Newsletter
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The Society of Actuaries in Ireland

Seminar speakers; Brendan Burgess, Pat Neary, Pat Healy, President, Society of Actuaries in Ireland and Michael Culligan.

Life Assurance - a brave new world?

A very successful Life Assurance Seminar was held on 20 May in the Alexander Hotel. The President, Pat Healy, Chaired the seminar and welcomed the following speakers to address the seminar: Pat Neary (IFSRA), Michael Culligan (Life Strategies), Brendan Burgess (Askaboutmoney.com), Mark Chaplin (Watson Wyatt), Brian Morrissey (KPMG) and Paul Whitlock (Tillinghast).

Opening Address

The President, Pat Healy opened the seminar by describing how the life insurance industry is currently facing difficult challenges. In the not so distant past the major challenge for the industry was runaway inflation but one of the key challenges right now surrounds low nominal asset returns.

He went on to say how the Irish industry had managed to avoid many of the pitfalls of the UK industry, mainly due to a much smaller with-profits insurance sector.

Pat called for greater transparency and objectiveness in the areas of new product introductions and hidden costs. However he did feel that product disclosures needed to be standardised across the whole financial services industry to ensure a level playing pitch for all.

He commented on how the Society of Actuaries in Ireland and the DETE (under the stewardship of Jimmy Joyce) enjoyed an effective partnership in the past and he looked forward to continuing this close relationship with IFSRA in the future.

He stated that the Society had recently made representations to IFSRA on reshaping the current Appointed Actuary structure and the practical implementation of same. He felt that the regulator's response was positive to date.

Pat went on to say that there should be strong actuarial resourcing within

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the Irish regulatory body as was the case for other national regulators, for example South Africa and Australia.

He then introduced the first guest speaker, Pat Neary, who was appointed Prudential Director of IFSRA in May 2003.

Current Developments at IFSRA and Vision for the Future

Pat Neary, addressed the seminar on the topic of current developments at IFSRA and its vision for the future.

He started by saying that achieving excellence in governance was fundamental to the relationship between the regulator and corporate bodies. He believes that the Board of a company is best placed to ensure that a company's policies are sound, ethical and build confidence. The Board should have ultimate responsibility for the actions of the company as it should be aware of controls in place, risk management and management competency.

He went on to say that the Audit Committee should be independent from management, with proven financial acumen. A company should have sound internal audit controls and the Internal Audit Department should be properly resourced. He also emphasised the importance of the independence of the external auditor.

He felt that the regulator's role should revolve around compliance and solvency considerations.

Pat used the example of Sarbanes Oxley to highlight the heightened awareness of good corporate governance at the present time. This case gave rise to the registration of auditors and auditor independence issues. The main effect on the Board was the certification of statements by CEOs and CFOs. Other effects were

- increased disclosure,
- retention of records,
- no conflicts between officers and directors, and
- certain whistleblowing protections.

He then went on to talk about corporate governance developments in Ireland. He referred to the set-up of a review group on auditing recommendations covering the possibility of an increased role for audit committees, increased disclosure in relation to audit fees and directors' compliance statements, and auditors reports theron. The review group was also looking at how auditors of financial institutions and IFSRA could work together in an effort to achieve good governance.

Other Irish developments included

- legislation implementing the recommendations of the Review Group on Auditing (RGA),
- establishment of the Office of the Director of Corporate Enforcement, with a tougher regime for non-compliant companies/directors, and
- a revised combined code.

He touched briefly on EU developments in corporate governance, referring to the EU Commission's Action Plan as well as its public consultation initiative on Board responsibilities and improving financial and corporate governance across Europe.

Moving away from corporate governance, he then focussed on accounting and regulatory developments in the life industry. He referred to the establishment of a working group by IFSRA to determine the effect of IFRS on regulatory reporting and solvency considerations. This working group will also consider the question of frequency and content of regulatory reporting going forward.

He noted that IFSRA are currently carrying out a best practice review with its European peers of its work practices.

Pat Neary went on to talk about reinsurance supervision. At the moment the regulator's role is an 'overseeing' one. The Notification Process prescribed in the Insurance Act 2000 for new reinsurers is such that they are vetted by the Insurance Supervisor on the basis of shareholders, capitalisation, directors and the nature of business to be written. There are moves afoot in the EU to introduce a Solvency I approach (a percentage of premiums and reserves) under reinsurance supervision which is likely to be effective within the next two years. Beyond this, a risk-based approach is expected.

On the regulator's relationship with the Society, Pat hopes that both can continue to work together as both parties have a definite common focus. He said that IFSRA would take account of the concerns of the Society and would engage in regular discussions on issues of mutual concern. In relation to the future role of the Appointed Actuary, Pat stated that it was important to maintain the independence of the actuary and that he/she should take a greater role in the responsibility of the Board. He added that discussions are ongoing in this regard.

Corporate Governance Post-Penrose

Michael Culligan began his talk by briefly summarising what the Penrose Report was. He then went on to give a definition of Corporate Governance as being "the system by which companies are directed and controlled". The responsibilities of the Board of Directors are set out in various Companies Acts and case law. These include setting strategic aims, providing leadership to put the aims into effect, supervising the management of the business and reporting to shareholders.

Current Corporate Governance Structures

Michael focused his presentation on proprietary life companies, as mutuals are less important in Ireland, beginning with an examination of Irish Corporate Governance. Every company has a Board of Directors comprised of a minimum of two people. There are no rules regarding qualifications and no single statement of directors' responsibilities. The Board is usually made up of a mix of executive and non-executive directors. A code regarding the balance of executives and non-executives exists for PLCs. Non-executives are important in that they bring independence and objectivity to the Board.

IFSRA influences the make-up of Boards, in terms of skills, knowledge, experience and balance between executives and non-executives.

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They have power of veto over Board appointments and approve the initial Boards of new companies. However, Michael felt that their influence might be more theoretical than practical. IFSRA, as well as the IAIS (International Association of Insurance Supervisors), places responsibility for all aspects of the company's business on the Board.

In Ireland, corporate governance of life companies is complicated by the statutory role of the Appointed Actuary (AA). The AA reports to the Board, but also has responsibilities to IFSRA and policyholders. Also, the AA's annual investigation is not audited nor signed off by the Board. Therefore the liabilities side of the balance sheet is dictated by one individual (in the IFSRA returns), while the directors and auditors sign off the assets side.

Issues raised by Penrose

Next, Michael looked at the conclusions of the Penrose Report in relation to corporate governance, in particular the role of directors. The report focused on the Equitable Life, but many of its findings can be more generally applied. The Board of Equitable Life gradually shifted from non-executives to executives. Penrose felt that a strong non-executive presence is important and that ultimate responsibility for all matters lies with the Board. However, he saw problems with this in practice, mainly:

1. non-executives are "ill-equipped to manage a life office by training or expertise";
2. directors are "totally dependent on actuarial advice";
3. directors are unable to "assess the advice...and challenge the actuaries";
4. actuaries on the Board are inhibited by professional guidance.

Penrose criticised not only the AA's annual investigation, but also all actuarial work in the Equitable.

Michael then discussed some of the disagreements with Penrose's conclusions. Non-executive directors felt it was unrealistic for them to challenge actuaries and take responsibility for actuarial work, particularly when auditors and regulators do not. Penrose rejected these claims as he felt there was a difference between being able to do technical actuarial work and understanding the implications of this work.

Michael outlined two options that are available to tackle the Board's inability to oversee actuarial work:

1. the regulator satisfies itself that the Board has sufficient actuarial skills - which would leave the regulator open;
2. the Board takes independent actuarial advice - which is seen as a potential way forward.

Recent UK Regulatory changes

The next topic Michael focused on was recent changes in UK regulation. At the same time as Penrose was carrying out his investigation, the FSA was doing an overhaul of its regulation of life offices. The main change is the removal of the AA role and the setting up of an Actuarial Function Holder (AFH) role. The AFH would advise the directors on actuarial issues, including valuation methods and assumptions, but the directors would be ultimately responsible. He/she would determine the liabilities for the FSA returns but the Board would certify the value. Another fundamental change is that the actuarial valuation would be within the scope of the annual audit. The actuary advising the auditors (the Reviewing Actuary) would review the long-term liabilities.

Michael looked briefly at how well these measures address Penrose's criticisms and concluded that an "independent and effective actuarial audit" would be achieved by the introduction of the auditors' Reviewing Actuary. However, he raised the questions of whether this review actually adds much value and whether it's necessary to switch from the AA to the AFH role.

Possible implications for the Irish Regulatory Regime

Michael felt that due to the high profile of the UK changes, there were bound to be implications for Ireland. The Society of Actuaries in Ireland (SAI) has already submitted some proposals to IFSRA which address criticisms of the current regime. These are broadly similar to the UK changes, but there are some key differences:

1. AA role should be retained and the AA should continue to be responsible for the valuation methodology and assumptions;
2. the directors' certificate to IFSRA should be extended to include certifying the value of the long-term liabilities;
3. the wording of the auditors' certificate to IFSRA should be changed to remove reliance on the AA's certificate.

Michael welcomed these proposals as they clearly extend responsibility for signing off the long-term liabilities to the Board and the auditors without being overly prescriptive. Both groups can decide for themselves how much independent actuarial advice they require. This is important from a practical point of view – Michael pointed out that auditors already sign off the liabilities for the Companies Act accounts and that many Irish life offices sell relatively simple products that do not involve complex calculations for determining the liabilities.

The presentation finished with a short summary of his main points. There were several questions directed to Michael during the Questions and Answers that followed the end of the first session. He accepted that the liabilities in the IFSRA returns involved greater detail and that the level of materiality was more significant compared to those in the Companies Act accounts. He explained that there would be a framework in place for resolving disagreements between the AA and the Board regarding sign-off of the liabilities. Lastly, he agreed that the regulation of reinsurers would impact their capital requirements and would likely drive up reinsurance rates, which would in turn drive up premium rates.

Consumer Concerns

Next, Brendan Burgess made an interesting and often humorous presentation on Consumer Concerns in relation to financial services, focusing on life insurance. He began by outlining what his website Askaboutmoney.com is about. It was set up as a discussion forum where individuals could ask questions

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about tax, mortgages, savings, etc. It has now evolved into a debating society where there is rarely a consensus view. Brendan admitted that he himself is usually on the minority side!

Improvements over the past 20 years

The first area he looked at in his presentation was improvements over the past 20 years. Brendan noted that life insurance policies were much better value now for consumers, compared to 20 years ago. New regulations will forbid proactive selling in the future, such as cold calling of potential customers and door-to-door selling.

There is much more information available today in respect of life insurance. Brendan always advises people to shop around and he mentioned the case of one individual who has paid nothing for his mortgage protection cover for three years, by continually moving his policy between different providers!

These developments have come about through a variety of pressures. Some are a direct result of legislation. On the downside, Brendan feels that there is over-regulation in some areas of the financial services markets, which is ultimately paid for by consumers, although he noted that there is certainly under-regulation in other areas. The internet has also had a big impact. Nowadays there is much greater competition for life insurance business in the form of direct sellers and discount brokers. Brendan feels that campaigners such as Eddie Hobbs and the Consumers Association have also had a major effect. The SAI too has played a role in improving life insurance - Brendan cited examples such as papers on geared trackers and mortgage endowments.

These pressures are set to continue through IFSRA, a new ombudsman scheme, an aggressive media and even more websites.

Current Issues

Next, Brendan moved on to talk about current issues in the life insurance industry. He feels that misleading advertising is a serious problem. As a result, complex products should be disallowed, even if they comply with regulations, because consumers cannot understand them and the risks involved. In addition, providers should not base advertisements on past fund performance.
Brendan felt that investment in equities should be encouraged and that the long-term benefits need to be better explained to consumers. He pointed out that banks in particular need to be especially careful when advising elderly people on investment - traditionally bank managers were seen as advisors whereas nowadays they are more like sales people. However, Brendan noted that it was not necessarily bad for an older person to invest in equities.

He went on to ask the question of whether there really is a pensions funding crisis. Different people have different priorities and they may prefer to incur necessary expenditure now rather than saving for retirement.

A Consumer's View of IFSRA

The final area that Brendan addressed in his presentation was IFSRA's strengths and weaknesses in relation to consumer protection.

He felt that a major weakness of IRSRA is the fact that the top staff in the consumer area mainly came from the Central Bank, rather than from a consumer background. IFSRA is not a proactive body and is very slow, which holds back consumer protection. There is too much consultation and too little action, along with a poor sense of priorities. Brendan gave the example of IFSRA's car insurance survey - he felt that too much time was spent on this when other, more useful, studies could have been carried out.

The strengths that Brendan listed were a good consumer helpline, some very good initiatives - such as the ongoing investigation into the passing on of Central Bank interest rate reductions to consumers (although he felt that at a year long already this investigation should be complete by now) - and the fact that sometimes IFSRA could be surprisingly tough.

Conclusions

Brendan concluded his talk by stating that we are not living in "rip-off Ireland" in relation to life insurance. Many improvements have been made over the past 20 years and he hoped there would be further improvements in the next 20 years.

Risk Management and the impact of Solvency II

The advent of Solvency II is a topic that has provoked much debate in the insurance industry of late.

In his presentation entitled 'Risk Management and the Impact of Solvency II', Mark Chaplin outlined the progress that has been made towards establishing the UK framework, and compared this to developments in other EU countries.

Background

Phase I of the Solvency II process was initiated in 2001 with an objective of reviewing the framework of prudential supervision of European insurers. A number of discussion papers have been produced outlining the technical issues relevant to meeting this objective.

The first of these discussion papers covered the quantitative and qualitative measures supervisors should use to determine an 'overall' solvency requirement. It also discusses approaches to risk margins, best estimate provisions, option and guarantee valuations. Central to the paper is the establishment of the 'three pillar' approach to solvency. This is analogous to the approach proposed by the Basel committee for the banking industry.

Mark illustrated the 'three pillar' approach to solvency management proposed under the framework as follows:

- Pillar 1 centres on determining future "target capital" and "safeguard capital" requirements and attempts to quantify different risk types.
- Pillar 2 focuses on internal risk control and the role and intervention of supervisory bodies.

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- Pillar 3 is concerned with overall market discipline. The focus here is on establishing sound risk management practices through disclosure and transparent practices.

One of the key practical implications will be the development of internal capital assessment methods for supervisory purposes.

A significant aim of the proposals will be to provide maximum harmonisation of quantitative and qualitative measurement methods across different supervisory jurisdictions.

Phase II Process

Two discussion papers have been produced in this phase. Each builds on the work performed in Phase I, and considers further key areas for development in the overall Solvency II framework.

Mark provided an overview of the following areas considered in the Phase II discussion documents:

- Allowance for margins in technical provisions
- Minimum solvency requirements
- Bases for harmonization of regulators' powers
- Asset Liability Modelling bases and methods
- Allowance for profit sharing

The UK Framework

To illustrate the impact of the proposed UK framework, Mark compared the Solvency II basis to the current regulatory solvency basis.

Central to the new framework is the comparison of a realistic asset valuation with realistic liability measures in order to quantify free capital measures. A significant component of the total capital requirement consists of an Individual Capital Assessment (ICA) calculated using mainly stochastic modelling techniques.

Mark gave an example of two approaches used to calculate the ICA – the Run-Off and Short-Term Shock models.

The Run-Off model can be run to analyse the ability to meet future cash flows as well as projected future balance sheet requirements.

However, Mark pointed to the potential complexity of allowing for non-market risks in both cases, as well as the difficulty of producing stochastically generated balance sheet items into the future.

The Short-Term Shock model leans heavily on the balance sheet calculation and assumes that management or regulatory actions would deal with any problems developing after the model time-line.

However, it was suggested as being more suitable for modelling non-market risks.

It was clear from Mark's summary that while neither method could be seen to deliver the 'perfect' result, from a capital assessment point of view each provides a potentially powerful capital requirement analysis.

Risk Factor Models

Mark then summarised the risk factors for calibration within the risk models. These consist of:

- Market risk
- Credit risk
- Mortality risk
- Persistency risk
- Operational risk
- Liquidity risk

It is clear that considering such a range of risks could lead to complex model requirements. Mark pointed out that the focus should be on consideration of relatively significant risk only, but that the process of actually determining significance of risk was not always obvious and could vary significantly between insurers.

Other Frameworks

By means of comparison, Mark briefly discussed the proposed approaches in the Swedish, Dutch and Swiss frameworks.

He pointed out that there has been rapid development in some countries, with similarities in approach centring on:

- Use of market-consistent bases for assets and liabilities
- Focusing on the qualitative side of the solvency calculation
- The desire to utilise internal capital assessment models

Conclusion

From Mark's presentation, it was clear that the movement towards more realistic capital assessment measures would have significant impacts on insurers' risk management practices.

Risk-based capital models can be complex to calibrate and to interpret, and a range of similar approaches could be possible in a given scenario. This is likely to introduce significant development requirements for insurers.

However, the move towards implementing a clear and consistent basis for insurance capital assessment is to be welcomed as providing wider qualitative approaches for companies' risk management bases.

International Accounting Standards

By way of introduction, Brian Morrissey summarised the process that has brought us to the current International Accounting Standards (IAS) for life assurance accounting.

The International Accounting Standards Board initially considered insurance business in 1997. In 2002, the European Union adopted IAS and mandated all listed companies to produce IAS-compliant accounts for years commencing January 2005.

This accelerated the need for IAS for insurance. As the IASB had insufficient time to complete the insurance standard, the process was broken down into two phases:

- Phase I (effective 1st January 2005) contains limited improvements to current insurance accounting along with enhanced disclosures in company accounts
- Phase II (effective 2007 at the earliest) will deal with improved recognition and measurement issues for insurance contracts.

International Financial Reporting Standard 4 (IFRS4) is the basis for the Phase I accounting requirements.

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IFRS4
Brian then went on to discuss the main features of IFRS4. Central to this standard is the definition of an insurance contract for accounting purposes. For products classified as insurance, existing accounting methods will continue to apply. Otherwise, accounting must be performed according to IAS39.

As a result, the mix of both contract types in a company's portfolio will be critical to determining the financial impact of the adoption of IFRS.

In addition, IFRS4 outlines :

- requirements to separate and apply fair value principles to Embedded Derivatives, in some cases
- requirements to perform liability adequacy tests
- requirements to 'unbundle' the insurance and deposit elements of some contracts
- additional disclosure requirements
- amendments to IAS18 (Income Recognition) for insurance contracts

Product Classification
Brian then expanded on the key issue of product classification.

IFRS4 defines an insurance contract as "a contract under which one party (the insurer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder".

He then provided a range of examples of products falling into both categories, ranging from those clearly meeting the definition (e.g. Term Assurances) to those clearly not meeting the definition (e.g. Guaranteed Income Bonds).

He also highlighted the fact that companies may have products whose classification basis may currently be unclear based on the IFRS4 criteria above.

Products with Discretionary Participation Features (DPF) were singled out for a special consideration. The complexity and varying characteristics of some DPF contracts means that the classification process is likely to be more complex for companies writing significant volumes of with-profit business.

From a practical point of view, the need to classify in-force contracts and future sales in accordance with IFRS4 may lead to costly systems upgrade requirements.

IAS39
Turning to those contracts to be valued under IAS39, Brian discussed the implications of IAS39 on the pattern of profit recognition on these contracts.

Profits are likely to emerge more slowly under the new standards than currently the case under Irish GAAP (Embedded Value or Modified Statutory Basis)

In addition, there may be significant reductions in opening equity positions as:

- Deferred Acquisition Cost assets will be more limited than on Irish GAAP
- Front end fees on investment contracts will need to be deferred
- Bancassurers will be unable to recognise a Value of In-Force asset in respect of investment contracts in their consolidated financial statements

Again, the significance of any profit/equity hit under IFRS will vary by company, but is likely to be very significant for some.

Disclosure
One of the key aims of the insurance standard is to provide meaningful disclosure of the key features of insurance contracts held on a company's books.

Examples of likely disclosure notes are:

- Amounts, timing and uncertainty of future cash flows
- Basis for determining significant assumptions
- Sensitivity of profit to changes in insurance risks
- Significant terms and conditions underlying policies
- Exposure to interest rate and credit risk

Again, the requirement to produce such disclosure may lead to significant systems development requirements and significantly increased workload for the financial reporting team.

Conclusion
It was clear from Brian's presentation that the advent of IFRS will lead to fundamental changes in the way profit is recognised from contracts sold by insurers. As the IFRS adoption date draws ever nearer, insurers face significant challenges in order to calculate and communicate the financial impact of these changes.

Enhanced Embedded Values
The final presentation of the morning was by Paul Whitlock. There may have been some financial reporting actuaries in the audience who felt they would still have time on their hands after implementing the changes described by previous speakers. They would have been reassured by Paul's presentation, which outlined two further related but separate developments: European Embedded Value Principles ("EEV") and Market Consistent Embedded Values ("MCEV"). Both of these have arisen in response to perceived shortcomings of current Embedded Value ("EV") techniques.

European Embedded Values
EEV is a set of twelve principles developed by the CFO Forum of nineteen large European insurers. The intention is to ensure that published EVs provide a credible and consistent measure of the economic value of long term business. Companies will need to consider carefully how the risk discount rate reflects the risks within the business. This should avoid the situation where choosing to invest in riskier assets creates an immediate increase in the EV. Options and guarantees should be valued explicitly using stochastic techniques. Companies should disclose enough information about methods, assumptions, and sensitivities to allow valid comparisons between companies.

Paul suggested that the EEV initiative is a worthwhile development which may address some of the criticisms of traditional EV accounts. Its success will depend on whether companies move

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to comply with the spirit of the principles, rather than using the latitude allowed by the guidance to stay close to the status quo.

Market Consistent Embedded Values
Paul then moved on to discuss Market Consistent Embedded Values. MCEV is a set of techniques which aims to address some of the issues already mentioned: how companies should set the risk discount rate, and how should they should value guarantees and options. Non-option cash flows are valued using discount rates that reflect the risk inherent in each component of the cash flow. Thus equities may be expected to generate higher returns than bonds, but these higher returns will be discounted at a higher rate to reflect the increased risk. Options and guarantees are valued consistently with the pricing of options in financial markets.

A particular feature of MCEV is a "cost of capital" adjustment. As the risks to capital are allowed for in the underlying EV, this adjustment is limited to items relating to the potential costs of capital being tied up in a corporate structure until it is expected to be released to shareholders. This gives rise to deductions for double taxation costs and agency costs.

Paul concluded that MCEV provides a robust framework to allow consistently for market risk within EV calculations. However it may take some time before companies are sufficiently comfortable with the results to consider publication.

Q & A Session

The seminar concluded with a short question and answer session. Several of the questions reflected a concern about the relationships between the separate financial reporting developments described in the presentations.

In response to a question about whether EEV and MCEV are complementary, Paul suggested that it would be possible to produce MCEV calculations with the EEV framework. However he felt that in the near future companies are more likely to use MCEV as an internal tool, separate from the published EV.

There was some discussion about the concept of agency costs, with one speaker suggesting that this is a rather arbitrary deduction from the EV. Paul suggested that there are a number of ways this could be presented - for example, information could be provided on the effect of a 1% per annum cost, leaving the market to judge the appropriate deduction.

Reviewed by: David Coldrick, Maria McLaughlin, Tom Howard & Alan Grant.
All presentations are on the Society's website.

New Department of Statistics and

From 1st September 2004, the Department of Statistics at UCD is changing to the Department of Statistics and Actuarial Science. Shane Whelan, the new head of department, explains that this is more than just a change of name.

Q. So why change the Department's name?

The new name is aimed to reflect better what we do and what we aim to do over the coming decades.

Our undergraduate degree, the Bachelor's in Actuarial and Financial Studies, has been a great success since [Professor] Phil Boland established it back in 1991. It attracts the brightest and the best – as often as not it has the highest entry points of any university course in Ireland – and attracts them in numbers – our average annual intake is about 35 students. The graduates from this course are helping shape the profession in Ireland and elsewhere. Of the 263 graduates from this program up to the end of 2003, three-quarters have gone on to take the profession's exams with some 67 already qualified (and one-third of these in three years or less). Not all of our graduates remain in Ireland, but to get a handle on the significance of these numbers, the 67 qualifiers is 2/5ths of the number of all new fellows in Ireland since 1996, and the 110 of our graduates still sitting the profession's exams bear the same proportion to the number of student members of the Society. In fact, UCD ranks in the top ten universities attended by new entrants to the UK actuarial profession in the latest year for which we have figures [2002]. We expect that the educational role our Department plays in the profession will be enhanced further with the introduction in the coming year of the postgraduate Diploma in Actuarial Studies, targeted at educating the student to a competency equivalent to the new core technical stage of the profession's exams [the old 100 series].

The teaching emphasis of the Department is only one of two reasons for the name change. Significantly, it also signals a commitment to push out the boundaries of actuarial science. The success of the BAFS programme created positions for Gareth [Colgan] and myself and our interests in actuarial science complement the emphasis on research in applied statistics the Department has always maintained. [Dr] John Connolly is expert on modelling ecological systems, [Dr] Adrian Dunne in pharmacology, [Dr] David Williams and [Dr] Gabrielle Kelly include epidemiology in their research interests (Gabrielle worked with the Society in forecasting the extent of the spread of AIDS early in the 1990s), [Dr] Patrick Murphy's interests centre on official statistics and econometrics, and [Professor] Phil Boland is, inter alia, completing a textbook on applied statistics for actuarial students. We are able to draw on the collective experience within the Department to advance actuarial science.

Q. You mention the close interests within the Department but are these not to be expected, as statistics is a sub-discipline of actuarial science?

[Laughs.] One would have to ignore all the developments in the 20th century – a century when pretty much all statistics was developed – to make that claim creditable in any way. Statistics and actuarial science are quite distinct and have a different emphasis.

Putting it pithily, one could characterise the difference as being that statistics models variability while actuarial science attempts to control it. Consider an assured lives portfolio. The statistical part would emphasise estimating and projecting the mortality rates while the actuarial emphasis is more to control the mortality experience and its financial significance - by the underwriting process, policy conditions and limits, and reinsurance. Accordingly, the actuarial perspective is more akin to Operations Research (OR) – application of the scientific method to give a quantitative basis for the optimum management of operations. Statistics plays a role in management decisions, but other factors can be just as important. In fact, actuarial departments around the world are not invariably linked to statistical or mathematical science departments as they are in Irish and most of the UK universities - in Australia, for instance, they are part of a commerce or economics faculty and in Africa they seem to be evenly divided between science and business classifications.

The difference in the disciplines leads to a different emphasis in modelling. Actuarial science seeks to model the data generating process – the mechanism that produces the data – and to understand how the data will alter with a minor alteration to the generating process (e.g., the effect of underwriting to different degrees on the mortality experience). Typically the actuary has either an abundance of data or none at all so the concern is never with parameter estimation in a given model but with the structural form of the model itself – structural misspecification of the model is the major risk in actuarial science. The concern in statistical modelling is less to do with modelling the underlying data generating process and more to do with describing and accounting for the variability in the data. The power

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of statistical modelling is that it allows one to fit and extrapolate from a purely empirical model – that is, where the form of the model and its parameters are optimised on the data (e.g., ARIMA modelling, multivariate regression, distribution fitting, generalised linear modelling). This is powerful in that it allows one to model data quickly, to rank how different models capture the patterns in the data and, of course, to draw inferences from the models – these strengths explain why statistics has become an indispensable tool to the scientist. However, the flipside is that statistical modelling does not require or aspire to capturing the essence of the data generating process itself and therefore generally only offers a temporary solution and not, in general, a permanent solution to the modelling problem. In particular, this change of emphasis is important in actuarial applications, as statistical models generally do not attempt to model the effects of variations in the data generating process itself.

Actuarial science is OR applied to long term financial institutions offering contracts linked to mortality, morbidity, and other life and general contingencies. Statistics plays a role in this and, to my mind, it is the discipline that plays the single greatest role. Nonetheless, they are quite distinct disciplines.

Q. How does UCD intend to 'push out the boundaries' of actuarial science?

We will do the pushing in three ways.

First and obviously, the major thrust must come from the next generations of actuaries and our graduates, as mentioned earlier, form a significant subset of the actuarial profession in Ireland. So we must ensure that the broader education they receive here equips them to serve the science and the profession well.

Second, in terms of significance, the push should come from the cohorts of students electing to do postgraduate research in actuarial science in this Department. I say 'should' here because the numbers have not, as yet, worked out this way. The commitment to study and high academic achievements of our undergraduates could be reasonably expected to lead to a steady stream of students into our postgraduate research programs – this would be the case with any other programme. However, we do not find this. In my time here [three years], I have seen just two students from our BAFS programme go on for a Masters. True, both are exceptional scholars – both won the prestigious travelling studentship scholarship, marking them out as amongst the very best graduates of all science programmes in Ireland - and both are going on for PhDs. However, it is still only two. The reasons for such a low number taking this path is obvious – entry to the profession promises just as much study, for just as long, but in the meantime the student is well-remunerated and afterwards has a promising career. Against this, it is difficult to see the attractions of years of penurious study rewarded with uncertain career prospects. However, we have got to get around this disincentive to postgraduate research in actuarial science if it is to truly flourish. Perhaps, qualified actuaries might consider research supervised by a member of our Department? If so, we would be delighted to hear from you.

The third way to put back the boundaries is for members of our Department to do the pushing. One area clearly demands the attention of the newly named department: Irish mortality and morbidity and their rate of change. Gareth is already well advanced in a PhD on genetic predispositions to certain morbidity conditions, which will establish an expertise within the Department on the impact that breakthroughs in genetics can have on the market for insurance and protection contracts. This is likely to be a dominant theme in many traditional areas of actuarial practice over the coming decades. When I finish off current work-in-progress (hopefully by next summer), I intend to come back to my roots and start research into Irish mortality and its future course. Like many actuaries, the topic has always fascinated me and the recent evening meetings of the Society have convinced me that I must get involved sooner rather than later. The two or three years lost life expectancy in Ireland compared to France and other countries, despite our higher standing in earnings league tables, demands to be understood and the lost years regained. This is a classic actuarial science or OR problem, requiring assessment of mortality differential by cause of death, attribution of the excess mortality to underlying common causes, suggesting optimum allocation of resources to counter the underlying causes, and continual monitoring to ensure that the lost years of life fall to zero in a reasonable time period. Similarly, it is necessary to monitor to ensure that improvements in Irish life expectancy, aside from closing the existing gap, should track the higher end of mortality improvements in the developed world. I envisage this as an on-going team project, drawing on the wide modelling expertise in the Department, setting the research agenda for a couple of postgraduate students and, ideally, volunteers from within the profession. My number is 01 7167155.

Dr Shane Whelan was interviewed by Frances Kehoe.

The Society's


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Annual Ball

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1. Pat & Joan Healy, Jeremy Goford and Jane Arkle.
2. Henry Allen, Mike Claffey and Stephen Bishop.
3. Gareth McQuillan, Aisling Burke, Neil & Johanne Guinan.
4. Richard O'Sullivan, Brendan & Aishling Kennedy and Mary O'Sullivan.
5. Paul Duffy, Ciara Regan, Jane Gleeson and Dermot Corry.
6. Brenda Dunne, Ann & Liam Quigley.
7. Eamonn Heffernan, Heather & Tony Jeffery.
8. Barry Cudmore, Ciara O'Malley, Oisin O'Shaughnessy, Anna O'Brien, Greg Ward and Linda Collier.
9. Pat & Joan Healy, Lis & Jonathon Goold.
10. Pramit & Catherine Ghose.
11. Therese & Michael Madden and Joan Healy.
12. Katherine Manning, Gill O'Connor and Brian Grimes.
13. John & Catherine Logan, Paul & Antoinette O'Faherty, Colm & Mary Fagan.
14. Tom Howard, Carmel Hasset and Kevin Manning.
15. Marvyn Henry, Tom Donlon and Viviana Pascoletti.

UK and Irish Pensioner

The good weather didn't stop a large gathering in the Stephen's Green Club on the 1st June 2004 to hear the latest findings of the mortality investigations in Ireland and the UK. The President, Pat Healy, chaired the meeting which consisted of presentations by Tony Leandro, Garrett Murtagh and Maeve Regan (on behalf of the SOAI working party on pensioner mortality), Aisling Kennedy, and David Harney.

Current Issues in Mortality

Tony Leandro of the Continuous Mortality Investigation Bureau (CMIB) presented some of the recent findings of the UK investigations. He began by saying that since 1948 mortality rates for male assured lives in England and Wales have improved at all ages. Indeed, mortality rates for cohorts of lives were seen to have improved further as they aged and in recent years the rate of improvement at all ages has been quickening. A slide detailing the life expectancy for a male aged 60 highlighted the improvement in mortality as the standard tables in use were updated over time. The most recent pensioner tables, PMA92, project the life expectancy for a 60 year old male at 26 years. In comparison, for the same 60 year old male the PMA80 tables show a life expectancy at 21 years, and the assured life table a(55)m projected a life expectancy of 18 years. The financial impact of this could be seen when annuity rates based on a 3% interest rate for a male aged 65 were compared to those calculated using PA90 (-2). Annuity rates using the PMA92 table were seen to be roughly 20% higher than the PA90 (-2) table – falling inflation has magnified the financial impact.

After that brief flavour for the potential impact of longevity, Tony outlined some of the current issues in mortality. He proceeded to give an update on the self administered pensioner investigation, a background to CMIB investigations (including data collection and the work of the working parties) and finally some observations on the process of projecting mortality.

The self administered pensioner investigation covered 99 schemes and consisted of over 1 million records, with the 6 largest schemes covering 50% of the data. The data collected was based on the last valuation and was for the period 1996 to 2003. The average amount of pension was higher than the Standard CMIB investigation and indeed the average male pension was significantly higher than the average female pension. The PA90 (-2) table was again seen to be inaccurate relative to the actual experience, with the shape of the curve significantly different. However, the PMA92 and PML92 tables appeared to be a better fit to the actual experience for males particularly around the ages 67–87, with actual mortality experience heavier than expected at the younger and older ages. Furthermore, CMIB investigations showed that male mortality appeared to be lighter for life offices than for self administered schemes. Similar conclusions were noted for female lives - however projections based on amounts were closer to actual experience than those for males. Indeed, it was noted that mortality based on male lives was heavier than that based on male amounts by about 10%, with a convergence at older ages.

Tony then proceeded to give a brief background to the current CMIB investigation. He advised that the 1999-2002 investigation is now complete and has been reported to the life offices. A graph showing the projected male mortality from the "92" base tables to the actual mortality for the various years of the investigation was downward sloping, indicating that the actual experience was lighter than the projected experience for both lives and amounts, i.e. more people survived than expected. A similar trend was noticed for females, although it was more volatile. When an adjustment was made for the cohort effect the experience was closer to that expected.

Working parties have been set up to produce the "00" series mortality tables which will include projections for future mortality rates. As a result the UK working parties must consider the range of errors in projections, which include model error, parameter error and data error. In addition, they are considering the behaviour of different mortality models and the effect of the size of the data set on the results.

Tony outlined some of the complications of the projection process. For example, in order to attempt projections of mortality rates it is important to have an understanding of the ageing process - in particular, how individual genes and various risk factors affect the ageing process, how soon medical technology can reduce the effects of ageing and the impact of lifestyle changes on the various risk factors. Tony outlined various reasons why it is unlikely the projections for mortality rates will be met – including lifestyle changes such as better diets due to health education, increased intake of vitamins or even increased obesity. Medical technology improvements would naturally have an effect and are hard to predict – will it be possible to stall or even reverse the ageing process? In addition, unpredictable effects such as hidden diseases of old age or epidemics would naturally impact on the projections. As an example, Tony illustrated that male and female smokers exhibited higher mortality than non smokers, while it was also interesting to note that the mortality rates for all social classes are improving yet the differential between the classes remains reasonably consistent. Cancer and heart disease are the predominant causes for claims by males from life assurance or critical illness – what would happen if a cure were found? A slide showing the expectation of life for a 65 year old in 2000 showed some disparity amongst the various countries. Males in Ireland had a life expectancy of 14.25 years while their counterparts in Japan had a life expectancy of 17.5 years. Could this be put down to lifestyle or healthcare effects?

The final part of Tony's presentation outlined the methodologies used for projecting mortality rates. There are 3 methods – process based (such as the effect of medical research etc), explanatory based (due to lifestyle, income changes etc) and extrapolative. Confidence intervals for projected mortality rates are particularly wide, highlighting the

Mortality Issues

difficulties in projecting.

To summarise his interesting presentation, Tony highlighted the fact that mortality rates have improved significantly over recent years and falling inflation (and interest rates) has magnified the financial effect of this. It is felt that this trend will continue and there remains the possibility that medical science will provide a dramatic step forward in the future. Tony also highlighted that any projection is likely to be wrong – and the financial consequences are equally uncertain.

Pensioner Mortality Investigation

Garrett Murtagh and Maeve Regan then took us through the initial findings of the recent Pensioner Mortality Investigation in Ireland. Firstly Garrett posed the question as to whether and how the investigation should be continued and indeed how the results should be applied. Maeve then summarised the work carried out by the working party to date. Data was collected for the most recent 3 year period split between males and females, and lives and amounts. Data was received from 6 sources and covered 45 schemes. This amounted to data on 51,000 lives and 5,900 deaths. The data constraints included the quality and volume of the data – in particular data was scanty on the type of pensioner e.g. normal, early, ill health, the industry sector, dependants and date of death.

The methodology applied was the Census method. From the analyses central exposed to risk figures were calculated and crude mortality rates were calculated for each age. Data was discarded for those below age 60 and above age 95. Furthermore the data was smoothed by grouping it into 5 year age bands. For males, mortality rates based on amounts was seen to be lighter than that for lives. The number of actual deaths in each analysis was compared against the expected deaths from a population taken from the following standard tables – PA90 (-3) (which is used for current transfer value calculations) and relevant "92" series tables for lives and amounts. The initial analysis of the results showed that PA90 (-3) is the wrong shape, with mortality rates too heavy up to age 80 and too light over age 80. However, the PMA92 tables are exhibiting lighter mortality at all ages for lives and amounts. When comparisons are done with the UK study, again it is showing a lighter mortality for the UK for both lives and amounts. Therefore, mortality rates appear to be heavier in Ireland than the UK.

Male single life annuity rates at 4% using the derived rates compared to PMA92 showed that PMA92 overestimated the rates and that the gap widened as the age increased. This trend was similar for the comparison to the UK study. For the PA90(-3) rates, it was shown to underestimate the rates at the younger ages and overestimate at the older ages.

The presentation concluded by asking what should happen next. It was suggested that further investigations could be carried out with better quality data. Furthermore, it was asked whether the results should be applied to transfer values, the minimum funding standard and ongoing valuations?

Population Mortality

Aisling Kennedy gave a brief presentation on population mortality and started by looking at life expectancy for 65 year olds in 2000 across various countries. It was noted that there was a wide spread between the countries and Aisling felt that the countries that are starting from a lower base have more room for a catch up – including Ireland. The SOAI population working party detailed the reduction in Irish male mortality rates over the periods 1962 – 2000, 1991 – 2000 and 1995 – 2000. The trends showed a significant improvement over recent years, and indeed the pace of improvement would appear to have increased at all ages. When equivalent international statistics were studied it was noted that there was a reduction in mortality rates for all countries at all ages.

The ratio of mortality improvements over the last 10 years to the previous 30 years showed a significant improvement at all ages, but most particularly at the older ages. This could be explained by the cohort effect of those born over the period 1920 – 1940, who may have benefited from medical advances etc.

Aisling then presented the projections for life expectancy of a 65 year old as carried out by the working party. For both males and females a significant improvement in life expectancy was projected. Ratios of pensioner mortality rates to population mortality rates showed that pensioner mortality rates were lower, but as the ages increased the gap was closing. Rates of improvement were seen to be greater for higher socio economic groups. This could be explained partly by access to private health care.

Pricing Annuities

David Harney took us through the process of pricing annuities from a life office perspective. He started by making the observation that when you compare self administered pension scheme mortality to insured mortality you find that insured mortality is lighter and therefore perhaps life offices are selected against.

The process of pricing an annuity for a 65 year old male was then outlined. Firstly, data for current mortality rates for 65 year olds is known i.e. those born in 1940. Data for current mortality rates for 85 year olds similarly is known i.e. those born in 1920. It was found that mortality rates for those born in 1940 are 40% lighter than for those born in 1920 – David stressed that this is not a future improvement in mortality but rather has already happened. In order to calculate annuity rates we therefore need to decide whether the differential between those born in 1940 and those born in 1920 will stay the same, get bigger or get smaller as those born in 1940 age? The cohort effect shows that there was a step change between people born in 1930 versus people born in 1920. However, there are no conclusions to be made beyond age 75 yet. The oldest cohort analysis available is for Japanese females born in 1915 and this indicates a continuation of the improvement into the older ages.

Analysis of the percentage difference in mortality rates as disclosed by the ILT No. 13 table also indicates that the differential in mortality rates appears

continued

UK and Irish Pensioner Mortality Issues

continued...

to continue. The effect of including future improvements in mortality has a significant effect on annuity prices, with the impact widening as escalation on pensions is included. Approximately 7% of the price of the annuity reflected the need for reserving, expenses and commission.

Questions and Answers

A lively discussion followed the presentations, with the general consensus being that the presentations were very informative. Many people asked where the Society goes from here with the data and information from these surveys. It was felt that the issue was too important to forget about, and certainly further investigations with more data should be carried out. One speaker commented that Irish experience appeared to be heavier than UK experience and questioned whether there was a need to include 7% for expenses as part of the Minimum Funding Standard test. Another speaker questioned the impact ARFs would have on the experience. He felt that those who take out ARFs would probably have different mortality experience and wondered how this would affect annuities going forward. Another speaker wondered what effect emigration/immigration flows would have, and whether the selection effect on annuity purchase would be removed in a scheme wind up due to a bulk annuity purchase by trustees. Tony Leandro commented that experience would show that life offices have consistently underestimated experience. One speaker asked what the effect of increasing income levels has on mortality rates. Tony commented that there are no results available as yet but he felt this could be significant.

The Chairman summed up the meeting by noting the large gap between annuitant mortality and pension scheme funding mortality. He noted the significant improvements in mortality experienced over the last number of years and felt it was the duty of the Society to educate the public about the effects of living longer and the resultant need to save more. He concluded that there is certainly lots more work to be done and felt the Society of Actuaries should take on board the implications of the research.

David O'Sullivan

Members of the working party: Garrett Murtagh (chairman), Michael Marsh, Maeve Regan, Ciaran McGrath, Frank Downey, Robert Wolfe, Paul O'Brien.

Consultation on Long Term Care

In June 2004 the Department of Social and Family Affairs ("the Department") issued a Consultation Document on the subject of the Future Financing of Long Term Care in Ireland.

Long Term Care (LTC) has been an issue that has been growing in importance for some years. It is generally believed that the demand and need for LTC will grow over the future as the population of Ireland grows older. Although there is optimism that longer lives will not lead to longer periods of disability, just having more old people will mean there will be more requiring LTC. At the same time, traditional family structures are changing and the State cannot assume that all those needing LTC will have it provided by their family. It is generally believed that some of the acute care beds in Ireland's hospitals are being occupied by those who need LTC. This can be a less intensive requirement but for much longer time periods.

The area is clearly one to which actuarial expertise is relevant and in fact the Department has based its consultation document on the results of actuarial research that it commissioned. Council is keen that we make a response on this issue.

It should be appreciated that the sums of money involved are significant. The benefit package that might be given is costed at an increase of 1.5 percentage points to both employer and employee PRSI contributions. This is a large amount of money.

We have been aware that a consultation paper was going to be issued for some time and even had an evening meeting lined up to discuss it. However the release of the paper was much later than we expected. When it came (June) we were disadvantaged by the holiday season having already started. However, as of writing the process has been as follows:

- A meeting of the Health and Social Policy Committee ("HSPC") to discuss possible issues.
- A meeting open to all Society members. At this meeting Jim Kehoe gave a presentation on the actuarial work that had been done for the Department. Following the presentation the questions posed by the Department were discussed (with the draft responses from the HSPC as starting points for the discussion).
- The results from the meeting were consolidated and have been placed on the Society's web site (members' section) and comments called for. Some (though not many) have been received.

A submission has now been drafted and considered by Council and will be submitted to the Department. The final submission will be posted on the Society's website.

This Consultation Document is likely to be only a stage in the evolution of Ireland's strategy towards LTC. The HSPC intends to continue to be involved and any member who has an interest in this area is welcome to contribute.

Tony Jeffery

Developments in European Non-Life Solvency - a practical approach to capital requirements

Richard Bulmer, Peter Copeman, Nigel Gillott and Annette Olesen gave a presentation to a very well attended evening meeting at the Stephen's Green Club on May 25th.

Overview

The European Commission's Solvency II project is a fundamental and wide-ranging review of the current regime for supervising the overall financial position of an insurance undertaking. While Solvency I has recently been introduced it is seen as not being robust enough to reflect all underlying risks and capital requirements of an insurance company.

UK Developments

Annette Olesen outlined the risk based capital approach proposed by the FSA ahead of Solvency II. This was followed by a brief discussion of the implications of introducing this method to determine solvency requirements.

The proposed approach is comprised of the following three elements:

1. Enhanced Capital Requirement (ECR)

The ECR is determined by applying capital charges to premiums, technical provisions and assets. Studies have shown the ECR to be on average 2.4 times the current minimum capital requirement. The main advantage of the ECR is that it is easy to calculate and report. The disadvantage is that any formula based solvency requirement covering an entire industry will have inherent limitations. Also, asset and reinsurance quality is not taken into consideration.

2. Individual Capital Assessment (ICA)

The next step in the process is for each insurance entity to identify the major sources of risk that it faces and the steps taken to mitigate each risk. Risks considered at this stage should include, but are not limited to; Insurance risk, Market risk, Credit risk, Operational risk, Liquidity risk and Group risk. The FSA appreciate the difficulty in modelling some or all of the above risks and do not expect complex DFA models. Stress testing a business plan with documentation relating to all risks and mitigation procedures should suffice.

3. Individual Capital Guidance (ICG)

This is the FSA's assessment taking into account the ECR, ICA and the firm's individual circumstances and underwriting / reserving strategy.

Discussion

- The risk based capital approach will generally lead to an increase in capital requirements.
- Smaller firms are concerned about the amount of resources that will be required in developing models.
- Subsidiaries capitalised at group level will see an increase in capital requirements on ECR. There would however typically be a parental guarantee which will influence the ICA and ICG, potentially resulting in a capital requirement below the ECR.

Modelling

Nigel Gillott discussed how a company may calculate the ICA. The approach, both in method and sophistication, taken to determine the ICA will vary from company to company according to resource and data availability. Methods adopted include scenario testing and DFA modelling techniques. Nigel demonstrated the DFA approach by way of a case study.

Q&A Session

Peter Copeman summed up the previous presentations by reiterating that the FSA is not looking for complex modelling techniques but rather wishes to focus management's attention on risk identification and mitigation. Questions and comments were then invited from the floor.

Issues raised and comments discussed included:

- The role actuaries have to play in risk based capital assessment and the usefulness of such an approach in terms of management information.
- UK regulated firms would be put at a competitive disadvantage if the ECR was introduced ahead of Solvency II. This point was accepted, although it was noted that the ICA and ICG could lead to capital requirements below the ECR. This in turn may lead to problems of public perception if firms hold less capital than the ECR.
- Risk based capital assessment may potentially make certain sectors of the market less attractive and lead to increased rates.
- Whether the FSA can use company ratings to assess operational and liquidity risk. Nigel's response to this was that the ECR calculation is more sophisticated than any rating agency approach and that it may have been an error to include a rating agency element in the calculation of the ECR.
- The treatment of non-UK subsidiaries of UK regulated companies. The panel believes that local regulations would apply and expect further guidance on this issue from the FSA.

Noel Garvey

Longevity in the

Two of the co-authors of the paper 'Longevity in the 21st Century' were the speakers at a well-attended evening meeting on June 22nd. This paper was produced by a Cross-Board Working Party in 2003. Richard Willets wrote a separate paper entitled 'The cohort effect: insights and explanations' which was also discussed at this meeting.

A working party of the CMIB is at present considering the issue of future mortality projection, and will issue new '00' series tables in 2005 incorporating their conclusions.

Richard Willets began the presentation with a number of stark statistics putting the issue in context – for example, the UK life assurance industry has total annuity liabilities of around stg£130bn and the UK's total longevity exposure is estimated at stg£1.5 trillion.

Mortality improved at an accelerating rate through the 20th century. For example, the mortality of males aged between 65-74 fell by 20% in the first 68 years of the century, a further 20% in the subsequent 17 years, a further 20% in the following 10 years, and by a further 20% between 1996 and 2002. Great news for those of us who plan to work on the golf handicap in retirement!

Richard presented further statistics showing that the improvement at older ages continued to accelerate throughout the 1990s for males and females, and showing that the deaths from heart disease, cancer and strokes have all fallen sharply since 1970.

The Working Party focused on five 'key forces' which shape the pattern of mortality change:

- The UK Cohort Effect
- The 'Ageing of Mortality Improvement'
- Past patterns of cigarette smoking
- Increased uncertainty at younger ages
- Widening socio-economic class differentials

The mortality of the UK generation born in the period 1925-1945 improved at a faster rate than other generations – this is known as the UK Cohort Effect, and the GAD has been explicitly allowing for this feature in its projections for some time.

There has been a lot of debate about the underlying reasons why this cohort is different from others. Some of the possible causes put forward are changes in patterns of cigarette smoking, the effects of World War 2, changing birth rates, dietary factors and the impact of the UK welfare system.

Analysing mortality change for males by year of birth between 1900 and 1950 shows that the cohort effect for this group has two peaks, one centred around 1930, the other at around 1945. Richard showed that the first peak could be partly attributed to sharp improvements in lung cancer mortality centred around 1930. The second peak coincides with a peak in the rate of improvement of heart disease mortality for males.

The 'ageing of mortality improvement' is a phenomenon generally seen in the mortality patterns of developed countries in the 20th century – not just in the UK. In the earlier parts of the 20th century the most rapid improvements in mortality were seen at the younger ages, mainly between 20 and 40. In the second half of the century, the groups experiencing the most rapid improvements were at older ages.

UK cigarette consumption has been falling since the 1960s. It is difficult to quantify the impact of this factor on mortality trends because smoking causes enduring damage which is not fully reversed when a person kicks the habit. It is thought that this factor may account for up to half of the recent improvements at some ages.

Improvements in health-related mortality causes towards the end of the 20th century were offset by a worsening in death rates from a range of causes affecting mortality of younger people – examples of this include more deaths from AIDS, drug and alcohol abuse and violence. Richard demonstrated this by showing that mortality rates actually worsened for younger males in the 1980s and 1990s.

Richard moved on to make some comments about the international picture. He started by showing a graph of the male expectation of life at age 65 in 2000 for 23 developed countries. Ireland was at the bottom of the scale, with the life expectation being almost three years shorter than that in Japan and France. The life expectancy in the UK was fourth from bottom, but still over half a year longer than the Irish life expectancy. Clearly there is room for significant improvement in Irish mortality rates at older ages.

Data on Japanese mortality shows that there was a similar cohort effect there, but involving an earlier generation - the cohort born between 1905 and 1910. Mortality has continued to improve strongly into very advanced ages for this cohort. Richard also showed that mortality improvement accelerated internationally for older ages towards the end of the last century.

The presentation then turned to the topic of Medical Advances, presented by Joseph Lu. The pace of scientific development appears to be accelerating, and this is likely to continue to drive mortality

21st Century

improvements in future. Medical advances can be made on many fronts – detection, surgery, treatment, medication etc.

Joseph described two examples of areas where big steps forward are possible:

- Firstly, a cardiovascular disease 'polypill' which would combine a number of existing medicines and which would be administered to everyone over the age of 55. Some researchers suggest this could reduce cardiovascular disease by 80%, although this remains a controversial area – for example there may be unknown side-effects of administering this medication to healthy people.
- The second area discussed was research into the ageing process. This is ongoing on a wide range of fronts, and again there is debate about the potential for medicine to arrest the ageing process. Some researchers believe that there is unlimited potential to improve human longevity.

The growing threat from infectious diseases is a factor working against continued medical advances. The threat is growing for many reasons, including the greater ease of travel in the modern world, increasingly industrialised food production, changes in human behaviours and the spectre of bio-terrorism.

New infectious diseases appear relatively frequently – for example Ebola, Legionnaires disease, AIDS, CJD and SARS have all emerged in the last thirty years.

In general, continuing medical advances will limit the impact on mortality of both old and new diseases. It is difficult to predict whether infectious diseases will play a bigger role in future as the more traditional causes of death become more controlled by medical advances.

Richard then took the floor again to conclude the presentation. It is likely that mortality rates for elderly people will continue to improve rapidly in the early decades of the 21st century as the factors described earlier continue to exert their influence. There will need to be a much greater focus on quantifying the uncertainty associated with future projections.

This uncertainty has huge reserving implications for insurers and DB pension schemes. For example, if improvements continue at their current pace, the cost of a pension for a 65 year old male retiring in 2019 will be almost 50% higher than the cost anticipated under the current UK Minimum Funding Requirement basis.

The implications for insurers include ongoing losses on their annuity books and increased reserving and capital requirements. Equity analysts and rating agencies are likely to be more focused on understanding the longevity risks in the insurer's portfolio, and the traditional annuity product may need to change, possibly with the use of more rating factors. Continued worsening of annuity rates is likely.

The implications for DB pension schemes may include increased pressure to disclose mortality assumptions, more pressure to move towards flexible retirement ages and increased buyout costs.

Finally Richard made two comments on the implications for the actuarial profession:

- Firstly, we need to realise that there is much to learn from other professionals in this area (including doctors, demographers, epidemiologists and gerontologists).
- Secondly, we need to ensure that we play our part and make a contribution to the wider debate on this issue.

Following the presentation there were a number of contributions from the floor. All speakers commended the working party's achievements, and the excellent standard of the presentations by Richard and Joseph.

Many of the questions related to whether people who live longer can expect to spend more of their life in an unhealthy state. Richard cited research which suggests that healthy life expectancy will increase as overall life expectancy increases. So far it is unclear what the 1925-1945 UK cohort's experience will be as survivors are only now reaching the advanced ages where this can be measured. A number of speakers commented on the growing obesity problem being faced across the developed world, especially for young people. Richard accepted this had the potential to counter mortality improvements, however he pointed out that there may be medical advances which will tackle the ill-effects of poor diet and fitness.

A number of speakers also questioned whether longevity is an insurable risk given the uncertainty around the future trends. A secondary market is developing which will allow longevity to be reinsured based on differing views of future trends, however insurance companies need to be careful that they recognise the potential volatility inherent in this business.

Damian Fadden

New Exam Strategy 2005 –

In the last Newsletter Grace Nyamayi gave an overview of the new exam structure that will be introduced from 2005. In this article I want to highlight some of the key issues for employers and qualified actuaries in relation to the new exam strategy. Employers especially need to note that there are some major issues for them to consider.

Worked Based Skills

For employers this is the most onerous aspect of the new exam strategy. Please Read!

Students will be need to acquire work based skills during their training, and will need to be able to demonstrate that this has happened. This will apply to all students joining the profession after 30th June 2004.

This requirement has many common sense aims including helping the student to develop management skills, communicate with colleagues etc.

Students will be required to maintain a learning log. This learning log will contain:-

- A self assessment by the student of skills addressed.
- A record of formal learning activities, e.g. training courses.
- A record of review questions, answers to these questions and any subsequent discussions.
- A sign-off by a supervisor.
- A statement of skills to be addressed in the next review period.
- A final sign-off on qualification by a qualified Actuary.

A Skills Map has been produced by the Faculty and Institute on the skills that need to be addressed.

Issues for Employers

Employers should be aiming to put in place processes to help students meet their work based skills requirements. This needs to be done at two main levels:
Firstly, a good employer will ensure that students are presented with adequate opportunities for the development of worked based skills. Most larger employers will probably already have development programmes in place for all employees. It is likely that these will cover the required Skills Map. This should be checked. Smaller employers may need to consider putting in place new training structures. Within the Employer's Consultation process the extra overhead of doing this was one of the concerns expressed by employers.

Secondly, the employer provides the assessment that the work based skills are being acquired. Each student needs to be appointed a supervisor. This supervisor is expected to be the student's boss, if that person is an actuary, or an actuary within the student's company familiar with the student's work and training. The supervisor is expected to meet with students and review progress every 6 or 12 months.

The bad news is that this is all quite onerous stuff, although I think that most people would agree that it is generally a good idea. The good news is that the Faculty and Institute have provided a supervisor's document to help employers and supervisors understand their responsibilities. This document can be found at the following link http://www.actuaries.org.uk/files/pdf/students/wbs_supervisor.pdf. Links to this document and other useful documents explaining the new exam strategy will shortly be placed on the Society's own website.

Business Awareness Module

This is a new module which serves as an introduction to the profession and the business environment that students will be working in.

The Business Awareness course needs to be taken by students joining the profession after 30th June 2004.
It is expected to be taken within 15 to 18 months of a student joining the profession. The module involves a two day course and it is compulsory for the course to be residential. It is likely that there will be a course run in Dublin. The course involves pre-course work and a post course on-line test. It is expected that if students are well prepared that a high percentage will pass.

Issues for Employers

You need to be aware that this course exists. Some of the pre-course work is to be completed on-line and employers should expect that many students will seek permission to use office facilities for this. Employers need to release students so that they can attend. Similar to the pre-course work, the post course test is completed on-line. Again students may look for employers to facilitate this. Finally, the course is obviously not free.

Modelling Module

This is a new module which aims to ensure that students have data analysis skills and can communicate the results to a technical audience.

The Modelling course needs to be taken by students who have not, following the September sitting, passed at least one 300 series exam. It is expected to be taken towards the end of or after the Core Technical exams. It is a two day course but it is not necessarily residential. It is

it's not just for students!

expected that courses will be run within universities. The Society is currently encouraging Irish universities to run a course and is hopeful that at least one will do so initially. Students are expected to do pre-course work. It is expected that if students are well prepared that a high percentage will pass.

Issues for Employers

You need to be aware that this course exists. The pre-course work needs a computer and employers should expect that many students will seek permission to use office facilities for this. Employers need to release students so that they can attend the course. Finally, this course isn't free either.

UK Practice Modules

UK Practice Modules are to be offered in each of the Specialist Applications subjects to test knowledge of UK business practice, legislation, regulation and professional guidance notes.

One of the main drivers for these modules is to meet the needs of the regulator in the UK, and to some extent reflect a general move within other parts of the exam syllabus placing more emphasis on actuarial techniques rather than local legislation. Any Fellow or student who has passed a 400 series Paper One, or its earlier equivalent, will be given an exemption from the UK Practice Module.

The Faculty and Institute are strongly recommending that every UK based student taking a Specialist Applications paper from April 2005 takes the relevant UK Practice Module at the same time.

These modules are still in the development stage and therefore full details are not yet available. However it is likely that each module will be in two parts. The first will cover generic FSA regulation and the second will be more practice specific.

A pass is not required in these exams in order to get an FFA or FIA qualification. However there is a move within the UK to introduce the concept of a UK Practicing Actuary. It is likely that this module would be required in order to become a UK Practicing Actuary. This concept is also in the development stage and therefore details are not available.

Issues for Employers

Some employers may employ actuaries who work in the UK. In the future it is possible that these actuaries will require a certificate that they are a UK Practicing Actuary, depending upon the type of work that they are undertaking. Employees for whom grandfathering arrangements do not apply will need to sit and pass the UK practice module.

Employers will need to consider whether they support the student/actuary in taking the UK Practice Module even where the student/actuary's current work responsibilities suggest that there is no immediate need.

The Society of Actuaries in Ireland will need to consider whether Irish practice modules need to be introduced in the near future. This may be something that the Society wishes to drive itself or we may find that some push is received from the Irish regulators.

Duncan Robertson
Chairman of the Education Committee

New Qualifiers

Congratulations to those who qualified from the April 2004 exams.

John Cashman	Coyle Hamilton
Cecilia Cheuk	RSA
Tadhg Clandillon	Irish Life
Niall Clifford	Hibernian
Tom Donlon	AIG
Shane Fahey	New Ireland
Cathal Fleming	Mercer HR
Michael Frazer	Eagle Star
Alan Hughes	Hibernian
Donal Hyde	Mercer HR
Brendan McCarthy	Canada Life
Patrick McKenna	Mercer HR
Emer O'Connell	New Ireland
Conor O'Donovan	Watson Wyatt
John Thornton	Canada Life
James Treacy	Friends First
Helen Waugh	Caledonian

Call for Papers

28th International Congress of Actuaries - 28 May - 2 June, 2006 - Paris

The IAA Scientific Committee is asking actuarial associations to encourage their members to write a paper on one of the Congress themes. Shane Whelan is the Society's scientific correspondent for liaison purposes with the IAA.
If you are interested, please contact Shane at
Shane.Whelan@ucd.ie

The Groupe Consultatif's website includes the following new features,
www.gcactuaries.org

- **A searchable database of Groupe Consultatif CPD activities and materials** (developed at the request of the GC Education Committee). Members of the Education Committee have been asked to 'populate' the database, which will initially be empty, with appropriate information to establish a useful educational resource. (www.gcactuaries.org/cpd.html).
- **A dedicated (public) Solvency II page** (www.gcactuaries.org/solvency.html).

Constitution of Committees

The Society's practice committees – which address issues arising in each of the key areas of actuarial practice – have evolved in different ways over the years. Some of the committees have become rather large (the largest had 29 members in 2003/04), with each committee having a somewhat different approach to membership.

A few months ago, Council asked a working party to review the committee structures in the Society, compared with other actuarial professional bodies, with a view to bringing in a consistent approach across the various practice areas. The main recommendations made by the working party were as follows:

- Each committee should have a maximum of 10 members.
- Each member should "own" one of the issues/strands of work within the remit of the committee and should chair a sub-committee on that issue.
- The membership of sub-committees should be drawn from the wider membership in the practice area.
- Where possible, each committee should include in its membership an actuary from outside the relevant practice area, to help give a broader perspective on practice issues.
- Committee members should normally serve for about three years, with around a third of committee members standing down annually, to provide for continuity as well as rotation.
- With fewer members on the main committees, the committees will need to have a strong focus on communication to the wider membership. There should be an open forum for actuaries in each practice area to discuss current issues around two to three times a year.

These recommendations have been accepted by Council and the practice committees are currently working towards implementing them in the Autumn. There will be a review again next year, on foot of feedback from the various practice areas as to their experience of the new structures.

The five principal committees will be: Pensions, Life, General Insurance, Finance & Investment (formerly Investment) and Health & Social Policy (formerly Health Care). Cross-border Life and PRSAs will come under the auspices of the Life Committee.

The new structure should ensure that there are opportunities for all members who would like to participate in the work of the Society, perhaps initially within a sub-committee. If you are interested in becoming involved, please contact either the relevant committee chairman - Liam Quigley (Pensions), Brenda Dunne (Life Assurance), Paul Duffy (General Insurance), Pat Ryan (Finance & Investment), Tony Jeffery (Health & Social Policy) – or Mary Butler, Director of Member Services.

On the Move

⇨	Fellows	**John Feely** has moved from Abbey Life to set up **IFS Strategy Consulting** - consultancy advising international financial services providers.
		Joe McElvaney has set up a pension and actuarial consultancy company, **McElvaney Consultants.**
		Robert Frize has moved from BoE Life International to **Carrick Consulting in the Isle of Man.**
⇨	Students	**Niamh Gaudin** has moved from Mercer HR to **Finaref.**

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