THE EUROPEAN

ACTUARY

Nº 47
SEPT 2026

QUARTERLY MAGAZINE OF THE ACTUARIAL ASSOCIATION OF EUROPE

DIVERSITY

2

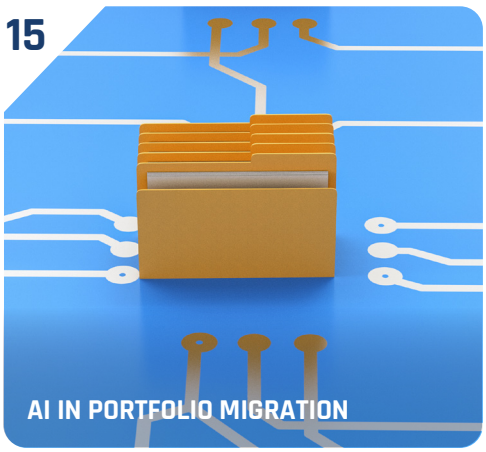
INTERVIEW WITH KIRSTEN SASADY:
A DIVERSE FUTURE IS A STRONGER FUTURE

6

SELF-INSURANCE AND POOLED SCHEMES

13

ASSURING INCLUSION AND ACCESS

15

AI IN PORTFOLIO MIGRATION

19

PARAMETRIC INSURANCE BEYOND INDEMNITY

23

UNDERSTANDING INCLUSIVE INSURANCE MARKETS

27

WHERE DOES AN ACTUARY'S AI COMPETENCE COME FROM?

29

A SECOND ORDER THREAT POSED BY AI ON PROFESSIONS

33 FOREVER CHEMICALS, LONG-TAIL LIABILITIES

37 COLUMN: DIVERSITY IS MORE THAN A NUMBER

AAE | ACTUARIAL ASSOCIATION OF EUROPE

INTERVIEW

BY **JENNIFER BAKER**

A DIVERSE FUTURE IS A STRONGER FUTURE

As CEO of the High Performance Institute, Kirsten Sasady works on leadership development and organisational capability in knowledge-based environments. She has a particular interest in how a diversity of perspectives strengthens collaboration, decision quality and long-term value creation in professions such as the actuarial field, and with more than 20 years of experience across insurance, pensions, regulation and consulting knows how it works in practice. She spoke to The European Actuary about how diversity can be a strategic capability for the actuarial profession.

KIRSTEN SASADY

How has your own experience shaped your perspective on diversity and inclusion in the actuarial profession?

'I quite early had leadership positions within the actuarial world, and when you get the opportunity, you want to change things for the better. I've always been driven by improving things rather than simply accepting the status quo – I always want to change things for the better for all of us. But what I often discovered was that you could discuss how things could be better or different, but when it came down to practice, it was always short-term next quarter thinking. And that limits the ability to actually change things. In fact someone once told me "you would have great career opportunities if you just stopped asking questions and just do as you're told." But we miss so many perspectives that way.

To me, diversity is fundamentally about broadening perspectives, improving decision-making and helping the profession navigate an increasingly complex world. The goal is not diversity in itself. The goal is better >

> ***I left the profession because I got so frustrated with not being allowed to be different, and not getting any points for asking questions, and trying to change things.***

decisions, stronger organisations and long-term value creation. Diversity is one of the means to achieve that.'

How diverse is the actuarial profession in Europe today compared to when you started and where do the most significant gaps remain? For example, gender, ethnicity, socioeconomic background, neurodiversity, etc.?

'In my work on diversity, I try to avoid talking about these labels. My view is that all of us are different people, and often we don't even have to know why we are different, just that everyone is an individual. As a manager or leader you need to bring out the best in everyone, so you have to stop labelling people or expecting to know who they are from a superficial label. Start by being interested in the people you work with.

You asked what I think has changed in the profession since I started more than 20 years ago, and actually I don't think a lot has changed. Not in the way we run companies, and that's what I want to change. Since my last article, which was two years ago, a lot has changed in the surrounding world – now we have AI everywhere, and things are moving more and more quickly. We need to be able to adapt, and if we still drive companies and the profession thinking we know best, and don't need other perspectives, we risk becoming less relevant as AI increasingly takes over technical tasks. AI can build on enormous amounts of existing knowledge and data, but we still need people who can challenge what we already know, imagine different possibilities, integrate different perspectives and ask the questions we have not asked before.'

What is the concrete business case for greater diversity in actuarial teams — do diverse teams produce better work? Can you point to examples where lack of diversity has led to blind spots in actuarial models or risk assessments?

'I do have a great example but from a different profession. A woman I know worked in the telecom industry at the beginning of the 2000s and all of the management team had been working within the telecom industry for years, when this new thing arrived. It was the possibility of cell phone data, and they couldn't figure out how to sell it to the clients. They thought everyone just wants cheap voice calls and cheap texts, and why would anyone want phone data? So they ended up giving it away for free! This was about half a year before the first iPhone.

So the point is that if just one person at that table had been from a different industry, or maybe younger, or with a more open perspective, they might have seen where the disruption was going to come from. It's not only the actual profession, but also every profession right now. I think disruption always comes from places you don't expect, so if you surround yourself with people who think the same, and you have a culture of just agreeing, you miss a lot!'

What are the most persistent structural barriers that prevent underrepresented groups from entering or advancing in the actuarial profession?

'Actuaries are rightly proud of their expertise. But expertise can sometimes make us overconfident >

> ***Organisations were created as though we are all the same, and as though life outside work has no impact on us. We need to change that.***

in our own perspective. We are very clever, but we're clever in our own ways. When I meet people and I tell them I studied actuarial math, they always respond with "Oh, you must be so clever." But I'm clever on a very specific topic, it doesn't mean I know everything. Unfortunately, I think there's a tendency within our profession to think that we know most things, and we don't need other perspectives. And that's one of the biggest barriers, both for recruiting and retaining people.

I left the profession because I got so frustrated with not being allowed to be different, and not getting any points for asking questions, and trying to change things. I think that's one of the biggest risks, and it's also why younger people may choose differently. It's not like the old days, where you become an actuary and you stay an actuary for the rest of your career. If people are not content with what they're doing, they're going to do something else.'

How much of the diversity challenge is a pipeline problem versus a retention and promotion problem?

'It's both. I work with diversity in many professions, and I think at least now in Denmark, we've gotten to a point where people understand that they need to hire more diverse people of more diverse backgrounds. But many organisations still approach diversity primarily because they feel external pressure rather than because they understand its strategic value. They do it because they think the surrounding world expects it of them. They do it to take nice pictures where people look different. They do it to be able to say "look how diverse we are." Often, they haven't yet connected diversity to better decisions, innovation and long-term resilience.

I'm also working in an ISO group making a global standard on diversity management, and we're trying to create a management system standard under governance. We're trying to take diversity from being an HR nice-to-have project to a need-to-have project that is central for your company strategy. Because if you know why you want diversity and it's because you want different perspectives and you want to be ready for the future, then you're going to look for diversity when you hire, and you're going to create a culture where speaking up is what people are applauded for, and not for keeping quiet.'

Are voluntary initiatives enough, or is there a role for mandatory targets or reporting?

'I think mandatory targets often create more difficulties than advantages, because if you say we need to hire more women, then you have the bigger group saying you were only hired because you were a woman. Or you will have people who think that you're going to take from one group and give it to another. It's not a zero-sum game; it's actually really the opposite.

It's also about people using their brain capacity for doing the actual work instead of trying to fit in – because even within the majority, people >

> ***We should remember that an ethical profession helps people in the wider society.***

are different, with different perspectives, experiences and needs. In some companies, there has traditionally been a strong fit-in culture, but creating room for people to be different benefits everyone.

And that is also about recognising that we are human beings outside the workplace. People go through different phases of life, and at some point, almost everyone will experience circumstances where flexibility and understanding matter. Maybe you have small children, maybe later in life you have aging parents you need to take care of, or maybe something else happens in your life that requires flexibility. In the end, everyone benefits from a culture where there's room for being human.

Organisations were created as though we are all the same, and as though life outside work has no impact on us. We need to change that.'

What concrete steps should actuarial employers, professional bodies, and educators each be taking right now? How can the Actuarial Association of Europe (AAE) and national actuarial associations better collaborate on diversity?

'The first point is to educate yourself on why you want diversity. There are some people who understand that, and there's research that shows that more diversity creates better decisions, better innovation, but it doesn't happen all by itself. It happens if you have leaders that know how to put it into play. So, if you just add diversity, it's just going to create friction, and it's not going to be helpful. So, what I want the profession, and managers, and everyone else to understand is the "why". It's not about morals or ethics, it's actually about all of us, and it's going to benefit all of us. It's not about helping, it's about being ready for the future. I think the world has become too complex for one person or one profession to understand. We need to collaborate, and we need to understand that people who see the world differently from us are going to help us see the world differently too.'

What does a truly diverse and inclusive actuarial profession look like to you in 10 years' time?

'I think AI is going to take over a lot of the work that we do today, so I would like us to become a profession that focuses increasingly on what humans bring – challenging assumptions, thinking beyond existing knowledge and patterns, imagining new possibilities, integrating different perspectives, asking better questions and bringing human judgement to decisions that affect people. We're going to challenge the assumptions, and we're going to integrate different perspectives and ask better questions, and be the guardians of decisions regarding people. And one of the things I'm also increasingly interested in is to get the profession back on track in remembering why we are here. Insurance was created to help people share risk, and it's not about profits. In my opinion that's not the end goal. The end goal is helping people share the risk, and I think we should remember that an ethical profession helps people in the wider society.' <

SELF-INSURANCE AND POOLED SCHEMES

AND THE NEED FOR REDISTRIBUTIVE MECHANISMS

BY **MARIA ARAGONA, LUCA REGIS** AND **ELENA VIGNA**

Longevity risk, captured by uncertainty in the evolution of mortality rates, continues to threaten the financial sustainability of traditional pension systems. As a consequence, insurers and plan sponsors are actively seeking alternative decumulation strategies that may transfer it to the pool of policyholders.

Among these alternatives, there are self-insurance solutions, such as Group Self-Annuitization (GSA) schemes, collective schemes and tontines. In theory, GSAs offer a highly efficient mechanism for mitigating longevity risk. A group of retirees pools capital; as members pass away, their remaining wealth (mortality credits) is distributed to the surviving members. Unlike in traditional annuities, where the insurer bears the longevity risk and has to set aside capital for that, a GSA scheme transfers the risk directly to the participants, who share it. Since policyholders are pooled together, their heterogeneity in mortality is a key factor. It is now a very well-documented demographic fact that mortality experiences vary drastically across socioeconomic classes. Individuals from more disadvantaged backgrounds generally face higher mortality risks due to environmental factors, income and education deprivation, riskier occupations, and barriers to healthcare. They are thus more exposed to mortality risk (High-Risk individuals) compared to those belonging to higher socio-economic classes (Low-Risk individuals), who instead live longer on average. In a standard GSA scheme, all members typically contribute the same initial premium and receive the same baseline benefit. When the members belong to different socio-economic classes, a GSA scheme triggers an implicit, regressive wealth transfer: the poorest members die earlier, leaving their mortality credits to subsidize the extended payouts of the wealthiest members. >

This article was published in the Astin Bulletin in September last year. It won the 2025 Chris Daykin award with the PBSS Section of IAA and it will be presented during the next International Congress of Actuaries in Tokyo, next November.

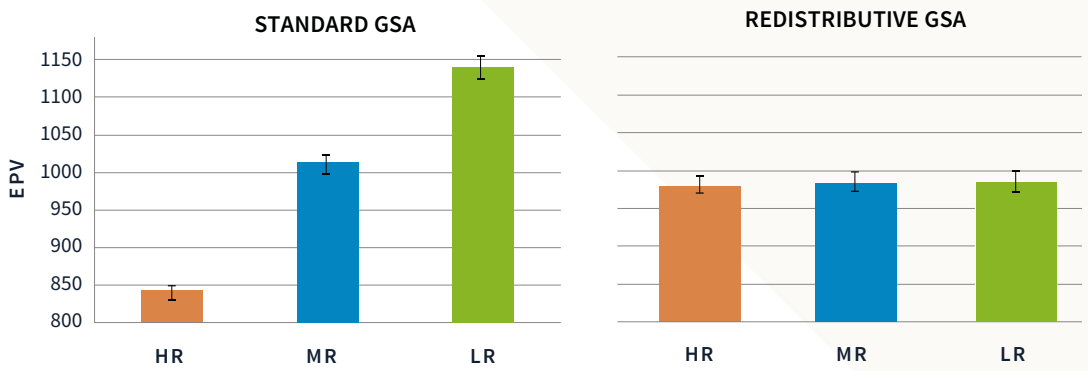
> ***In a standard GSA, the poorest may effectively subsidize the pensions of the wealthiest.***

Therefore, overall, longevity risk is mitigated, but there are implicit welfare transfers from more disadvantaged to wealthier individuals, worsening inequality among socio-economic classes. In our recent article 'A redistributive GSA scheme to cope with socioeconomic mortality differentials', appeared in the ASTIN Bulletin and recipient of the 2025 Chris Daykin prize, we have quantified the extent of this wealth transfer and proposed a modified redistribution rule to reduce inequality. We have used stochastic processes to model the force of mortality and have calibrated them using a British dataset on historical mortality data differentiated in ten socio-economic classes.

Considering three sub-populations of retirees: High-Risk (the most deprived class), Medium-Risk (the median class), and Low-Risk (the least deprived class), we calculate that, based on the Expected Present Value (EPV) of the cash flow streams calculated with each group's specific mortality experience, the poorest individuals implicitly transfer about 30% of their premium in favour of the lowest-risk individuals. This dynamic violates the fundamental principle of actuarial fairness and conflicts with global sustainability goals, such as the UN's 2030 Agenda aimed at reducing inequalities.

If standard pooling creates inequity, how can actuaries build a better decumulation product? The answer lies in replacing the 'equal benefit' rule with a redistributive rule which restores actuarial fairness at the individual level. In our article, we propose such a rule: a 'redistributive GSA' scheme, designed specifically to cope with these socio-economic mortality differentials. Instead of paying identical benefits to all members, the redistributive scheme optimizes benefit shares across different risk classes. In practice, policyholders are segmented. While all members contribute the same initial capital, the scheme assigns different redistributive >

FIGURE 1 – The figure reports the median simulated Expected Present Value (EPV) of the benefits for GSA scheme members belonging to the three socioeconomic classes. The bars on the left represent the EPVs in the standard GSA scheme, the bars on the right the EPVs of the redistributive GSA scheme. Whiskers display the 10th and 90th percentile of the distribution of EPVs.



> ***The people who die earlier can end up paying for those who live longer.***

shares and starting benefits based on the member's socio-economic profile. High-Risk members receive higher initial payouts to offset the effects of their shorter life expectancies, while Low-Risk members, who are expected to draw from the pool for a much longer period, start with a reduced initial benefit. Through Monte Carlo simulations, we show how actuaries can compute the redistributive shares to minimize the gap in Expected Present Value across classes. Our analysis shows that this mechanism is highly effective, restoring actuarial fairness to each member of the pool, as figure 1 shows.

Sensitivity analysis shows that effectiveness of the redistribution scheme is particularly relevant when interest rates are lower, because in the absence of redistribution high discount factors benefit disproportionately those who live the longest to the detriment of those who pass away earlier. Of course, the redistribution may serve as a tool to limit the possible adverse selection mechanism that may discourage the more disadvantaged and typically less insured people to take on insurance. However, practical challenges arise in correctly assigning members to the different classes and in the possible time-dependence of the individual characteristics.

As the industry is shifting away from traditional guaranteed annuities toward self-insurance schemes, it is necessary to guide these innovations responsibly, so that the newly designed products do not inadvertently penalize the vulnerable. Redistributive mechanisms are key to align financial sustainability and social equity. <

MARIA ARAGONA has a PhD in Economics at Universit à di Torino (Italy). She currently works in the Risk Management Unit at Reale Mutua Assicurazioni.

LUCA REGIS is Associate Professor of Financial and Actuarial Mathematics at Universit à di Torino (Italy), Affiliate at Collegio Carlo Alberto and Deputy Director of the LTI@UniTO Research Center.

ELENA VIGNA is Full Professor of Financial and Actuarial Mathematics at Universit à di Torino (Italy) and Fellow at Collegio Carlo Alberto.

ENGAGING WITH EUROPE'S POLICYMAKERS

THE VALUE OF CONSULTATION

BY **STEPHANOS HADJISTYLLIS**

One of the AAE's strategic priorities is to maintain a strong presence in European policymaking. Strategic Objective 1 – 'Enhance relations with European institutions' – commits us to building relationships with key European institutions so that we can provide high-quality professional advice and improve the soundness of decisions from an actuarial perspective. That advice draws on the technical expertise of our member associations and the volunteers who contribute to each response; the AAE's distinctive role is to bring that expertise together and channel it, with the collective weight of the European profession behind it, to those who shape policy.

Public consultations remain the principal mechanism through which we pursue that aim, providing a transparent forum for expert input and helping ensure that regulation is grounded in sound actuarial principles. Our ability to respond relies on our Member Associations and volunteers, and the AAE thanks all those involved for their dedication and professionalism.

RECENT CONSULTATION RESPONSES

This column appears each quarter, reporting on the consultations to which the AAE has responded since the previous issue. Since the previous issue of the magazine, the AAE has responded to five European Commission and EIOPA consultations of direct relevance to our profession:

1. EIOPA Annex to the Opinion on risk mitigation techniques and proportional reinsurance
2. EIOPA consultation on shortening additional Guidelines under Solvency II
3. European Commission Guidelines on the classification of high-risk AI systems
4. EIOPA draft advice on minimum standards for Insurance Guarantee Schemes
5. EIOPA Discussion Paper on integrated data collection >

1. PROPORTIONAL REINSURANCE WITH FEATURES REDUCING COMMENSURATENESS

This Annex to EIOPA's 2021 Opinion on risk mitigation techniques addresses proportional reinsurance treaties containing variable commissions, loss corridors and loss limits – features that can materially alter the effective risk transfer of what would otherwise be a straightforward quota share.

The question goes to the heart of standard formula work: whether SCR relief is commensurate with the risk genuinely transferred. We supported the principle-based approach and the proportionality carve-out, but argued that full quantitative testing should be reserved for cases of genuine doubt. We questioned the binary drafting under which a treaty whose commensurateness is jeopardised would lose its risk-mitigating effect entirely, and proposed partial recognition proportionate to the risk transfer demonstrated. We also cautioned that applying claims-calibrated standard deviation factors to fixed commissions in the non-life premium risk volume measure – essentially expense risk – would generate capital charges disproportionate to the underlying risk.

2. SHORTENING OF ADDITIONAL GUIDELINES UNDER SOLVENCY II

EIOPA proposed to shorten thirteen sets of Solvency II Guidelines as part of the European simplification agenda. We support that objective, but observed that removing regulatory text does not automatically reduce administrative burden: where guidelines supply interpretive clarity not replicated at Level 1 or Level 2, their absence may increase uncertainty and produce divergent supervisory practice.

We also questioned the justification that a guideline may be deleted because its content is 'common sense' or 'well integrated' in supervisory practice: practices may be well integrated precisely because the guideline provides the anchor. Our specific concerns centred on the internal model guidelines – proportionality in supervisory examination, the one-year horizon and early supervisory escalation – and on the loss-absorbing capacity of deferred taxes, where the proposed deletions remove a proportionality relief and leave notional deferred tax liabilities unresolved at Level 2. >

3. CLASSIFICATION OF HIGH-RISK AI SYSTEMS

The draft Commission Guidelines under Article 6 of the AI Act matter directly to the profession, since Annex III point 5(c) captures risk assessment and pricing in life and health insurance.

Our central message was that classification should turn on whether a system is an AI system at all, its degree of autonomy, the extent of meaningful human oversight and its individual impact – not on statistical sophistication or the line of business. Established actuarial methods such as generalised linear models, Cox proportional hazards models and mortality-table techniques are manually configured and transparent, and generally do not transcend basic data processing. This is consistent with EIOPA's letter of 13 April 2026, which the AAE endorsed, and with ECB Opinion CON/2026/10.

We proposed that actuarial sign-off under the Solvency II Actuarial Function be recognised as meaningful human oversight for Articles 14 and 6(3), inviting the Commission to leverage existing governance rather than duplicate it. We asked for confirmation that using AI for one upstream step – clustering claims data, for example – does not render an entire workflow high-risk where the pricing decision is produced by a transparent, human-supervised method, and flagged that drawing the boundary of point 5(c) by product form rather than economic substance creates a regulatory arbitrage risk.

4. MINIMUM COMMON STANDARDS FOR INSURANCE GUARANTEE SCHEMES

Insurance remains the only retail financial sector without minimum harmonisation of guarantee schemes. EIOPA's draft advice under Article 98 of the IRRD addresses coverage, operational functioning, funding and the interaction with resolution.

We supported minimum harmonisation but cautioned against drawing the banking analogy too closely: insurance claims emerge far more gradually than bank withdrawals, so liquidity safeguards need different calibration. Scheme costs are ultimately borne mostly by policyholders through premiums, so protection must be commensurate with cost, and we highlighted the risk of double coverage where IRRD resolution tools and a scheme are triggered for the same event. On funding, we recommended that contributions be ring-fenced and that individual insurer contributions be capped to avoid a procyclical risk of cascading failures. We welcomed policy continuation alongside compensation: in life insurance, a gone-concern cash payout may crystallise substantial losses relative to going-concern value. >

5. INTEGRATED DATA COLLECTION

EIOPA sought views on overlaps and gaps across insurance and IORP reporting. We identified substantial duplication around climate and sustainability information, required under ORSA, CSRD/ESRS, SFCR/RSR, SFDR and the EU Taxonomy – the same asset or scenario prepared repeatedly to different definitions, perimeters and timelines. We supported a 'report once, use many times' principle underpinned by a common data dictionary linking prudential, actuarial, product and sustainability concepts. We also noted that current datapoints are largely asset-focused and backward-looking, and do not capture the forward-looking actuarial effects of climate and transition risk on claims, premiums, guarantees and lapse behaviour.

WORKING TOGETHER FOR BETTER POLICY

A common thread runs through this quarter's responses. Each was, in its own way, an exercise in calibration – how much capital relief a reinsurance treaty should earn, how much guidance can be withdrawn before clarity is lost, how far AI rules should reach into established actuarial methods, and how much protection a guarantee scheme should provide and at what cost. In every case the profession's contribution was the same: the answer should follow the underlying risk. Simplification and proportionality are objectives we share, but they deliver value only where technical precision is preserved.

The AAE's strength lies in the collective knowledge of its members, drawn from 38 actuarial associations across 37 countries. We are grateful to all volunteers and associations who contributed to drafting and refining these responses. Your work ensures that the profession's voice is technically sound and relevant to policymaking. The technical substance of each response comes from our member associations and the volunteers who give their time to it. The AAE's role is to bring that expertise together into a single, coherent position and, as an association of associations, to carry it forward with the collective voice of the profession. Speaking through the AAE amplifies what each association contributes, giving our messages greater reach with EIOPA and the Commission.

Looking ahead, the AAE will continue to engage with the European Commission, EIOPA and other stakeholders. By participating in the consultation process, we help ensure that regulation remains proportionate, forward-looking and centred on the long-term interests of citizens and policyholders. That is how the profession fulfils its public-interest mandate.

This article was written on 27 July 2026 and does not include developments in relation to consultations submitted by the AAE after this date. <

STEPHANOS HADJISTYLLIS is a Senior Actuary at the AAE and a Member of EIOPA's Occupational Pensions Stakeholder Group. The full text of the AAE responses to the consultations referenced above is available on the AAE website.

ASSURING INCLUSION AND ACCESS

INITIAL FOCUS ON NEURODIVERSITY PROVIDES LESSONS FOR EMBRACING AND LEVERAGING ALL FORMS OF DIVERSITY

BY **PETER TOMPKINS** AND **MARC HOMMEL**

The Institute and Faculty of Actuaries has recently established a new Inclusion and Access Committee, to be responsible for the development of the profession's Diversity Equity and Inclusion (DEI) strategy and its concern for the profession focussing on diversity in all its dimensions. One of the areas on which we have focused is neurodiversity, an element of diversity on which every human sits. This recognises that we all think, feel, engage and sense in different ways; our brains and bodies are uniquely wired – and if we can better understand, respect and leverage our differences, we can both (1) alleviate challenges of misunderstanding, misinterpretation and exclusion and (2) create better outcomes for all of society, organisations and individuals.

Within neurodiversity, it is commonly thought that around 20% of humans are what is called **'neurodivergent'**: relative to 80% thought of as being **'neuro-typical'**. Neuro-divergencies include conditions such as autism, ADHD and dyslexia. And neurodivergent people often find it extra-challenging to operate in a world designed for and by neurotypicals.

It is thought that the incidence of neuro-divergency (and, in particular, autism) is much higher in the actuarial profession than in the general population. In general, most (but not all) autistic people relative to the general population are significantly more numerate, skilled at seeing patterns, fast and intuitive – characteristics that lead us to choose and excel in the actuarial profession.

Many actuaries also work in industries that have high proportions of neurodivergent people. These include financial and professional services where the creativity and nous of dyslexic and ADHD people is (unknowingly) much valued.

Differences between and among us in terms of our neuro-wiring can present challenges. For example, we each have different sensitivities to senses encompassing not only the commonly known five (touch, hearing, smell, vision, taste) but also senses of intuition, empathy, space, balance, self and bodily needs (e.g. hunger, temperature). One person might need to listen to loud music in order to work effectively while another may need total silence and no competing noise in order to concentrate and be effective. One person may relish and thrive in crowded settings while another be petrified in this environment and operate much more effectively alone or in 1:1 interactions. One person might think it rude and cold to have screens off during on an online meeting while another might have deep anxiety about how they come across on screen. All of these people might have critically important skills and talents needed to manifest successful outcomes.

We see a lot of 'masking' both in our profession and in the spaces in which we work. This comes about because we commonly and understandably >

feel a need to put on a front in order to 'fit in', for connection and a sense of belonging, and because we naturally worry about how we present to clients, colleagues and superiors, all of whom can have an impact on both how we feel and on our career prospects and progression.

For many people, long-term masking results in burnout, relationship problems and mental ill health. And for many neuro-divergent people, these challenges often start at a young age, in the home, at school and other educational environments, and in the world of socialising and relationships.

Given the relatively high prevalence of neuro-divergency in our profession and the workplaces in which we operate, the Inclusion and Access Committee intends to review a number of aspects to inform actions we may wish to implement in the profession. We will be seeking views from across our stakeholders and welcome you letting us know if you'd like to contribute or participate in informing the debate. It's early days in our deliberations but the initial focus on neurodiversity has already helped us to recognise that, **across all forms of diversity**, we need to look within the profession at how we work with and across all diversities to:

- improve understanding, acceptance and engagement of the differences among us
- assure we are able to attract and develop talent from across all diversities rather than inadvertently excluding people who could contribute materially to our development and success
- communicate and engage with each other within the profession and with our stakeholders outside it
- educate, examine and assure professional quality and ability
- make and implement decisions that affect us all
- design work and event logistics, timings, places and spaces

We are considering holding workshops to enable our leaders, boards and committees to look closely at the behavioural attitudes inherent in the way in which work is conducted and opinions formed and implemented. We need to be building on the best qualities among diverse people and embracing and encouraging all of our members to achieve their full potential by making sure there are no unnecessary barriers.

Many of the world's most innovative advances have been achieved by people who would be classified as neuro-divergent – imaginative inventors, creative writers, artists and thinkers who advance our humanity and abilities in extraordinary ways. Each person, irrespective of their place within neurodiversity or -divergency, may well have beneficial skills that help to produce better outcomes within teams within both our profession and our workplaces.

Our hope is that over the coming months and years we be more inclusive of diversity **in all its forms**, helping people to avoid making harmful assumptions in favour of embracing differences for what they can bring to our abilities to provide better outcomes for ourselves and our clients, colleagues, fellow professionals and the world at large. <

reactions to info@actuary.eu

PETER TOMPKINS is an independent consulting actuary and former editor of *The European Actuary.*

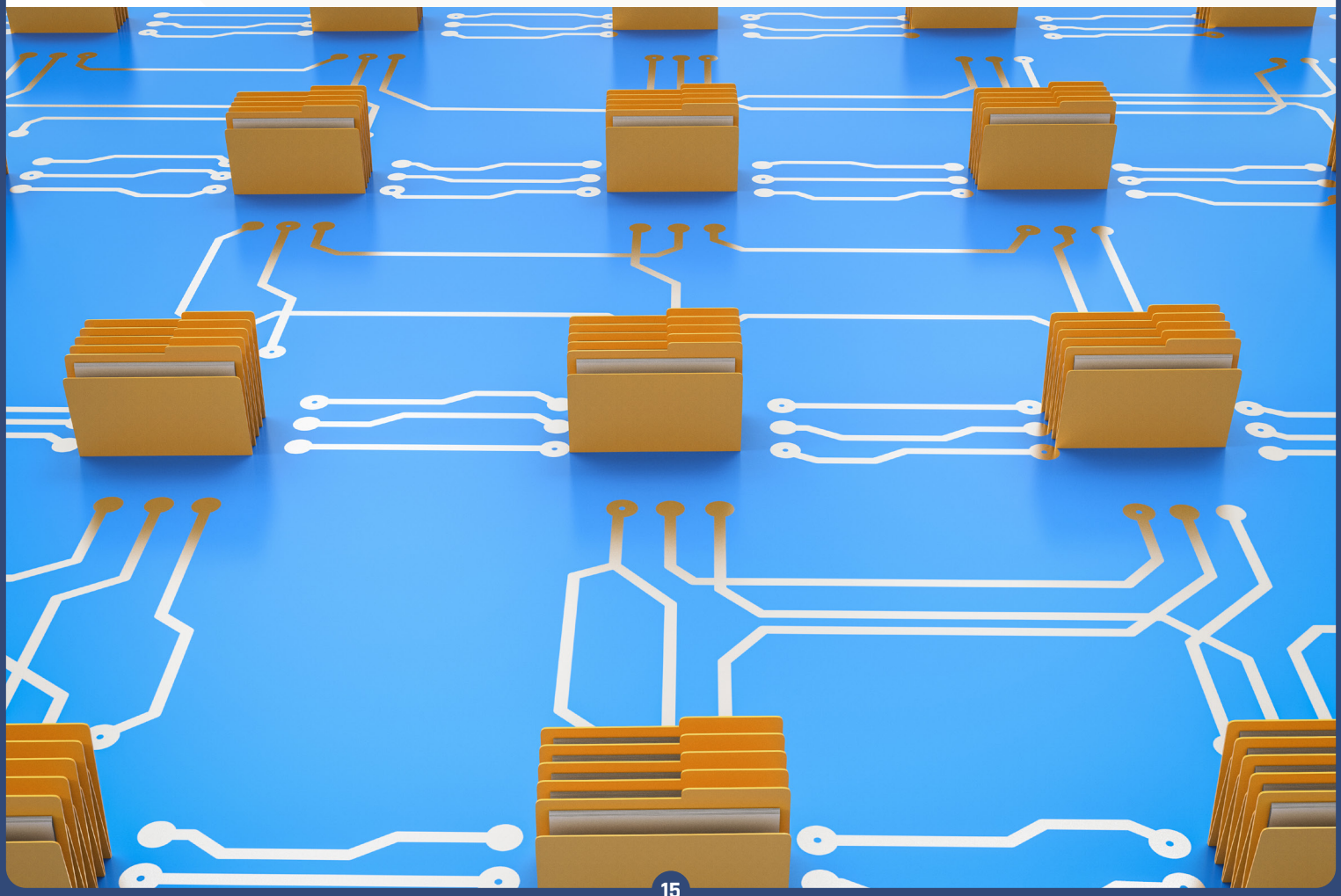
MARC HOMMEL is an actuary and business leader, with lived experience both as an autistic person and a parent of neurodivergent children. He is a passionate advocate for and adviser on neuro-inclusion and sits on the Board of the National Autistic Society.

AI IN PORTFOLIO MIGRATION:

WHAT WORKS TODAY – AND WHAT COMES NEXT

BY **BARTLOMIEJ MACIAGA, ARNO RASCH** AND **SVEN GRÖNEWÄLLER**

Portfolio migrations in life insurance are lengthy, costly and error-prone – yet they follow clear actuarial premises. That is what makes them an ideal testing ground for explainable AI. The AI Lab of the DAV (German Association of Actuaries) working group on portfolio migration shows what is possible today and which role actuaries play in it. >



MOTIVATION

Portfolio migrations are among the most demanding undertakings in life insurance. Large policy portfolios with contract histories that often reach back decades must be migrated from a complex legacy administration system into a modern one. The reasons for migration are diverse: increasing operating costs of mainframe systems and new demands driven by digitalisation are key factors behind insurers' extensive efforts to modernise their core IT systems. Moreover, mergers between insurers and portfolio acquisitions by run-off carriers typically lead to migration projects.

In the past, migration projects – depending on portfolio size, tariff diversity and product complexity – could take several years. The DAV working group on portfolio migration therefore set out to investigate the use of new methods, particularly from the field of artificial intelligence, for migrations.

WHITE BOX INSTEAD OF BLACK BOX

The guiding decision was to focus on explainable AI rather than black box AI. For actuaries, it is not only the result that matters but the traceable path to it. There are useful applications for black box models, e.g., classification tasks, but in the actuarial context, those are often difficult to sign off from a regulatory perspective and are hard to handle in professional validation. White-box approaches, by contrast, produce traceable and reproducible results.

POTENTIAL APPLICATIONS OF AI IN MIGRATION PROJECTS

In this context, we examined the actuarially relevant subtasks, that typically arise in migration projects, for their potential to benefit from AI, and derived the following use cases.

- Analysis of product documentation, such as general policy conditions, technical business plans and regulatory filings.
- Analysis and preparation of the portfolio to be migrated, for example by detecting inconsistencies and applying automated corrections.
- Support in calculation-engine development through AI-assisted code generation, documentation and onboarding of new staff.
- Support in implementing product data, especially for target systems with heavily parameterised tariff frameworks, by intelligent combination of existing calculation logic.
- Support for data transformation through semantic analysis of data-field descriptions combined with machine-based evaluation of the portfolio data.
- Automation of testing the ETL (Extract – Transform – Load) pipeline through self-learning methods that detect recurring patterns in the data transformation.
- Providing reference values through the automated generation of reference calculators from existing tariff information and pricing tools.
- Generation of test portfolios, e.g., based on tariff descriptions, and assessment of test coverage.
- Support in migration controlling through Machine Learning-based plausibility checks, clustering of tolerance breaches, and root-cause analysis. >

DEEP DIVE: CALCULATION-ENGINE DEVELOPMENT

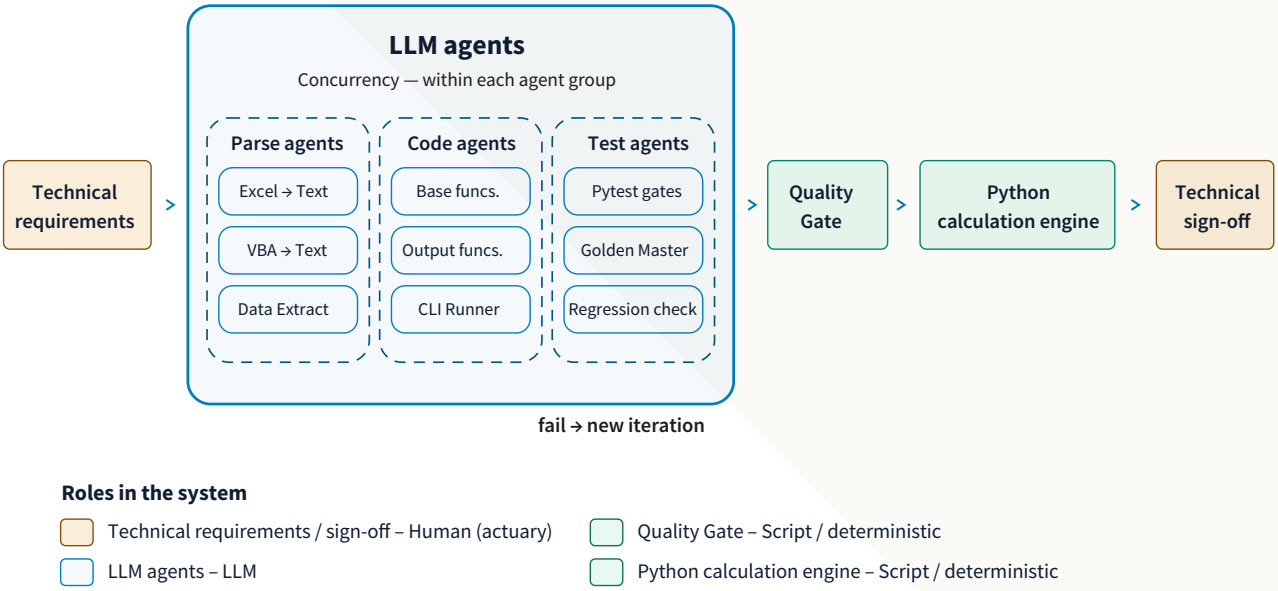
The use case concerning calculation-engine development was examined in greater depth. The prototype was the porting of an existing Excel tariff calculator to Python. Such calculators usually are hard to maintain, have no version control, and can barely be integrated into a modern IT landscape. Because of their complexity – multiple worksheets with formulas, defined names, references and Visual Basic for Applications (VBA) code – porting is generally a non-trivial task and hence a suitable case to evaluate the practical use of AI.

The first approach was hands-on: we manually decomposed the Excel tariff calculator into its individual components, such as formulas, mortality tables and VBA code, and translated these into Python step by step in dialogue with ChatGPT. The resulting Python calculator worked as intended, but it is difficult to reproduce the process.

In the next step, we therefore developed an industrial, scalable approach in the form of a pipeline: first, all contents of the Excel file are automatically extracted into text; then, utilising several calls to the Large Language Model (LLM), the corresponding Python code is generated and automatically tested using golden-master comparisons. Every step of this pipeline is traceable for humans and safeguarded by test gates. If one of the test gates fails, a new iteration is triggered, or a human intervenes to correct it.

Meanwhile, the capabilities of current LLMs have risen to the point where they can now port a complete Excel calculator on their own. Hence, we are placing further and more stringent demands: In addition to demonstrable correctness of the generated code, certain architectural guidelines must be obeyed during generation. This is particularly important when additional code is generated for existing target calculators. Beyond code, further sources – >

FIGURE 1 – Current architecture: the agentic system



such as business plans, tariff descriptions and even portfolio data – should also be incorporated.

For tasks of this complexity, linear pipelines are not ideal. So we replaced the LLM pipeline with an agentic system, shown in figure 1. Specialised teams of agents handle various subtasks such as extraction, code generation and testing. Thereafter, a deterministic quality gate decides between release and a further iteration. The actuary sets the requirements and grants the sign-off.

We plan to gradually expand our agentic system for handling increasingly complex tasks.

CONCLUSION AND OUTLOOK

The potential applications of AI in portfolio migrations are manifold and exciting. Using the example of porting an Excel reference calculator to Python, we have shown how actuaries can bring AI into their core processes in an understandable and responsible fashion.

In the future, agentic AI will increasingly take on subtasks autonomously – yet the actuary remains permanently in the leading role. For an actuarially robust, auditable process it is crucial that every step remains traceable. This is not a constraint but a benefit: transparent, test-gated automation can shorten migration timelines and reduce errors while keeping regulatory validation and professional accountability firmly in actuarial hands.

Notes

The working group's findings are documented in the DAV results report 'Einsatz von White-Box-KI in der Bestandsmigration' ('Use of White-Box AI in Portfolio Migration', January 2026); the porting of the reference calculator is publicly available as an open-source project. <

SVEN GRÖNEWÄLLER is a German actuary and member of the Executive Board of SIGNAL IDUNA Lebensversicherung AG.

ARNO RASCH is CEO of vtmw AG, a German consultancy specializing in insurance transformation and portfolio migration.

BARTLOMIEJ MACIAGA is a qualified actuary (DAV) and founder of Nexuria Consulting GmbH (Cologne).

PARAMETRIC INSURANCE
BEYOND INDEMNITY

BY **ARNO GABRIEL** AND **COLE MAYER**

In the actuarial curriculum the concept of indemnity is often presented as a cornerstone of non life insurance. It means that the insurance cover puts the insured back in the same financial position as just before the loss, no better and no worse. This matters because it prevents the insured from profiting from a loss (no moral hazard) and it aligns incentives between insurer and insured.

However, in cases where speed, clarity, and coverage of non traditional costs matter more than perfectly matching actual 'traditional' loss experience, alternative risk transfer solutions exist in the form of parametric insurance. This is a common means of risk transfer in a mature market in the Americas and Asia. The take-up rate in Europe however is somewhat lagging behind. Therefore, it's about time we take a closer look.

WHAT IS PARAMETRIC INSURANCE

Parametric insurance pays a claim based on the occurrence of a pre-agreed event, as reported by an independent, third-party index, rather than based on the 'traditional' claims adjustment process which calculates the actual loss sustained after an event (and then applies deductibles, sublimits, exclusions, etc.). Examples include weather events such as hurricane/typhoon, earthquake, heavy rain, high temperature, hailstorm or snow days, as well as non-natural hazard events including industry loss indices, cyber outages, etc.

Parametric insurance uses an index value or another measurable trigger as a proxy for the loss to be compensated: its payout calculation does not depend on a precise post-event assessment of the actual loss suffered, only how the proxy (index value) performs.

Of course, the proxy must have a strong correlation with the incurred real-world loss. Insurance markets, reinsurance markets and regulators alike require a link to insurable interest: you can't just 'bet on the weather'. >

Therefore, the parametric structure must be demonstrably designed to indemnify a plausible loss, even if not perfectly.

KEY ADVANTAGES AND TARGET AUDIENCE

Parametric insurance stands out for its speed of compensation, flexibility and customization. Because the index value of the contract can be verified very quickly, the claim can be paid within days of the event. The compensation is fast and predictable, there is no claim settlement process that depends on post-event loss assessment, repair estimates or any other loss adjustment. This allows for very quick post-event liquidity to deal with the immediate aftermath of a disruptive event. Furthermore, the payment can be used by the insured for any financial expenditure following the event. From this, the coverage provided is very broad and can address expenses and loss that is typically excluded from traditional insurance coverage. In addition, the flexible design of parametric coverage allows for solving specific problems that are difficult for traditional insurance address. This includes, amongst other use cases, contingent business interruption, difficult-to-insure risks, and supply chain exposure.

The above features are especially attractive to governments, large corporates and industry associations. Local authorities can fulfill their public duties and provide emergency relief, repairing critical infrastructure and social support to affected households. Business stakeholders enhance their resilience as it supports payroll and working capital, emergency repairs and business continuity. >

	Traditional (Indemnity)	Parametric	Parametric Advantages
Loss Trigger	Physical damage or loss	Event occurs and meets objective thresholds	A set of objective, predefined triggers determines the loss event rather than a claims adjustment process
Loss Recovery	Actual loss sustained after detailed claims adjustment	Pre-agreed payout based on the reported parameter value	Pre-determined loss recovery provides a transparent claims payment
Basis Risk	Exclusions, deductibles, terms, sub-limits, etc.	Actual economic loss could differ from parametric payout	Form of 'basis risk' is different, but either policy type can have basis risk
Claims Timeline	Longer - Months to years to adjust, depending upon claims complexity	Shorter – claims paid within 2-4 weeks	No traditional 'loss adjustment' process, claims paid in days
Policy Term	Typically annual	1-3 Years, longer terms sometimes possible	Longer terms provide for known costs and capacity availability
Exclusions	Outlined in policy	None	Simple coverage without financial deductibles, exclusions, sub-limits, etc.
Policy Structure	Generally standardized and rigid	Flexible and customized to the client; derivative available	Unique and bespoke solution jointly developed by parties involved

BASIS RISK

From the imperfect correlation between the index value and the actual losses sustained, basis risk is inherent in parametric insurance. Here, the role of the actuary is important to select the appropriate index and design the structure in such a way that basis risk is limited. This is done both by analyzing historical observed events and by modelling using stochastic event simulation. In cases in which parametric transfer should as closely as possible follow a traditional indemnity cover, the goal is to symmetrically minimize both the shortfall (negative basis risk) and windfall (positive basis risk). In case the parametric cover aims to provide broader compensation (e.g. for contingent loss) an optimal structure might be found where there is a bias towards the windfall scenarios.

FIGUUR 1 – Exhibit of basis risk assessment
Shortfall/ windfall distribution and statistics for a layered parametric risk transfer

RESILIENCE FOR A CHANGING WORLD

In today's rapidly changing world, climate and non-natural hazard events become more prominent and government is shirking ever more on public order, security and defense. In this context parametric insurance solutions offer an extra layer of protection that provides relief to both public authorities and the private sector when systems get stressed. Having proven their value in the Americas – for example paying out after numerous hurricanes like Irma or Melissa – and in Asia – for example following the Tohoku earthquake - we expect that in future years Europe will also be able to reap the benefits of this alternative risk mitigation strategy. >

	Below UNL Layer	IN UNL Layer	Above UNL Layer
Above Index Layer	0 events No Basis Risk	73 events +32% Avg Windfall	211 events No Basis Risk
In Index Layer	83 events +15% Avg Windfall	452 events +15% Avg Windfall	48 events -29% Avg Windfall
Below Index Layer	8,276 events No Basis Risk	180 events -15% Avg Shortfall	0 events No Basis Risk

EXAMPLES OF PARAMETRIC RISK TRANSFERS

Caribbean governments

CYCLONE, EARTHQUAKE AND RAINFALL COVERS

We take Jamaica as a good example of how small economies are using parametric solutions. Jamaica purchased natural catastrophe protection both through CCRIF (a regional Caribbean parametric insurance pool) and a parametric cat bond.

Following hurricane Melissa (2025) Jamaica has made successful recoveries. It received a USD 71 million payout under the hurricane policy and then another payout of USD 21 million under the excess rainfall policy. On top of that, Melissa triggered 100% payout of the USD 150 million principal of the parametric cat bond, bringing Jamaica's total recoveries for this single event to USD 241 million.

Cognac Winegrowers (France)

DROUGHT COVER

200+ producers in the Cognac region (corporate agricultural producers and cooperatives) participate in this joint cover that serves to stabilize income facing climate-driven water stress.

The index value is based on rainfall deficits during the vine-growing season, using Météo-France data.

Wind Farms and Solar Parks in Europe and U.S.

RESOURCE SHORTFALL COVERS

These covers serve to protect project owners from revenue shortfall when nature doesn't cooperate, helping them satisfy lenders and investors. The index value for wind is based on distribution of wind speeds (e.g., average wind speed or power-weighted wind index) over a defined period, for solar the index value is generally based on solar irradiance (sunshine) measured by satellites or ground sensors.

Global Corporates

HURRICANE / EARTHQUAKE LIQUIDITY COVERS

Many multinationals (manufacturers, retailers, logistics groups) quietly use parametric programs. Payouts provide for immediate cash to fund emergency repairs and cleanup, paying staff securing sites and bridging non-damage business interruption that traditional insurance often struggles to cover.

Here, maximum sustained wind speed, minimum central pressure, or modeled intensity within a radius of key sites are commonly used index values for wind hazard. For earthquake on the other hand often magnitude and distance from plant locations or sometimes peak ground acceleration from seismic networks are used. <

A. GABRIEL MSC is Managing Director of Capital and Risk at Aon Reinsurance in Amsterdam.

C. Mayer is Head of Parametric Solutions at Aon in San Francisco.

UNDERSTANDING INCLUSIVE INSURANCE MARKETS: A BROADER PERSPECTIVE

BY **CHRISTOPHE HECK**

Discussions about fairness and inclusion in insurance underwriting have intensified in recent years as regulators, policymakers, consumer groups and insurers find themselves grappling with increasingly complex questions about the use of data, the role of underwriting and societal attitudes towards acceptable risk differentiation.

At the heart of these debates lies a healthy tension between two views of 'fairness': the evidence-based, rational underwriting processes, and evolving social norms with political, moral and often deeply personal views. When it comes to 'social fairness', the idea that individuals should not be excluded, penalised or treated differently on the basis of characteristics society considers unacceptable to use – even where those characteristics may be risk-relevant. For underwriting fairness, insurers are looking to offer protection that is commensurate with the risk they are taking on. This requires an evidence base of credible, relevant data to assess risk.

To be clear, this is not a conflict between good and bad, or between economics and ethics. Both forms of fairness are legitimate.

In order to understand how these fault lines can create tension, it is worth taking a step back and identifying the key issues. Let's apply two views of 'fairness' to a very simplified scenario of a certain population, with a standard distribution of risk. >

CHRISTOPHE HECK is Head France, Switzerland & Benelux at Swiss Re.

FULL SOLIDARITY

At one end, 'fairness' means everyone should be included, with risk shared evenly by everyone paying the same premium.

In this case, the mechanism to build the insurance market is relatively simple: The insurer estimates the expected claims cost across the whole population, adds expenses, capital costs and an uncertainty margin, and charges a single premium to every participant. See figure 1.

At first sight, this appears fair and inclusive. Everyone is treated the same. No distinction is made by age, gender, health history, occupation or lifestyle. The cost of risk is simply redistributed across the population.

That redistribution may be socially acceptable. Indeed, many insurance systems contain deliberate elements of solidarity: national health insurance programmes, or countrywide natural catastrophe programmes might look something like this simplified model.

In such a system, adverse selection is a challenge if participation is voluntary. Lower-risk individuals may conclude that the premium is higher than their perceived risk and so decide not to buy. Higher-risk individuals have a stronger incentive to remain in the pool but are effectively subsidised by lower-risk members.

A second important problem emerges if there is a significant change in the system and no mechanism to adapt the rate over time. Ageing populations, health trends and scientific advances such as new medications might be typical reasons that such systems become stressed in a life or health context.

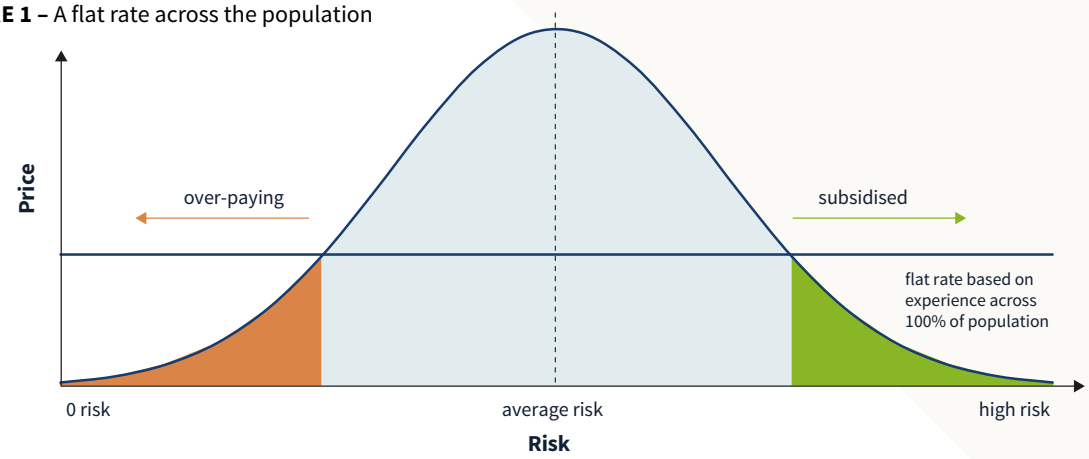
RISK-BASED FAIRNESS

At the other end of the spectrum, consider a theoretical fully risk-based mechanism to assess the cost of risk. In the idealised version, the insurer has access to the required information about each individual and freedom to use that data for risk assessment. Each person is therefore offered a premium that reflects their individual expected claims risk. Cross-subsidies are minimised. Lower-risk individuals pay less. Higher-risk individuals pay more. See figure 2.

This system is also 'fair' and inclusive. The difficulty, however, is that individuals with the greatest need for insurance may face the highest prices, exclusions or be declined cover. They may also be simply priced out of the system.

If this is applied to a property line, where those offered higher rates are wealthy individuals insuring luxury cars, there may be little social friction to this approach. However, in the case of products that supplement the welfare system, such as critical illness or disability covers, this approach may risk outpricing the most vulnerable members of the community. This system can therefore be technically fair but fail a broader social fairness test. >

FIGURE 1 – A flat rate across the population



THE HYBRID REALITY WORKS

The above examples are theoretical, and most real insurance programmes lie somewhere in the middle. If we look at healthcare, life insurance, and even beyond life to products such as motor insurance, we see there is some form of societal mechanism, whether policy-driven or driven by demand, that determines what 'fair' participation looks like. Insurers then work in a competitive environment to assess their risk appetite, define their risk assessment strategy and serve the market.

These systems are volatile but adaptable. They will go through pricing and competitive cycles. Regulatory adjustments, economic trends, consumer demand, and innovation will drive changes which the industry can adapt to. There will be peak losses. There will also be mechanisms in place, such as reinsurance, to absorb those peaks.

THE TRUE FAULT LINE IS INFORMATION

No insurance system can function without being able to assess risk. And to do that, we must have the risk knowledge to set our assumptions. That becomes difficult when information is both socially sensitive and actuarially relevant.

The Right to be Forgotten (RTBF) is a poignant example of this. The RTBF for cancer survivors means that, after a defined post-treatment period, insureds are no longer required to disclose a previous cancer diagnosis. As such, this information will not be available to the insurer when assessing risk.

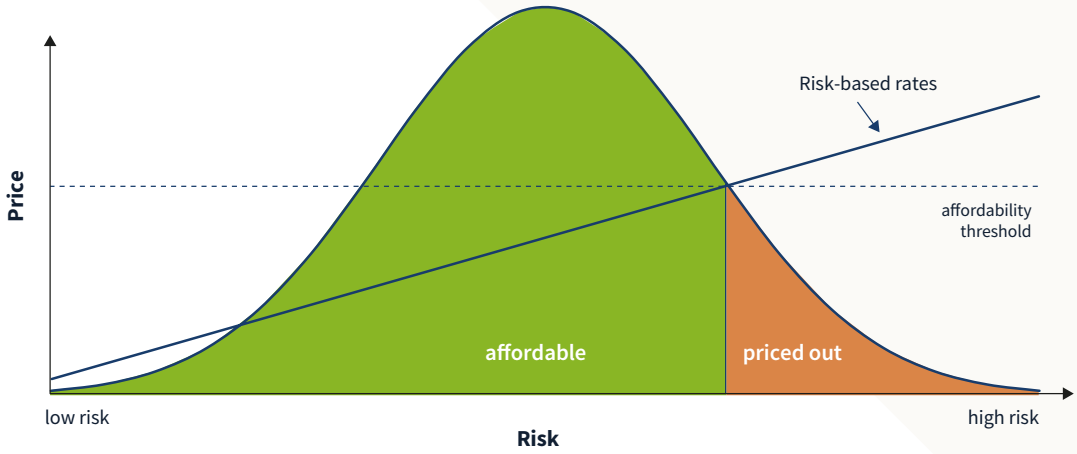
This was developed in response to a real social concern: cancer survivors may face financial exclusion or discrimination years after treatment has ended. 14 EU countries have implemented national Right to be Forgotten frameworks for cancer survivors. The first was introduced in France in 2016, and national approaches differ in both timeframe and product scope, with periods ranging from 5 to 15 years.

This is social fairness in action. It recognises that a person who has survived cancer should not necessarily carry that history indefinitely into every financial decision. It also reflects legitimate public discomfort with the idea that someone may remain penalised long after treatment has ended.

The question for insurers, however, is whether cancer survivorship is risk-relevant for future cover.

There are studies which have shown increased risk. The Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute (NCI) found that cancer survivors in >

FIGURE 2 – Riskbased rates, affordable for more people



the general population have a 16% higher risk of developing subsequent cancers.[1] NIH has shown that nearly one in five cancers diagnosed today occurs in an individual with a previous diagnosis of cancer, and these 'second cancers' are a leading cause of morbidity and mortality.[2] There are many more studies and estimates of recurrence.

Secondary cancers vary depending on the population studied, age, sex, and other factors. However, from an insurers perspective it seems fair to say that cancer survivors generally carry a slightly higher risk of developing cancer again, compared to the general population.

Being able to assess that risk is important for products where cancer risk is central to the proposition. Critical illness is an obvious example. Cancer is often a major driver of claims experience, and products with cancer-heavy definitions will therefore be sensitive to changes in incidence, diagnosis patterns, screening practices, benefit wording and underwriting rules.

We have seen how this can cause issues in a market. Romania is one example, where RTBF allows for a statutory period of 7 years from completion of the oncology protocol, or 5 years if cancer was diagnosed before age 18. The definition of 'cancer survivor' is broad and includes controlled chronic cancer situations, although the non-disclosure right still depends on the waiting period after completion of the oncology protocol.

This has created a genuine anti-selection concern whereby an applicant eligible for RTBF may not disclose prior cancer history when buying a product where the insured event is cancer itself. This created enough uncertainty for some to reduce or withdraw capacity until the market has been more thoroughly tested and more evidence is gathered.

NO PROGRESS WITHOUT INFORMATION

The information gap in RTBF is a challenge for medical underwriting today. But it also raises questions for future product innovation. Where society decides that certain information should not be used, product design must acknowledge the resulting uncertainty rather than pretend the risk has disappeared. This adds complexity and uncertainty. It introduces the risk of developing unsustainable product lines based on inaccurate assumptions.

The conclusion is not that social fairness should give way to underwriting fairness. Nor is it that underwriting fairness should be abandoned in pursuit of inclusion. Insurance is a vital part of the financial safety net and thus needs to operate sustainably with an understanding of its social context.

Inclusion fails when people are unfairly excluded. But it also fails when products become so expensive, narrow or unstable that they disappear. The future challenge is therefore to develop protection that is socially acceptable and based on sound risk economics.

Disclaimer

Certain statements and illustrations contained herein are forward-looking and are made for informational purposes only. These statements (including as to plans, objectives, targets, and trends) and illustrations provide current expectations of future events based on certain assumptions and include any statement that does not directly relate to a historical fact or current fact. Readers are cautioned not to place undue reliance on forward-looking statements. Swiss Re undertakes no obligation to publicly revise or update any forward-looking statements, whether as a result of new information, future events or otherwise. Further information on forward looking statements and the use of information contained in this publication can be found in the Legal Notice section on Swiss Re's website at www.swissre.com/terms-of-use.html. <

[1] Do cancer survivors have an increased risk of developing subsequent cancer? A population-based study - PMC

[2] Second Primary Cancers Among Cancer Survivors - NCI

WHERE DOES AN ACTUARY'S AI COMPETENCE COME FROM?

BY **SIMON HATZESBERGER** AND **MARVIN SCHNELLER**

Artificial intelligence is no longer a topic actuaries can choose to sit out. The only question is how the profession builds the competence it needs: through the syllabus for those still qualifying, and through continuing professional development for everyone already in practice. One answer is 'Fit4AI Compact', a two-day seminar that grew out of the German Association of Actuaries (DAV) and is now being taken up across Europe by the European Actuarial Academy (EAA).

AI is becoming part of actuarial work at increasing speed. For actuaries, this is not only about learning new tools, but about using them responsibly: understanding data and model limitations, translating business questions into analytical problems, recognising bias and discrimination risks, ensuring explainability and governance, and communicating results clearly to decision makers. The AAE discussion paper **What should an actuary know about Artificial Intelligence?** makes this point very clearly: actuaries have a duty to step up, combine their traditional modelling expertise, domain knowledge, and familiarity with regulated environments with new data science capabilities, and help safeguard the responsible use of AI in insurance and beyond.

That raises the practical question: where is this competence to come from? For actuaries still qualifying, the natural place is the syllabus itself, and a growing number of member associations are building data science and AI into their qualification requirements. For the much larger group who qualified before these topics appeared in any syllabus, it has to come from continuing professional development – structured, actuarially relevant, and realistic alongside a full workload.

Regulation points the same way. Article 4 of the EU AI Act requires providers and deployers of AI systems to take measures that support the development of AI literacy among their staff and among anyone else operating AI systems on their behalf. The duty is formally the employer's, but >

	Fit4AI Compact learning journey	Participants work especially on
1	AI terms & concepts	Definitions, learning paradigms, over- and underfitting, explainability, and bias
2	Ethical AI & regulation	Trustworthy AI, GDPR, EU AI Act, risk categories, and insurer obligations
3	Data science in practice	CRISP-DM, data sources and formats, data quality, data readiness
4	Hands-on AI in Python	Notebooks and environments, with classification and regression examples
5	Machine Learning	Supervised learning with decision trees, random forests, and neural networks; unsupervised learning for clustering; each with case studies
6	Generative AI	Tokenisation, embeddings, transformers, RAG, and limitations that matter in insurance

the competence itself has to sit with the actuary: an insurer is not AI-literate in the abstract, but only through the people who build, validate, and sign off its models.

This is where 'Fit4AI Compact' comes in: a two-day seminar designed by actuaries from the DAV and offered as a webinar or, on request from member associations and companies, as an in-house seminar. It is aimed at actuaries from all fields who do not yet work with data science, machine learning or AI; no prior programming knowledge is required, only an actuarial background and the wish to understand the vocabulary, methods, and limitations of these technologies in professional practice.

The seminar turns the competence areas highlighted in the AAE paper into a practical learning journey: Day 1 builds the foundations, the regulatory frame and first hands-on applications; Day 2 moves into machine learning and generative AI for actuarial insurance use cases. The overview above sets out the modules and what each covers.

Participants receive a certificate documenting the training – evidence of exactly the kind of measure Article 4 of the EU AI Act asks employers to take for actuarial work in insurance.

Together with the EAA, the format is already travelling: a web session ran in June, further online and on-site events are planned for the coming months.

What matters is not the individual seminar, but that no actuary has to face AI unprepared.

Dates are listed at actuarial-academy.com and announced in the free EAA newsletter. <

DR. SIMON HATZESBERGER is Senior Manager at Deloitte and one of the lecturers of 'Fit4AI Compact'. He is involved in various AI initiatives of the DAV, the AAE, and the IAA.

MARVIN SCHNELLER is Senior Client Manager at Munich Re Life & Health, specialising in disability insurance, AI and digitalisation. As a DAV actuary, he currently leads the ADS/AI Committee's communication activities.

A SECOND ORDER THREAT POSED BY AI ON PROFESSIONS

THE AI-ERA SUCCESSION GAP PROBLEM

BY **GÁBOR HANÁK**

Artificial intelligence (AI) has already made a strong impact in most areas of our lives and almost all *professions*; and it will make even more in the near future. By *profession*, I refer to fields requiring specialized credentials, life-long learning, a code of conduct and adherence to other *professional* and practice standards, and in many cases, practitioners belong to an organization based on such foundations — such as -among others- medical doctors, lawyers, architects, and -not least- my own profession, actuaries. In essence, there are no exceptions to the fundamentals, only the specific applications differ in terms of the subject matter. >

GÁBOR HANÁK is a retired actuary active in the International Actuarial Association, the Actuarial Association of Europe and the Hungarian Actuarial Society. The views presented in this article are his own only and do not represent any official opinion within the organizations he is affiliated with.

> ***According to my own experience, AI is currently not capable of the skill to make the right professional judgment.***

Before AI, and even today, albeit to a decreasing extent, practitioners of certain professions performed many tasks that could be easily or not too hardly replaced by an AI application.[1] For example, if AI applications can 'learn' all the relevant medical/legal documents of a topic without any difficulty and very quickly and can even display them in their context with regard to a specific medical/legal case, as they do, then it is clear that a large part of the work of medical doctors/lawyers can be replaced by simple AI applications. This example is relevant to all *professions*. Recently, one of our actuarial task forces asked our AI application to explore the internal consistency problems of a planned actuarial publication on AI, and consistency problems in relation to a set of existing relevant documents; it did so, and the AI application gave us a serious task to decide with natural intelligence: which of its suggestions are legitimate and which are not. Such AI assistance can contribute greatly to the quality of the final publication. This type of AI activity is not limited to the actuarial *profession* either: it can be applied to essentially any field.

However, the issue of liability raises a serious problem: who is responsible if something goes wrong? Is it the developer of the AI application, its implementer, or its user, or within the latter, the one issuing the prompt to the AI, or the user of the AI's response, message, or choice? Has the developer of the AI application provided the user with information that makes it clear under which preconditions the application may be used, and if so, has the user followed these instructions? And if so, does the adaptive and autonomous model at the heart of the given AI application really work as designed and expected?

To comply with liability and other related *professional* norms, such as the code of conduct, the actuarial *profession* has developed certain standards and educational materials for the responsible use of AI; I believe that all *professions* need to act similarly. Our *profession's* answer to the question of liability is absolutely clear: the ultimate responsibility must be assumed by the *professional*, they cannot get rid of it by saying they only used AI.

As we'll go through the thought process of the article, we'll see how the liability issue is explicitly connected to the succession gap problem of how newcomers of a *profession* become experienced practitioners under the AI era; and who would assume full responsibility for *professional* work products.

Medical/legal experts say that a good doctor/lawyer (or from our perspective: a *professional*) has certain experiences that are essential for making the right decision. We, actuaries, call this *professional judgment*. *Professional judgment* means the judgment of the actuary based on actuarial training and experience; i.e., applied in compliance with the appropriate standards of their *profession* and based on training and >

[1] Throughout this article, I use 'AI application' to refer broadly to AI-powered applications, tools, systems, models, agents, etc.

> ***Tackling the succession gap problem outlined above should be a high priority of each individual profession.***

experience. *Professional judgment* is not an ad-hoc decision made based on mere 'gut feelings', but the result of an analysis in which the *professional* takes into account all relevant information, including the training completed in order to enter and continue to belong to the *profession* and the experience accumulated during their practice of the *profession*. These experiences are usually widespread. They include lessons learned from both successes and failures; for example, going through a thought process like 'in a very similar case, I made a decision that, based on later observations, was successful/unsuccessful; but let's also examine the similarities and differences between the current case and the one at the time, etc'.

According to my own experience, AI is currently not capable of the skill to make the right *professional judgment*. The decisions of the current AI applications, which I understand to a certain extent, are rather mechanical, they make them based on certain algorithms that do not consider *professional* standards such as ethical/ behavioural requirements.

The above implies that for quite some time, at least until AI is able to apply *professional judgment* reliably, responsibly, and in accordance with *professional* standards, there will be a need for professionals. Of course, *professionals* who can apply AI properly and responsibly.

At the same time, it also follows from the above that the *professionals* who will be needed can only be 'born' as a result of a longer process, driven not only by training but also by the acquisition of a long trail of experience; and those inexperienced *professionals* who do not yet have this skill will not be needed in their traditional numbers, or will only be needed in significantly reduced numbers, because a large part of their work will be replaced by AI.

Now the question arises: how will there be a proper succession of *professionals* with the skill to make *professional judgments*? If there is not such a great need for inexperienced *professionals*, but there is a need for relatively large numbers of experienced *professionals*, then how can this path from inexperience to experience be bridged? We are faced with a new situation, because the process of normal *professional* development -in a somewhat simplified way- has looked something like this until now: an inexperienced *professional* enters the profession; they perform all kinds of activities during which professional judgment is not required, in a sense they serve those who already possess this skill, who need the preparatory work, that inexperienced people do, to apply their professional judgment. During the experiences of this period, they continuously acquire the skill to apply *professional judgment*. I call this *succession gap problem* a second order threat as it is not a direct but a consequential threat that will make its impact only over a relatively longer period of time after the first order threat of diminishing the influx of inexperienced *professionals* have already made its impact. >

It also seems quite natural that in the age of AI, there will be a need for *professionals* who have not existed before. Those who 'drive' individual AI applications; those who invent, develop, validate, test, implement, continuously monitor their proper functioning, intervene when necessary, and initiate the necessary modifications or the elimination of models: in other words, those who manage and control the entire life cycle of individual AI applications. My expectation is that these *professionals* will be a tiny minority compared to the number of *professionals* currently employed, and they will also be mainly among the more experienced. (I know there are those who say that nothing is new under the sun, we have seen many such things before; computers and the internet came along earlier, and many said that the end was here, but the end has not come. I still think that the age of AI will be qualitatively different from previous technological innovations: here we are faced with a **qualitative** challenge to human capabilities such as the adaptiveness and autonomy of the advanced AI applications, compared to some simple **quantitative** improvement such as increased processing speed.)

Of course, one can trust that the process of AI's spread will be so rapid that by the time *professionals* capable of applying *professional judgment* retire or exit the *profession*, AI itself will be able to take over this role. But what if that is not the case? How can the appropriate succession be achieved?

I am convinced that tackling the succession gap problem outlined above should be a high priority of each individual *profession*.

Without jumping into very concrete potential solutions on **how** *professions* might address the succession gap problem, I'd mention two potential routes forward. One might be that *professional* bodies consciously strengthen the importance and successful acquisition of *professional judgment* for their inexperienced members. Another -maybe related- route might be that such organizations build their pool of members so that a streamlined mentorship program would be applicable to all members until they reach the level that is ranked highest in the *professional* body. <

Call for Discussion

This article is intended to provoke discussions. The reader is encouraged to challenge any or all of the ideas in the article, and/or add their own ideas (especially if they believe they know the answer to the final question about the *succession gap problem*) and send their comments to the author at gabor@hanaks.hu or to the editor of The European Actuary magazine at info@actuary.eu.

Note by the author: The first draft version of this paper has been checked by an AI application (Claude). I also requested opinions of the Actuarial Association of Europe's AI and Data Science Working Group members. Considering the comments, I changed some parts of the paper to arrive at its present version. Nevertheless, the responsibility for the paper lies with the author.

FOREVER CHEMICALS, LONG-TAIL LIABILITIES:

WHY EMERGING CONTAMINANTS ARE BECOMING AN ACTUARIAL CHALLENGE

BY **YOHAN BOTBOL**

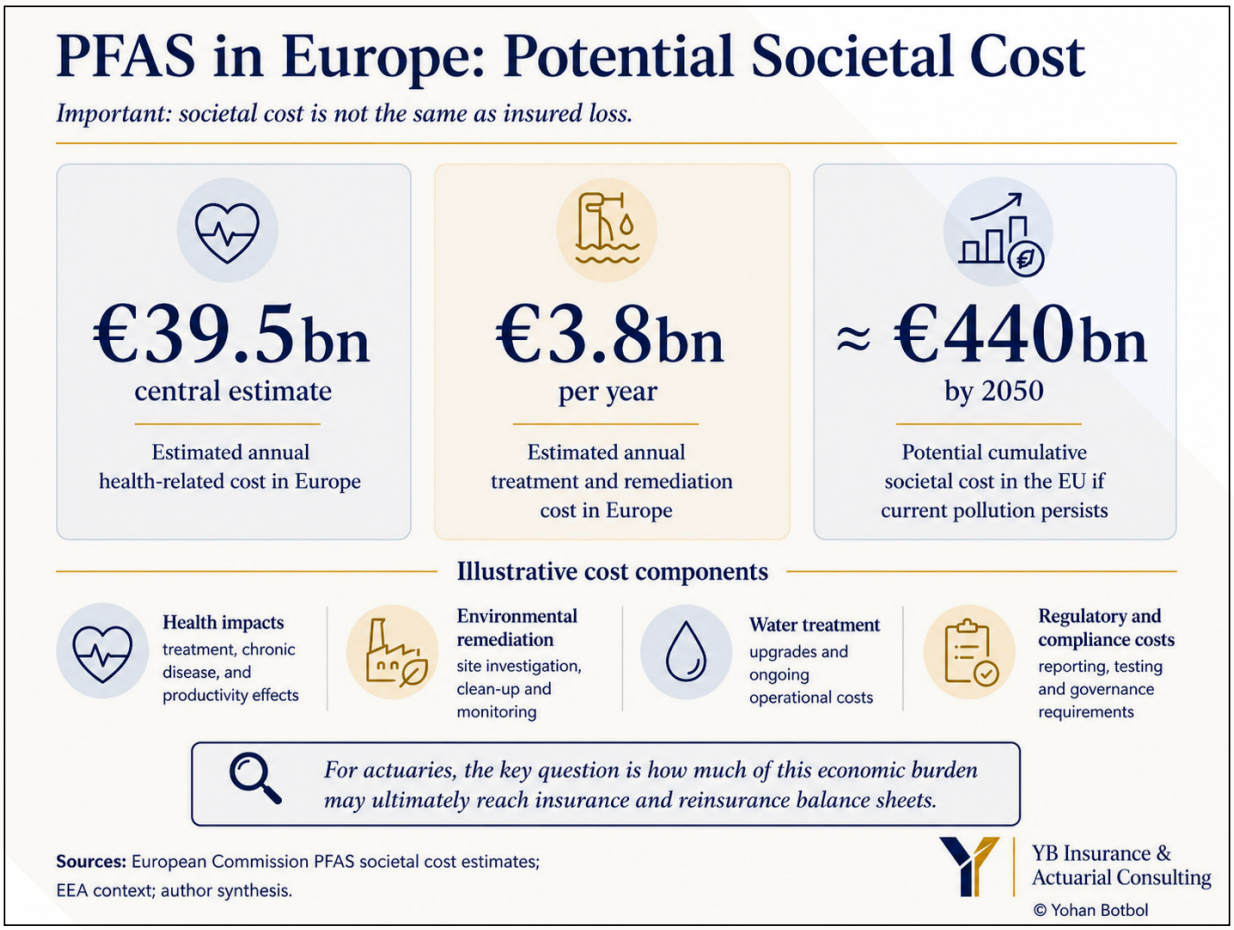
Some of the most significant insurance liabilities begin long before they are recognised as such. Over the last century the growth of the chemical industry has led to the development of a vast number of new materials used across almost every sector of the economy including construction, transport, defence and energy.

One infamous example is asbestos, once regarded as a miracle material in the construction industry. After years of use, litigation emerged in many jurisdictions against manufacturers and suppliers over fatal disease caused by asbestos exposure. Several large corporations have subsequently entered into major settlements.

A more recent and now widely known family of substances is PFAS which stands for per- and polyfluoroalkyl substances. These substances are often called 'forever chemicals' because of their persistence in the environment and in the human body. The PFAS family comprises thousands of chemical substances. They have been used for decades in firefighting foams, industrial processes, water-resistant materials, food packaging, cosmetics, and many other products.

In recent years several major companies involved in PFAS-related litigation or pollution claims, mostly in the US, have reached settlements before trial. The ultimate magnitude of the issue remains uncertain, but it is already clear that PFAS has the potential to become one of the most significant long-tail liability challenges of our time. The European Commission has estimated that, if current pollution levels persist, the societal cost of PFAS pollution in Europe could reach approximately €440 billion by 2050.[1]

[1] European Commission, The Cost of PFAS Pollution for Our Society, 2026.



This figure does not represent insured losses, but it illustrates the potential scale of the underlying economic exposure.

LESSONS FROM LONG-TAIL LIABILITIES

Asbestos, once regarded as an innovative material, became a major problem for society and for insurance companies generating endless procedures, complex medical and legal investigations, and a new challenge for actuaries.

The main actuarial concern was how to reserve for a risk that was still developing and for which negotiated settlements played a significant role in the ultimate claims outcome.

Although asbestos, PFAS and other emerging pollutants are fundamentally different, they share several characteristics that deserve actuarial attention. Insurers can benefit from revisiting the lessons learned from this period. The common characteristics, which made the risk difficult to approach are: long latency, scientific uncertainty, evolving regulation, multi-year exposure, litigation context, political dimensions and multi-industry issue. Parallels can also be drawn with more recent episodes related to Covid-19, where uncertainty, coverage interpretation and scenario analysis played a major role. >

From Asbestos to PFAS: Two Generations of Long-Tail Liabilities

Similar patterns. Different era. Shared actuarial features.

	Asbestos	PFAS and Emerging Pollutants
Widespread use	Widespread throughout much of the 20th century; peak use varied by country	1940s–present
Claims emergence	Often several decades	Potentially long; still highly uncertain
Scientific understanding	Evolved over decades	Still developing
Regulatory response	Gradual, then accelerating	Accelerating globally, especially in Europe and the US
Litigation	Mass torts, class actions, multi-jurisdiction	Increasing, still evolving, potentially multi-jurisdiction
Actuarial challenge	Estimating unobserved ultimate losses	Reserving under deep uncertainty and limited data

Shared actuarial features: long latency, evolving science and regulation, and material uncertainty.

Sources: Swiss Re Institute; EEA; WHO; EPA; author synthesis.

YB Insurance & Actuarial Consulting

© Yohan Botbol

Persistent pollution exposures can arise across almost every sector of the economy, including chemicals, construction, textiles, technology, energy and transport. These sectors are typically insured by international non-life insurers operating in specialty and commercial lines. During my years as Chief Actuary within a specialty insurer, emerging-risk discussions focused primarily on climate-related exposures, heavy rainfall, flooding, drought and other natural-catastrophe developments. More recently, PFAS has moved rapidly to the forefront.

When a new risk with potentially significant implications emerges, the first response is often to revise policy wordings. Such measures can limit PFAS exposure on newly written business but do not eliminate historical exposure for claims arising under earlier policy wordings. A large proportion of specialty and commercial insurers is potentially exposed to PFAS-related liabilities through current and historical portfolios. Some specialty insurers continue to write clients with PFAS exposure supported by tailored terms and reduced sub-limits as they represent a material part of their revenue. Other insurers may purchase facultative reinsurance to transfer part of the exposure, although capacity may be limited and expensive. It is a way to stay within the company's risk appetite and keep the client. Where traditional market capacity is unavailable or insufficient, some corporate groups may consider captive reinsurance solutions to cover part of the exposure.[2] >

[2] See Yohan Botbol, 'Reinsurance Captives: Why Luxembourg?', *The European Actuary*, October 2018.

RESERVING UNDER DEEP UNCERTAINTY

Traditional reserving techniques rely heavily on historical experience. Emerging pollution risks challenge this assumption. Historical triangles are less relevant when reporting patterns are still immature, scientific knowledge evolves, legal frameworks change and regulatory intervention accelerates.

Actuaries can approach the problem in two stages. It starts with a qualitative assessment and a simple question: How much of this liability can reach our portfolio?

Answering that question requires close collaboration with other functions. Underwriters understand the product, the sublimits, the coverage, the exposure, and the original intent behind the coverage. Claims specialists can explain how claims emerge and provide insight from surveyors and legal advisers. Risk engineers can help identify potential sources of contamination and propose risk mitigation measures. Risk management, Legal and the reinsurance team should also contribute to this exercise. Together, these functions provide the range of expertise required to refine the initial qualitative view.

The qualitative assessment should be followed by quantitative scenario analysis. Actuaries need to convert the initial exercise into numbers that can inform reserving, pricing, capital management and the wider finance function. This analysis should also influence the company's strategy as it is no longer solely an underwriting risk anymore. Embedding new metrics and quantitative scenarios can provide a concrete perspective on how the risk may evolve. A natural framework in which one can formalise this approach is through the annual ORSA (Own Risk and Solvency Assessment) work.

In practice, the scenario-based methodology would be similar to that used for other emerging or systemic risks. Specialty insurers have already applied such approaches for asbestos, Covid-19 and climate-related claims. <

In Part II (next quarter), this analysis will be taken one step further by translating the qualitative and scenario-based assessment into a structured actuarial analysis. Particular attention will be given to two critical issues for long-tail pollution liabilities: the trigger of coverage under **occurrence-based** *and* ***claims-made*** *policies, and the* **allocation of losses** *across multiple policy years. The analysis will then consider how these technical questions can inform reserving, reinsurance and strategic decision-making.*

- *Written by a human, reviewed & corrected by AI*
- *Illustrations generated by AI*

YOHAN BOTBOL is the founder of YB Insurance & Actuarial Consulting, based in Luxembourg and serving clients across Luxembourg, France and the UK. www.yb-insuranceconsulting.com
He previously served as Chief Actuary for Europe and as an Executive Committee member of a leading international specialty insurer.

COLUMN

DIVERSITY IS MORE THAN A NUMBER

All international actuarial organisations are built on a simple but ambitious idea: that national associations can achieve more together than they ever could individually. At AAE, bringing together expertise from different European countries allows us to develop stronger professional standards, exchange knowledge and speak with a more credible actuarial voice. But this promise only becomes reality if we embrace diversity in all its forms.

Geographical diversity is essential. Actuaries work in markets with very different legal systems, economic conditions, regulatory environments and insurance traditions. A solution that appears obvious in one country may be impractical in another. By ensuring that different regions are represented, we create guidance that is more robust, more widely applicable and more likely to gain broad support.

The same is true for the diversity of our member associations. Some represent many thousands of actuaries with extensive professional infrastructures; others are much smaller and operate with limited resources. Both perspectives matter. Large associations often contribute significant technical capacity and experience, while smaller associations frequently bring agility, innovation and a fresh view on established practices. Together, they provide a more complete picture of our profession.

Professional diversity is equally valuable. Actuaries work in life and non-life insurance, pensions, health, investments, banking, risk management, data science and many emerging fields. An organisation that draws on this wide range of expertise is better equipped to address new challenges and identify opportunities that may otherwise be overlooked.

Gender diversity also matters, and our profession benefits from ensuring that talent has equal opportunities to contribute. Therefore, improving gender balance in our bodies continues to deserve attention.

Ultimately, diversity is not about checking boxes or meeting quotas. It is about improving the quality of our discussions and the strength of our decisions. Perhaps most importantly, it helps ensure that members across all our associations can recognise their own realities in the outcomes we produce together.

Of course, diversity alone is not enough. It must be accompanied by mutual respect, openness and a genuine willingness to listen. The best solutions rarely emerge because everyone thinks alike. They emerge because different perspectives are brought together with a common purpose.

In our European actuarial community, our differences are not obstacles to overcome. They are the very reason why working together creates value. The wider the range of voices around the table, the stronger our profession becomes—and the better equipped we are to serve the public interest in an increasingly interconnected world.

Birgit Kaiser
Chairperson of the AAE Professionalism Committee

COLOPHON

The European Actuary (TEA) is the quarterly magazine about international actuarial developments. TEA is written for European actuaries, financial specialists and board members. It will be released primarily as e-mail newsletter. The views and opinions expressed in TEA are those of the authors and do not necessarily reflect the official policy or position of the Editorial Board and/or the AAE. The Editorial Board welcomes comments and reactions on this edition under info@actuary.eu.

THE EDITORIAL BOARD CONSISTS OF

Pierre Miehe, France
Pierre.Miehe@Milliman.com

Florin Ginghina, United Kingdom
florin.ginghina@milliman.com

Birgit Kaiser, Germany
Birgit.Kaiser@aktuar.de

Koos Gubbels, The Netherlands
koos.gubbels@achmea.nl

Marcin Krzykowski, Poland
marcin.krzykowski@milliman.com

Raffaello Marcelloni, Italy
r.marcelloni@inail.it

Jette Lunding Sandqvist, liaison AAE
jette.sandqvist@pwc.com

AAE | ACTUARIAL ASSOCIATION OF EUROPE

Actuarial Association of Europe
Silversquare North
Boulevard Roi Albert II 4
B-1000 Brussels, Belgium
https://actuary.eu/publications/the-european-actuary/

For further informations contact
Monique Schuilenburg
(moniques@actuary.eu)

Lay-out Manager: Linda van den Akker
Magazine Manager: Frank Thooft

NEXT ISSUE

The next issue will appear 1 December 2026. Suggestions can be e-mailed to **info@theeuropeanactuary.org**. The deadline is 1 November 2026.

EUROPEAN AGENDA

Please check
https://actuary.eu/events/
for the most actual forthcoming events.