY MAGAZINE OF THE ACTUARIAL ASSOCIATION OF EUROPE

THEME

THE GLOBAL ACTUARY





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INTERVIEW

TAKING A WORLD-WIDE VIEW

The Institute and Faculty of Actuaries Fellow and Chief Actuary of Mercer in the UK, Charles Cowling, will take up the year-long Presidency International Actuarial Association on 1 January 2024. Although most of his working life is focussed on pensions, over the next year he will be looking at the bigger picture around international actuarial professionals and some of the big challenges that are affecting the actuarial profession globally.

INTERVIEW BY **JENNIFER BAKER**

As the role of actuaries continues to develop in new geographies and industries, what are your views on the global actuary and how important are they for the future of the profession?

'I think they're really important. The actuarial professional is expanding into a number of different areas. Banking being an example of an area where actuaries previously hadn't been involved, but in certain countries around the world are increasingly involved. One of the great advantages of a global profession is the ability to learn from different countries and see how progress is being made in one area in one country. Asking how we could learn from that and apply it elsewhere. So when actuaries gain expertise in one part of the world, we could share that understanding and knowledge globally and apply it elsewhere.

Actuaries have also been collaborating and working together on a number of global issues and that's increasingly the case – the most obvious examples are perhaps climate change and pandemics. With Covid19, we saw a rapid growth in the need to understand and to analyse the statistics, the projections, and the likely impact of this virus. And of course, actuaries are experts in managing lots of data in coming up with statistical and financial projections and a lot of their systems were ideally suited for pandemic modelling. It's not just to model the spread of the impact of the virus itself, but also how economies and countries respond. And actuaries uniquely combine that expertise around data modelling, statistics, investments and finance.

Climate change is another area where a lot of the impact is ideally linked to the work of actuaries. Not simply modelling what is happening in the weather, but how you take >

> ***When actuaries gain expertise in one part of the world, we could share that understanding and knowledge globally and apply it elsewhere***

steps to mitigate the impacts of climate change. So insurance has a huge role to play in that.

Finally, as actuaries get more involved in investments and working with large investors, like insurance companies and pension funds on their portfolios, they are looking at the environmental impact of how large investors are invested around the world.

Actuaries are also beginning to look at the United Nations' 17 sustainability goals globally as well – in particular there are a number of issues related to water. Sometimes it's water shortage, sometimes it's too much water and the implications of that, both in terms of insurance and society. So increasingly, actuaries are working together globally in new areas and applying their skills.

CHARLES COWLING

You've talked a lot about what are the possibilities, the hopes and the aspirations of the profession, but what challenges do you see?

'The whole world faces challenges in lots of areas, and we're not immune from those challenges. I think some of our traditional areas are not flourishing as they once were. So in my particular area, which is defined benefit pension schemes, the trend is away from providing those sorts of pension arrangements. Likewise, in insurance, the days of the large life companies providing with-profit type insurance policies, which required a lot of actuarial support, are moving away.

But as the traditional areas dwindle, other areas are coming to the fore and inevitably, that sort of change provides challenges and threats. Looking a bit further into the future, I think one of the biggest changes is AI. Artificial Intelligence, not only within the actuarial profession, but across many professions, poses a number of significant challenges. Some of those are around how we use it – putting data into an AI, bots >

> ***The days of the large life companies providing with-profit type insurance policies, which required a lot of actuarial support, are moving away***

or programs, means you lose control of it. Who knows where that data ends up in the global world of AI. And that's a real challenge.

There are also professional issues around AI. The actuary, like many other professions, rightly places a high degree of importance on professional judgement. As AI improves, we're going to get into the blurry area of when we effectively start relying on the judgement of AI. It's something we're already seeing in the medical profession, where AI is being used for things like cancer diagnosis, and has been shown to be statistically more reliable than doctors. Under such circumstances, which doctor is going to override the AI diagnosis based on their professional judgement? So I think the whole debate around AI is something that we're going to have to grapple with. AI is coming and we've just got to work out how we're going to manage it.'

What does the development of the global actuary mean in terms of new skills and education? You said yourself AI is coming if it's not already here, will actuaries have to learn how to work alongside it, rather than against it?

'I think it very much has to be that. And I hope it's the same for most professions. The optimist in me thinks that AI will do a lot of the heavy lifting or the boring bits, and allow us to do the more interesting problem-solving stuff. And I think there are huge opportunities there.

I think for actuaries their core skills of statistics, of risk, of economics and finance, and data analysis are going to be needed for whatever problems the world is facing in the next 40 or 50 years. The requirements to be skilled in understanding mathematics, finance, risk and data are not going to go away – if anything, the world seems a riskier place. And there is a need for people who can understand that and help companies or individuals or governments mitigate that risk.

I think an area that actuaries are going to have to develop, as well as the ability to work alongside AI, is greater flexibility in how to apply the skills we've got to all sorts of problems. Rather than the sort of training I had, which was very deep in a particular area of actuarial science, I think the actuaries of the future are going to have to be more flexible and apply their skills in different areas. So imagination and creativity in looking at different problems is going to be increasingly important.

Another area, which again, actuaries have been getting a little better at, but we're not necessarily known for, is communication skills. It's a challenge. You have actuaries and others who understand the deep complexity of the models that they're building – at least I hope they do – and the nature of the problems that they're solving. But they don't always have the ability to communicate that deep mathematical statistical risk knowledge, to the layperson who has to make the decisions.

It's a really important role. And it's not limited to actuaries, you can apply this to all sorts of >

> ***The optimist in me thinks that AI will do a lot of the heavy lifting or the boring bits***

deep technical areas of work. Scientists have to be able to be good at communicating their knowledge to others, to the politicians, leaders of corporations and so on, who are making decisions.'

Is a global actuary more involved in social and economic development and working for the wellbeing of society compared to the traditional actuary? Is that something that has shifted or changed over time?

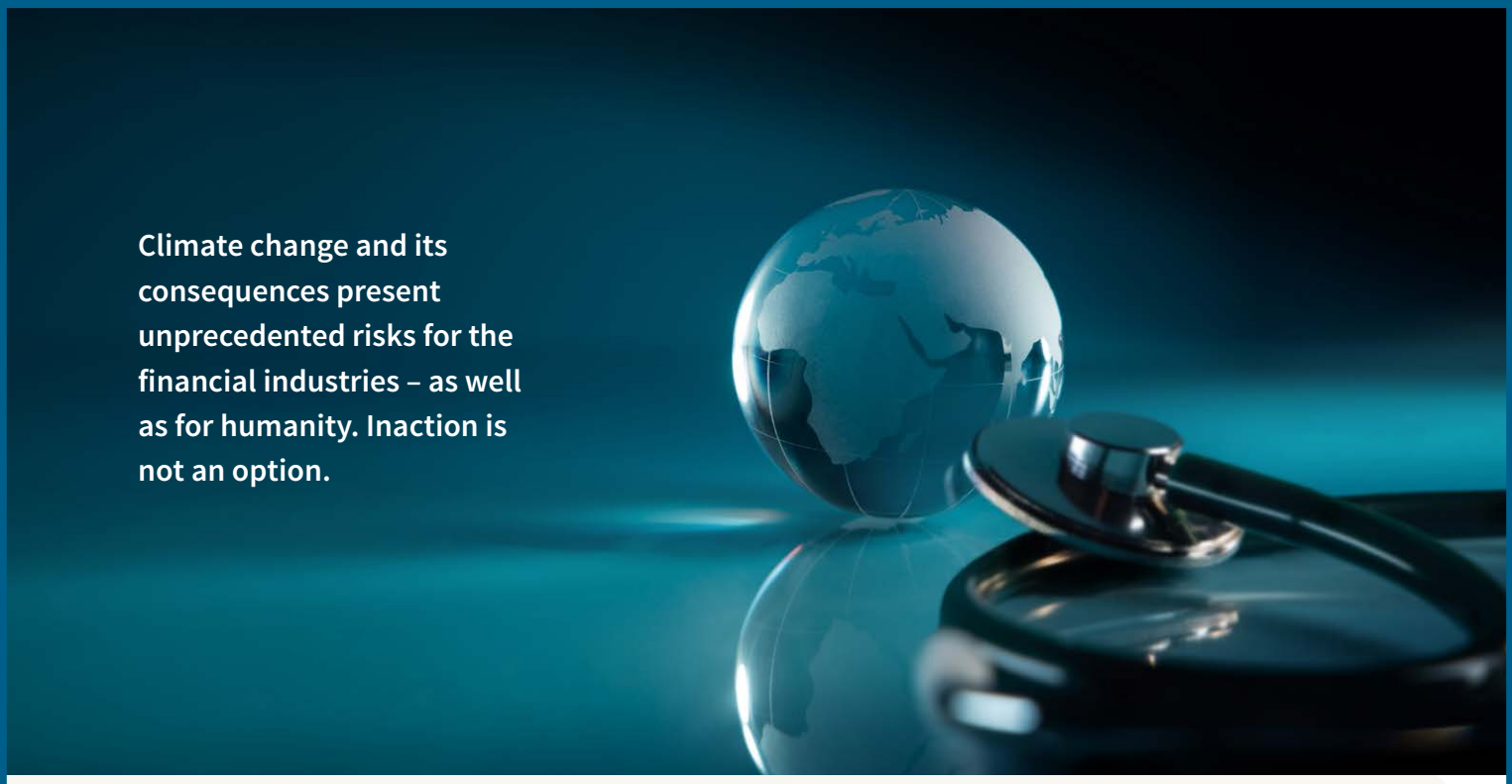
'Absolutely, yes. I think actuaries have a really important role to play in supporting and promoting the wellbeing of society. And I for one, am very keen to see actuaries do that. I think, to some extent, we've always had that within our charter. If I look at the Institute and Faculty of Actuaries, there's always been a strong public interest role of the profession to be acting in the interests of the common good.

I think what's changing is that a lot of the questions we're being asked to address are ones where the wellbeing of society is at stake. Things like climate change, like some of the work we're doing on water sustainability, like modelling pandemics and mitigating pandemic risk, are being driven by a global society recognising the need to manage and mitigate these sorts of risks. So I think it is inevitable that the actuary will have to get more involved in those areas, and will be working on projects that have very much at the heart of them, protection of the wellbeing of society. But I think that goes hand-in-hand with a very long-established professional ethos to look after the public interest.'

Is the global actuary more involved in governance roles and as support for the governments or for other stakeholders/decision makers compared to the traditional actuary?

'I think actuaries have an understanding which makes them well suited to getting involved in governance. Although they are getting involved in governance roles, I still think it's fairly low key and fairly minimal. I'd like to see more of it, particularly in areas that have an obvious risk mitigation or actuarial elements.

One of the things that actuaries have done for many, many years in pensions and insurance is struggle with the governance of how you make decisions, and struggle with how you balance the different stakeholders and their interests. Actuaries have to come up with decision-making processes that are not just appropriate, but support wider society's interests. That experience, together with the skill set of actuaries in risk management, means that we are well placed to be able to help governments and other stakeholders look at their decision making and governance processes. We are seeing some of that, but I think we could see more. Sadly, I don't think it's always the case that those in power welcome lots of additional governance and checks and balances. It depends a little bit on where you are, which again provides challenges for the global profession, because ethics and professionalism is not consistent the world over.' <



Climate change and its consequences present unprecedented risks for the financial industries – as well as for humanity. Inaction is not an option.

SUSTAINABILITY MATTERS

BY **GIAMPAOLO CRENCA** AND **FRANK SCHILLER**

The climate crisis is already urgent: in 2020 global heating saw temperatures pushed to 1.2°C higher than pre-industrial levels, with clear impacts on weather events and natural phenomena. It is widely accepted that a rise beyond 1.5°C will be disastrous, and that crossing the 2°C threshold will lead to catastrophic and irreversible effects.

A global problem requires an international response, and with these grave consequences on the horizon the majority of countries signed up to the landmark 2015 Paris Climate Agreement. This specifically targets long-term emissions reduction by imposing specific commitments on individual signatories, in line with factors including the country's proportional contribution to emissions. Sounds great! Not entirely: even though the Paris Agreement is built on the need to keep heating levels well below 2°C, the actual reductions pledged by countries are not even close to achieving that goal – in fact, they put us on track to hit 3°C. This represents a huge climate action gap.

Sustainability – a critical response to the climate emergency, and an issue which is also more widely relevant to topics such as biodiversity, social responsibility and good governance – is an increasingly universal claim made on behalf of everything from toilet rolls to window frames to hospitality. The concept is often understood to >

be enacted in three dimensions: environmental, social and governance. Social sustainability is concerned with achieving healthy and fair communities in which everyone has access to a good quality of life, while sustainability-focused governance seeks to provide sound processes and compliance as well as transparency by means of adequate reporting. But it all comes back to climate.

The UN has described sustainability as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs'. This creates a useful framework for understanding the different types of sustainability. It also encompasses the fact that, as the climate crisis poses huge risks for humanity, it ultimately endangers progress in all sustainability areas.

SUSTAINABILITY AND THE AAE

The AAE emphasises a broader understanding of sustainability but is clear that the environmental aspect is of immediate relevance and requires pressing attention. Climate change has direct and indirect impacts on parameters which are fundamental for actuaries as long-term risk managers – such as property claims, mortality, investment behaviour, business continuity. What's more, actuarial analysis must acknowledge bigger-picture issues: increased risk of weather events means increased capital requirements for insurance companies; rising sea levels or food shortages may drive population migration which transforms demographic profiles; increased incidence of individual risks leads to higher premiums and could even jeopardise the insurability of these risks.

In other words, actuaries are already engaged in managing risks related to climate, and looking at the stability of the insurance and pensions industries. The AAE has highlighted this in recent and ongoing discussions with key stakeholders the European Insurance & Occupational Pensions Authority (EIOPA), the European Commission (DG FISMA) and Insurance Europe. The AAE also ensures we are a relevant voice in the climate conversation through other actions, such as publication of our December discussion paper, 'Sustainability issues and reputational risk'.

FINANCIAL & SOCIAL SUSTAINABILITY

The ongoing Solvency II review, which is a central feature of stakeholder discussions, has proposed that incentives and disincentives are built into the amended capital requirements; in response the AAE has stressed its view that the basic principle of 'same risk, same capital' must continue and, if any penalising or supporting measures are introduced, they must be robust and science-based. It supports the already-proposed appropriate integration of climate risk into Solvency II, for example through the inclusion of climate scenarios into insurers' Own Risk and Solvency Assessments (ORSA). The AAE has already started examining which factors will be appropriate here.

Public awareness must be improved. With this in mind, pensions and insurance savings products should clearly inform policyholders about underlying investment strategies and their social considerations. One problem we recognise in this respect is the risk of 'greenwashed' financial products; as this is facilitated by a lack of established sustainability data in relation to financial products, it could be remedied through implementation of a transparent and rational classification system that implements ESG (environmental, social and governance) criteria.

CLIMATE SUSTAINABILITY & MINIMISING THE CLIMATE PROTECTION GAP

Pension funds and insurers can influence climate action in several ways: as long-term investors, their investment behaviour can significantly contribute to a more sustainable future by favouring 'greener' activities. It should be noted though, that immediate restructuring is likely to be impossible in many cases, due to the long-term nature of the investments in question. However, >

fundholders should be aware that delaying portfolio changes means assets could eventually be stranded.

The investment activities pursued by insurance and pensions funds can also actively promote the structural changes needed for long-term climate protection. AAE supports facilitation of investments which directly fund relevant transition projects, particularly in the form of structured green bonds or loans. Such products may need to be backed by governments and central banks; done correctly, these could be very attractive long-term investments.

Though non-life insurance is expected to be critical for mitigating losses caused by climate events, a greater focus on ESG criteria in underwriting is likely to make some risks increasingly unfeasible to insure over time, as the expected changes in climate have a progressively heavier impact. We believe that managing this will require insurance companies and public policy to come together and develop joint solutions. Here, consultant actuaries would be involved in ensuring the early identification of such protection gaps and maintaining coverage for those who need it. To be able to achieve this, as with ESG-oriented impact underwriting, reliable and appropriate data needs to be available; new data techniques may be required. Moreover, revised approaches will necessitate new products involving dynamic and static risk prevention, discounts as well as other incentives supporting climate-oriented behaviour change and actions to improve overall resilience against climate effects. Identifying the best levers for such new approaches will be another task for actuaries.

Ultimately the climate crisis requires consistent and targeted action – ideally on a worldwide basis – with no opportunities to ignore risk-based and scientifically sound rationales. Actuaries and the AAE are ready to take their place in supporting comprehensive, appropriate carbon and pollution accounting as well as valuation approaches, to uncover any such weak points that may exist. Sustainability cannot simply be an optional extra – all of us depend on it. <

FRANK SCHILLER
is Member of the Board of the Actuarial Association of Europe.

GIAMPAOLO CRENCA
is Vice Chairperson of the Actuarial Association of Europe.

EUROPEAN ACTUARIAL DAY 2023

BY **DANIEL JUNG**

Based on its grand success, the AAE decided to hold a second edition of the European Actuarial Day in this year. Under the theme *Towards the Actuary of the Future - Build on our traditional values and be innovative in solving the current and upcoming challenges*, the EAD 2023 will take place on 27th June 2023. Every interested expert is invited to participate free of charge.

In 2021, the Actuarial Association of Europe (AAE) as host together with the European Actuarial Academy (EAA) as organizer have conducted the first-ever European Actuarial Day (EAD).
This innovative format has taken place as a two-day virtual conference. Back then, it was conceptualized as a digital alternative to the postponed European Congress of Actuaries (ECA). In accordance with the AAE Strategic Objective 'To promote professionalism across Europe', it offered a unique CPD experience to all kind of different specialized actuaries.

Eventually, in 2021 the EAD brought together over 250 interested participants, 40 renowned speakers and many established partners from the industry. Amongst the four key notes given were *Skillsets and Mindsets: Reimagining the Actuarial Profession* by Tan Suee Chieh (Past President, IFoA), *Can AI Enhance Actuarial Science?* by Paul Murray (Swiss Re, Head Life & Health Products Reinsurance), *Keeping the Consumer at the Heart of What We Do* by Fausto Parente (EIOPA, Executive Director) and *Man-made risks for life insurers* by Tigran Kalberer (Milliman, Principal & Consulting Actuary).

KEY NOTE SPEAKERS

This year's EAD will offer two sophisticating plenary sessions with highly recognized keynote speakers: The first one will deal with the *Current State of Affairs and Upcoming Challenges for Actuaries*, which will be presented by Fabio Massimo Castaldo (Member and former Vice President, European Parliament). It will lay a focus on the economic aftermath of the pandemic, the increasing impact of climate change, the outbreak of war on Europe's borders, and global inflation. These contemporary developments are all putting a strain on traditional business models and products of banks, insurance companies, and pension funds.

The second one will take place as a panel and revolve around *Addressing Major Challenges: ESG and Sustainability Reporting*.
It brings together three prestigious presenters, f.e. Jutta Bopp (Head Group Sustainability Reporting, Swiss Re) and Sven Gentner (Head of Unit for Corporate Reporting, Audit and Credit Rating Agencies, European Commission). It will depart from the fact that designing a sustainable business model is the key strategic task for insurance companies and pension funds. Environmental, Social and Governance (ESG) issues rank more and more among their business priorities. Regulatory frameworks are starting to follow suit and insist on higher standards and transparent reporting on how they are implemented.

Additionally, the EAD will feature twelve attractive parallel sessions. They will investigate >

contemporary professional challenges and opportunities stemming from new areas of actuarial activity as well as from traditional working areas. These interesting concurrent sessions will lay a special focus on the surrounding actuaries work and operate in. They will as well look at the fast development of this environment in the recent past and attempts to give predictions for the future.

In the run-up and during the event, many interactive features will provide a chance to all participants to connect with each other and interact with the speakers as well as the sponsors. The post-event promotion will be done through the global streaming platform for actuaries www.actuview.de. Further details on the presentations, presenters and timetable are available on the event page www.ead2023.org.

Don't miss the chance to register and mark the 27th June 2023 in your actuarial calendar! <

DANIEL JUNG is Manager International Affairs at Deutsche Aktuarvereinigung (DAV).

THE EAD'S 2023 PROGRAM SCHEDULE

09:30	**WELCOME** Lutz Wilhelmy, AAE	
	PLENARY I: Current State of Affairs and Upcoming Challenges for Actuaries Fabio Massimo Castaldo, European Parliament, Giampaolo Crenca, AAE (Moderator), Lutz Wilhelmy, AAE (Moderator)	
10:30	**Cyber Risk Management Strategies** Marco Pirra	**Insurance and the Adoption of Climate Adaptation Strategies by Policyholders** Bruno Dotti, Federica Zappari
11:00	**Cyber Incident Reports: Extrapolating Severity Using Neural Networks** Justin Kher, Olivier Lopez, Hugo Rapior	**Does Consumers' Attention Influence the Price of Wine?** Carmen González-Velasco
11:30	**Recent Developments in Reinsurance and CAT Bond Markets for Catastrophic Risks** Fernando Mierzejewski	**Saving for Retirement Through Consumption: An Application for Portugal** Abraham Hernández
12:00	***Lunch Break***	
13:30	**Insurance Data Science Marketing Actuary** Claudio Giancaterino	**Penalized Regression – Between Credibility and GBMs** Jan Küthe
14:00	**Attractiveness of an Actuarial Career** Inga Helmane	**Non-crossing Neural Network Quantile Regression Estimation for Driving Data with Telematics** Xenxo Vidal-Llana
14:30	**Customer Insurance: Call for New Data Analysis Approaches** Paola Scarabotto	**Inflation Impact on Non-life Reserving** Romain Nobis
15:00	**PLENARY II: Addressing Major Challenges: ESG and Sustainability Reporting** Jutta Bopp, Swiss Re, Sven Gentner, European Commission, N.N., Jérôme Crugnola-Humbert, AAE (Moderator)	
	FAREWELL Giampaolo Crenca, AAE	

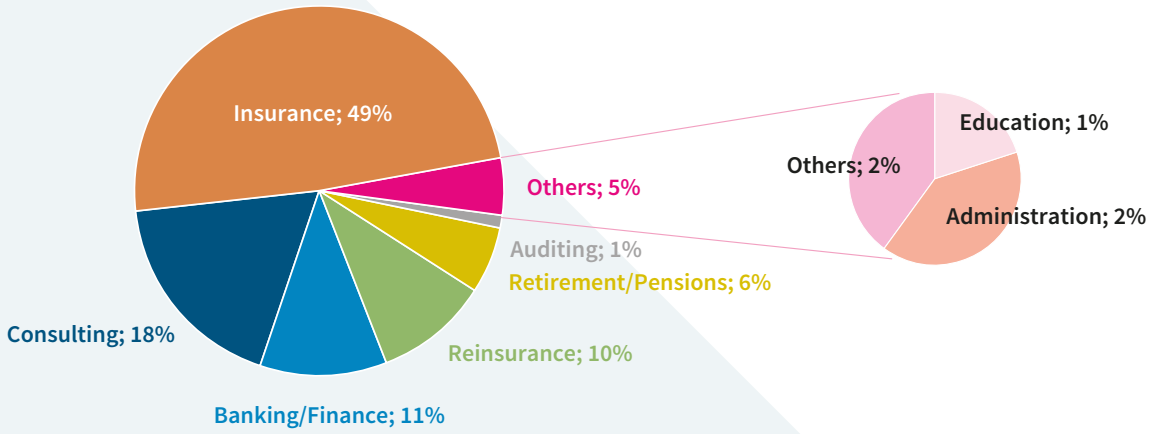
THE ACTUARY AS AN INTERNAL AUDITOR IN INSURANCE COMPANIES

BY **CAMILLE RENARD**

It is not as though internal auditor and actuary are two such opposing roles: in fact, what specialist is better placed to evaluate the control of risks within an insurance company? And yet only 1% of actuaries perform their functions in auditing (*survey by the French Institute of Actuaries*).

According to the French Institute of Actuaries, an actuary 'is an expert in risk assessment, modelling and management. They practice a wide variety of professions in many sectors of activity, both public and private, such as insurance, reinsurance, mutual insurance, provident societies, pensions, banking and asset management, industry, consulting... and auditing'. However, only 1% of IA actuaries are active in auditing – even though an expert in risk management is the ideal figure to assess the risk control of an insurance company. >

FIGURE 1: THE SECTOR IN WHICH ACTUARIES WORK



Source: Institute of Actuaries, What is an actuary?

NB: The qualification of internal auditing actuaries within insurance companies is not specified, which may influence the statistics.

> ***This job requires also curiosity and an active watch on the world of insurance and underlying risks***

CAMILLE RENARD

CONTEXT

The Solvency 2 directive caused a major cultural change in European insurers, by imposing on organisations a real transformation of the governance system around risk management. Though internal auditing was already evident and embedded within companies before its introduction, it has now taken on another dimension – and with the application of pillar 2 of the Solvency 2 directive, has even become one of the four key functions of insurance companies (*alongside risk management, compliance and actuarial; article 41 of Solvency 2 directive*).

According to article 47 of the Solvency 2 directive, the key internal audit function 'shall include an evaluation of the adequacy and effectiveness of the internal control system and other elements of the system of governance. The internal audit function shall be objective and independent of the operational functions.' It therefore contributes to the controlling of activities and efficiency of operations by ensuring compliance with laws and regulations, the application of instructions and guidelines set by governance and the proper functioning of internal processes in collaboration with all departments.

Moreover, the insurance world is constantly evolving and becoming more complex. Insurance regulations (*Solvency II, IFRS, etc.*) are putting growing constraints on insurance models and requirements in terms of technical reserves, quantification and risk control. For example, the ACPR (Autorité de Contrôle Prudentiel et de Résolution, the French regulator) has set up a unit dedicated to model controls (internal, USP, or standard formula). This, coupled with a difficult economic, social and environmental context, leads to a complication of insurance and reinsurance products (*reflection around parametric insurance, structured reinsurance, cat bonds, variable annuities... cf. the P&C days of the Institute of Actuaries in March 2023, Mastering uncertainties in a world in upheaval*).

Insurance companies therefore need employees who are able to understand insurance models and products, as risks in the management and strategy of organisations are growing in prevalence and complexity. >

> ***The Solvency 2 directive has been a major cultural change for European insurers***

WHAT SKILLS ARE NEEDED?

The job of internal auditor in an insurance company requires knowledge of:

- Mathematics, probability, statistics in order to challenge the modelling work of actuaries;
- The commercial field for full understanding of insurance products and guarantees;
- Legal and financial matters to understand the framework in which insurance activities must be carried out;
- And even IT...

This broad skillset means an internal auditor/actuary may be required to carry out assignments on pricing, underwriting, technical provisioning, reinsurance and in general on the evaluation of the technical and economic management of the audited structure, but also on governance or financial issues. These are all cross-cutting subjects in an insurance organisation, and represent new future arenas for actuarial auditors due to evolution of these sectors of intervention (*continuous challenge linked to prudential evolutions*). For example, in two years I have had the opportunity to work on Life and Non-Life issues, allowing me to deepen my knowledge of insurance activities/products, underwriting and pricing issues and to become aware of the internal control environment.

This job requires autonomy, intellectual rigour, and the ability to be analytical even while summarising work; but also curiosity and an active engagement with the world of insurance and underlying risks. It also requires communication skills that make it possible to address all levels of company management, whether specialised or strategic, as well as decision-makers, so you can persuade them of the validity of findings and associated recommendations.

WHAT ABOUT TOMORROW?

We live in a landscape of great uncertainty: technological developments, changes in mobility, the emergence of cyber risks, wars, growing inequality, climate change, inflationary economic environment etc. – and within an increasingly constrained regulatory context. As such, the need to control these risks is paramount if we are to meet the challenges of tomorrow. For internal auditors and actuaries alike, there will certainly continue to be a range of challenges.

So let's get on with it! <

References:

- ACPR
- L'Institut des actuaires
- IFACI

CAMILLE RENARD is internal auditor at Groupe Covéa

THE ROLE OF THE GLOBAL ACTUARY IN BANKING

IN THE FACE OF BANK FAILURES

BY **MICHAEL TICHAREVA**

In their normal banking activities, banks are in the business of maturity transformation, where they raise deposits and other forms of funding (liabilities to the bank) from those with excess cash and lend to those in need of loans (assets to the bank). This scenario exposes banks to various risks, key of which is mismatching risks between assets and liabilities, as liabilities are often of a shorter duration whilst assets are often of a longer duration.

This can lead to bank liquidity and funding crises where a bank may not be able to raise funds at short notice when needed to finance any outflow of deposits. This has been the case with the recent Silicon Valley Bank ('SVB') failure in the United States in March 2023, due to what is known as 'a run on the bank' as customers demanded their deposits at a time when the Bank was short of cash and liquid assets, and could not raise fresh capital at short notice. This was the second largest US bank failure behind Washington Mutual that collapsed in 2008.

BANKING RISK MANAGEMENT IN THE FACE OF BANK FAILURES

The history of bank failures around the world has shown that, whilst both capital and liquidity are important for the financial health of a bank, it is often liquidity and funding risks that lead to immediate bank failures. This is often driven by lack of confidence in a bank due to reputational risks materialising, leading customers to rush to withdraw their deposits at a time when the bank cannot raise funding.

We can certainly take lessons from these events, and actuarial professionals, among other professionals, could play a more pronounced role in liquidity and funding risk management in banks through asset liability modelling and management. The asset liability management tools required for managing such risks, that include projection of cash inflows and outflows over various periods under stressed conditions, are already familiar to actuaries.

> ***This calls for the need to continue refining banking risk management models and stress testing exercises***


MICHAEL TICHAREVA

Liquidity is a fundamental risk as banks 'borrow short and lend long'. Banks, therefore, accept a degree of asset-liability mismatch and related liquidity risk. The management of asset-liability and liquidity risks are important in banking and are familiar ground for actuaries.

POSSIBLE BANKING INDUSTRY CONTAGION FOLLOWING SVB COLLAPSE

SVB's collapse was sudden, following a sustained 48-hour rush to withdraw deposits by its customers in what is seen as a classic 'run on the bank'. It was feared that the SVB collapse could trigger a banking financial crisis. Despite assurances by the US banking regulators of no contagion, we also saw the collapse of another US bank, the New York based Signature Bank, two days after the failure of SVB. First Republic Bank then also collapsed in April 2023.

In Europe, there were concerns about Credit Suisse, the world's eighth largest investment bank based in Switzerland, with its shares having crashed by more than 20% to a new record low on 15 March 2023 after its biggest backer ruled out providing any more funding to the Bank. The Swiss banking regulator then committed to provide Credit Suisse with liquidity should this be required. The Swiss government also brokered a deal for UBS to buy Credit Suisse as a way of containing a crisis of confidence in global financial markets, bringing together Switzerland's two biggest banks.

IMPLICATIONS FOR BANKING BUSINESS MODELS AND RISK MANAGEMENT

As for other historic cases of bank collapses around the world, the recent US bank failures illustrate the need for sustainable banking business models and improved risk management. This calls for the need to continue refining banking risk management models and stress testing exercises, with the design and implementation of integrated enterprise-wide risk management ('ERM') frameworks being extremely important for both large and small banks. Some risks are not immediately >

> *Advisory roles allow actuaries to build up strategies and models for banks across the breadth of risk types and topics*

obvious, but with appropriate and integrated risk management models and frameworks, they can be anticipated, managed and/or mitigated.

OPPORTUNITIES FOR ACTUARIES IN BANKING

The changing banking landscape presents actuaries with opportunities for applying actuarial techniques in banking. Given worldwide regulatory pressures in the banking space, actuaries, among other professionals, are sought after to build cutting edge models to optimise the risk environment and to work on the forefront of policy development.

The roles of actuaries in banking typically relate to risk management. This ranges from credit risk, market risk, liquidity risk, operational risk and other business risks. Each of these risks can be broken down further into a breadth of topics. For example, credit risk is a major area of work and can be broken down into loan origination and pricing strategies, monitoring of portfolio trends, provision of capital and reporting. Given actuaries' quantitative abilities and understanding of the financial world, actuaries are able to play a key role in each of these areas. These roles are not confined to banks but to consulting firms as well. Consultants are able to act in advisory roles or audit roles. While audit roles often lead to validation of a bank's model, advisory roles allow actuaries to build up strategies and models for banks across the breadth of risk types and topics.

Actuaries employed in the banking sector and risk-consulting field in jurisdictions such as South Africa and Australia are largely employed in the following areas:

- Credit scorecard development
- Credit risk management and reporting
- Design and pricing of all banking products (credit and non-credit related)
- Provision model development
- Balance sheet management, i.e. asset-liability mismatching risk management and liquidity risk management
- Pricing and trading of derivative products
- Capital modelling
- Credit, operational and market risk modelling
- Balance sheet management.

BANKING CREDENTIALS FOR ACTUARIES

In view of these developments in actuarial practice in banking, the Actuarial Society of South Africa ('ASSA') developed a banking fellowship subject for actuaries that was introduced in 2015, a first in the world, as part of the qualification track. This subject has now evolved and revamped, and from 2022, it is being offered to the global actuarial profession leading to a certificate in banking. The Institute and Faculty of Actuaries ('IFoA') has also partnered with ASSA and is offering these banking subjects at fellowship principles and applications level as part of the IFoA qualification track. <

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BANKING EDUCATION FOR ACTUARIES

BY **DICK RAE**

Continuous professional development is a personal journey. For qualified actuaries, education doesn't come in shrink-wrapped packages in the way that it does, in large part, for student actuaries. Your educational requirements will depend on where you are in your career. There are various steps along the way for an actuary keen to explore the world of banking.

The observations I make in this article are based on my own experience. I vividly remember my initial confusion back in 1997, when I entered the world of banking. Everything seemed to be the opposite of what I had been used to as a life actuary. The emphasis on capital requirements was with reference to assets rather than liabilities. Bankers thought in terms of floating rates rather than fixed rates. With the exception of credit risk, banks preferred not to carry risks in the way that insurance companies and pension funds do. Market risk was hedged, and everything with a fixed rate duration was swapped to a floating rate.

My first task was to get familiar with the banking jargon. It's a new language, and it's essential to be conversant in it. My suggestion is to listen and talk to any contacts you have that are in banking. Actuarial 'gobbledegook' was often a source of much amusement amongst my former investment banking colleagues.

A STRUCTURED APPROACH TO EDUCATION

If you are serious about getting a thorough overview of banking, a first step could be reading the course material for the fellowship course on the principles of banking. These are available through either the IFoA or the Actuarial Society of South Africa (ASSA) websites. This is an international course designed by actuaries for actuaries seeking to get broad-based knowledge of the core principles of banking. Not only will this cover the bank balance sheet, but you will get an education in banking regulation, risk management, and product pricing. You will gain the banking perspective on credit risk, market risk, and operational risk along with capital measurement and, vitally important, liquidity measurement. I'm not necessarily suggesting that you take the examination; that's your prerogative, but that would seem an obvious course of action for a student.

IFoA and ASSA websites list the **syllabus for the principles course** along with a **syllabus for a banking applications fellowship course**. It is worth noting that for many years, ASSA has been providing banking education for actuaries, and these international courses arise from a collaboration between the IFoA and ASSA. Links can also be found on both websites to the **additional reading material** suggested by ASSA. Additionally, you may refer to an IFoA Banking **reading list**, which is another useful resource.

THE PARALLELS BETWEEN BANKING AND TRADITIONAL ACTUARIAL ROLES YOU MAY KNOW

There are numerous similarities between in the traditional roles in insurance and their counterparts in banking. In fact, it is astonishing that the actuarial profession has only recently fully embraced banking as an industry where the actuarial skill set has >

relevance and where actuaries may choose to make their career.

This means that you already have a lot of the skills and experience you will need. Here are some examples

- Product pricing/profit testing – the familiar territory of projecting cash flows
- Reserving – for banks, these represent provisions for future losses
- Modelling – a core skill of ours
- Risk management – our bread and butter
- Data management and analysis - banks manage millions of transactions
- Climate change risk – banks, like insurance companies are grappling to come to terms with what this means for them
- Regulation – a bank's Internal Capital Adequacy Assessment Process (ICAAP) is strikingly familiar to the Own Risk and Solvency Assessment (ORSA)

Whatever your skillset, there will most likely be some equivalent within the banking world. These areas will be the easiest to educate yourself on, and you can read in depth about these similarities in the International Actuarial Association's publication on '**Opportunities for Applying Actuarial Techniques in Banking**'.

CURRENT THEMES IN BANKING AND KEEPING YOUR KNOWLEDGE RELEVANT

No matter which part of the world you are in, you won't go wrong by looking at the **Bank of England's (BofE's) consultations** with the UK banking sector. If there is one thing about banking it is its global nature. The issues elsewhere will be similar to the UK's. Doubtless you can try other central bank websites; it's just that I know the BofE's content and I can recommend their consultations. These often read like text books. So not only do they highlight the current issues in banking and the regulatory issues, but they also provide excellent educational material to boot. You'll find these covering familiar issues of the day such as climate change stress testing, model risk management, and the implementation of new regulatory standards.


DICK RAE

Banking is more directly connected to the real economy than insurance and pensions. It doesn't take long for really hot topics to hit the headlines. Silicon Valley Bank and Credit Suisse are interesting recent examples that put much of the educational material I've mentioned above into context.

There has never been more opportunity for actuaries to learn about banking irrespective of where they are in their career. There is education to appeal to most actuaries and there is a role we can all play within this fascinating industry. <

DICK RAE is a Fellow of the Institute of Actuaries having spent 22 years in insurance and reinsurance before a 15 year spell in investment banking. Currently he is a member of the IFoA's Member Engagement Committee. Prior to that he chaired the IFoA's Finance and Investment Practice Board.

THE IFRS 17 SUPREMACY

BY **SERVAAS HOUBEN**

With the introduction of a new accounting standard, the search for KPIs to measure success of insurance companies has begun. Where under IFRS 4 the return on equity or gross written premium measures were common, under IFRS 17 the concept of current and future equity (CSM, RA) has been introduced and premium income has lost its central presence in disclosures and financial reporting. Although the search for the best KPIs is still ongoing and will change over time based on user experience, I will give an insight on why KPIs play a central role within the finance industry, what the major changes in reporting and KPIs has been from IFRS 4 to IFRS 17, and what logical choices for KPIs could be under IFRS 17 depending on the nature of the insurance business.

THE ROLE OF KPIS IN FINANCIAL STATEMENT ANALYSIS

Financial statement analysis plays such a central role in the CFA program that highest weights in levels 1 and 2 are assigned to financial reporting and analysis. Financial statement analysis allows an analyst to convert data into financial metrics which can be used for decision making and to assess the company's performance and trend in performance. It is common to use ratios to express company performance, as it removes company size as a factor when comparing companies and enable easier comparison >

over time (trends). Although the use of ratios has its pitfalls (judgment, different accounting methods, consistency of underlying data over time) they are well embedded in the financial industry. Most common categories of financial ratios are:

- **Activity:** such as asset utilization ratios, or operational efficiency, which measure how efficiently the company utilizes assets such as inventory/receivables/payables/asset turnover ratios.
- **Liquidity:** measuring the ability to meet short term obligations, such as current, quick and cash ratios.
- **Solvency:** measuring the ability to meet long term obligations, therefore requiring more insight in the financial structure of the company such as debt level. Common ratios are debt-to assets/capital/equity ratios, or interest coverage.
- **Profitability:** measuring the ability to generate profit and hence a reflection of the company in the market and the quality of management. Return on assets/equity (ROA/ROE), and profit margin are famous examples.
- **Valuation:** measuring the quantity of an asset or flow such as price to earnings or earnings per share.

The choice of financial ratio to focus on depends on the type of industry: e.g. some industries like banks are more vulnerable to short term liquidity challenges than pension funds. Stock traded companies are more sensitive to profitability and valuation ratios, while non-traded companies like pension funds focus more on longer term goals and thus tend to use solvency ratios. Even within an industry different ratios might be applicable: non-life insurance companies tend to have short term obligations while life insurance companies tend to have long term obligations.

Besides the 'pure' five ratios mentioned earlier, there are examples of ratios using a decomposition of another ratio into sub-elements with the goal of providing additional insight. The DuPont analysis is such a decomposition of the ROE and helps to explain the different components affecting ROE. An example of ROE decomposition is to rewrite ROE as ROA times leverage which then can be rewritten as:

$$\frac{Net\ income}{Shareholders'\ equity} = \frac{Net\ income}{EBT} \times \frac{EBT}{EBIT} \times \frac{EBIT}{Revenue} \times \frac{Revenue}{Average\ total\ assets} \times \frac{Average\ total\ assets}{Shareholders'\ equity} \qquad \textit{Equation 1}$$

Which is interpreted as
ROE = Tax burden × Interest burden × EBIT margin × Total asset turnover × Leverage

As IFRS (17) is an accounting framework which main aim is to measure the level of profitability, applying one of the profitability ratios in the context of IFRS 17 seems to most sensible. >

KPIS USED UNDER IFRS 4

Depending on the status of the insurance company (publicly traded or not) in the past the following KPIs were used under IFRS4:

- **ROE:** a general metric which can be used across insurance companies (primary vs reinsurance, life/non-life/health). As this metric is also used for other industries, it is easy to understand for analysts. Possible drawbacks could be that due to heavy regulations in insurance, comparing an insurance company's ROE with other industries might not provide insights.

- **Combined ratio or claims ratio** (mainly non-life): this ratio is more insurance specific and thus can be less easily compared with other sectors. Especially with business with short duration (and hence no significant investment results) a combined ratio reflects the efficiency of management (selection of risks, pricing and efficiency of operations).

- **New business strain:** showing the tradeoff of upfront expenses (commissions, reserves) compared to profits over time. This metric reflects the relative ease with which new business can be written.

- **Premium volume:** giving insights in future market share, possibilities for economies of scale etc.

- **Technical component analysis:** similar to Dupont analysis where the overall (technical) result is split up in underlying factors like actuarial assumptions and expenses to provide more insight in what components contribute most to profit.

Like with the financial ratios depending on the type of business, and the audience, different metrics are most suitable. However the ROE has the main benefit of being used widespread outside of the insurance industry and therefore seems the most logical candidate to measure financial success.

CHANGES IN IFRS 17 COMPARED TO IFRS 4

IFRS 17 introduces some fundamental new concepts which differ from IFRS4. Besides the more market-based approach relying on current assumptions, and the preference for market based valuation, when possible, the concept of CSM is introduced which reflects the future profit. Instead of taking a day 1 gain or loss, profit is released over time when coverage is provided in line with IFRS 15 revenue recognition. Furthermore the Risk Adjustment (comparable to Solvency II Risk Margin) is introduced providing an additional buffer for non-financial cash flow uncertainty. As CSM and RA are released in the future, they are not part of current equity however excluding them altogether from a profitability assessment will underestimate the profitability of the company. Lastly CSM and RA tend to be pretax balance sheet items, will equity is post tax further complicating matters. >

WHICH KPIS SEEM LOGICAL CHOICES UNDER IFRS 17

As premium volume does not play such an important role in IFRS 17, and instead the focus has switched more towards future profits (CSM) other metrics than premium income seem a more logical KPI to use. The following measures related to ROE and therefore might be logical choices, where net income is the P&L impact and the items with * are the optional elements in the equation:

$$IFRS\ 17\ ROE = \frac{Net\ income}{Shareholders'\ equity + [(CSM+RA)^* \times TaxAdjustmentFactor^*] \times FutureProfitAdjustmentfactor^*}$$

Equation 2

- **Shareholders's equity:** this would be a least conservative approach and understatement of future profits included in CSM and RA resulting in a high ROE%.
- **Shareholders's equity + other elements like CSM and RA:** a more realistic approach on future profitability however more complicated approach:
  - Tax effects: as equity is post tax while CSM and RA are pre tax, a tax adjustment would be required.
  - With or without prudence margin: as there is uncertainty around CSM and RA, taking the full amount might be an overstatement of profitability.
  - Current or future equity: for the denominator one can either consider only the current equity (which reflects current investment) or the future equity including CSM and RA. The latter might be a more realistic reflection of profitability as part of the equity under IFRS 4 tends to be allocated to CSM under IFRS 17.
    - Circular reference: when CSM and RA are both include in the numerator (P&L release) and denominator (equity + CSM + RA) there is a circular reference with a higher CSM resulting in a higher CSM release hence not showing the full effect of future profits.
    - Understanding of coverage units essential and development of locked in rates.

While CSM seems to be a good indication of future profits for life business, it might underestimate profitability under non-life business especially with short term contracts. >

Lastly due to changes in past and future/current business levels of profitability due to to higher inflation and interest rates, it could make sense to perform ROE calculations on different cohorts of the business.

Like the ROE decomposition under DuPont, it seems to make sense to apply decomposition of the net income over equity ratio in an insurance profitability context:

$$IFRS\ 17\ ROE = \frac{Net\ income}{Shareholders'\ equity} = \frac{Net\ income}{CSM + RA} \times \frac{CSM + RA}{Equity} \qquad \textit{Equation 3}$$

Where the first component expresses the current period income over future income, and the second component measures future profitability over invested capital. Like with DuPont additional elements on tax, leverage or interest expenses can be added.

CONCLUSION

Like in other industries, also in insurance metrics play a key role for analysts enabling them to compare different companies. Similar like with other industries, a ratio by itself might not explain the full story and hence the analyst needs to be aware of company specific or industry circumstances before being able to compare insurance company's results with each other or with companies from other industries: as insurance (like banking) is heavily regulated, this leaves less room for companies for (excessive) risk taking, hence affecting the level of ratios. IFRS 17 CSM has similarities with Embedded Value (EV) metrics used in the past, and might result in a revival of interest for EV

This article shows the challenges for deriving an insurance specific KPI which heavily depends on sector and time specific circumstances. To ensure the diversity within the insurance sector is properly reflected in KPIs, a blend of optimistic and pessimistic KPIs might provide the most insight in the level of profitability of the company. Decomposition of return in equity as under DuPont will provide better insights in the underlying elements of profitability and giving management insight in what levers can be pulled. <

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COLUMN

THE GLOBAL ACTUARY – WHAT IT MEANS FOR US?

When I reflect on the last few decades, I am proud to belong to a profession that worked together and used its knowledge and experience in different parts of the world to solve the world's challenges. Today, it is more important than ever that we focus on how we continue to make an impact globally.

Globalisation makes us more connected, and we interact and integrate with each other more than ever. As actuaries, we have the transferable skills to contribute positively this. Examples of these include our contributions in the recent COVID19 pandemic and climate change.

What does being a global actuary mean? It means using our core actuarial skillset in different settings and geographies, supporting each other in sharing knowledge and learning from each other. This points to lifelong learning and being generous with our experience and time. The AAE provides a good framework for this to happen but in order to optimise knowledge sharing, we all need to contribute to it.

As global actuaries, we work with each other to ensure that we provide the best support we can to our stakeholders, be it customers, companies, regulators or the public. Technology makes this easier now with everyone an expert in video conferencing (even though there are still those of us unable to unmute at the appropriate times!). Being a global actuary also means that it is not just the geographies we work in but also being flexible to venture into different domains and areas.

Looking to the future, our skillset needs to evolve for our profession to be sustainable. In the advent of Artificial Intelligence and the democratisation of information where it is freely available through technology and the internet, it is crucial that we focus on what we can do with said information.
This requires creativity, innovation and the ability (and the appetite) to 'think outside the box'. More importantly, it requires courage on our part to come out of our comfort zone and venture to acquire new applicable skillset to continue to be relevant, as the world changes.

Kartina Tahir Thomson

AAE Board member, incoming President-Elect of the Institute and Faculty of Actuaries

COLOPHON

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