

THE EUROPEAN ACTUARY

1_Gabriel Bernardino on European pensions framework 4_Kurt Lambrechts on radioactive waste issues 5_Mick James on genetic testing 6_Romain Durand on insurance privacy 7_Peter Tompkins on pension saving 8_Karel Goossens on the actuarial function 10_Chris Daykin and Gábor Hanák on European actuarial standards 12_Ronald Bosman on emotions, risk preferences and investment 14_Pauline de Chatillon on consumer protection 16_Petra Wildemann on data in the age of cyber-risk 19_Falco Valkenburg on IORP 20_Column from the AAE

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It was six years ago that the actuarial associations of Germany, the Netherlands and the UK started the 'The European Actuary' magazine. France joined in 2012.

In the years of its existence the magazine has proven to be of interest to a large audience of European actuaries and stakeholders.

We are now delighted to present you with the first edition under the responsibility of the AAE and we hope that this magazine will continue to be of interest to you.

Ad Kok
AAE Chief Executive

Second term for EIOPA Chairman Gabriel Bernardino

By Paul Jurriëns
Paul Jurriëns is a freelance journalist

'EUROPEAN PENSION FRAMEWORK WOULD HELP TREMENDOUSLY'

'The main challenge is about supervisory convergence.'
Gabriel Bernardino is confirmed for a second term of five years as Chairman of the European Insurance and Occupational Pensions Authority (EIOPA). An interview about future challenges includes the IORP, Solvency and consumer protection. 'We need a similar level of protection.'

On the question what precisely that main challenge is, Bernardino answers: 'In the insurance area we're starting the implementation of Solvency II in a consistent way. Firstly, we want that the framework is applied in all the European member states. Secondly, we want to achieve a level playing field and avoid regulatory and supervisory arbitrage. And finally, we want to have a similar level of protection

for consumers in the member states and a high level of quality in the conduct of supervision.'
'We want to build a fair European supervision with a forward-looking approach to risks. This is a highly challenging task because it's not about changing a system but about changing culture and people's attitude. The differences are huge in types of cultures in European supervision.'



It's not about changing a system but about changing culture and people's attitude.

'With Solvency II we have a harmonised regulatory system in Europe. There are not many options for member states in the implementation. There are some differences in the level of preparation, but that's natural. Over the years we will see consistency in the implementation.'

'For the pensions on the European level there is IORP II. We're quite happy that the text, that has been discussed, is based on EIOPA's advice developed some years ago. It's fundamental that we take account of all security mechanisms in the different countries. That's why we are examining the Holistic Balance Sheet concept. The HBS is having a more realistic valuation of assets, liabilities, promises and the capital that is there to back them. Our objective is to present in the coming weeks an opinion how HBS can be integrated in the supervisory framework.'

Would you agree that if pensions are measured in an objective way many IORPs would show significant deficits?

'The recent stress test showed that there are deficits when you look from the national frameworks and bigger deficits when you look from a perspective of a realistic market consistent valuation. Within our mandate and responsibilities we advise the EU political institutions on how to promote a prudent regulatory framework for the benefits and the protection of the members of pension funds. We have already seen

discussions in some countries about a more realistic valuation and about how sustainable the pension funds' promises are.'

There's also a challenge for the actuaries, to translate their technical knowledge in a more understandable way to consumers.

What are your thoughts about possible regulatory arbitrage?

'I don't think that we have a sufficient workable basis for cross border arrangements in Europe. My opinion is that the pension deal defines the structure of the benefits and the conditions to the benefits. Of course, in a cross border arrangement, a pension deal needs to be fulfilled in the same way. We have different kinds of regulatory and supervisory frameworks in the member states, which makes it complicated to deliver the same outcome. This creates in Europe arbitrage opportunities, which is certainly not the solution. A principles based common framework at the European level would facilitate the cross border arrangements tremendously. This is a very sensitive issue in the member states, but we never proposed to have complete harmonisation in the solvency of pension funds.'

The low interest rates are challenging the profitability, solvency and structure of business models.

What do you think needs to be achieved in the area of consumer protection?

'Firstly, instead of flushing consumers with information, we give them much more standardised simplified information that they can understand. The ultimate goal is that consumers have the opportunity to compare the risks, performance and costs to take important decisions. Secondly, we need to tackle the conflicts of interest in selling practices between insurance and intermediaries and bring more transparency. The third point is product oversight and governance. Companies have to place the consumer at the centre of their business and not to sell them products they don't need. With the supervisory authorities EIOPA has developed a risk based - preventive - supervision of conduct of business. There's also a challenge for the actuaries, to translate their technical knowledge in a more understandable way to consumers.'

How do you see the status of the financial system today?

'The low interest rates are challenging the profitability, solvency and structure of business models. On the other side Solvency II is a blessing for the industry thanks to its good incentives for managing risks in a proper way, much better than before the financial crisis.'

It's important to have stability.

Do you think zero interest rates are the new normal?

'I don't have a crystal ball. But this low yield period is starting to be structural. I understand the ideas and objectives of the monetary policy. But we definitely need to have growth, more investments and inflation again picking up. In the meantime this environment creates a lot of challenges, specifically for savers, insurance and pensions. We need to closely monitor the situation and to see where elements in the system start to be unsustainable and to address those issues in a timely manner. For example, we need to have a realistic valuation of liabilities in the insurance sector, especially in the long term business.'

IAIS is working towards a global insurance capital standard (ICS).

How will that affect the Solvency II regime and review?

'We promote and develop an international capital standard because we believe that there is a need to have more convergence on this sound risk based approach at international level. This doesn't mean we're going to scrap Solvency II. That does not mean either that the ICS will be a copy of Solvency II. It will be a compromise but we believe Solvency II is a very good point of departure. ICS will be developed on a step by step basis. Elements in the ICS could also be considered to adjust Solvency II while we review it. We should converge towards an international standard. But Solvency II will be the regulatory basis for a number of years. It's important to have stability.'



RADIOACTIVE WASTE ISSUES



Kurt Lambrechts

by Kurt Lambrechts

Actuaries tend to describe themselves as risk experts in the context of insurance. In a wider perspective, an actuary can however be defined as a professional trained in evaluating the current financial implications of future contingent events. This view enables us to consider actuarial approaches outside the financial industry, like the radioactive waste sector.

Radioactive waste issues

In Belgium the governmental institute ONDRAF/NIRAS is responsible for the collection of highly radioactive waste from nuclear power plants. When collected by ONDRAF/NIRAS, this waste is actually too hot to handle at once and has to cool down first for a period of 60 years. Only then can a permanent solution be applied, which must ensure that this waste is safely kept for the next 100.000 years or more...

This puts a great responsibility on our generation to find a safe, scientifically sound and societally acceptable solution. In Belgium, engineers and geologists from ONDRAF/NIRAS are considering a deep clay layer to dispose this waste in a series of galleries linked to the surface by shafts (it should be noted however that this solution has not yet been formally approved by the Belgian Government).

Further research is required in the next decades to confirm this option. Therefore, current estimates of the cost (3.2 billion € 2012 overnight) and timing (2090-2110) are still uncertain. For a security margin on the current estimates, NIRAS can rely on sector standards that lead to a margin as much as 30-35% of the best estimates. Obviously, these expected building expenses are inflation-linked as well.

At the same time, ONDRAF/NIRAS has to set a fee system for collecting this waste and taking over all disposal responsibilities from the waste producer. With the aforementioned uncertainties in mind, one can imagine that this tariff system also requires a mechanism that allows NIRAS to charge additional fees for historical waste as well. It is quite possible however that the companies that currently produce this waste will no longer exist by the time that the actual expenses will be known (2100).

An actuarial approach

This situation should be recognizable for actuaries. We have to set

premiums to finance ultra-long term, inflation-linked obligations that are uncertain both in size and timing. A long investment period needs to be bridged between the moment of premium collection and the actual final storage solution. Also liquidity risk, counterparty default risk and possible future management actions play a role.

We therefore applied existing life insurance software to project the planned cash flows and their security margins and performed both market-consistent, risk-neutral valuations as well as real-world projections, which include expected risk premiums on various investments. Obviously, this also included sensitivity and stress testing for the key parameter assumptions.

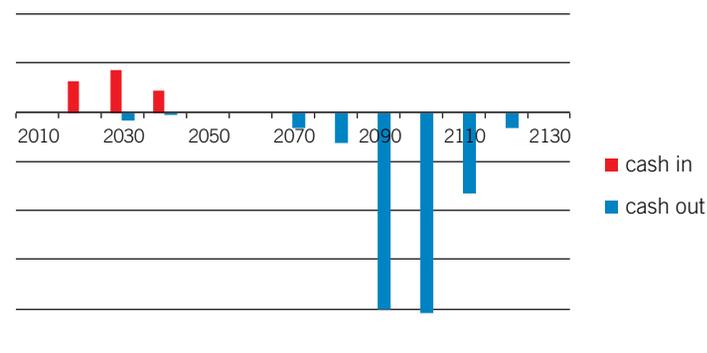
A major challenge was to select an acceptable extrapolation of the yield curve, where we did not want to simply rely on the ultimate forward rate from Solvency 2. One of the reasons was that the cash flow projections are actually going until the moment that the EIOPA assumes the 4.2% rate to be effective.

This last example shows that the exercise was more than just applying existing techniques on a new area of practice. It also required the actuaries involved to critically reflect on methods that they see as obvious, in order to challenge implicit assumptions in current methods that may be no longer valid outside the insurance industry.

Outcome

An immediate result of our work is that ONDRAF/NIRAS has realized how much risk laid in their tariff system and together with Belgian authorities is reconsidering it to mitigate some of these risks. It is also in the process of getting approval for broadening the asset categories they can invest in. More generally, the same approach could be used by any organization responsible for the long-term maintenance of buildings or infrastructure, especially when there is a timing mismatch between contingent cash in- and outflows.

Kurt Lambrechts is an actuary at MILLIMAN, the largest independent actuarial consultancy firm in the world. He manages the Brussels office and performs assignments in Solvency 2, IFRS and ALM. His key interests are ERM and value creation.



Cijfers duiden -3.2 billion EUR overnight 2012

Will consumer behaviour change as genetic testing becomes more accessible?

GENETIC TESTING

By Mick James

At the end of 2013, I managed to engineer a row with my wife. From her side, it went like this:

“How on earth could you sign up for a genetic test without telling me? What if you get really bad news? Where would that leave me and our children?”



Why the row? Three weeks earlier, I'd signed up for 23andMe's test. The bank statement had arrived, and I was confessing to my wife what the unusual charge was for.

Why did I sign up? I'm curious and inquisitive, and I care about my health. I exercise daily, run ultramarathons, don't use caffeine and watch what I eat. Also, an aunt of mine had died with Alzheimer's, which upset me badly, and I was wondering if a genetic test could tell me my chances of sharing her fate.

The test is very easy: you just spit in the phial provided by 23andMe and send it off in their postage-paid box. About six to eight weeks later, the company made my results available via its website. At the time, U.K. customers received reports on approximately 250 conditions, and a great deal of information to help understand and interpret the information.

My results fell into two broad categories:

- **Interesting dinner conversation.** I was told I have a multitude of fifth cousins in the U.S., my hair colour is brown (correct) and I can smell asparagus in my urine (also correct).
- **Medical conditions.** I have increased risk of: restless leg syndrome (which I knew); ocular macular disease (which I didn't know); and diabetes.

The supporting information highlighted diet changes I could make that might lessen my chance of developing ocular macular disease. However for diabetes, my genetic predisposition was clear. Lifestyle (exercise, food and smoking habits) changes might have a far bigger impact. Unfortunately, the test was not able to provide information about my Alzheimer's risk. However, as a consumer, I now know far more about my future health probability than an insurer.

In Europe, insurers are subject to laws that govern whether results of past genetic tests are usable in underwriting. Currently, only limited circumstances exist where genetic test results might need to be disclosed to obtain insurance. Given today's views on privacy, the likelihood policymakers might alter this stance, at least in the near future, appears small.

Will consumers seek genetic tests to anti-select? Short term, probably not. The number of meaningful conditions my test covered was low, and for those conditions, lifestyle factors are often more important. Example: my test covered the BRCA1 and/or BRCA2 mutation, which signals increased risk for breast cancer. Results from this portion of the test could lead to more conversations with physicians.

Can insurers be complacent? Absolutely not. Genetic testing has become so cheap and easy, providers could set up in lightly regulated environments and reach customers via post, leading to more accessible testing for Huntington's disease or other single-defect conditions. Insurers are already looking for ways to collect and leverage genetic information. Insurer Discovery Ltd. recently launched a venture with Human Longevity Inc. to provide subsidised exome and genome sequencing to customers in South Africa and the U.K. The data amassed will provide real and ongoing value for insurers in predictive and experience modelling.

In the next decade, genetic tests might become significant and cheap enough that advisers might start suggesting insurance customers test prior to applying for insurance cover. Lead indicators for anti-selection will appear first in the high-value case market, and insurers should be mindful of this possibility. In the meantime, an honest debate with policymakers around probable outcomes is recommended.

Mick James is Business Development Director at RGA UK Services Limited

FROM THE "SYSTEMIC" "TOO BIG TO FAIL" TO "TOO BIG TO SUCCEED"

By Romain Durand

The concept of "too big to fail" was made fashionable by the 2008 financial crisis. The largest banks and the largest insurers could not go bankrupt because their failure would entail whole sectors of the economy. "*Se non e vero e ben trovato*": the big bankers have got their share of apologising in a certain way for the rescue plans that have proven dangerous in the long term.

Romain Durand



The injection of huge sums of money into the economy after 2008 could not be done without an intellectual justification and the "too big to fail" principle came just at the right time: by applying this rule, a non-stop money making machine was needed, providing cheap money to the bankers otherwise they would disappear, thus taking with them the economy of the planet. By saving the financial institutions, we saved the whole economy. History has shown that only a small part of the money has found its way into the so-called "real" economy but that's another story.

The Americans found a brilliant formula, only four words were enough to describe a complex situation.

Yet this simple-sounding formula denied 200 years of financial history during which the economy had regularly survived the collapse of the central bankers. Moreover, it is difficult to understand why the trade of money does not obey the principles of Schumpeterian creative destruction. In a world of digital transformation, the "too big to fail" formula has helped to protect the largest banking operators. Today the world should obey Bill Gates' formula: "the World needs banking, not bankers" instead of the one still used by central bankers.

On behalf of this theory, the financial markets were flooded with cash, having a negative consequence as a result: the loss of currency value which is evidenced by the collapse of interest rates.

But it is not safe to use a rather rough formula under the pressure of time. Countermeasures were

taken, first by the "systemic institutions". For states and for regulators, if some institutions are "too big to fail" they become a risk to the entire economic system...they affect the system itself. To put it briefly: they become "systemic financial institutions."

One shouldn't get away with asking for millions from states and put them into bankruptcy without trying, or at least pretending, to protect their investment. We could not imagine states lending millions without any protection, without even asking the shareholders to share in this protection. However this increased shareholder engagement causes them to ask questions. The more we risk losing, the stronger and faster we think. The most active of them, Carl Icahn, taking a sharp look at AIG has drawn two conclusions:

The first one is that when you consider an institution is highly over-capitalised due to its systemic character, then simply decrease its size! It sounds rather logic! If you think the "systemic" load is getting unbearable, then stop being "systemic"! This certainly makes more sense than complaining about it! This idea led to questioning the value added when it comes to size.

Why should we accept these "mammoths" in the financial area if a collapse of the economic system is at risk? What are the benefits expected from the size and how do they justify endangering the whole economy? We can't say that the answers on the subject are really clear. The strongest argument in favour of size is the diversification of the risks it would bring. This argument is contested both by those who

think that great diversity means less precise control and by those who study correlating crises: instant or seemingly uncorrelated risks occurring simultaneously. We have written about this subject with Stéphane Loisel¹.

So here we are, doomed to keep alive monsters whose benefits have been proven to be wrong, at the price of a possible destruction of our economic system. Braver than us, our ancestors in the early 20th century did not hesitate in squeezing United States monopolies afraid of adverse effects.

Secondly, Carl Icahn suggests that AIG is not only "too big to fail" but also "too big to succeed". A striking formula² that again is food for thought. Not only would the size not limit the risks but in addition it would prohibit proper management. Are these financial monsters like tools, mismanaging operations and capital given to them? We cannot exclude this hypothesis and recent news is full of examples³: BNP and its Iranian adventures, HSBC and its Mexican quarrels, UBS and the subprimes, Credit Suisse and FIFA, Zurich and its difficulties tracking US Risks, Barclays and Libor, Lloyds bank and PPI, Lehman, AIG, SocGen and Kerviel, AXA and the variable annuities in the United States. The list is long.

Thus the "too big to fail" formula slowly became systemic and this now pushes shareholders to question the interest of large organisations when it comes to financial matters and to answer the question of "too big to succeed". Maybe this path brings them to the conclusion of Nicolas Taleb: Nothing should ever become too big to fail!

Romain Durand is Head of operations worldwide at Barents Re

1 – Correlation crises in insurance and finance, and the need for dynamic risk maps in ORSA

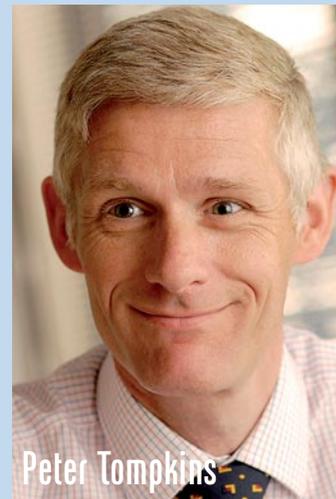
2 – That is a Twitter hashtag as well: #toobigtosucceed

3 – Not that small are free from risks, but they are not systemic.

Pension saving – tackling misbehaviour

By Peter Tompkins

Can the way in which options are presented to people change the way they act? That is, even if the technical choice remains unchanged. That seems to be the experience when it comes to pension saving – automatic enrolment with the right to leave is much more likely to result in them saving than just optional enrolment by applying to join.



One of the challenges for insurance companies and actuarial consultants is persuading young people to enrol into pension and retirement plans. In many plans it is common for employees and employers each to pay part of the contribution. This means that an employee who doesn't join is missing out on the contribution from their employer.

Around thirty years ago there was a change in UK law to stop employers from requiring their employees to join pension plans. The practice then was commonly that employees had to fill in a form to join their plans. Even where contributions from employees were small (2 or 3% of salaries with

much more coming from employers) there were quite a number of employees who did not sign up and they missed out on large amounts of pension benefits later on. Typically employers reported 75% or 80% membership take-up which meant up to a quarter of people earning poorer benefits than they might have done for their retirement.

In an effort to change the culture, inspired by the thinking of behavioural economists from the US like Cass Sunstein, the UK Government set up what was known as the "Nudge" unit, literally to nudge people into making better decisions. A compulsory pension system was created under the name "auto enrolment" in which employees must be automatically enrolled but were advised that they could leave if they wanted. It still only has small contribution levels starting at 1% from the employee and 1% from the employer but with strong publicity about its importance, opt-out rates for leaving the plans have been remarkably low and in 2014 averaged around 12% rather than the level of 30% which had been forecast. Contribution rates will rise to a still modest 8% in total in the next few years – and probably beyond that if some politicians' wishes are to be believed. We will be watching to see if the initial acceptance level is any different when the cost is higher. Certainly the approach of automatically signing people in seems to be a success in boosting saving.

Peter Tompkins is an independent consulting actuary, based in the UK



THE ROLES OF ACTUARIES

By Karel Goossens

The Solvency II regime impacts the way the actuary contributes to the management and the monitoring of insurance and reinsurance undertakings.

What are the new requirements for actuaries introduced by Solvency II?

The risk based approach of the Solvency II regime creates a technical framework that completes the basic skills of the actuary as defined amongst others in the syllabus of the international actuarial association (what has also triggered an in depth review of it) related to:

- prospective and stochastic projections taking advantage of the professional judgement of the actuary;
- modelling of the loss function;
- enterprise risk management;
- processes and an accurate communication;
- fit and proper;
- access to the Board.

What roles are intended for actuaries under Solvency II ?

The success of the Solvency II regime highly depends on the actuaries involved in all lines of defense.

First line of defense (operations): actuaries are present all over de insurance cycle.

Second line of defense (risk management): actuaries are heavily involved in the risk management system.

Actuarial Function: the Actuarial Function is close to the second line of defense.

Third line of defense (internal audit): the Internal Audit Function includes actuarial competences.

External audit: actuaries offer the expertise required based the International Standards on Auditing.

Supervisory system: supervisors have increased their actuarial capacity significantly since Solvency II has been introduced.

External Actuarial Expert: supervisors appoint actuarial experts for inspection of specific technical aspects of the undertakings reporting.

How are these roles implemented in Europe?

The Task Force on the Roles of the Actuaries of the Actuarial Association of Europe conducted a survey to find out how the roles of the actuaries under Solvency II are implemented in the different markets.

26 member associations representing as many different markets of the European Union answered the survey. The quality of the information allows to detect trends and draw conclusions. Answers that are not complete or not consistent have been filtered.

Main observations are:

Observation 1

The number of qualified actuaries available per company in:

- The life business equals 7,3
- The non- life business equals 1,3

Observation 2

In 95% of the cases the Actuarial Function Holder is a qualified actuary.

Observation 3

The statutory role of the appointed actuary is continued for about half of the markets. The appointed actuary is always (99%) a qualified actuary.

Observation 4

About 2 on 3 Chief Risk Officers of European insurance undertaking are qualified actuaries.

About 1 on 4 actuaries working for insurance are active the risk department.

Observation 5

The Risk Management Function can be combined with the Actuarial Function in 21 out of the 26 countries in function of the size of the undertaking.

Observation 6

The risk management profession is organized in only in 1 on 3 countries.

Observation 7

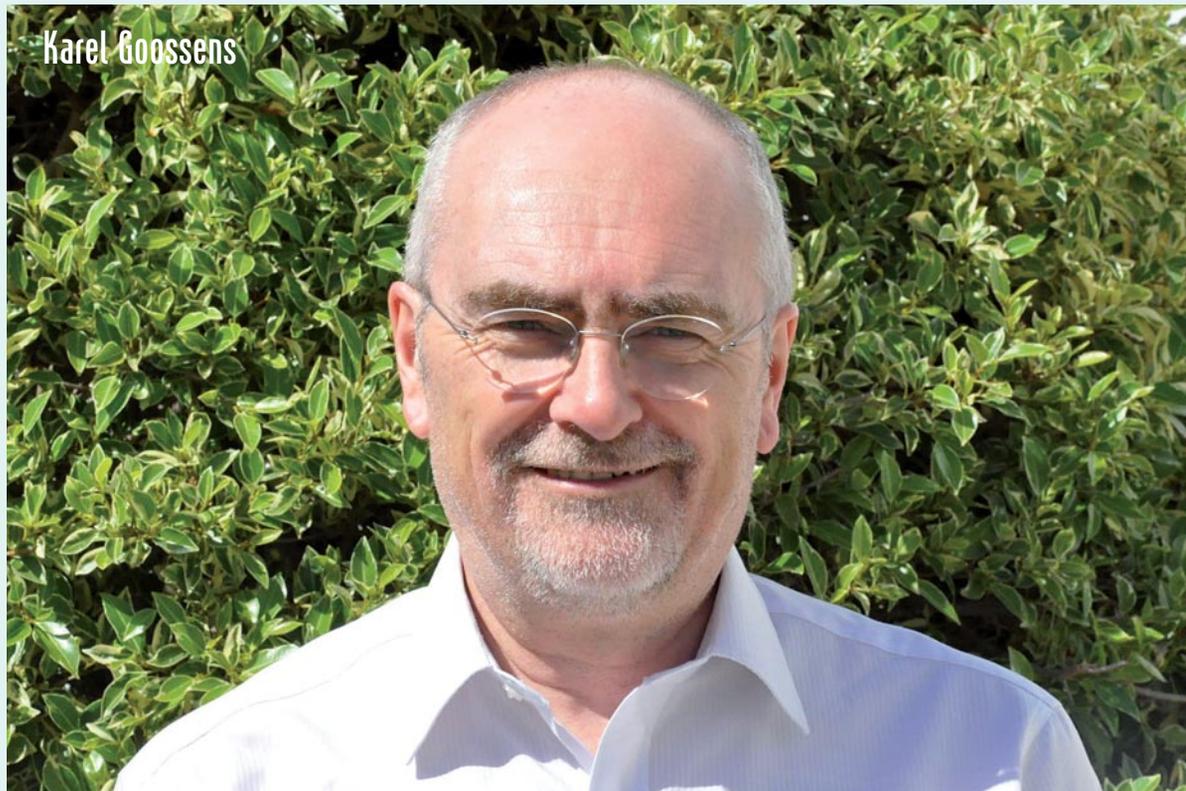
The International Standard on Auditing nr 500 explains that external auditors will refer to experts for those subjects that require in depth knowledge. External auditors do work with actuarial experts in 77% of the markets. If this is the case, audit firms employ actuaries in all cases and in about 50% of these markets external audit firms will also refer to independent actuarial firms.

Observation 8

The supervisors of 4 countries are using external actuarial experts: the purpose of the assignments is different (can be in the context of the validation of the internal models, can be in the context of the projection of cash flows, ...).

UNDER SOLVENCY II

Karel Goossens



Conclusions

The way the roles are implemented in the different countries is different. An additional potential issue here is that there is overlap in the work these actuaries are carrying out in the various roles. It can therefore be expected that this will lead to much less harmonization than anticipated for Solvency II, to unnecessary duplication of work, to unnecessary discussions and as a result increasing costs for the undertakings. It is observed that Risk Management Function Holders are often actuaries: the AAE therefore proposes that its representation mission in Europe also includes the subject of Risk Management and how to optimize the implementation of SII.

The challenges for the profession

1° Need for professionalism

The different stakeholders have high expectations about the quality of the work of the actuaries in all the roles under Solvency II. Technical and ethical standards applicable to all actuaries can create a common basis and assure that not only key functions are fit and proper. In the mean-time the AAE has adopted two European Standards of Actuarial Practice.

2° Risk Management

The actuarial professional world is continuously strengthening its risk management framework : ERM is discussed in task forces and

committees, 653 European actuaries have already successfully ended the Certified Enterprise Risk Management program, specific ESAP's in the field are prepared.

3° Independence

Actuaries are acting in different roles and at different moments of the control-cycle. This omni-presence is at the same time a strength and a weakness for the actuarial profession. Actuaries can exchange experience and opinions, but need to respect sufficient independence: the profession needs to create the environment that allows actuaries to demonstrate intellectual independence where appropriate, factual independence when required.

Karel Goossens is a past President of the IAIBE from 2003-2007 and has also been a Chairman of the Actuarial Association of Europe (AAE) (formerly Groupe Consultatif) from 2012-2013.

EUROPEAN ACTUARIAL STANDARDS

Chris Daykin



Pierre Miehe, member of the editorial board of The European Actuary, posed several questions to Chris Daykin about European actuarial standards and their developments. In preparation of the interview Chris Daykin consulted Gábor Hanák.

as a clone of ISAP1 from the IAA to be a basic generic standard for actuarial work to act as a foundation for other standards.'

The aim of the AAE is to prepare model standards which have a specifically EU context.

What is the objective of European actuarial standards?

'The overriding purpose of European actuarial standards is to serve the public interest by ensuring that the users of actuarial services benefit from a high quality of actuarial work. Actuarial standards should be adopted by each member association but to facilitate the production of such standards, and to create consistent practice across Europe, the Actuarial Association of Europe decided to develop model standards for associations to adopt or adapt.

The aims of the model standards include:

- enhancing the quality of delivery of professional services by actuaries;
- helping to ensure that the actuarial work product meets the needs of users; and
- providing guidance to actuaries on good practice
- raising the profile of the actuarial profession in the European Member States through enhanced professionalism requirements of the members of the profession

The IAA has already proposed 8 actuarial standards (ISAPs). Why do we need additional standards at European level (ESAPs)?

'The IAA is producing model standards which have global application. The aim of the AAE is to prepare model standards which have a specifically EU context, for example in relation to Solvency II for insurance companies or, in due course, IORP II for pension arrangements. As an exception to this the AAE decided to create ESAP1

Do the AAE standards apply to all European countries? Are all actuaries forced to comply with it?

'AAE standards are model standards and do not apply directly to individual actuaries (unless an actuary claims to be complying with an ESAP). They are created for the benefit of member associations, who can adopt them or adapt them in some way (including translating them into appropriate languages). Then the corresponding standard issued by the member association could be made mandatory for individual actuaries who are members of that association. Some associations may already have standards which cover similar material, which they might decide to adapt in the light of the ESAPs, unless they are satisfied that their existing standards cover the same ground and do not need to be changed.'

What is the list of approved or in preparation European standards? What is the adoption process?

'So far the AAE has adopted two model standards. The first (ESAP1) was promulgated in October 2014 and, as already mentioned, was very closely based on the IAA's ISAP1, dealing with generic matters affecting all actuarial work. The second (ESAP2) was promulgated in February 2016 and relates to preparation of the Actuarial Function Report required under Solvency II.

A third standard (ESAP3) has just completed a period of exposure. This concerns actuarial practice in relation to the ORSA under Solvency II and is expected to be accompanied by a European Actuarial Note (EAN) which will be more educational in nature and describe alternative practices.

No other standards have yet reached the stage of an exposure draft but task forces of the AAE's Standards Project Team are considering whether to propose model standards on:

- the contribution of the actuarial function to the risk management function under Solvency II
- independent review by actuaries in the context of Solvency II
- governance of models (this would follow the proposed ISAP1A of the IAA and could eventually be combined into ESAP1)
- possible standards in the context of the IORP II Directive

The SPT sets up task forces to work on specific model standards or proposals for standards.

How is AAE organized to issue drafts of such standards? What is SPT? How can AAE check consistency of these standards with local/international standards?

Within the AAE work on standards is carried out by the Standards Project Team (SPT) which reports to the Standards, Freedoms and Professionalism Committee (SFPC). The SPT sets up task forces to work on specific model standards or proposals for standards. If the SPT considers that a proposed standard meets the requirements for the AAE to issue a model standard, it will bring a Proposal to Develop a Standard (PDS) to the SFPC to get a green light to carry on work (or a red light to stop!). Then the SPT, through the relevant task force or working group, will develop an exposure draft for the proposed standard. This has to be approved by the SFPC before being promulgated to member associations and other interested parties for a period of exposure, which will usually be three or four months.

This process may need to be repeated if there are significant concerns expressed about the exposure draft. Eventually the SPFC will be asked to recommend the final version of the model standard to the General Assembly, which will then adopt the standard (or send it back to the drawing board). The General Assembly is kept informed about proposals for developing standards and how they are proceeding through approving on an annual basis the work-plan of the SPT.

The SPT has a protocol for sharing information with the IAA as the two organisations are developing standards. There is also an overlap of membership between the SPT and the IAA's Actuarial Standards Committee. The SPT is responsible for finding out about existing standards on similar subject matter and avoiding any overlap or conflict with IAA standards.

Member associations have a number of opportunities to comment on the whole standard development process and to have their voice heard at various decision points.'

What is the communication around standards? How can AAE check that actuaries are aware of it?

'The AAE is responsible for communicating with member associations about model standards but communication with individual actuaries is a matter for member associations, who are also responsible for educating actuaries about standards and monitoring compliance. However, the AAE, through its Officers and members of the SPT, is always ready to talk to member associations about the standard-setting process and the importance for the profession of having effective standards in place.

Gábor Hanák is Director at KPMG in Hungary and is a Past Chairman of the Actuarial Association of Europe. **Chris Daykin** acts as consultant and independent trustee for several defined benefit pension plans and is a Past Chairman of the Actuarial Association of Europe.



Emotions, risk preferences,

By Ronald Bosman

Many economists and finance experts think that people make rational decisions when they deal with risk and uncertainty. However, research by behavioural scientists show that people are prone to so-called psychological biases, and that they systematically deviate from rational behaviour assumed in economic theory. This article focusses on emotional biases.

Ronald Bosman



Investment under global risk

Suppose you receive a fixed sum of EUR 30. You have to allocate this money over two assets. The first one is a safe asset which yields neither a gain nor a loss. The second one is a risky asset where there is a probability of 0.5 that you receive 2.5 times the amount invested in the risky asset and a probability of 0.5 that you receive nothing. In this situation people invest on average two thirds of their money in the risky asset, according to Bosman and Van Winden (2010) who studied this investment problem in a controlled laboratory experiment.

Now imagine that a global risk, which you cannot control, is added to this investment problem. This risk entails that there is a small probability that you lose all your investment earnings, irrespective whether you have invested in the safe or risky asset. Would such a global risk change your investment decision?

According to standard economic theory, global risk has no effect on the investment decision since it equally applies to all available assets. Rational investors with stable risk preferences should therefore not be influenced by global risk. But that is not what the experiment of Bosman and Van Winden showed. When participants were confronted with global risk, they invested on average 15% less in the risky asset. So, what happened?

Emotion theory

An explanation is provided by emotion theory. Emotions typically arise when one evaluates an event as relevant for one's interests. If interests are promoted, positive emotions result. If interests are jeopardised, negative emotions arise. Positive emotions, like joy or relief, are experienced as pleasurable whereas negative emotions, such as fear or anger, are experienced as painful. Emotions thus have a direct hedonic impact. An important feature of emotions is that they are 'cognitively impenetrable': one cannot choose to have or not have emotions, given certain stimuli or events that are relevant for one's interests (Frijda, 1986).

Another important feature of emotions is that they imply an action tendency (urge) to approach or avoid ('fight or flight'). Brain scientists have found that during emotional activity different neural networks in the limbic system (the feeling part of the brain) are involved, which interact with neural systems in the cortex (the thinking part of the brain) (LeDoux 1996). Neuroscientific evidence suggests that the amygdala, a small region in the limbic system with strong connectivity to the cortex, plays an important role when people deal with risk and uncertainty.

Furthermore, emotional responses to external stimuli appear to be faster than cognitive (cortical) responses. In particular, when the intensity of an emotion is high, it may progressively seize command over rational deliberation. In other words, emotions influence people's immediate behaviour more than they think is normatively justified. So, how does this all relate to the global risk experiment?

and investment

Anxiety and risk preferences

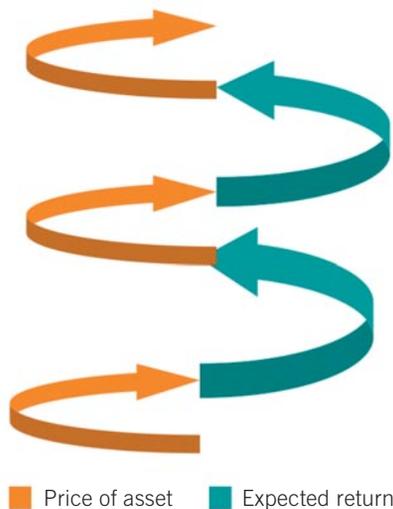
Emotion theory predicts that in the context of risk and uncertainty, anxiety and fear play a central role. The action tendency of this emotion type is flight. This is consistent with the experiment where participants who were confronted with global risk fled into the perceived safety of the 'safe asset'. This type of anxiety can be dubbed 'situation anxiety' since it is generated by the (uncontrolled) situation an individual is in. Many studies have found that anxiety and fear caused by uncontrolled events tend to favour cautious, risk averse, decision making (Loewenstein et al., 2001).

Besides situation anxiety, participants in the experiment also experienced so-called 'decision anxiety' which is generated by an individual's own decision to invest in the risky asset. The more an individual invests in the risky asset, the more decision anxiety is experienced. Some researchers have linked decision anxiety to the existence of the equity risk premium (Caplin and Leahy, 2001). The idea behind this hypothesis is that the return on equities is significantly higher than the risk free rate in order to compensate for the negative hedonic impact of anxiety that is caused by stock price volatility.

Expectations and procyclical markets

Emotions such as anxiety do not only influence the risk preferences of people under the influence of them, they also change people's expectations about future events (Kuhnen and Knutson, 2011). Experimental research shows that after a bad investment outcome, people become more pessimistic about future returns and invest less. On the other hand, when people get a good outcome, they become excited and more optimistic about future returns. Consequently, they invest more. Such emotion-expectation feedback mechanisms can make financial markets more procyclical and help to explain their notorious boom-bust character. Since the underlying emotional processes are deeply ingrained in the human brain and universal across cultures, it seems almost impossible to avoid such boom-bust cycles.

Emotion-expectation feedback



Implications for risk management

So, what should a risk manager do with all this information? First, they should be aware that in risk assessments the affective features of investments (such as a global risk) distort objective decisions and probability estimates. Risk managers should lean against such emotional biases when they identify them in decision processes. Pre-commitment type of instruments like automatic trading, circuit breakers, risk limits, and mandatory cooling off periods can be very helpful in this respect. Secondly, risk managers should take into account that many market based risk indicators – such as the implied volatility (VIX) or CDS spreads – can be emotionally biased as well (too optimistic during booms, too pessimistic during busts). Research suggests that simple, broad risk indicators like the credit-GDP ratio or the deviation of asset prices from their long term average are more informative than sophisticated (market) based indicators (Borio, 2012).

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CONSUMER PROTECTION: MORE OF THE SAME WON'T GET YOU THERE!

By Pauline de Chatillon

Following from the financial melt-down in 2007, confidence in the financial system has been shaken. To restore confidence in the global financial system and reinforce its long-term stability, regulators have put consumer protection to the forefront of the political agenda.

There was already some consumer protection regulation in place, both in insurance (it was then called policyholder protection) and in banking, but it was limited and scattered with some heterogeneity between European countries regarding their importance and the resources dedicated to supervise it. Prudential considerations were the primary concern.

Nowadays, political, regulatory and supervisory concerns all go in the same direction to make sure consumer protection is given pride of place, independently of the political game. Although politicians are concerned by the protection of customers, which could have a direct and concrete impact on the day-to-day life of their electorate, this topic also allows them to improve their public image through the media. In addition, in the current atmosphere, imposing new constraints on financial institutions is well-considered by the general public.

Consumer protection regulation is still in a development phase.

Regulation and supervisory action is moving away from focusing almost only on prudential concerns to concentrating more on consumer protection¹. Consumer protection regulation is still in a development phase, European supervisors are very cautious, except a few, such as the UK Financial Conduct Authority. Mentalities and supervisory culture are changing, as well as risk culture in firms. Situations which were hitherto widely accepted have become open to supervisory sanctions, such as conflicts of interest or certain remunerations, potentially impacting the reputation of the financial institution concerned. It is no longer a question of simply respecting the letter of the law, but of exercising personal judgement to make sure that the action taken today will still be judged in a given time horizon as acceptable in the supervisory perspective. A producer or distributor of financial product should consider not only whether what he is doing is legal but also whether it is legitimate. Putting the processes in place to ensure that regulatory requirements will be respected is good, but not enough. A firm now needs to be result-oriented where consumer protection is concerned.

Soft law has emerged in countries that had a Roman law environment. Today, soft law in the financial sector concerns mainly consumer protection issues and is mainly adopted by supervisory authorities. There has been strong resistance from the financial industry in “Roman law” countries to this new layer of regulation, arguing that it blurs the distinction between those that write the law and those that ensure it is applied. But it seems that soft law, more agile than “hard” law, is already



¹ – See the recently published “EIOPA’s strategy towards a comprehensive risk-based and preventive framework for conduct of business supervision”, EIOPA, January 2016.

well embedded. As soft law also includes codes of conduct adopted by the industry itself, industry may consider taking a proactive stance in that matter: by adopting its own codes of conduct, it may reduce supervisory soft law initiative.

Good old times, with a simple tick box approach, were more comfortable.

Today, there are two main attitudes to consumer protection in firms. It can either be seen as a “popcorn” of different subjects: as soon as you fix one issue, another one pops up, such as distance selling, key information documents, duty of care, cross-selling, ancillary intermediaries, vulnerable populations, etc. It can also be seen, in the wake of what is happening in the UK, as evolving into the broader concept of “conduct”, which could be best described as a general attitude: an attitude that it is everyone’s business in the financial institution to take into account the consumer view to make sure that nothing toxic or useless is sold to the consumer.

Because it is new and developing, consumer protection is often considered by firms as a nebulous concept. This is even more true of the broader concept of conduct. Good old times, with a simple tick box approach, were more comfortable. This is not the way forward today, and those who limit their action to such an old-fashioned behavior could be faced with significant fines or costly action plans imposed by the regulators.

It’s a call to not look at risks exclusively from the firm’s point of view, but to also embrace the customer’s needs.

Every financial institution needs to undertake a thorough analysis of the concrete nature of its business, to tackle the specific culture and ethics issues which could arise from it. It requires in-depth reflection on what the main vulnerabilities of the firm are, given the products sold and the way in which they are sold, and urging those concerned by product distribution to prevent consumer miss-selling.

Board members and top management should impulse this new conduct culture. It’s a call to not look at risks exclusively from the firm’s point of view, but to also embrace the customer’s needs.

Once the analysis of client specific risks has been developed, the complete action plan to ensure compliance is often not fully enforced



Pauline de Chatillon

because its implementation in the operational processes is time-consuming, resource consuming and can have strong implications on the current organization of work. Therefore, change management and information systems’ modifications need to accompany the action plan. The front-runners are now tackling consumer protection as a performance and profit sustainability criteria: they are right and they build for their company a true competitive edge.

Pauline de Chatillon is Executive Director at EY, Paris

DATA IN THE AGE



By Petra Wildemann

Data, networks and technology are undergoing exponential growth. Since 2011 the volume of data produced globally has been doubling every two years and it is forecast to grow to 35 Zetabytes by the year 2020. This growth comes not only from business but also from social media and other personal data sources.



Measuring the Value of the Data

With so much data passing through different platforms and communication networks – how do we measure its value?

Some of this data is well-structured, some is semi-structured, but the majority is essentially unstructured. The production of data is expanding more than we could have imagined. Experts point to a 4'300% increase in annual data by 2020.

In 2009, total data storage was at about 0,79 zettabytes, the equivalent of 79 bn terabytes. One terabyte is the equivalent of 212 DVD's. Only 10-15% of this was in the form of structured block-based data storage. This is a revolution in itself, only 40 years after the start of the dominance of relational databases. The shift is occurring quickly and having a huge impact on us.

And it is not just the case that the amount of data is increasing. The structuring of data is also growing increasingly variable and complex, with highly individualized use of spreadsheets, word-templates and other forms, so that it becomes more and more complicated to quantify the value of data.

We find ourselves in the era of so-called “big data”, and the trend is accelerating. “Big data” is a broad term for data sets so large and/or complex that traditional data processing applications are inadequate. The term is also sometimes used to refer simply to the use of predictive analytics or certain other advanced methods to extract value from data without regard to the size of the data set.

There are key multipliers that can be used. It is possible to take the volume of data accessed multiplied by the value and cost of managing that data. One could also multiply that again by what is often referred as “country risks” or the location of the data, such a icloud, server, region or country.

Yet there are considerations which insurers need to recognize. Firstly the size of the data set will most certainly increase over the course of the insured time interval. Also, the use of the systems or networks will continue to evolve and, since the data and the systems operate in different regions, their handling in different regions needs to be factored into the calculations.

OF CYBER-RISK



What is the Value of Data? Business Value and Financial Value

- All financial data is sensitive data and should be carefully managed
- All business data has value
- The value of data increases the more it is used
 - This differs from all other protection
 - For traditional coverages, the value of an insured object or an asset decreases over time



Protecting data against cyber-risks

A key issue which insurers must consider concerning data is the risk of cyber-attack. These give rise to a range of new challenges which make risk measurement almost impossible for actuaries and underwriters. For example; a cyber-attack could cause a blackout affecting homes, businesses, healthcare facilities, schools and government agencies. This category of risk is not well covered by the insurance industry, which historically has simply needed to provide coverage where the damage and value to physical assets are measurable.

Although cyber-risks are technically uninsurable, most reinsurers have set mechanisms in place to cover large portions of potential losses. As there is a lack of sufficient data, reinsurers build their pricing mechanisms based on scenarios, forecasting structures, mathematical structures and models. A good example of an uninsurable risk was the collapse of the World Trade Center, which illustrates the difficulty of pricing such an event.

When a high-risk event, such as a natural disaster, occurs, insurers will typically cover only a small portion of the required capital to pay for the losses, perhaps covering only a limited number of components. This is due to the difficulties and ambiguities of establishing the direct cause, determining what and who is affected and accurately measuring the damage.

Now consider cyber-attack claims. Such claims pose unusual underwriting challenges in that they are priced as man-made risks, yet

have many of the features of natural disasters, with high impact and large-scale damages. And these underwriting challenges can be expected to grow if, as expected, sovereign combatants and terrorists increasingly target their attacks on the industrial control systems of critical infrastructure, such as water authorities, energy and power generation and distribution systems, where detection can be very difficult, and damage consequences existential.

We should not be surprised to find that insurance coverage issues arising from cyber-attack claims are typically unresolved, or in negotiation, dispute or litigation for many years.

Insuring businesses

Data breaches continue to make the news headlines. These breaches are often caused by software vulnerabilities, advances in data stealing malware, and as we have seen recently with the Sony breach, by states using cyber-espionage against other states.

All types of businesses are at risk, especially those which use outdated software and have limited security measures in place, such as healthcare providers who have a wealth of valuable data such as sensitive patient records.

With this in mind, business operations must formulate a security plan, which includes their entire It infrastructure, from applications and networks via the cloud and mobile devices, to secure identification and access.

A host of thorny questions arise. For example: How long should data be stored? Who should have access to data? The recent case of an 87-year-old man, bombarded 731 times between 2010 and 2015 by cold calls asking for donations simply because he failed to tick the “do not share my details” box in an online survey in 1994, makes the case that even very old data can be used unlawfully.

The topic is not easy. There can be IT hazards, including damage to (or reduction in the functionality of) the IT environment or equipment. Sources of damage can be events such as fire, hail, hurricanes, floods and other catastrophic events, which normally are covered though NatCat policies. Policies covering events having effects on Electronic Data typically exclude losses, damage or destruction in any form, even if they are the result of events such as computer viruses, Trojans, worms, time bombs, logic bombs, etc.

Technology firms are offering services to identify the security standards to clients from the industry prior to the insurers coming to an agreement with respect to underwriting practices. There are also discussions of using black boxes for data to record irregularities such as large data breaches or hacking attacks. However, the installation of a black box might bring the company into a situation where confidential and private data can be observed by a technology firm with access to the data within the black box.

The insured data is probably only a small percentage of all existing data within all sensitive records. Another insurance opportunity lies in the data we all store in the cloud, especially company information. iCloud, Dropbox, Google Drive, and other cloud technologies are vulnerable.

One must never underestimate the risks to business from cyber-attack. Cybercriminal are no longer one-man operations, attackers have access to a wide range of tools and services, and fraud can take many forms and use many channels.

Insuring the individual

Another consideration for insurers is how to offer appropriate cover for the general public. The biggest threat lies in the openness of the social media and social networks where people are often lax about their private security and personal information.

Very few people are really aware of how much information they are making available information which can then be used by unscrupulous hackers. It is critical that we all understand the value of the information we make public on the web, in order that we take the necessary steps to reduce the risk of becoming the victim of cyber-fraud.

Although cyber-risks are technically uninsurable, most reinsurers have set mechanisms in place to cover large portions of potential losses. As there is a lack of sufficient data, reinsurers build their pricing mechanisms based on scenarios, forecasting structures, mathematical structures and models. A good example of an uninsurable risk was the collapse of the World Trade Center, which demonstrates the difficulty of pricing such an event.

Final thoughts

Looking at cyber security over the next ten years indicates there will be a dramatic and rapid need for comprehensive measures to protect against this major threat.



“Cyber-Risk” makes up a fairly new risk category and poses a major challenge to reinsurers who attempt to give guidance on pricing and potential coverage for their clients.

Petra Wildemann, SAA, SAV, DAV is Managing Director Global Insurance Services at FTI Consulting Switzerland GmbH

GOAL: DEAL ON IORP 2 BEFORE JULY

By Falco Valkenburg

Commission, Council and Parliament are working hard to agree on the revision of the IORP Directive. Each have put forward proposals for the revision and now they are comparing notes, discussing the differences and looking for possible compromises that are acceptable to all. The current Dutch presidency seems to be determined to achieve agreement on amendments to the IORP Directive in the next months to come and get a final text adopted before the end of the term of the Dutch presidency, so before July.

The current IORP Directive is from 2003 and had to be implemented by the Member States before 23 September 2005. Five years after the formal adoption the Commission started a consultation in September 2008 on how to apply Solvency II for pensions. An interesting question as it was not whether Solvency II could be applied, but how. Public Hearings were organized, EIOPA was asked for advice, the Commission issued a Green Paper followed later by a White Paper on Pension and the Commission undertook a Quantitative Impact Study. End of the story was that there was reasonable support for introducing Solvency II like governance, risk management and disclosures for pensions, but no capital requirements. In May 2013 Commissioner Barnier confirmed

that no proposals would be developed for capital requirements. The formal proposal from the Commission followed in March 2014.

The Commission's proposal has copied quite a lot of text from the Solvency II Directive. I will just mention some highlights, especially from an actuarial perspective. Key Functions for IORPs are introduced: a risk-management function, an audit function and an actuarial function. A Risk Evaluation for Pensions is included in the proposal and a load of new articles on member and beneficiary informations. The latter are rather prescriptive for a European Directive defining even the color and the size of the letters used. The Commission included the possibility for delegated acts

on remuneration of IORP management, on the risk evaluation and on the communication requirements.

The next step in the process was the European Council of Ministers agreeing on amendments to the Commission proposal. After a fourth round of finding a compromise under the Italian presidency the Council published their proposed amendments in December 2014. Thereafter European Parliament started their discussions on what they liked, disliked and missed in the Commission's proposal. Several hundreds of suggested amendments were discussed before they agreed end of January this year on their proposed amendments to the Commission's text.

The Council took out the delegated acts. A delegated act would enable the Commission to introduce further rules and requirements without the need for democratic decision making. Many stakeholders were afraid that a delegated act on the risk evaluation on pensions could be used to get the quantitative requirements of Solvency II in via the back door. The Council drastically reduced the detail on the disclosure requirements, leaving much more space for individual Member States to develop requirements that would need their social and cultural needs. This is referred to as the principle of subsidiarity, meaning that 'Europe' is providing the high level direction and each Member State has enough freedom to develop more specific rules that fit the needs and circumstances in their own country.



I am impressed by the proposed amendments of Parliament. Apart from the fact that Parliament seems to agree in principle with most of the amendments of the Council, Parliament actively suggests new texts. Both People and Planet are key for Parliament. Parliament stresses on various places the long-term interests of members and beneficiaries as well as ensuring long-term sustainability. I personally feel sympathy with their suggestions, but also see that it will be very difficult to translate that into clear and appropriate actions. Help from actuaries to explore how to measure these long-term interests and long-term sustainability is definitely needed. Parliament adds to this "intergenerational balance" as well as attention for environmental, social and governance factors. Reading this I think that we, actuaries, should help identifying methods and good practices around what defines intergenerational balance. This relates to the paper "Clarity before Solvency"¹ by the Actuarial Association of Europe. Clarity for all stakeholders is vital in order to make informed decisions.

Falco R. Valkenburg AAG RBA is Chairperson Pensions Committee at the Actuarial Association of Europe

1 – F.R. Valkenburg and others, Actuarial Association of Europe, "Clarity before Solvency", May 2015, <http://actuary.eu/documents/AAE-Clarity-before-Solvency-19-05-2015-FINAL.pdf>

COLUMN FROM THE AAE



When you read this you will only have a couple of weeks to register for the 2nd European Congress of Actuaries. Of course, you will already know that this congress, ECA2016, will take place in Brussels from 21-22 April 2016.

Since your last visit to ECA2012 you could hardly wait to attend this 2nd congress. Again an overflow of interesting topics presented in plenary sessions and numerous parallel sessions will await you.

Topics will include working outside the financial services industry, professional ethics and independence, behavioural finance, big data and cyber risk and others.

As a result of the ever moving world around us but also as a result of Solvency II traditional actuarial roles are changing and some are even disappearing. On the other hand new areas of expertise are opening to us: many actuaries are now working as risk managers.

In addition to this there are many more areas where our skills and experience can be of added value.

So let us guide you through these new areas in the upcoming congress which will be more interactive than ever. Do not be too late to register as the number of places is not unlimited.

I look forward to welcoming you in Brussels.

Ad Kok

European Agenda

Please check <http://actuary.eu/forthcoming-events/> for the most actual forthcoming events.



colophon

The European Actuary (TEA) is the bi-annual 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 Editorial Board welcomes comments and reactions on this edition under contact@the-european-actuary.org.

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