



Newsletter

December 2003

The Society of Actuaries in Ireland

Ageing Population: Facing the Challenge

The Society hosted a very successful conference on 8 October 2003. Feedback from members who were there was that it was a most fascinating subject and they enjoyed the various aspects which were explored by the speakers and the lively debate during the questions and answers session. The conference also attracted a large attendance from outside of the profession.

Prior to the conference, the Society issued a press release *Society must reconsider how it views ageing, retirement and pensions – current retirement practices too rigid*. This press release received enormous media and press coverage and indeed following the conference there was further coverage. The press release is on the Society's website.

Ageing Well - presented by Professor Tom Kirkwood, head of the Department of Gerontology at the University of Newcastle-upon-Tyne

Professor Kirkwood began his presentation with an image of Jeanne Calment, a French lady who lived to a mere 122 years and 5 months. The saying "older and wiser" certainly applied to Ms. Calment who struck a deal with her solicitor such that in exchange for giving him the rights to her home on her death, she would receive an annuity from him for her remaining life. In the end, she ended up receiving an annuity worth three times the value of her house and surviving her solicitor by 40 years!

The first issue Professor Kirkwood considered in his presentation was



Pat Healy, President, Society of Actuaries in Ireland, Professor Tom Kirkwood, Mary Coughlan, T.D., Minister for Social and Family Affairs, Jim Kehoe & Dr. Alan Barrett.

that of "the rapid and continuing increase in human survival". He showed how the extraordinary increases in the population of the world from the 1800s onwards have coincided with huge industrial and agricultural advances. Starting from the same period, life expectancy also began to noticeably improve in both developed and under-developed countries. However, the most dramatic improvements have occurred in the last 30 years where there have been decade-on-decade increases in the UK of 2 to 3 years in remaining life expectancy.

So, why and how have these improvements occurred? The "Disposable Soma" theory put forward by Professor Kirkwood has a number of implications. Professor Kirkwood stated that "ageing is unnatural". You just don't see senile animals! The "Disposable Soma" theory implies that the length of time you live is dependent on the

maintenance/repair that you carry out on your body. We age because we only put a limited amount of effort

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Ageing Population:

into this and therefore ageing occurs because of the build up of "damage" to the cells in our bodies. Is there anything we can do to slow down the accumulation of "damage"? The broad answer is yes there is...-but! You can slow down the ageing process by improving your nutrition, lifestyle and environment. If your ancestry is one of centurians then studies have shown that genes account for 25% of what determines longevity so lucky you! However, we cannot forget the "chance" element. Hypothetically, if you took two identical people following the exact same lifestyle it would be extremely unlikely that both would live to the same age. Evidence shows that the ageing process has slowed with mortality rates among older ages continuing to fall partly due to kinder lifestyles but also due to the presence of a lesser number of fatal diseases.

Professor Kirkwood's general view of the life expectancy/pensions topic was that we need to be more flexible in our attitude to our retirement age. 65 has been the retirement age used since the late 19th century when the expectation of life was about 50 years. Given current life expectancies, is it still reasonable to have a retirement age of 65?

Looking into the future, Professor Kirkwood said that it is difficult to predict what way life expectancy will go. On the positive side, you have effective interventions against age-related diseases, improved environment for ageing and delayed reproduction. On the negative side, you have adverse effects of excess nutrition, alcohol/drug abuse, sedentary lifestyles and early maturation. Overall, he expects a slower rate of increase in life expectancy than that observed over the past century, somewhere in the region of a third of that increase.

Population Ageing and its Impact on Pension and Health Care Costs, 2nd Report of the Society of Actuaries Population Studies Working Party - presented by David Harney, FSAI, chairman of the Working Party

David started his talk by letting the audience know just how much he was enjoying his new role as the most hated man in Ireland. As the chairman of the Society of Actuaries Population Studies Working Party he has been held individually responsible for increasing the national retirement age to 75.

However, he was quick to point out that the element of the working party report that had been focussed on by the media i.e. increasing the national retirement age, was only one of a range of ideas that the working party had considered. Their aim was to raise awareness of the financial challenges that Ireland is likely to face due to population changes in the future and to consider what impact different actions could have on this.

Irish population

The talk focussed initially on the current Irish population. The effects of the last Irish "baby boom" can be seen in the large number of people we have in the 15-30 age range. In the late '70's, the average number of children per household was just below 4. Despite recent increases from lows in the early '90's, the current average number of children is just over 2. A slide showing the distribution of the current Irish population by age looked like a fallen over Christmas tree. The widest point was in the 20-30 age range with the numbers tapering off at older ages. Moving on to a population projection for 2050, the graph will have levelled off so that there are similar numbers of people at all but the highest ages. This is expected to happen due to greater longevity as well as a lower birth rate.

The impact of population change

Some summary statistics on the impact of this gave everyone in the room food for thought. David gave some detail on the assumptions that were used to create the projections to 2050 and referred those looking for more background to the report of the working party.

- The median age of Irish people will rise from 32 to 46.
- The number of people working as a multiple of those who are retired would fall from 6 to 2.
- Pension costs as a % of GDP would increase from 2.9% to

7.9%.

- Pension costs as a % of the salaries of those working would increase from 8.9% to 23.8%.
- Health service costs as a % of GDP would increase from 6.0% to 8.8%.
- Health service costs as a % of the salaries of those working would increase from 18.1% to 26.5%.

If additional pension and health-care costs were to be funded from extra income tax, we would all be paying an extra 23% tax. This figure really brought home the size of the problem we could face if nothing was done to address the pension issue.

Projections by the working party showed that any plausible increase in either fertility rates or inward migration had no significant impact on the figures above. The only element that led to a significant change in the projected numbers working compared to those retired was to increase the national retirement age. Increasing the retirement age to 70 would increase the pensioner support ratio from 2 to 2.8. Increasing the age to 75 would increase the ratio to 4.4. This is still a long way from our current ratio of 6. However, David pointed out that the European average pensioner support was currently 4, so this was a level that mature economies could sustain.

Mortality improvements

David then introduced some statistics on mortality improvements as a back-drop to the population changes previously discussed. The mortality rates for men aged from 55 to 64 have halved since 1970. To put it another way, those born in 1940 are twice as healthy as those born in 1910.

Currently, if you retire at age 65, your life expectancy is 18 years if you are a man or 22 years if you are a woman. The resulting changes and opportunities have not yet hit home. The reaction of the general population to the suggestion that they could possibly retire later shows this.

David went on to make the point that more flexibility is required around retirement and career change

Facing the Challenge contd...

a woman. The resulting changes and opportunities have not yet hit home. The reaction of the general population to the suggestion that they could possibly retire later shows this.

David went on to make the point that more flexibility is required around retirement and career change in order to facilitate those who wish to work longer. He gave a number of examples of those who had successfully managed to extend their careers (Alan Greenspan aged over 70 or Martina Navratilova winning a Wimbledon title at age 50) or change their careers (Governor Arnie) to illustrate what he meant.

Conclusions

At the end, David was keen to point out that productivity increases were the key to sustaining pensions going forward. As much as we may wish to pay our pensioners, we cannot do this unless the money is there.

On a brighter note, we are likely to be entering into a "golden period" for the population over the next 25 years. The Irish baby-boomers will enter the most productive phase in their work careers and the working population could increase to anything up to 2.5 or 3 million. We need to make the most of it and use the flexibility it provides to plan for the future.

Finally, he thanked all the other members of the working party, (Michael Bennett, Damian Fadden, Pdraig O'Malley, Ciara Regan and Liam Sloyan) for their hard work over the past number of months. The valuable input of the VHI, Department of Health and Children and the ESRI was also acknowledged.

The Implications of Population Change on the Public Finances - presented by Dr. Alan Barrett, Senior Research Officer at the Economic and Social Research Institute

Dr. Barrett set out the aim of his presentation, which was to investigate whether there were any offsetting cost factors in education and elsewhere

which could help to ease the finance pressures in health and pensions arising in the future from the projected population changes.

Dr. Barrett initially explored the impact on education spending of the projected demographic changes, and set the scene by outlining recent experience. Over the last ten years real spending has increased by 60%. Over the same period of time the total numbers of students in primary, secondary and third level education has decreased, with primary numbers decreasing, secondary numbers remaining stable and third level numbers increasing.

Dr. Barrett outlined that against this background there was no evidence of budgets falling as student numbers fall, and that during this period spending per pupil at all three levels increased in real terms. This illustrates that much more drives public spending on education than demographics.

Looking forward Dr. Barrett outlined that his projections were based on information produced by Eurostat. This data projects that from 2000 to 2050:-

- The population in Ireland will increase from 3.8 million to 4.8 million.
- The % of the population over age 65 will increase from 11% to 24%.
- The old age dependency ratio will increase from 18.7% to 44.2%.
- The % of population in ages 5 to 24 will decrease from 33% to 24%.

From this data, projections can be made on GNP by assuming a combination of participation rates, unemployment rates, and productivity rates. Similarly, baseline projections on education spending could then be made by looking at the number of students in each level, and projecting spending per pupil.

Dr. Barrett then presented the spending levels on education as a percentage of GNP. The baseline projections showed spending decreasing from 5.2% of GNP in 2003 to 3.8% of GNP in 2050.

Alternative future scenarios were also considered.

- If productivity growth is assumed to be only 0.5% lower than the spending on education in 2050 increases to 4.7% of GNP.
- Another scenario considered was where more life long learning is experienced, with increasing numbers of 25-44 year olds going into third level education. This scenario is not out of line with views expressed by other speakers at the seminar. If participation in this group increases from the current 1.1% to 5.5% then this increases spending on education by about 0.4%.
- A final scenario considered the impact if the National-Anti Poverty Strategy (NAPS) achieves its target of those completing secondary education to rise to 90%. It was expected that this would have only a minor impact on spending levels.

Dr. Barrett then went on to consider the extent to which tax revenues would change as a result of population ageing, for example through lower earnings from those in retirement and different spending patterns leading to reduced revenue from VAT. It was estimated that revenues from indirect taxes could reduce by about 5%, and similarly tax revenue from direct taxes could reduce by 5%. Dr. Barrett warned that these numbers were difficult to predict as tomorrow's retirees should be higher earners, and today's younger people may maintain higher spending patterns as they age.

As a final issue, Dr. Barrett considered whether there was any link between population ageing and public sector spending preferences. There was some US evidence that older people are less willing to spend on education. However there was doubt about whether older people would vote based on such narrow self interest, and in any event the older population needed a well educated workforce to pay for pensions and healthcare.

In concluding, Dr. Barrett stated that any savings in education spending would be modest, less than 1.5% of GNP, and that this is small when placed against the projected increased cost in pensions and health of 7%.

continued

Ageing Population:

Indeed there will always be pressures to maintain education spending and that this 1.5% starts to disappear when other plausible scenarios are considered. Taxation revenue will probably fall but will certainly not increase. Therefore there is no magic counter balancing solution. Instead longer term solutions need to be kept in focus such as increasing participation in the workforce of lower socio-economic groups and of the older age groups.

Life in an Ageing Society – presented by Senator Joe O'Toole

Senator O'Toole began his presentation with a call for "imaginative and creative actuaries" to help address the ageing issue. However, he warned that actuaries must remember that they are not demographers; he also expressed the view that actuaries, like economists, are overly inclined to extrapolate current trends into the future.

He acknowledged that there are serious challenges for financing retirement pensions as a result of the ageing population. However, he is firmly of the view that there are strategies that can be adopted to avert any possible crisis in pension provision.

He urged a "carrot rather than stick" approach and said that suggestions about increasing the State retirement age were "reactionary, conservative and unimaginative responses" to the issue. He said that telling the nation that it is going to be "all work and no play" and that they are going to have to remain in work until they are in their seventies is cruel to older workers who are looking forward to a restful retirement, discouraging to ambitious mid-career workers who will face being blocked by their bosses retiring later and unthinkable for young workers beginning their careers.

Senator O'Toole then proposed a multi-faceted strategy to change the current demographic trend.

Firstly, there is a need for more flexible pensions options, including phased retirement. Senator O'Toole outlined his vision of a new buffer category between full-time work and full retirement, to allow a better work/life balance for older people, whilst also making it attractive for them to remain working. He said that we must make "wannabe pensioners" a job offer that they cannot refuse.

As an example, he suggested that a worker who has reached retirement age could continue to work on a job share basis, allowing a younger worker with parental responsibilities the opportunity to re-enter the workforce on a part-time basis. This would allow the older worker to enjoy a better lifestyle, whilst saving 50% of the pensions cost and continuing to harness the older worker's experience.

Senator O'Toole also proposed a national initiative to increase birth rates. He pointed out that other countries, such as France and Sweden, have implemented strategic pro-natal policies that have succeeded in raising the birth rate.

He asked why women are deferring the decision to have children and pointed to the cost of housing and the lack of childcare provision. He also said that any discrimination against mothers in the workplace must be eliminated. These three areas have to be addressed, with the objective of making it more attractive to have and to rear children.

The third strand of Senator O'Toole's proposed strategy would be to implement strategic immigration policies to attract a new generation of overseas workers and their families to settle in Ireland. He said that racism was not only appalling and unacceptable, but threatens our future economic well-being. History has shown that the second generation of immigrants, in particular, brings a new impetus to economic growth, as well as increasing the birth rate.

In concluding his presentation, Senator O'Toole reiterated his challenge to actuaries to bring forward imaginative and creative proposals to address the demographic issues that are facing us.

Pensions: The Shape of Things to Come? - presented by Jim Kehoe, FSAI

Jim spoke on his vision for pension provision in Ireland in the years ahead. The central idea within Jim's presentation was a suggestion as to how an equitable basis of risk sharing for the generality of employees with respect to financial provision for retirement could be found.

Indeed, Jim's presentation specifically focused on the 'generality of employees', i.e. those in the Average

Industrial Earnings bracket, on the basis that higher earner groupings are better placed to manage their own financial risks.

Jim outlined the reliance on voluntary pension provision in Ireland, and also the trend towards Defined Contribution schemes, meaning that increasing numbers of employees were taking all of the risks associated with pension provision. He noted that he does not believe that such a situation is socially acceptable or economically necessary, and outlined a potential 'better way'.

Two main protections were proposed:-

- Post retirement risk could be removed by allowing the fund accumulated at retirement in a Standard PRSA be converted to a supplementary Social Welfare pension.

A factor of €815 for €1 per week additional benefit was suggested. The money would be transferred into a State fund, which would allow a long term investment perspective to be taken. From the State perspective it would be equivalent to issuing index linked securities with a mortality factor.

The benefit would be limited to the prevailing rate of Social Welfare pension, again focusing the benefit on the generality of employees. Access to the benefit could be via existing structures, e.g. through An Post.

- Pre retirement risk could be tackled by providing a State underpin to savings effected through a Standard PRSA. Simply put, for every €15 paid to a Standard PRSA the State would provide a supplementary Social Welfare pension of €1 per annum. Again the benefit would be limited to the prevailing rate of Social Welfare pension. Jim illustrated that this benefit would be of most relevance for those over 50 years of age.

Standard PRSAs were deliberately targeted as these have been subject to Regulatory approval of the investment policy & low cost structure. The problem with not extending these options beyond Standard PRSAs was that another layer of complexity would otherwise be needed in the pensions arena to stop opportunistic transfers to Standard PRSAs. Jim felt that, on balance, universal application of the protections outlined would be preferable.

Facing the Challenge contd...

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Jim then went on to outline his views of equivalent protections that could be put in place for Defined Benefit schemes, noting that his aim was to arrive at consistent levels of protection for DC and DB schemes for the generality of workers.

Jim felt that to appropriately balance accrued benefit security and economic long term costs, a change to the Statutory Minimum Funding Standard was required.

He suggested that the existing standard should be maintained for disclosure purposes, but that a new MFS should be based on age related benefits and limited to the prevailing level of Social Welfare pension, the logic being that the State should primarily be concerned with the security of a retirement income of 60% - 70% of Average Industrial Earnings. The security of benefits above this level should be more appropriately addressed by the person involved, the scheme sponsor and the trustees.

Jim highlighted that his proposals led to a situation where the protections offered for both DC and DB schemes

are limited to an amount equal to the Social Welfare pension payable.

On the issues of retirement ages and increasing life expectancy, Jim warned that increasing the Social Welfare retirement age would disproportionately disadvantage the lower paid. He referred to research from North America detailing the proportion of total income for people aged 65 plus provided through Social Security benefits. The research showed a far greater reliance by those in lower income categories on Social Security. He felt that the Irish situation would be similar, with lower earners being far more dependent on the Social Welfare pension in retirement.

He added that it would be far more constructive for the social partners to actively promote a system of gradual retirement, including introducing increased flexibility into Revenue regulations. This would mean that the opportunity to continue working in a reduced capacity would be available to those who need to work and to those who simply want to work.

Q & A Session

An interesting and stimulating question and answer session followed, during which many speakers emphasised the opportunities that will emerge as a result of the changing demographic profile. Professor Des O'Neill of Trinity College pointed out that in order to take advantage of these opportunities the issue of ageism would need to be confronted. Professor Kirkwood concurred and advised that policies that minimise

the dependency and social isolation of older people be adopted. Specifically, he suggested ensuring that all older people have access to a telephone and that debilitating conditions are treated as early as possible, thereby limiting the extent of muscle wastage and associated disability.

Many of the views expressed during the presentations at the conference received much scrutiny and were challenged both by members of the audience and by other speakers. Professor O'Neill challenged what he referred to as the "ageist argument" that it is appropriate for older people to leave work to allow younger people to take their position. Brendan Walsh noted the adverse repercussions that high levels of emigration of educated people from developing to developed countries can have for the developing countries, while Dr Alan Barrett challenged the argument that migrants should be recruited primarily for low skill jobs, pointing out that such a policy would increase problems associated with social exclusion for the migrant community. Senator O'Toole responded that society can change in order to confront such issues and in particular could change to tackle any social exclusion problems that might arise for a low skill migrant population. David Stratton of Age Action Ireland pointed out that the rest of Europe already has an older age profile than Ireland and suggested that the increasing costs anticipated to result from an ageing population could be met by raising taxation. Dr Barrett agreed that EU levels of public spending on pensions are currently much higher than in Ireland but he warned that raising taxes could stifle economic growth.

Jim Kehoe's proposals on a flexible retirement were also discussed. Brian Duncan questioned whether they might be overly complex and might therefore fail the test of transparency. Jim acknowledged that issues about transparency and complexity arise but considered that the idea of flexible retirement is one of merit that has not yet been tried and that challenges, such as those outlined by Brian, could be overcome.

Professor Walsh thanked the floor for its contribution to an interesting, thoughtful and thought provoking discussion, which he said reflected the nature of the presentations. Professor Walsh then led the audience in a round of applause as a show of appreciation to the speakers.

Aisling Kennedy, Edel O'Connell, Munro O'Dwyer, Ciara Regan, Duncan Robertson, Liam Sloyan.



David Harney, Jim Kehoe and Professor Tom Kirkwood

Genetics and Insurance

On the evening of October 21st, David Paul presented the above paper to members of the Society and guests.

The running order of the presentation was:

- The science
- Chronology of related insurance developments in the UK
- Themes from the paper
- Ireland

The science

The distinction of predictive power in relation to insurance was noted by contrasting Cystic Fibrosis and Huntington's Disease. Since its symptoms are manifest from childhood CF is not an issue for insurance whereas in the case of Huntington's predictive testing raises the prospect of an applicant having knowledge that is denied to an insurer.

The prospect in the longer term is that it will be possible to draw links between patterns involving many genes, possibly allied to other physical and environmental factors, and occurrence of disease.

The issue is to what extent insurers are allowed access to the results of predictive genetic testing.

Chronology of related insurance developments in the UK

In 1997, the UK Human Genetics Advisory Committee (HGAC) looking at insurance implications of genetic testing concluded that:

- A permanent ban on the use of genetic testing results by insurers was inappropriate.
- A moratorium should apply up to a certain level of sum assured.

- Disclosure of particular genetic tests would only be acceptable when a quantifiable association had been established 'actuarially relevant' for a specific insurance product.

In 1998, the Association of British Insurers (ABI) introduced a code of practice and the Department of Health established the Genetics and Insurance Committee (GAIC) to test the "actuarial relevance" of genetic tests submitted to it by industry. Subsequently the industry's submissions were strongly challenged at the Commons Select Committee on Science and Technology; ultimately, under government pressure, industry self-imposed another 5 year moratorium from October 2001 for sums assured below £500,000 on all products. The nature of the Committee's challenge can be appreciated when one considers the BRCA1 and BRCA2 genes that lead to a predisposition to breast and ovarian cancers but account for less than 5% of these cancers.

The GAIC was also reconstituted with a mostly new membership and new chair and the current state of play is that it is about to issue guidance on how industry should make applications to it for tests to be approved. The Human Genetics Commission (HGC), a successor to the HGAC, will also 'further examine' the use of family history information which is seen as a proxy for genetic information. (See Professor MacDonald's paper in the recent British Actuarial Journal for more discussion of this particular topic.)

Themes from the paper

On a philosophical level, a key point in the paper is that an insurance market can work with a highly detailed risk classification or might operate equally well from an actuarial

point of view if a less detailed classification were adopted, provided that there is a stable mix of risks within the class.

Getting down to basics, David introduced Section 3 of the paper as a showcase of the output from the Genetics Insurance Research Centre headed by Professor MacDonald. This Section defines two questions:

- Where insurers may use genetic information in underwriting, then people with adverse family medical histories or genetic test results could be charged extra premiums. How large might these be, and would they lead to the creation of a 'genetic underclass'?
- Where insurers may not use genetic information then adverse selection may result leading to increased premiums for everybody. These increases give a useful measure of the 'cost' of adverse selection. How great might they be?

It then describes the actuarial techniques that can be applied to answering these questions and concludes that the basic tools for handling multi-state models are.... systems of linear ordinary differential equations, which can be solved numerically... and should, in any case, be tractable. In this regard, David remarked that 'older actuaries' might need to go back to school! He didn't define older but your correspondent qualifies.

Section 3.5 of the paper lists some of the conclusions reached by actuarial research to date, and examples mentioned by David include:

- In a large life market, even a ban on genetic testing results for severe single-gene disorders would be unlikely to lead to significant

- some Social Policy Issues

adverse selection costs, provided excessive sums assured were controlled. In the subsequent discussion the definition of what constitutes a 'large' market was raised in the context of Ireland.

Degree of penetration was suggested as an important factor as well as absolute size.

- A ban on using family medical history of breast/ovarian cancer would be much more significant than a ban on using the results of tests for the mutations in the BRCA1 and BRCA2 genes.
- Persons at risk of Huntington's Disease may be offered life insurance for certain ages and over certain terms at lower cost than previously thought possible.

Sections 4, 5 and 6 of the paper address respectively:

- the GAIC process,
- potential to reconcile insurance industry instincts and a coherent social policy perspective, and
- the implications of potential future developments in this field for actuaries and the formulation of public policy.

In relation to Section 4, suffice to say that the issues are complex and the approaches adopted by industry and the GAIC in the past will need to be refined. This is an area that may well give rise to a need for the involvement of a greater number of actuaries and for relevant research to be conducted at an appropriately rigorous level.

One practical way forward for insurers, in relation to the use that they can make of genetic tests, would be to require a financial demonstration that insurers are financially exposed to applicants taking advantage of their vulnerability arising from information asymmetry.

The UK actuarial profession's submission to the HGAC set out some ideas about 'vulnerability' which the HGAC received positively, supporting their development.

With regard to future developments, a key issue is whether and to what extent society should restrict the freedom on insurance companies and individuals to negotiate freely. One route would be to require equality of information; another would be to outlaw certain outcomes as socially unacceptable. In order to contribute meaningfully to this debate, insurers will need to develop and demonstrate the scientific basis for their underwriting policies and decisions.

Ireland

David noted that Ireland (like the UK) has not ratified the April 1997, Council of Europe Convention for the Protection of Human Rights and Dignity of the Human Being, Article 12 of which states that genetic testing should only be for the purposes of healthcare or research.

However a Disability Bill, proposing a ban on insurers' use of genetic tests until 2010 and providing for restrictions on use of family medical history information, is on the current Government legislative list for publishing before the end of 2003. The Society's submission on the Bill in relation to genetic testing proposed use of Statutory Regulation instead of legislation and, in view of the dynamic nature of the field, a code of practice to 2006 instead of a ban to 2010. (The Society's submission is on the Society's website.) With regard to the use of family medical history the Society noted that a different model would be feasible but would need to be carefully designed and tested.

The Irish Insurance Federation code of practice on the use of genetic testing

information imposes a moratorium for sums assured up to €381,000; above that level it allows for the concept of approved tests, using the current GAIC approved list.

Conclusion

Subsequent discussion noted the 'intelligent and mature' debate in Australia where disability legislation covers genetic predisposition as a disability, contrasted to the GAIC approach which gives insurers 'carte blanche' once a test is approved.

Throughout the discussion, it was enjoyable to observe a sample of the spectrum of social ideologies. Nevertheless, there was strong support for the argument that in the public interest, the Society has an important 'unbiased advisory' role in pointing out the consequences (intended and unintended) of various policy options.

However, it was acknowledged that given the sensitivity of the issues there is potential for the profession to shoot itself in the foot; and therefore it needs to tread a fine line and be seen to acknowledge that it is for society to decide on how we deal with the issue.

One has to agree with the presenter that this subject is fascinating not only from a technical perspective but also from the perspective of the social, economic and ethical issues surrounding it. Not only is it fascinating but extremely complex and to gain an appreciation of the issues one is recommended to read the paper, whose authors should be congratulated for a comprehensive presentation.

There is a link to the paper on the Society's website.

Stephen Devine

The North Atlantic in Winter -

The Jeanie Johnston project owes its origin to the vision and imagination of a group of people from Tralee, Co. Kerry who conceived the idea of doing something really significant to mark the 150th anniversary of the Great Famine which devastated rural Ireland from 1845 to 1850.

What could be more appropriate than building a replica of the three masted Barque – “Jeanie Johnston” – the original of which opened a “New World” for Irish emigrants in the midst of despair? This was eventually achieved in difficult financial circumstances with considerable assistance from State Agencies, Corporate and Private sponsorship.

The original “Jeanie Johnston” was built in Quebec in 1847 for John Donovan & Sons of Tralee as a cargo vessel plying between Canada and Blennerville, Co. Kerry. The circumstances of the time dictated that her cargo consisted of timber from Canada and emigrants from Tralee on the return journey. She developed a unique reputation for safety at sea in never having lost a single passenger. This was a remarkable achievement considering the “coffin ships” reputation earned by most of her contemporary vessels.

To date I have sailed as a crew member on the Jeanie Johnston on two occasions – Belfast to Waterford last January and a transatlantic voyage from St. John’s, Newfoundland, to Fenit, Co. Kerry in October/November.

The Transatlantic voyage was truly memorable in so many ways. We set sail from St. John’s on Friday October 24, 2003 in heavy fog and fresh winds. Our course for the first few days took us North of the Grand Banks and the infamous Flemish Cap (“Perfect Storm” territory).

The on board weather fax then began to show deep depressions developing North West and North of the ship’s position and tracking East rapidly.

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JRK plotting ship's position by astro navigation - taking a sun sight

One such depression dropped as low as 955 millibars with hurricane force winds in the Northern quadrants. The on board barograph dropped dramatically within the space of a few hours to herald the onset of severe weather.

We altered course to the South East to run South of the worst of the

storms and prepared the Ship for very heavy weather. Those of us who relished the experience were not disappointed!

With the exception of one 24 hour period when we were “hove to” – dodging slowly into the worst of the weather – we kept the ship sailing broadly in the direction of Ireland.

A true test for “Jeanie Johnston”

Wind varied mainly from gale force 8 to storm force 10 (35 to 50 knots) with wave height reaching 15 meters.

It was fascinating to see what the North Atlantic can unleash in winter storms. Hanging on to a topsail yard with elbow and stomach muscles while reefing the sail in gale force conditions is an experience I will remember for the rest of my days.

Throughout the gale force conditions the ship was constantly accompanied by Pilot Whales surfing on the breaking crests. They seemed to be enjoying themselves just about as much as we were!

The tranquility of Fenit materialised on Thursday November 6th. The voyage was over all too soon. Captain McCarthy's parting remark to me at Fenit was “At 60 years of age it's good to know I have the fire in my belly to do this – and I know you have too”. A pleasant comment from one sea-dog to another!

The future of the “Jeanie Johnston” has yet to be decided. She offers tremendous opportunities for sail training and related activities. Hopefully potential Corporate sponsors will note the words of Captain Tom McCarthy

“A spell on board a sailing ship like the “Jeanie Johnston” can give people of all ages many practical skills, enhance team working abilities and promote character development”.

James R. Kehoe



JRK enjoying a rare blast of sunshine



A precipitous fall in barometric pressure - a sure sign of imminent extreme weather

A Practical Implementation of Wright's Operational Time Model

Derek Bain presented this paper to a very well attended CPD meeting at the St. Stephen's Green Club on November 6th.

Overview

Operational time models are generally based on those described in Wright's 1992 paper "Stochastic Claims Reserving When Past Claim Numbers Are Known". These models have a reputation for being quite cumbersome and difficult to implement. Derek's presentation set out to illustrate that such models can be implemented in a spreadsheet, without the high degree of computing power that is currently perceived as necessary.

Why use Operational Time?

Traditional methods of claim reserving usually assume that the pattern of settlement of claims remains constant over time. In situations where the pattern is changing, methods such as the Basic Chain Ladder can give very unreliable estimates. Derek's presentation illustrated how operational time models can be valuable reserving tools, which can be used in such a situation.

What is Operational Time?

At any given point, operational time is defined to be the proportion of the ultimate number of claims that have been settled to date. For example, when a quarter of the claims have been settled, operational time is 0.25.

In order to estimate outstanding claims reserves, it is assumed that the average cost of a claim is related to operational time. This would be the

case, for example, where larger claims tend to be settled later. In this situation, we would have an upward sloping graph of average claim size against operational time.

If the number of claims yet to be settled is known, we can calculate what the operational time will be just after each of these claims is settled. Then, using the relationship between operational time and average cost of claim, the average size of each of these claims can be estimated. The outstanding claim reserve is then the sum of the average claim sizes, across all claims yet to be settled.

Model Fitting

The function Derek used to describe the relationship between operational time and average claim size required six parameters to be estimated. Because of some of the assumptions of the model, the parameters cannot be fitted using a weighted sum-of-squares approach. Derek explained that the parameters could be fitted using a "Quasi-likelihood" approach. While functions of this type appear at first to be unwieldy, Derek showed how optimal parameters can be fitted in a spreadsheet using an optimisation tool such as "Solver" in Excel.

Inflation

In order to introduce inflation into the model, a relationship also needs to be assumed between operational time and development time. Wright suggested an exponential model in his 1992 paper and Derek showed how this could be fitted in practice, by estimating the time at which half

of the claims are expected to be settled.

Stochastic Reserve Modelling

Derek mentioned the advantages of stochastic reserve modelling over traditional deterministic approaches. Operational time models can give stochastic results whether fitted by GLM software or by spreadsheet. It was pointed out that while both methods give similar results, the former method is likely to be less time consuming.

Discussion

Tom Wright, author of the 1992 paper on Operational Time was in attendance at the meeting and congratulated Derek on his presentation. Various issues were then raised and discussed, including:

- the applicability of the model to reserving reinsurance liabilities
- the applicability of the model to claims incurred rather than claims settled
- whether the complexity of some of the calculations would result in less "buy-in" from management and non-actuaries

The President of the Society, Pat Healy closed the meeting by thanking Derek for his presentation.

A copy of the presentation and the spreadsheets used to illustrate the calculations are available on the Society's website.

Don Salisbury

Report on the Student Society

We are opening up the curtains, letting you all have a peek into the Student Society of Actuaries in Ireland – maybe that way more students will get involved (you know other than from Irish Life!)

The Society is run by Chairperson James Bradley, Student Consultative Committee rep. Grace Nyamayi and student rep. for the Member Service Committee Julia Moore, with the aid of numerous volunteers.

Grace's role is to air any issues on exams / centres / subjects etc to 'the powers that be' along with the other representatives of student societies in the UK at the SCC meetings (held twice a year).

Julia's role is to help the MSC by providing guidance and opinion on whether MSC activities are meeting

the needs of the student members. Students love to have fun, especially if it's fun free of charge and organised by someone else! That's where James comes in. He is in charge of organising various events throughout the year for the students. Upcoming events include Table Quiz, Soccer and Pool competitions, Ice skating in Smithfield and many more. Watch this spot for details!

The Society of Actuaries in Ireland has recently launched their new website (www.actuaries.ie). We are looking into adding a student's page to it. Ideas and volunteers are welcome to help us get the page up and running.

Currently, we rely on various company representatives to forward our emails to the rest of the students. If our emails aren't reaching you, because maybe you do not have a

student rep in your company, email us and we will add you to our mailing list.

By Grace and James

Email us @

Grace.Nyamayi@irishlife.ie

and James.Bradley@irishlife.ie

By the way.....

The pool extravaganza that was held in Jasons on the 8th of October was a successful night out. The winner Ciaran (De Shark) O'Sullivan received a sizable cheque for €100 and Michael (the Pirate of Piltown) O'Byrne the runner up received a cheque for €50. John Groarke was cruelly robbed of a third round place and still hasn't recovered mentally from it. A few quite drinks in Russells rounded off the night.



Dr. John Appleby, Chair of the Undergraduate Degree, School of Mathematical Sciences, DCU; Pat Healy and Siobhan Devin.

Siobhan Devin received the Society's award for the best student in Financial and Actuarial Mathematics in DCU

Financial Guarantee Business

This very enlightening paper was presented by George Maher, Chris Waites, and Cormac Bradley on 20th October. The subject matter is an area where actuaries have not traditionally worked but which should provide fertile ground for the profession.

The financial products that were the basis for the paper were securitisations. Essentially, cashflows become assets that are collateral to bonds e.g. mortgage cashflows, music royalties, and litigation settlements.

The presentation focussed on discussing a particular aspect of these securities where the collateral pools are credit enhanced. It addressed the definition of financial guarantees and how the meaning differed between banks and insurers. It also described the nature of the market and the expected level of future potential growth. There is significant scope for actuaries to develop a bigger footprint in this area.

Background

There has been significant growth recently in the level of credit risk transfer. Asset-backed securities have demonstrated more pronounced and sustained growth in the US but Europe is catching up quickly. Credit derivatives have developed as a market much more recently and quickly. The market for credit derivatives is much more similar to the insurance market than the asset-backed securities market.

Recent times for corporate debt have been very turbulent, with the unparalleled default levels well in excess of 1990-1991 levels. This stress could pose a significant threat to economic and banking systems worldwide. Therefore, it seems that growth in credit risk transfer has been beneficial. In the case of similar previous situations, there would have been huge banking collapses and the risk of a domino effect of a series of failures. Now a significant degree of this credit risk is coming through to insurers. Insurers have a better chance of matching assets and liabilities. Liquidity in credit risk develops in the secondary markets, where one can deal in a block of credit (derivatives) and it can be repackaged and moved around again where necessary. At a global level, the system has coped with record levels of default/downgrades in recent times.

"The most toxic element of the financial markets today"

As evidenced by Howard Davies' description, not everyone in the world of finance sees the benefits of credit risk instruments. One of the main issues is that of stability regarding whether or not this market is concentrating risk in the wrong hands. The insurance industry is less regulated than banking, which can cause an element of regulatory arbitrage that increases risk levels. There is less capital in the insurance markets which may also present a risk regarding payment of guarantees. However, not all problems are caused by insurer participation in the credit markets. In many cases, banks are

not in control of their lending portfolio and are remote from the original borrowers. Some of the exposure of insurers of these credit risks is coming back into the banking system to the extent that the insurance industry is supported by banks.

The flow of credit risk throughout the economic system has been characterised by banks, hedge funds and securities funds being the prime "shippers-out" of credit risk. Monolines, multi-lines, life companies, and pension funds, the institutions that actuaries are most closely associated with, have been net acquirers.

Insurance Vs Banking

There is a diverse selection of products available across the insurance, banking, and capital market sectors. There are a variety of terms specific to each sector which often causes communications problems. When a discussion takes place across industry lines it is important that there is understanding of terminology. The insurance industry's move into the area of financial guarantees has brought to light significant cultural differences between the banking and insurance industries. There is a wide disparity in the attitudes towards risk and claims, but it is to be hoped that these barriers will be broken down over time.

This fundamental divergence in attitudes towards payout caused a well-publicised debacle regarding film financing. Financial guarantees

– Time for a Reality Check

provided by insurers were not paid out pending investigations about the veracity of the payouts. Rating agencies, in particular S&P, were appalled by this and introduced an additional rating – FER – that measured insurance companies' willingness to pay.

There are some important differences between the insurance markets and the capital markets. Insurance legally requires and rests on a number of important principles e.g. duty of disclosure, Utmost Good Faith. When providing insurance there must be an insurable interest but this aspect does not apply to financial guarantees written in the capital market. The adoption of transformer vehicles has been an attempt to cross this divide. It is effectively a way of allowing a bank to look to the outside world like an insurance company or vice versa.

The participation of insurers in the credit risk market was spurred by the innovation driven by soft markets in the late 1990s. Some insurers see it as an extension of asset management activity. It is seen as an opportunity to exploit the underwriting, risk management, and actuarial core competencies of insurers. Regulatory arbitrage played a part because banking regulation does not give credit for diversification unlike the case with insurers. Insurers also saw the potential for economic capital savings through reduced concentration of their portfolios in the traditional insurance sectors.

Insurers' Exposure

The direction of flow of credit risk through the economic systems is now

a topic that regulators are analysing extensively. Credit derivatives and collateralised debt obligations (CDOs) haven't been identified as major threats to insurers. Some insurers are significant market participants in some areas. The variety of instruments increases the difficulty associated with monitoring these items. Portfolio credit default swaps and the repackaging of credit risk through CDOs are portfolio entities and so are most relevant to insurers.

Insurer exposure to CDOs arises from the wrappings that they provide to the securities. Where the underlying assets of a CDO are not well understood there is usually demand for third party insurers to provide a financial guarantee for investors. Therefore, the wrapped securities inherit the rating of the insurer. The insurer expects premium and possibly some equity upside interest in order to make positive performance of the security mutually beneficial to both the originator and the insurer.

There are a wide range of market players, including monoline primaries and reinsurers, niche monolines, and multiline insurers and reinsurers. The business model of each type of company is based on the credit rating that they offer. The monoline insurers are generally AAA-rated and specialise in bond wrapping insurance. Such wrapping insurance can significantly improve both the credibility and liquidity of the issue, meaning that investors are less likely to worry about understanding the underlying pool. The multiline companies take on significantly lower numbers of AAA-rated bonds. Niche monoline

insurers, of which there are only 2 or 3, focus on AA-rated bonds. The monoline reinsurers generally have lower credit ratings, which can often provide a competitive advantage.

Market Experience

The experience so far of credit risk instruments has been negative in some areas, with single name Credit Default Swaps generating the most significant losses. CDOs at equity and mezzanine layers have also shown poor results due to leverage effects. CDOs have experienced higher levels of downgrades than similar primary securities. This could be partly caused by the fact that rating agencies are only learning how to deal with these securities because there has only been 5-10 years of ratings for CDOs. The market reaction to the losses recently suffered in credit risk markets has been mainly through some withdrawal of capacity levels. Regulation is beginning to exert greater effects on credit ratings issues, particularly with the advent of Basle II. There will be greater roles for niche monolines and multilines. Significant levels of financial guarantee business are written offshore, so the rating agencies become the de facto regulators.

The Future

The future of the financial guarantee market will be characterised by a lack of the over-exuberance that was in evidence in recent years. Regulatory arbitrage appears to be giving way to economic arbitrage. There are constant efforts to widen the universe of asset backed security types.

continued

Financial Guarantee Business – Time for a Reality Check Contd...

The same techniques that have been used hitherto could be applied to other risks e.g. decommissioning, pharmaceutical, oil and gas.

Conclusion

The credit risk transfer market has demonstrated both resiliency and robustness. Insurers have now developed disciplined approaches to underwriting financial guarantees and comprehensively understand the risks. This market has reduced the systemic risk in the financial system that can arise from institutional and system failure. There is a need to do more work on reserving, capital, and solvency issues to improve results of market participants.

Q&A

There was a lively debate following the presentation that benefited from a wide range of contributions from the floor.

The CDO experience has undermined many of the arguments regarding diversification so that the latest CDOs are likely to have greater diversification hurdles.

Although there is a perception that originators could have been arbitraging against CDOs and their financial guarantees, insurers have been proportionally represented in CDO downgrades. However, there is a reputation issue because banks passing on poor risk will not receive further business. The equity base of asset backed securities is usually retained by the originator and this aligns the interests of the various participants. There is some evidence that insurers have been

disproportionately caught by credit derivatives. The players remaining in the market on the insurance side are following the monoline model e.g. Ace Capital, XL Capital, and Swiss Re.

This market would seem to depend on people knowing what a particular credit rating means so its necessary to understand how, if at all, the meaning of ratings change. In one case, the regulator stated that isolating credit risk is difficult and that much more risk has been transferred out of banking industry than is commonly believed.

The main reason that there are different languages used in the banking and insurance industries are because they share common processes but they do them in different sequence. The insurer will give a contingent line of generous credit in return for small premium, whereas a bank agrees to fund all claims up front i.e. will definitely pay the claim. Across the spectrum from natural peril to financial guarantee one must pay gradually greater attention to management since the claim is more human influenced.

The knowledge arbitrage involved in financial guarantees is significant in that there is a benefit in getting a professional insurer to analyse a risk. The following adage demonstrates this issue clearly: "For every five minutes it takes to explain the model the spread goes up 50 basis points".

At the end of the discussion, the President, Pat Healy, thanked the audience, in particular the Society's guests from the banking world and

the regulatory authorities. He then concluded the proceedings by thanking the authors and presenting them with a gift.

The presentation is on the Society's website.

John Hannon

Congratulations to our New Qualifiers:

Jack Buckley	QBE Europe
Mary Cahill	Canada Life
David Coldrick	Irish Life
Paul Connor	Mercer HR
Peter Doyle	Canada Life
Tanya Fick	Hibernian Insurance
Tara Grealley	Mercer HR
Declan Keena	Mercer HR
Conall Kennedy	Friends First
Ronan Mulligan	Centre Solutions
Sinead Ni Chuinneagain	Prudential Europe
John Noonan	Irish Life
Maria Quinlan	Watson Wyatt
Simeon Rimmer	Ark Life
Neil Shepherd	Hibernian Insurance
Constantinos Stavrakis	HCM International

Irish Critical Illness Experience 1995-2000

Neil Guinan and Alan Grant addressed a well-attended evening meeting of the Society on 3rd November.

As members of the Critical Illness Working Party, they delivered a summary of the Working Party's comprehensive report. Here is a selection of their findings.

Methodology:

The Working Party analysed the claims by date of diagnosis.

They discovered that IBNS and IBNR are significant for critical illness cover. 73% of claims diagnosed in a calendar year are reported, and only 53% are settled by the end of the calendar year.

The Working Party estimated the claims diagnosed during the investigation period using the IBNS experience from 1995-2000.

Exposure:

- The investigation was supported by all offices selling critical illness policies in Ireland between 1995-2000.
- The investigation has 1.1 million exposure years, but just 1,772 claims.
- 54% of the exposure arises from accelerated cover.
- Males account for 54% of accelerated exposure and 57% of stand-alone exposure.
- Smokers account for 27% of the exposure.

However, the portfolio is not mature. It is only in the last 2 years of the investigation that there is any significant exposure at the longer durations.

Results:

The experience is still developing, and the investigation is based on 1,772 claims. In particular, there is very little exposure arising over age 50. So the Working Party points out that these results can only be taken as an early indication of ultimate critical illness experience.

Below is a sample of some of the Working Party's results:

- Experience is 55%-65% of CIBT93 during the period. Since this table is based on population experience, the Working Party expected the percentage to be below 100%, and
- There is no evidence of anti-selection in the data, and
- There appears to be positive initial selection if you look at the first 2 years only, but it is less clear if you look at all durations.
- The experience for smokers is heavier, although the Working Party concludes that it is too early to say whether the differential will be as significant as it is for mortality experience.
- The experience for direct sales channels is heavier than for other channels.
- There is slightly lower experience when the results are calculated on an amounts basis, which the Working Party speculated could be due to more stringent underwriting at higher sums assured or a higher economic status.
- Trends in experience over the period of investigation were not distinguishable.

The Working Party also compared the experience to IC94, but they did not have enough data to determine

which table provided the better shape.

Reserving Suggestions:

The Working Party suggests:

- a margin of 25%-35% over best estimate,
- a deterioration factor of 1% to 3% per annum, and
- an allowance for IBNR claims.

If reinsurance rates are used, the Working Party suggests that the margin for prudence in the rates should be checked. Further investigations may be necessary to determine the office's exposure to credit risk.

What Next?

The last 2 years account for about half of the claims in the investigation, and each additional year will enhance the understanding of critical illness experience. The Working Party urges that the momentum continue, suggesting that the CMIB facilities are used to analyse further years' data.

For example, with more data, the Working Party envisages that work that was not possible with the data available in this investigation e.g., a more detailed analysis by cause and trends – could be pursued.

The paper is on the Society's Website. Members of the Working Party were: Neil Guinan (Chairman), Gareth Colgan, Jeff Davies, Alan Grant, Tony Jeffery, Steve Payne and David Roberts.

Linda Kerrigan

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We will shortly be discontinuing the use of Actuaries@iol.ie.
Please remove this address from your Address Book.

Champagne is on its way to James Bradley, Irish Life, winner of our Website Quiz. Answers are on the website!

Congratulations James!

New kid on the international actuarial block!

The International Actuarial Association (IAA) has recently formed a new Health Section (IAAHS), to promote and facilitate an international exchange of views and research among actuaries on health-related issues. The new section is chaired by Howard Bolnick, a former president of the Society of Actuaries in the US, and Aisling Kennedy has taken on the role of Secretary. IAAHS is now actively recruiting members, especially in advance of its forthcoming International Health Colloquium in Dresden, Germany on 27-29 April 2004.

IAAHS activities will span the full range of health-related insurance products - income protection, critical illness, long term care and health insurance - as well as public and private health care financing and provision, so the new section should be of interest to a good number of Irish actuaries.

You can read more about this new section on www.actuaries.org (IAAHS is on the main menu and it is not necessary to go to the members only section of the website). You can enrol as a member of IAAHS online and the 2004 membership fee of €29 can be added to your next Society subscription invoice. The first edition of the IAAHS online journal is also available on the IAA website together with details of the Colloquium in Dresden, Germany in April 2004.

News in Brief

PRSAs

- GN31D (ROI) is on the Society's website and is now in force.
- A guidance note on Annual PRSA Reporting will be finalised shortly.

PRE responsibilities. For domestic business, the need for guidance was seen as less pressing because of the existence of GN22, which was introduced on foot of the Life Assurance (Provision of Information) Regulations 2001.

Cross Border Committee

The main news from the Cross Border Committee is the completion of a draft Guidance Note on Policyholders' Reasonable Expectations (PRE). The proposal to introduce the new Guidance Note, which will be classified as Recommended Practice, has received Council's approval in principle.

Originally, the intention was to limit its scope to cross-border business, where there is a perceived need for greater consistency in how Appointed Actuaries discharge their

However, recent developments have pointed towards the desirability of extending the scope of the Guidance Note to domestic business also. Those developments include the PRE issues relating to how life assurance companies review their charges on flexible whole of life policies, particularly charges for critical illness benefits, and the need to articulate Principles and Practices of Financial Management (PPFM) for with-profits business. Accordingly, with the agreement of the Life Committee, the Guidance Note on PRE will now include domestic business. Some wording changes will be needed to give adequate coverage to with-profits business. Volunteers for this job are being sought from both sectors of the industry- any takers?

On the Move



Fellows

Duncan Robertson has joined **Boal & Co.** from Scottish Provident Ireland



Society of Actuaries in Ireland

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