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TO LIVE AND LET PAY?

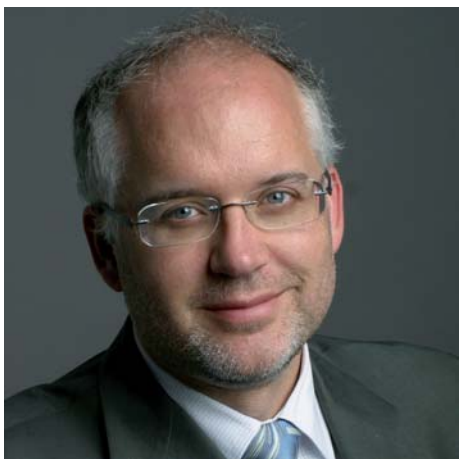
By Klaus Mattar

We all live longer – this is evident around the world with few exceptions. Consequently, maintaining the standard of living after retirement will become a challenge for significant parts of the population. In addition comes the cost for health care and for long-term care for this increasing group of the elderly.

Therefore comprehensive and sustainable solutions to cover the society's future costs of longevity are high on the priority list of political bodies, social security institutions and the financial services industry. Projecting future mortality and morbidity trends and modeling the impact on various benefit schemes and insurance products must form the basis for any responsible decision making. And of course, the recent past has shown how important it is to take the behaviour of the financial markets into account.

This issue of The European Actuary sheds some light on current state-of-the-art actuarial research and development work when Daria Kachakhidze shares with us how actuaries help to illustrate and to understand mortality trends and patterns, but the remaining uncertainties as well. Furthermore, Peter Tompkins reflects on topical developments in the UK and the Netherlands to tackle the long-term care problem. Two practical contributions by Steven Richards and Hartmut Engbroks talk about what the actuarial profession provides to make occupational and private pension schemes a more efficient tool to provide retirement income.

We hope these few examples give our readers some insights into the relevance of the contribution the actuarial profession is continuously providing to the public in this field. From monitoring, analyzing and describing the underlying driving forces to developing and further refining practical solutions, actuaries prove to be a valuable resource.



This issue contains the first contribution from a French colleague. The French Institut des Actuaires has joined the British, Dutch and German profession supporting The European Actuary making it even more a truly European venture.

Dr. Klaus Mattar Aktuar DAV is Managing Director at RGA International Reinsurance Company Limited Niederlassung für Deutschland

On the last season

by Mark Heijster

Walls of glass reflect the beams of an early February sun. The first sign of the lengthening of days after an exceptionally severe winter. La Défense warms up. A changing of the seasons, like a cycle of human life. The difference being that our last season is often stretched and we keep postponing our leave. Daria Kachakhidze is familiar with long winters and long life. Coming from St. Petersburg she is an expert in the field of longevity. I met with her in Paris, at the headquarters of the global reinsurer SCOR.

To get the ball rolling, from an actuarial perspective, is there evidence that we will live forever?
'For this moment the longest life span is that of a French woman named Jeanne Calment. She lived 122 years. In one of her jokes she told people she had only one wrinkle. The one she was sitting on. No, of course there is no such evidence. Even from a medical point of view it would be very daring to say that we would live forever unless you talk to people like Aubrey de Grey, the British scientist who says that the fundamental knowledge needed to develop effective anti-aging medicine mostly already exists and the first human who will live up to 1,000 years is probably alive now. What we can say is that there is no evidence that we are approaching a limit in terms of life expectancy yet.'

What are the main challenges when predicting future mortality and life expectancy? Are actuaries well positioned to face them?
'For me the main challenge is to combine mathematical models with subjective expert opinion and the information that is not contained in the data. A certain degree of subjectivity is inherent in any mortality projection, even when we use straightforward mathematical models. The impact of these subjective choices on the outcome of the projection increases as we are projecting further and further ahead. Thus for long-term forecasts the role of those choices is very important.'

'Other elements such as the socio-economical or financial situation also need to be taken into account. The dramatic fall of life expectancy in Russia in the nineties due to the political crisis at that time is an example. These elements are not quantifiable, so there we need expert opinions. Actuaries are well positioned to deal with these issues but they need input from other disciplines such as demography, gerontology, biomedicine, et cetera.'

In view of current financial developments, how would you qualify the ambition to provide for guaranteed income (pension / care) funds at projected much later dates in human life?
'It is extremely difficult. The part of the financial risk is important: for example half of a percent of additional return on reserves for a sixty year old man could compensate for approximately two and a half additional years of pension payment. With the current speed of life expectancy increase in developed countries it actually takes slightly more than ten years for life expectancy to increase by 2.5 years. In the past longevity problem was less visible partly because high financial return was hiding the impact of falling mortality.'

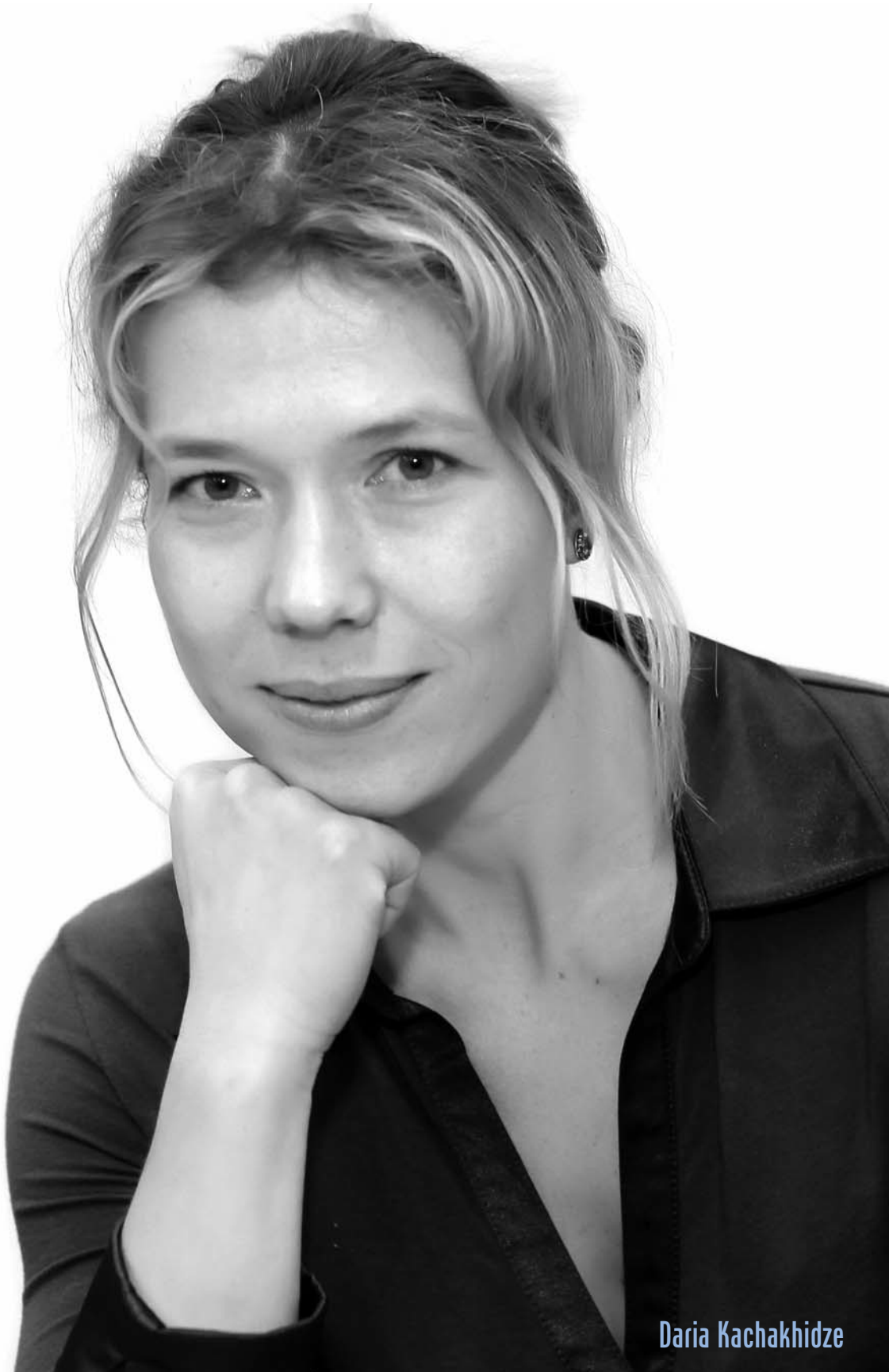
Do you feel that 'saving' for health care at later ages should be taken care of by state provisions, or on an individual basis?
'I think you need both. Longevity is a complex risk that contains both systemic and individual components. By the individual component I mean the part of the longevity risk that can be mutualized between the individuals of the same generation: this risk can be tackled by the law of large numbers. The systemic risk is affecting everyone: when everybody is living longer than expected then nobody will have something in the end if the provisions are based exclusively on the accumulation principle. Considering the size of the systemic risk, insurance capacity and even financial risk takers appetite are not sufficient, and in my opinion it is inevitable that public powers become involved in one way or another. Thus in my view the systemic risk should be taken care of by the governments, and there should be a certain balance between the pay-as-you-go schemes and the accumulation type of schemes.'

Do you see a common level playing field for actuaries and politicians to reflect on the challenges related to longevity, and changing demography?
'Actuaries can show the numbers and convey the message , for example that the mortality tables used by the government are outdated or that the current system is not able to operate much longer because of a set of various factors. They serve as a sort of a thermometer that helps politicians to make choices as there is always a trade-off. The decisions belong to politicians, and of course should be supported by the actuarial and economical state-of-the art developments.'

Do you think that longevity could create 'impossible' choices on who to treat at progressive ages, and for what medical cause: How should (financial) discrimination in the medical treatment be tackled?
'Unfortunately, inequalities already exist. It is not really a question linked to the longevity phenomenon, it is a very old problem, even in how we

distribute medical research funding: for example, there exist rare diseases , treatment of which could save years of life to only a few persons, and there are easier developments that would treat unpleasant symptoms of millions of people: what do we choose?… From a different point of view, such inequalities sometime reflect different cultural traditions. In Japan for instance, there is a large number of very old people being kept alive thanks to all sorts of medical equipment. Whereas there are studies showing that such episodes were less common in the Netherlands, where, by the way, euthanasia is legally authorized. Besides, in terms of financial provisions it may well be that in the future we will not have the financial means anymore to choose.'

Your activities take place within a large reinsurance group. Do you feel that knowledge on these issues is sufficiently shared among peer groups, or do you feel that this should be seen within the professional setting of a competitive environment?
'There is a lot of exchange going on. One example of that would be the LLMA, Life & Longevity Market Association which is a group of insurers, reinsurers and financial institutions trying to promote a liquid traded market in longevity related risk. There are also many multi disciplinary-conferences being organized in all parts of the world where insurance players, investors, demographers and medical doctors can meet: such as Longevity 7 or Axa Global Forum for Longevity in 2011. There is a lot to gain when we are together discussing the problems.'



Daria Kachakhidze

LONGEVITY RISK IN THE UK

By Stephen J. Richards

Stephen Richards looks at how longevity risk in the UK is now being managed by looking closely at where people live – which gives a good indication of how long they will live.

The private sector in the United Kingdom carries a lot of longevity risk. Most of this sits in the defined-benefit pension plans sponsored by UK employers, but a significant amount also sits on the balance sheets of insurance companies in the form of annuity reserves. When prospective asset returns were high, longevity risk was largely either forgotten or ignored. However, now those asset returns are much lower and life expectancy in retirement has increased faster than expected over the last few decades. This has had consequences for investors: for example, British Airways did not pay a penny in dividends during its 2010 accounting year, but it did contribute £364 million to its pension scheme; there are many other similar examples. Shareholders increasingly understand that the pension scheme stands in front of them in the queue for the company's cash, and that longevity risk is one of the things which now come between shareholders and their investment returns. This fact had its most dramatic expression for the shareholders of Uniq plc, who in April 2011 had to hand over 90% of their shares to the pension scheme as part of a restructuring deal. Measuring and managing longevity risk is now a business priority.

As a result of this, there have been major steps forward in UK actuaries' approach to longevity risk. One of the biggest innovations has been the use of postcodes (UK Zip Codes) to profile people by attributing to them a socio-economic group based on where they live, as I described in a paper in 2008 in the British Actuarial Journal. There is a link between socio-economic group and life expectancy in the UK, and so using postcode-driven socio-economic profiles leads to a better understanding of the longevity of a group of pensioners.

Like the Netherlands and Canada, the UK has a hierarchical postcode structure and a common aspect of these countries' postcode systems is that each postcode defines a relatively small number of neighbouring houses. This means that people sharing a postcode are more homogeneous with respect to socio-economic group than if they had been chosen at random. This in turn makes postcodes useful to actuaries, who are interested in shared characteristics for understanding longevity.

The usual approach to postcodes is not to use them directly, however, but to use a geodemographic profiling tool. Examples of such profilers in the UK include Mosaic and Acorn, although there are a number of other systems available. Other countries have postcode-like systems, but not with such fine granularity – a French *code postal* or a German *Postleitzahl* typically covers many more houses than a postcode in the UK or Netherlands. The result is that people sharing a *Postleitzahl* are not as homogenous as those sharing a UK postcode, thus reducing the usefulness of postcode profiling. However, solutions are still possible for these countries and it is possible to achieve similar results by using a person's whole address, i.e. profiling the household instead of just the postcode in which it sits.

Postcodes are now routinely used in the assessment of longevity risk in pension plans, although their first use came with actuaries working for life insurers taking on annuity liabilities. Postcodes are widely used in the pricing of individual annuity contracts and also for risk transfers from pension plans to insurers. In order to price risk in a highly competitive market, insurers need to use as many reliable risk factors as they can. Extra urgency has now been added by the EU-wide ban on the use of gender as a pricing factor for individual insurances from December of this year. Gender has been the second-most important risk factor for annuities after age. So 2012 will see a search for new pricing factors to compensate for the loss of gender as a permitted factor. Necessity is the mother of invention, so postcodes will certainly not be the last innovation for assessing longevity risk.

Stephen Richards is the managing director of Longevitas Ltd, a company specialising in modelling longevity risk. He writes regularly on aspects of longevity in a freely available blog at www.longevitas.co.uk

Actuary's Role in Occupational Pensions

By Hartmut Engbroks

Demographics are creating huge problems for public pension systems and resulting in declining levels of retirement benefits. Occupational pension schemes admittedly cannot solve the problem of poverty in old age on their own as they only provide benefits in the event of an employment relationship or activities performed for an organisation. Such schemes are not generally available – at least not yet – to people who are not in employment or who have significant gaps in their employment history (and, therefore, in their retirement provisions), while these people may be particularly exposed to the risk of poverty in old age.

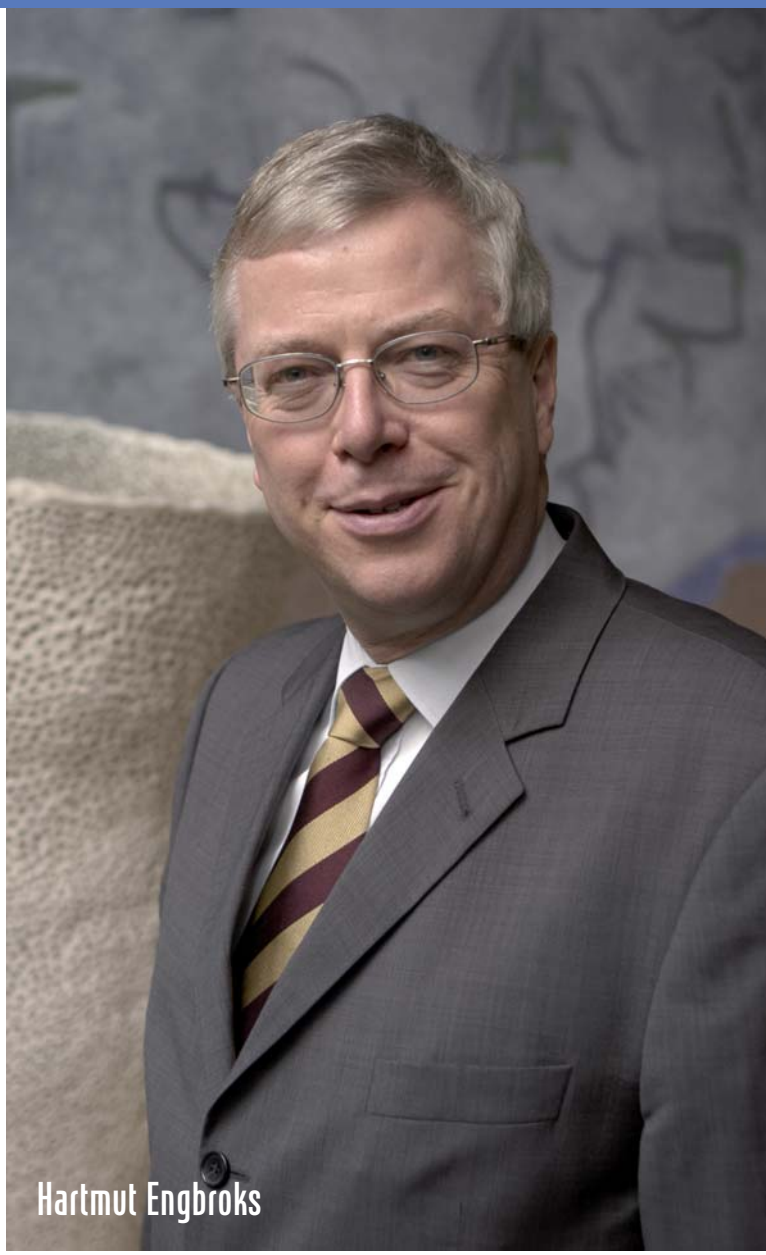
Where, however, such arrangements are in place, they can make a special contribution to improving the retirement position of participants and, therefore, helping to overcome poverty in old age. Companies can also complement and supplement other staff benefits by, for example, offering more flexible retirement ages, special incentives for key personnel or providing support for new staff recruitment.

If an occupational pension scheme is to prove its worth, it is essential for it to be structured in line with requirements. This applies both to the defining of pensionable events and the formulae used to calculate levels of benefits. These can include specifying a suitable, company-specific basis for accruing pension benefits and required years of service.
In addition to retirement pensions, it is also possible to cover other biometric risks. These risks are considerably easier to accept within an occupational pension scheme as participants exposed to such risks are grouped together, and the chances of random fluctuations are very likely, therefore, to remain relatively low. In practice, a group comprising at least 30 people with similar risk profiles has been shown to provide a very robust defence against random fluctuations. In larger groups, actuarial methods deriving from risk theory are used, and these result in lower costs. Independent occupational provisions can be structured to take these aspects into account, while appropriate insurance products can be used to cover possible peaks in exposure.

As well as serving to diversify risks, arranging occupational pension provisions on a group basis can also be advantageous in terms of capital invested and from an administrative perspective. And these benefits will ultimately accrue to the pension scheme beneficiaries. Pooling individual pension plan assets or adding them to a larger portfolio generates higher returns on capital invested, as well as reducing costs.

Occupational pension schemes require beneficiaries to provide certain personal data. Most of this information, however, is usually already available in the salary administration systems and personnel records. Linking the occupational pension scheme administration to the general staff payroll system avoids the need for separate data management and administrative systems, while staff responsible for administrating the pension scheme can continue working in the operating environment with which they are familiar.

'Opt-out' models, which require action by those employees not wishing to build up a pension entitlement, result in significantly higher acceptance levels (often 70% or more) than 'opt-in' models, where employees individually have to take the initiative to join a pension scheme (in such cases, acceptance rates are often below 20%). This experience shows that although people certainly understand the need to make provision for their old age, as individuals they often find it hard to take the steps required.


Hartmut Engbroks

There are opportunities for actuaries to demonstrate their creativity in structuring occupational pension schemes in ways that will reduce the risks of poverty in old age. These may include better provisions in the event of reduced capacity for work, ways of repairing gaps in individuals' pension provisions and selective improvements in the benefits available to surviving dependants.

Hartmut Engbroks is member of the Board of Heubeck AG, Cologne. Heubeck AG is one of the biggest consulting companies in the field of pensions and employee benefits in Germany.

FINANCING LONG-TERM CARE

By Peter Tompkins

Improvements in longevity give societies large cost increases in many areas but most notably in the cost of paying pensions, for healthcare and for long-term care for the elderly who are no longer capable of looking after themselves.

State budgets for pensions are being tackled largely through increases in the age of retirement, extending the working life and thereby enabling the books more easily to balance.

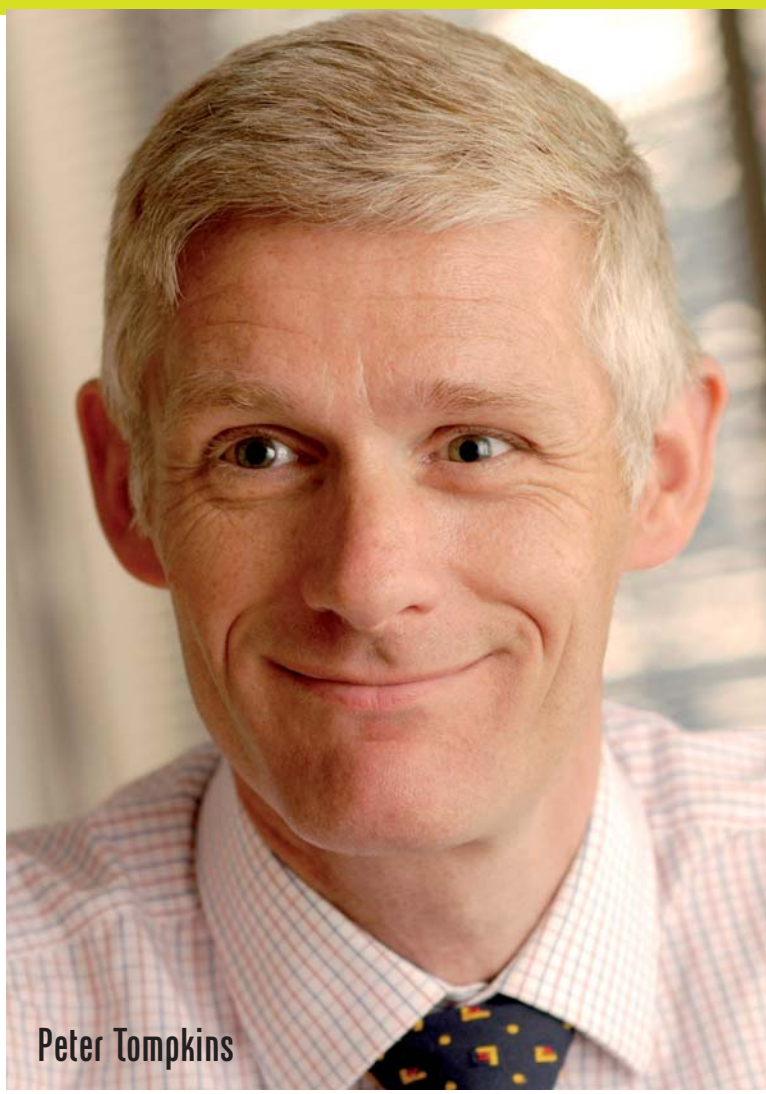
Healthcare (medical) and long-term care (personal support) costs are less easily managed. In the Netherlands, for example, a major part of long-term care is already financed through a premium of 12,15% of income*. Actuaries at large Dutch Pension Administrator PGGM with roots in the health care and social works sector (managing assets in excess of € 109 billion) currently predict that without any change to the system, this premium would have doubled by 2060 for two key reasons:

– First, the increasing longevity of the population gives greater chance of people needing long-term care in their old age; and

– The cost of long-term care is rising at a level of inflation around 1% per annum faster than incomes in general.

Actuaries are investigating and calling for systems of privately insured benefits, either on a group or individual basis. One of the challenges of such an initiative is the expense of reserving for such future promises, which is why an integration of care saving into pension saving could offer opportunities in those countries where there is a history of substantial funded pension.

* (12,15% of max. € 33.000 taxable income)



Peter Tompkins

In the UK there are similar issues but a very different starting point. Long-term care costs, such as the cost of being looked after in a nursing home, are to a large extent met from private savings, with the role of the state limited to meeting the costs of medical support. The recent report led by Andrew Dilnot into the future funding of care was driven in part by public concern at the situation where one person might need expensive care in old age and spend all their savings, whereas another may die without that cost, leaving their house and savings to their children. Dilnot recommended reforming the current system so that the citizen picks up the first GBP35,000 (EUR40,000) of costs when they need long-term care (if they have the means) with the state picking up the rest, for however long they live. Decisions on putting this into legislation

are now needed but the idea should appeal to politicians keen to win favour with families which would otherwise spend much family capital on care costs.

For the insurance industry, the prospect of the state picking up the tail risk could make product development more attractive. As usual, there is a need for clarity and certainty of future policy, so that products are not at risk of future political interference and support from all parties would be welcome.

The Netherlands and UK are not alone in facing these challenges. Development of private insurance for long-term care anywhere needs a clear legal and stable framework for what the state will provide and what private insurance can do by way of supplementary provision. A major challenge everywhere is likely to be how to draw the dividing line between what the state does and what citizens need to do recognizing that many will be financially unable to participate in any new market initiative to meet the basic costs of care.

Peter Tompkins is a Member of Council of the Institute and Faculty of Actuaries and a former Chairman of its Pensions Board. As a consulting actuary he has specialised in pensions and investment.

European Congress of Actuaries
Brussels 7-8 June

By Pia Skaerbak

While European leaders are struggling to find a way out of the financial crisis, the Groupe Consultatif Actuariel Europeen is organising the first European Congress of Actuaries in Brussels on 7 and 8 June, which will similarly look at how actuaries are facing the financial crisis, within the overall theme of *The European Actuary of the Future*.

It is clear that actuaries' expertise in understanding and quantifying risk ensures that they are well-qualified to contribute to resolving the financial crisis. What is perhaps less recognised is that they also have a significant role to play in relation to other areas where risk has a financial dimension – climate change, longevity, pandemics, and energy supplies etc.

The target audience includes consulting, academic, and industry actuaries as well as other financial professionals, politicians and others interested in the future of risk management in Europe. Speakers include leading experts from the actuarial profession, as well as officials from the EU institutions; EIOPA; influential figures from the business community, and national regulators.

The format of the Congress will have three parallel streams:
- **The parallel stream on Solvency will look at the European actuarial world which is significantly affected as a consequence of the Solvency II Directive for insurers;**
- **The parallel stream on Enterprise Risk Management is considered an exciting and important emerging working area for actuaries, since their technical skills have added value not only within the field of the financial industry, but in the so-called "wider fields" as well;**
- **The parallel stream on the Role of the Actuary will look at whether the number of actuaries, although increasing, can meet the strong demand expected with the implementation of Solvency II for insurers, IFRS4 Phase II and the development of solvency rules for pension funds.**

Information

To learn more about the Congress and to register please visit http://www.eca2012.org.

Pia Skaerbak is Deputy Chief Executive (Public Affairs) at Groupe Consultatif Actuariel Européen

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