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INDIAN ACTUARIAL PROFESSION
Serving the Cause of Public Interest

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एकला चालो रे...

If they answer not to
thy call walk alone,
If they are afraid and
cower mutely facing the wall,
O thou unlucky one, open thy
mind and speak out alone.

If they turn away, and
desert you when
crossing the wilderness,

O thou unlucky one, trample
the thorns under thy tread,
and along the blood-lined
track travel alone.

If they do not hold up the
light when the night is
troubled with storm,

O thou unlucky one,
with the thunder flame of
pain ignite thy own heart and
let it burn alone.

- Rabindranath Tagore
(Eng. ver. - source : wikipedia)

08/01/2012; NIA, Pune;
Photograph by Binita Rautela

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FROM THE PRESIDENT

Dear friends of the actuarial profession

End of the Journey?

This is my last column as President in the Actuary India, the Magazine of the Indian Actuarial Profession.

While I write this, I am nostalgic about my association with the Indian profession – a long journey in some sense.



Peep in to the past:

Qualified as FIA while working in the UK in year 1973, on return and some time thereafter got in to the Executive Committee of the Actuarial Society of India, the predecessor to the Institute of Actuaries of India. Memories of tall leaders of the Indian actuarial profession and the values they stood for are still fresh in my memory. Late R M Mehta is one such. His persona, values and ethics indeed the whole of him was overwhelming in many a sense. Christening in his name the waiting room beside the reception desk in the Institute office was a small tribute that I could do in September 2005, the month in which I handed over the President's responsibility.

After a long gap and on returning to Bombay (as Mumbai was called then) in the year 1992, was elected to the Executive Committee which ended with my decision to leave India in September 1993. This period, though brief was hectic, the Malhotra Committee having been appointed by the Government for opening of the Insurance industry to private sector participation, I was given the responsibility to coordinate and steer through the submission of the ASI. It was a unique opportunity to learn many a things that came handy much later when I got the opportunity to get into the Executive Committee of ASI in 1998 (or 1997, probably), having returned to India in 1997.

The beginning of the march forward:

Along with few of the younger generation members of the Executive Committee and some older ones and many from outside, the battle (yes it was so) began: broaden the horizon of ASI, include and assimilate qualified actuaries from major actuarial bodies so as to facilitate actuarial inputs in the private sector much desired by the Insurance Regulator and by ASI to prepare its young students, Mutual Recognition with major actuarial professions and many other initiatives ended my tenure of just one year as first time President in year 2001. Year 2002 to September 2005 gave me another opportunity to serve as President and take many initiatives that put the ASI on a platform much stronger than before and brought it closer to other major actuarial bodies: MRA with Institute and Faculty in the UK and with IAAust of Australia and in number of ways with International Actuarial Association (IAA), the global umbrella of the actuarial profession. We have never looked back since then, the pace of march forward may be subject to debate though. The ASI became Institute of Actuaries of India (IAI) in year 2006 under an Act of Parliament passed in year 2005 and I moved out of the Executive Committee in which position I had remained after ceasing to be President in September, 2005.

Again!

Gap of about four years, rather long for someone who was so much responsible that had happened from year 2000 to 2005 (that is how I think, at least) with 'heat and dust' going along with it, brought me again into the thick and thin of the affairs of the profession. Request by few friends deeply involved in the Institute affairs, just prior to year 2010 Council elections brought me back as President again exactly on 4th September, 2010. Two years gone – it appears it was just the other day. The challenges and the risks along the path of presidentship very different than the earlier period of ASI, however, this is not the space where these issues should be discussed.

The Governance:

After some consultations with friends, I had to take a quick call about the Committees within the Actuaries Act provisions, section 26 the Disciplinary Committee and others that could be under Section 21, the Audit, Investment, CoP/CPD and any other that Council could appoint within the prescribed framework: all Council members but could have not more than 1/3 of the total committee number from outside the IAI members but not within the IAI membership. A difficult proposition but that is how the law is. The Advisory Groups were created earlier but I felt that these were full of Council members and in many cases as Chairs. Such structure, on the one hand could lead to a situation where recommendations from the Advisory Groups had better

chance of adoption by the Council and on the other hand any proposal that the Council member Chair was not comfortable with, had very little chance of going to the Council even. Aside from such functional deficiencies, the membership of the Advisory Group could be heavily influenced by the Council's pre-perceived views. I took the call that the Advisory Groups have to be instruments of governance of the President who is also the CEO (under section 17 (2)) of the Actuaries Act and should be constituted in a manner that these become discussion forums of quality so as to examine issues and make suitable recommendations which President could then take to the Council if policy decisions were required which otherwise could be implemented. The 15 Advisory Groups thus constituted (with some council members included there in) along with some Working Group's proved to be real source of strength.

Journey worth the efforts:

Has the journey of two years been smooth? Certainly not.

Has it been devoid of controversies? Certainly not.

Whether these two years produced some results that have the potential of changing the shape of the profession? Certainly yes.

Are there objectives that I had set for but could not achieve? Certainly yes.

First thing first, the results;

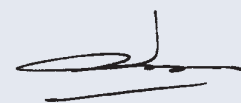
- 1) **ACET:** project that involved number of agencies and by some estimates could have taken about year and half at the least was completed in about nine months. ACET 1 and ACET2 behind with May 2012 exams having first batch of ACET students appearing has produced results that clearly show higher rate of passes for ACET students in comparison to earlier category of students. With spread of exam centres from 12 to 41 across India, I would rank ACET as **NUMBER ONE** success story. All credit to Varun Gupta, Chair of Examination Advisory Group and Puneet Nayyar, member of the Advisory Group who held responsibility for the ACET Project.
- 2) **The CT9, ST9 and the CERA:** Resolution of the issues with CT 9 examinations, introduction of ST9 and application for CERA are three achievements, I believe should get **NUMBER TWO** rank and these certainly have huge potential to shape up more global brand for the IAI resulting into global opportunities for IAI members. Pranshu Maheshwari, Varun Gupta and Sanchit Maini respectively deserve just about all the credit in taking these initiatives to closure which involved very diligent and collegial working with IFA.
- 3) **The VMV:** The Strategy Initiative that took near about one year in planning and execution culminated in four workshops from May 2011 to July, 2011 which had all the elected Council members (without exception) and the Advisory Group Chairs/Honorary Secretaries participating. The journey to Vision, Mission and Value statement which the Council in its meeting on 24th August, 2012 adopted, throws up path to the future and in retrospect had huge learning points as the path was marched along. I would like to claim **NUMBER THREE** rank for this.
- 4) **Member Services:** The Member Tracker System Project starting some time in year 2008 having failed, the data management and consequently member services were under huge strain. The Project had to be scrapped with consequent financial loss and the challenge of developing the system internally was taken up. The whole of data system and online member services delivery is up stream along with upgraded Website. Its an ongoing process and should be never ending. The success lies in putting all this on track which has happened. Going along with this, the input that is taken through survey feedbacks and consequential actions by the admin, I believe should take **NUMBER FOUR** place.
- 5) **The face of the IAI – the Actuary India:** I would like to end this “blowing-my-own-trumpet” with the continually growing better face of the IAI, the Actuary India. Decidedly, **THE NUMBER FOUR** success story.

Lastly but more importantly the NON- Achievements:

One and the only one, Actuarial Practice Standards compliance monitoring and enforcement. Attempted but had to restrain. Collectively we are just not ready yet to understand that compliance and enforcement is the key to our success as a profession and strength to us individually in the eyes of the public.

Is this the end of the journey for me?

Thank you all for great support and understanding.

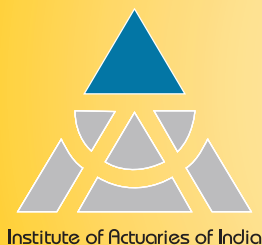


Regards

Liyaquat Khan

Let's hope for the best.

[illegible]6 The Actuary India August 2012



VISION & MISSION VALUE



THE VISION

IAI to be globally well recognised professional organisation, developing enduring thought leadership to manage uncertainty of future financial outcomes.

THE MISSION /OBJECTIVES

- To educate/train risk professionals
- To enhance and maintain high professional standards
- To shape Public Policy and Awareness
- To engage with other professional / regulatory / government bodies
- To promote/build IAI as a respected Brand of risk management globally
- To promote Research, to advance actuarial science/application

THE VALUES

- Integrity
- Respect for others' views
- Accountability
- Continuing learning/Research oriented learning
- Transparency
- Be responsive/sensitive

VISION, MISSION AND VALUE STATEMENT

(Excerpts from the book: Bootstrap leadership – 50 ways to break out, take charge, and move up by Steve Arneson)

Vision & Mission provides purpose and direction to an organization and paves way for road to success

VISION – Vision is the dream – the future state, where you want to go. Think of it as **the why** – as in, “Why does our group exist?” The vision should be aspirational and motivational; something the team can rally around. Aim high and make it aspirational. A great vision can unify a team and give its members a reason to come to work every morning.

MISSION - Mission is the goal: the objective in front of you. Think of it as **the what** – as in: “What are we trying to accomplish?” The mission should be challenging and should describe the business you’re in and the customers you are trying to serve (whether internal or external). The mission should be connected to the vision; that is, by accomplishing the mission, you move closer towards making the vision a reality.

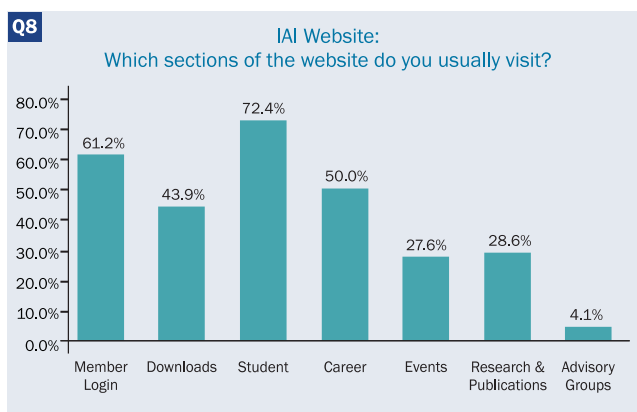
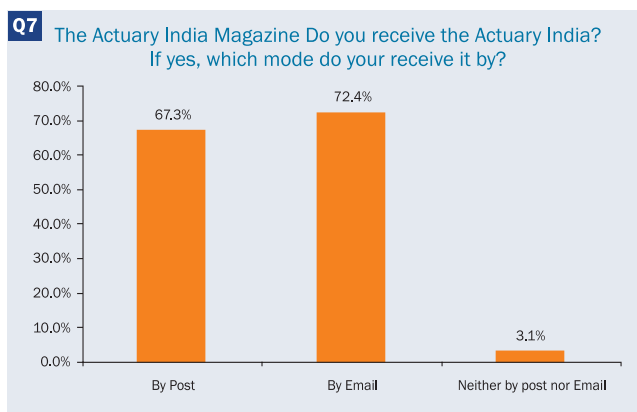
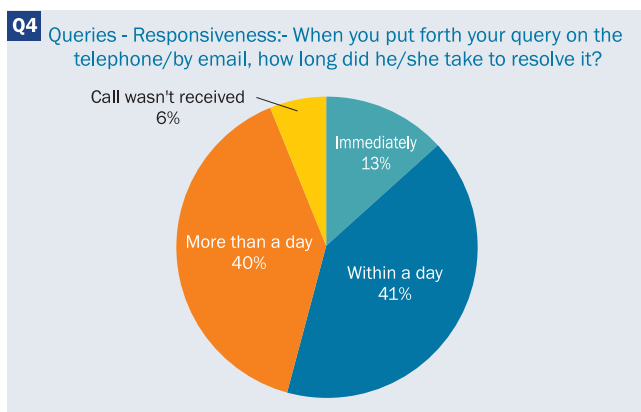
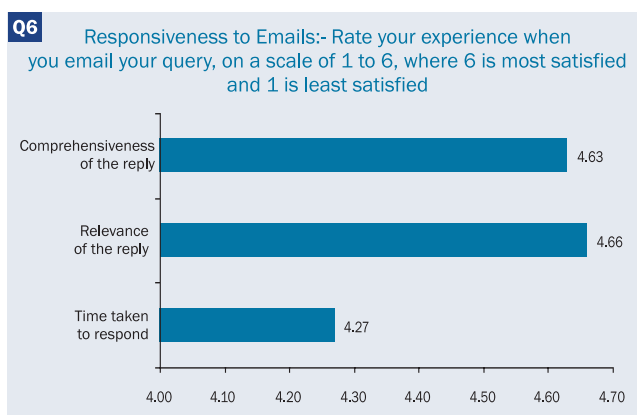
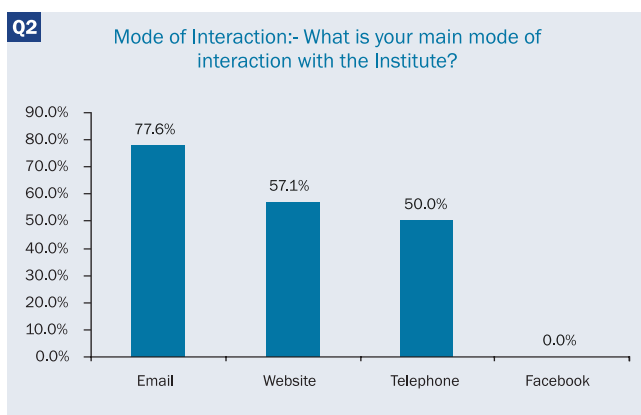
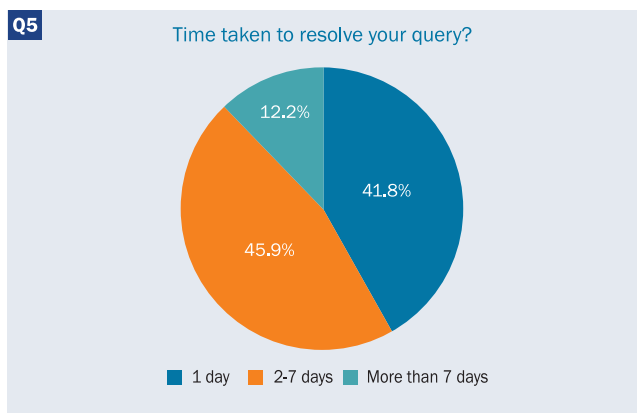
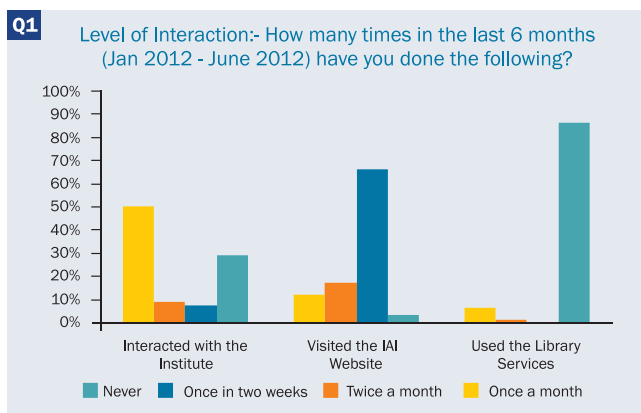
DEVELOP STRATEGY – Think of Strategy as **the how** – as in “how are we going to complete the vision?”. Strategy describes the specific plans taken to meet the objective, and should be clear and measurable. Good strategy includes detail about how the work will be accomplished, and includes resources, responsibilities, budget, metrics, and milestones.

VALUES - Value statements are often referred to as “guiding principles”. A value statement is an expression of a company’s or individual’s core beliefs. It allows for the company’s staff to be aware of the priorities and goals of the company.

The value statement, along with a mission and vision statement forms the corporate culture and climate.

IAI - MEMBERS SERVICE DELIVERY : YOUR PERSPECTIVE

We had conducted a survey to get your views on “Member Satisfaction” with the services delivered by IAI. Many members took the survey and the results are below for your consideration.



NEW MATHEMATICS FOR STOCHASTIC & RISK MANAGEMENT WORKSHOP

by Himanshu Bhatia

Organized by : Institute of Actuaries of India

Venue : Hotel Sea Princess, Mumbai

Date : 28th July, 2012

World is changing so are the risks ... risks are becoming complex so should be the mathematics used to quantify them... "New Mathematics for Stochastic & Risk Management Work" was a one day workshop organized to provide deep insights into new mathematical frameworks to be used in the Stochastic and Risk Management work of Indian actuaries.

The workshop was conducted by Dr. Frank Ashe who is a part-time Associate Professor at the Macquarie University and has a consulting practice specializing in risk management, investments and behavioral finance. He has over 30 years of practical experience predominantly in the measurement and management of financial risk and return.



Frank Ashe, Avijit Chatterjee

The workshop commenced with an introductory speech by Avijit Chatterjee, Appointed Actuary (AA) of ICICI Prudential Life Insurance Co Ltd. In his introductory speech, Mr. Chatterjee welcomed the participants and Dr. Ashe on behalf of IAI. He shared his perspectives on

increasing relevance of stochastic modeling in actuarial work. Liyaquat Khan, President, IAI inaugurated the workshop. He emphasized on the importance of Risk Management in the future Actuarial Profession and thanked Dr. Ashe for the workshop.



Frank Ashe

Dr. Ashe started the real proceedings i.e. sessions sharing his experience in the field and the research he did for the workshop. There were four interactive and interesting sessions covering the following topics:

- Modeling Volatility
- Extreme Value Theory
- Statistical Bootstrapping
- Stochastic Calculus
- Copulas
- Simulation with all this

Modeling Volatility

The topic took off with Dr. Ashe supporting the theme "Volatility is not constant" with various graphs illustrating historical volatility observed in the equity indices of India and abroad. He emphasized that

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the market movements are unpredictable whereas the squared marked movements are predictable. He explained various models for volatility modeling like Stationary, Log auto-regressive, regime-switching, MA (Moving Average), EWMA (Exponential Window Moving Average) and GARCH(p,q) (Generalized Auto-Regressive Conditional Heteroscedastic) with the focus on the last two. He discussed the asymmetry in the volatility due to the direction of the market movement and incorporation in the modeling. He explained that the observed log equity returns doesn't appear to follow a normal distribution whereas the standardized log returns i.e. log equity returns divided by volatility does. Further, the volatility of the illiquid assets like property was discussed along with differentiation of volatility for overlapping and non-overlapping periods.

Extreme Value Theory (EVT)

Dr. Ashe introduced EVT comparing it with the CLT (Central Limit Theorem) and commenting that CLT is for pricing actuaries whereas EVT is for the reserving actuaries to look into the tails of the returns. According to EVT, the tails of distribution of returns (X) follow Generalized Pareto Distribution (GPD) with density function $F(x)$ defined as $F(x)$



$= 1 - (1 + k(x-u)/s)^{-1/k}$ (x is sufficiently large and presumed to be larger than some threshold u , s (> 0) is a scale parameter (drives the spread), k is a shape parameter (drives the tails)). He explained the calibration of the parameters (s and k) of GPD from past data. He discussed how the fit of GPD to the data can be tested using Q-Q plots with his work on past. He complemented the discussion on EVT with an exhaustive excel spreadsheet which allowed to play with the threshold, parameters, frequency of returns etc. used and illustrated the impact on the distribution and the fit.

Statistical Bootstrapping

Dr. Ashe started with the discussion of the problems of sampling (like only one sample), statistical complexity (where confidence intervals/standard error are difficult to compute) and biased statistics which paves the way for Bootstrapping, a particular form of a resampling procedure. He explained the bootstrapping technique – calculation of residuals and estimation using an illustrative modeling exercise on outstanding claims of a general insurer. This model included recursive calculation of the residuals between the actual past claims and estimated claims and adjusting the model with the distribution of errors (residuals).

Stochastic Calculus

Dr. Ashe introduced “Ito’s Lemma” and derived the Black-Scholes formula in crisp and quick way. He discussed No-arbitrage principle with few examples and provided deep insights into Risk-neutral valuation including state prices, risk-neutral probabilities, discount factors. Further, risk-neutral valuation of a call option was demonstrated using the simulation and valuation techniques discussed. He emphasized that the difference between the returns and log – returns is generally missed but it should be appreciated.

Copulas

Dr. Ashe suggested the participants to have lots of sugar in the evening tea-break so that they can understand and digest the complex topic of Copulas. He took off with the discussion of Multivariate probability distributions, dependence and correlation between the random variables. Then different correlation measures including Pearson’s rho (product-moment correlation), Spearman’s rho & Kendall’s tau (rank correlation) were discussed in detail with their pros and cons. Dr. Ashe demonstrated the correlation in the bivariate distributions using beautiful 3-d graphs. He explained the concept of Copulas function which combines set of marginal distributions to form a joint

distribution (using Sklar’s theorem). Further, he discussed few copulas like Gaussian copula, Student copula and tail dependence property. He explained how the analysis changes when the correlation measures are calculated for data (returns) at various time lags.

Simulation with all this

To wrap it off in style Dr. Ashe gave an overview of simulation (Monte Carlo) techniques that are an integral part of stochastic work/analysis. He started with pros and cons of Pseudo-random numbers which can be generated from an initial seed using a deterministic sequence. He discussed various variance-reduction techniques which can help in providing good set of random numbers. At the end Dr. Ashe quickly summarized the topics of all sessions and answered few questions of the participants.

As all good things come to an end, so did this one with closing remark by Mr. Chatterjee who also presented a memento to Dr. Ashe.

The slides of the workshop can be downloaded from the following link: <http://actuariesindia.org/events/past-events-within-india/details/41-new-mathematics-for-stochastic-a-risk-managment-work.html>



LEADERSHIP DEVELOPMENT PROGRAM

by Devinder Kumar

Organized by : Institute of Actuaries of India

Venue : Hotel Regenta, Rajokri, Delhi

Date : 18th & 19th August, 2012

The Leadership Development Program is an attempt of the Institute of Actuaries of India (IAI) to inculcate leadership qualities into practicing and budding actuaries.

A two days seminar was held in Delhi on 18th and 19th August 2012. There were 14 participants.

The seminar started with brief introduction of the participants and the faculty. The faculty Mr. Nimesh Rathod is a renowned face in the area of training specially "Leadership Qualities".

During two days seminar, a number of activities were undertaken to learn the skills of a good Leader. The activities were thought provoking and interesting way of making analogies.

The interaction and participation during the seminar emerged into following key items required to be a leader:

- Communicate as a leader (Starting with Active Listening)
- Managing self thro' Planning and prioritization
- Managing others thro' Optimization of resources &
- Developing subordinates to be future leaders

A Leader should be very clear whether a particular job is doable or not. There needs to be a process setup for every critical function. Highest priority to Information flow-in time (Bad or Good) so that there are no surprises.

A few advises were given for a good leader:

- Planning - Good Leaders always PLAN and then execute. Leader should spend maximum time on planning. Leader should know the End Result/Output at beginning and then start backward, setting mile stones, managing resources etc.
- Distinguish between "Urgent" and "Important". Very often Urgent things are not so important but Important things can become "Urgent" if planning is not done on time.
- Approach to Review Meetings- they are drivers of growth as a leader
- Do not wait till deadline to finish the work- rather plan and execute
- Identify the critical resource and then protect him; nourish him & always have back-up plans in case he is not around
- Do not be a problem solver for a team member- allow team members to solve their day-to-day problems – so that they could become leaders soon by taking decisions
- Shield the Team members- so that team always feel protected and dare commit mistakes
- Should believe in "High Risk High Return" theory- Playing safe makes you manager not leader
- Do not shoot the messenger- Otherwise information won't flow to

About the Author



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you from next time

- Do not escalate -- If at all, go with alternative solutions

The feedback of the seminar on a scale of 1 to 5 (1 being poor and 5 being excellent) averaged out to be 4.6, with minimum rating given 4. This shows that the seminar was very much appreciated by the participants.

Varun said- ***I Came with the thought that there will be lot of theory but thankfully the workshop was full of relevant activities.***

Nikhil said- ***The workshop was extremely well structured and very relevant.***

These remarks proved to be the sentiments of most of the participants.

President IAI, also addressed the participants. He mentioned that Indian actuaries do not have any geographical boundaries today. They have got overseas opportunities as well. They should not only have the required technical skills but also the leadership qualities if they want to succeed in their profession.

Seminar ended with a short film with a message for all participants:

"Lead & Shield Your Team".



UNDERSTANDING LATEST DEVELOPMENTS IN IFRS FOR INSURANCE INDUSTRY

by Bharat Venkataramani

Organized by : Advisory Group on Accounting and Solvency

Venue : ITC Grand Central hotel, Mumbai.

Date : 22 August, 2012

The IAI Advisory Group on Accounting and Solvency organized an interaction with K Prabhakar ("PK"), Member – International Accounting Standards Board (IASB), UK, on the topic "Understanding latest developments in International Financial Reporting



K Prabhakar

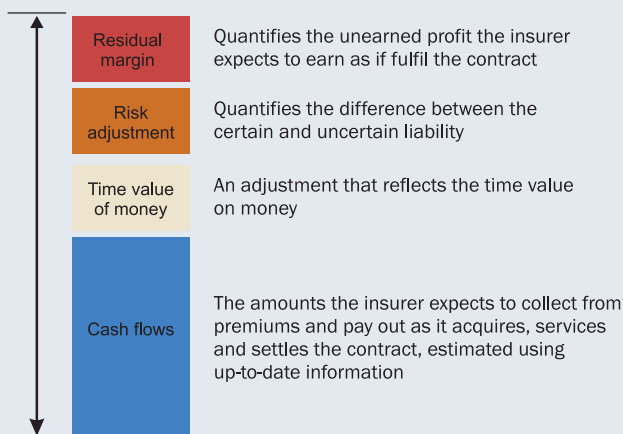
Standards (IFRS) for Insurance Industry". The event was held on 22 August, 2012 at the ITC Grand Central hotel in Mumbai.

Sathyan Jambunathan, Chairperson, Advisory Group on Accounting and Solvency introduced the speaker to the participants. The participants included members of the profession from life and non-life companies, consultants and reinsurers.

The session was very interactive. PK attempted to address the concerns that the participants had regarding the application of the IFRS regime to India. He encouraged the Indian Actuarial profession to play a more active role in the development of the IFRS by participating in the standard setting process. He invited the members of the profession to put forth their point of view and associated justifications to the IASB. This, he reiterated, would go a long way in developing standards that better suit the Indian market and avoid the need for carve-out.

In his presentation, PK updated the audience on the latest developments in the standard relating to insurance contracts, IFRS 4. He informed that key decisions have been reached around definition, scope, unbundling, measurement

Measurement of insurance contracts liability



About the Author



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of insurance contract liability, special applications with regard to participating contracts, reinsurance, short-term contracts and presentation. However, issues around volume information, residual margin, disclosure etc. are yet to be finalized. He further elaborated on the aspects of the exposure draft relating to measuring insurance cashflows, time value of money, risk adjustments, residual margins and premium allocation. It is expected that there would be a second exposure draft before the standard is finalized. The standard is not likely to be effective before January 2015. For the benefit of the participants he listed a few internet links that would help to stay abreast of the latest developments on the exposure draft.



Liyaquat Khan

The evening ended with a vote of thanks by Liyaquat Khan, President, Institute of Actuaries of India.



RESEARCH INITIATIVES OF THE INSTITUTE OF ACTUARIES OF INDIA

VISION, MISSION AND FRAMEWORK

by Vinod Kumar

Keeping the long time existence and functions of the Institute of Actuaries of India, one may observe that it took long time to formulate the Mission of the Institute, however, formation of research team as a part of implementing one of the important missions of the Institute “to promote research to advance actuarial science/ application” have taken place within the shortest possible time. The Advisory Group on Research and Publication (AGRP) constituted and effective from 13th September, 2011 chaired by Ms. Tania Chakrabarti has lost no time to formulate its strategy for Research Activities of the Institute.

As approved by the Council meeting held on 12th June, 2011, a four member team has been formed with members joining on regular basis till the month of August’12.

It’s no wonder that anyone who understand the term “Research” related to functionalities of insurance may lead to conclude that the research team would be doing activities such as Mortality & morbidity investigations, calculation of other indicators such as persistency levels, revival behaviour, IBNR rates etc.,. This is partially true when we understand that the Research team would be closely working with MMIC and intend to take up such investigations analysis which can add value to the market and market players. These exercises are some of the simplest form of research and analysis which can be undertaken by the team. What is important for them is that there are tougher tasks making complete sense of Research for the profession. These tasks can be understood better if we knew strategies formulated by AGRP for its research activities as:

- I. To identify subjects for research, to encourage working parties and individuals to undertake research, and disseminate research findings within the profession, academia and external bodies. All the projects would be anchored under the research dept of IAI and MMIC
- II. To be responsible for putting in place and reviewing an institutional system of commissioning research project every year under IAI. The group would

be guiding the MMIC and research dept under the IAI on various research related matters.

- III. To identify key / emerging issues across all practice areas which may require research and insights in the coming months / years by the actuarial profession
- IV. To identify subjects for research, to encourage working parties and individuals to undertake To be in touch with the research groups of other actuarial bodies of UK, Australia, US etc to seek opportunity to engage in collaborative research projects
- V. To participate in the seminars organized by each practice area

THE RESEARCH TEAM

Name	Joined as
Vinod Kumar	Head-Research
Arpi Bhavsar	Actuarial Research Executive
Manisha Mehta	Actuarial Research Executive
Kavita Sakure	Actuarial Research Executive

group and present either the research work done by the group or talk about some emerging issues relating to the practice area

- VI. To advise the Institute on any regulatory or market issues that potentially may affect the status of the profession.

There are established Research teams functioning under other Actuarial professions across the world. Prominent among them include actuarial professions in US, UK, Australia and Canada. The International Actuarial Association (IAA) too has strategic objectives to facilitate the use and expansion of the scientific knowledge and skills of the actuarial profession and promote research activities. The key success factor for all such well-established research bodies of actuarial professions is understood as its members who as individual volunteers or member led groups showing interest in all research initiatives and immensely contributing their time, knowledge, information, skills and experiences. There are compact models within which they work; however, the key factor remains the active interest shown by the

About the Author



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Vinod Kumar is Associate member of Institute of Actuaries of India and is currently heading Research team at IAI.

members of the profession.

With this understanding, the research department has drafted its Vision, Mission and framework aligning to the related mission of the Institute and also to the strategies formulated by AGRP. Having this alignment, vision and mission of the Research department termed as obvious; the framework or model to function the team leading to successful implementation of projects it undertake is going to be a testing machine for the Indian actuarial profession, keeping in view of the key success factor for other bodies.

The framework identifies four sources of research on a broad basis and under each source, suggests resource generation, delivery model, Dissemination process and source/s of identification of projects. Four main sources of research include:

- Individuals, Individual led groups, Institutions and Research bodies
- Strategic Research
- Projects in Collaboration
- University Links

A process document by which a research project takes its full turn to generate a report is also a part of the frame work which makes the Vision, Mission and Framework document complete. The Council meeting held on 24th August, 2012 has taken keen interest to discuss the whole of the document and adopted for its implementation.

The Research team is ready with all required foundations and in a position to embark on implementing its research projects as envisaged in the in the framework. Members of the team would be reaching out to all of you with great expectations of your active participation and involvement in all regular research projects. Keep watching profession’s website and/or pages of “Actuary India” magazine for announcements of research projects.



THE FALL OF EQUITABLE LIFE ASSURANCE SOCIETY – LESSONS FROM THE DISCIPLINARY ACTION

by Neelam Sharma, G. R. Surya Kumar and Akshay Dhand

It is said that history can teach us many a great things which can help us make better decisions in the future. The decline of the Equitable Life Assurance Society (ELAS) is one such incident whose study can provide important lessons to the current and future generations of actuaries. This article details this incident and in particular discusses the lessons that should be learnt from the disciplinary action taken by the Institute of Actuaries of UK against three former directors viz. Roy Henry Ranson, Christopher Paul Headdon and Alan Nash of ELAS.

With-profits business of ELAS

In 1762, ELAS was formed as 'the Society for Equitable Assurance on Lives and Survivorship' in the UK and is regarded as the first and oldest mutual life assurance company in the world. The Society was registered with its current name as a private unlimited company on 18th August 1892.

Up to 1950s, ELAS was a relatively small mutual selling largely retirement plans to university staff. In 1957, ELAS started selling retirement annuity policies to general public. These had to be written as deferred annuities but were structured as with profit endowments with a Guaranteed Annuity Rate ("GAR"). The policy included an underlying Guaranteed Investment Return ("GIR") of 2.5% p.a. in deferment and a GAR at 4% p.a. interest to convert the accumulated single premiums net of expenses to an annuity. Premiums were on a recurrent single premium basis with future single premiums receiving the same guaranteed terms. No additional premium was charged in respect of the guarantee.

From October 1975, new policies were written with a GIR of 3.5% and a GAR of 7%. In July 1988, these Retirement Annuity Policies were withdrawn and replaced by Personal Pensions policies which did not include a GAR.

Bonus Policy up to 1988

Many of Equitable's with-profits policies were designed to provide a pension for the policyholder on retirement" and the lump sum available for annuity purchase depended on the sum assured, the reversionary bonuses and the larger terminal bonus. Both types of bonus

were allocated at the discretion of the directors in accordance with Article 65 of the Articles of Association, the total being intended to reflect the investment return over the lifetime of the policy, subject to smoothing.

Up to this period, interest rates were quite favourable and the ELAS management was keen to distribute most of its profit in the form of reversionary bonuses. There were no penalties on surrendering policyholders, no market value adjustments were applied, no estate was maintained and according to Christopher Headdon, **"At no time did ELAS ever hedge or reinsure adequately against the GAR risk to counteract it. The reason for this was ELAS's belief that it could ...neutralise the potential effect of the GAR risk through the exercise of its discretion to allocate final bonuses under Article 65"**.

New Bonus Approach from 1989

In November 1989, Mr Ranson recommended to the Board a new system for allocating the bonuses called **'Managed Fund Approach'**. According to it, with-profits policyholders were treated as participating in a "managed fund". The approach was adopted by the Board. Accordingly, a total roll up rate (**"Policy Value accumulation rate"**) were declared having regard to actual earnings on the fund in that year. The roll up rate would be divided between declared and final bonus. Declared bonus was guaranteed and had to be reserved for. Terminal bonus depended on current asset values to a greater extent and could be reduced at any time. Thus, since no guarantee attached to the terminal bonus, there was generally no requirement to hold a

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valuation reserve for it.

Differential Terminal Bonus Policy ("DTBP")

The Current Annuity Rates (CARs) fell below the guarantee prompting GAR policyholders to exercise their rights from mid 1990s. To tackle the GAR risk, ELAS adopted a **Differential Terminal Bonus Policy ('DTBP')** where, In the event that the policyholder opted to exercise his option to apply GARs to his vesting value, the non-guaranteed terminal bonus was reduced to such a value that when the total vesting value including the reduced terminal bonus was multiplied by the GAR, it produced the same annuity as if the original vesting value had been multiplied by the CAR in force at the time.

While the notice of the amendment in bonus policy regarding DTBP was given to the sales staff, no information was provided to the policyholders.

Events leading up to closure to new business

In 1998, the Government Actuary Department (GAD) and the Treasury insisted that reserves for policies containing GARs should be strengthened by £1.5bn. This proved possible by ELAS affecting a "Stop Loss Reinsurance Treaty" with Irish European Reinsurance Co Ltd. The treaty was not finally completed until October 1999 but which with the agreement of the FSA was treated as having been in force at 31st December 1998 for the purposes of approving the year end 1998 returns. This had the effect of reducing statutory reserves by £800mn in that year. The FSA informed the Chief Executive Mr Nash that in the absence of that treaty it would be unable to allow ELAS to declare a bonus in respect of 1998.

Another development was the significant number of complaints that began to be made from mid 1998 to the Personal Investment Authority (PIA) by policyholders with GARs who disputed ELAS's right to allocate a lower level of terminal bonus to policies if the GAR was used.

In January 1999, ELAS issued declaratory proceedings against one of the complainants, Mr Alan Hyman, to test the validity of the DTBP. ELAS won in the High Court in September 1999, but lost following Mr Hyman's Appeal to the Court of Appeal in January 2000. ELAS's now sought a ruling by the House of Lords.

On 20th July 2000, the House of Lords upheld the Court of Appeal ruling and concluded that ELAS could not apply different rates of bonus depending on whether or not a policyholder chose GARs. The effect on ELAS was to require reserves to be strengthened by a further £1.5bn immediately. This was to be done by imposing a moratorium on bonuses for seven months and by attempting to raise money through agreeing to demutualise and to seek a purchaser for ELAS.

However, no purchaser for the whole of ELAS was found and ELAS closed to new business in December 2000.

Aftermath of the Society's closure to new business

Consequences of the closure to new business were significant for ELAS. The President and seven non executive

directors resigned on 20th December 2000. Vanni Treves became Chairman in March 2001 with Charles Thomson as Chief Executive.

On 4 February 2001, the Halifax agreed to buy Equitable's operating assets, sales force and non-profit business for a payment of up to £1 bn. On 20 September 2001, the Compromise proposals were published offering 17.5% increase for GARs in exchange for the guarantee and 2.5% for non GARs in exchange for abandoning any legal claim.

In July 2001, policyholders were angered to be told their savings had been reduced by 16% whilst in November 2002 pensioners were told that with-profits annuities were out of line by about 30%. 50,000 Annuitants suffered a 20% reduction in income.

In February 2007, Equitable completed the transfer of £4.6 bn of annuities to Canada Life and in November transferred £1.8 bn with-profits annuity policies to Prudential.

In November 2008, Equitable announced that the process of the sale of the Society's remaining business would be put on hold and that the Board would instead review the arrangements to run off its existing business.

Reviews & enquiries conducted on the Society

In May 2001, FSA concluded that ELAS had breached rules of its former regulators the Life Assurance and Unit Trust Regulatory Organisation (LAUTRO) and the PIA in failing to disclose risk of the existing GAR policies to new non-GAR policyholders

Corley Report was published on behalf of Institute of Actuaries in September 2001. It recommended that Appointed Actuary should insist on a process for reviewing communications to policyholders, should resist holding a dual role as CEO and his work should be subject to peer review.

In October 2001, Baird report stated that there had been some "deficiencies" on the part of FSA in the discharge of their regulatory responsibilities

The Penrose report, published in March 2004, found that ELAS had made over-generous payouts to policyholders & accused the former management team of dubious practices and nurturing a "culture of manipulation

and concealment" Penrose stated that **"Principally, the Society was author of its own misfortunes. Regulatory system failures were secondary factors"**.

Disciplinary action against directors of the Society

In 2004, the Institute of Actuaries' investigating committee laid charges of misconduct, in regard to their conduct of the affairs of ELAS over 1988-2000, against three of its members:

Mr. R Ranson FIA, as the Appointed Actuary and as Managing Director and Actuary

Mr. C Headdon FIA, as the Senior Assistant Actuary and as Appointed Actuary

Mr. A Nash FIA, as Managing Director and Actuary

In 2006, disciplinary proceedings were heard by a panel of the Disciplinary Tribunal. The Panel consisted of three actuaries, and two non-members with the Chairman, Mr. Philip Hodson, being a solicitor.

Mr Ranson was charged with failing to:

- identify and/or monitor and/or manage the risks that the Society was running which cumulatively led to the Society being weakened and unable to meet the reasonable expectation of policyholders and alleged failure adequately to notify the Society's board of such risks
- act appropriately with regard to the actuarial practices of the Society and the advice to the Society's board
- take proper steps to ensure that the:
 - reasonable expectations of the Society's pension policyholders as to the value of their policies were consistent with their actual value
 - board was properly advised and policyholders were properly informed in relation to the differential terminal bonus practice
 - reasonable expectations of both GAR and non-GAR policyholders were not allowed to develop in a way which could not be met in the aggregate.

The above constituted a breach of the standards of integrity, competence and professional

judgment expected from the profession and hence Mr. Ranson was expelled.

Mr Headdon was charged with failing to:

- take appropriate action, on becoming aware of what appeared to be a breach by another member of the Memorandum on Professional Conduct and/or guidance notes, and causing and/or contributing to the breaches by the other member.
- provide full information to the Society's board on the financial position of the Society and failed to advise the board accurately on its policyholders' reasonable expectations.
- disclose to the regulator the signing, in April 1999, of a side letter to the Society's reinsurance agreement with ERC Frankona.

As a result of the above charges Mr. Headdon was admonished.

Mr Nash was charged with:

- failing to ensure that the board was properly informed and advised in circumstances where the aggregate policy value of the Society's policies as reported to policyholders consistently exceeded the value of its asset.
- authorising and signing a letter to policyholders dated 1 February 2000, upon which policyholders were likely to rely, that allegedly misrepresented the Society's position in the event of its appeal to the House of Lords failing.

As a result of the above charges Mr. Nash was admonished.

Lessons from the disciplinary action

The disciplinary action against the former directors of ELAS has taught significant lessons for the conduct, administration and regulation of life assurance business.

For the companies

Insurance companies must avoid dependency on single line of business and should try to diversify their business as far as possible. Moreover, wherever the insurer provides guarantee to the customer, it must make proper provision in respect of that guarantee. In case of with - profits business, bonuses must be allotted considering Policyholders' Reasonable Expectations (PRE) and the interest of all the stakeholders. Finally, companies need to have an effective corporate governance framework and a rigorous risk management policy to counteract the risks arising from future adverse scenarios.

For the actuarial profession

Actuaries must avoid accepting 'dual-role' which may limit the independence required to discharge statutory duties such as those of the Appointed Actuary. They need to follow the professional guidance notes not just in intent but also in spirit. Valuation method and basis used by them must comply with relevant regulatory requirements, keeping solvency of the company at top priority. If a product offers any guarantee or option to the customers, the same should be appropriately valued. Actuaries need to maintain necessary and appropriate communication with policyholders, sales agents and the Board of the Company when taking decision (e.g. on bonus rates). They must also ensure openness

and transparency in their interaction with regulators.

For the Regulator

Regulators must ensure timely updation of regulations. They must have a clear statement of a life office's approach to the financial management of its with-profits fund, and its approach to smoothing returns to policyholders. They should ensure that all such statements are available to the general public, policyholders and their advisers. Regulators must insist on independent and effective actuarial audit of the insurance business. Reporting requirements for firms should be designed to pick up significant changes in the balance of interests of new and existing policyholders within the same fund. Regulators must ensure that consumers of financial products are informed, clearly and succinctly, of the scope of regulation and what can be expected of it.

Lord Penrose stated that the practices of the Society's management could not have been sustained over a material part of the 1990s had there been in place an appropriate regulatory structure adapted to the requirements of a changing industry that happened to manifest themselves in an extreme form in the case of Equitable Life. But it is worth emphasising that however highly specified the tools might be, and however well-adapted to the needs of practical regulation, they will be useless unless the personnel charged with their use have the skills and experience necessary for their effective application.



Welcome...



Manisha Mehta has joined on 24th July, 2012 as Actuarial Research Executive. She is a Chartered Accountant, B.Com. Her hobbies include teaching, drawing and playing chess.

We welcome her to the family of Institute of Actuaries of India. She can be reached at manisha@actuariesindia.org , Phone: 022-67843321.

IAI VALUE : BE RESPONSIVE

"It is easy to dodge our responsibilities, but we cannot dodge the consequences of dodging our responsibilities."

- Sir Josiah Stamp

THE HIH STORY

by Alap Mehra, Vaibhav Tyagi, and Debarshi Chatterjee

HIH Insurance was one of Australia's largest insurance companies with worldwide operations. On 15th March, 2001, it was placed under provisional liquidation. With losses totaling to \$5.3 billion, this was the largest corporate collapse in Australia's history. In this article, we explore the reasons for its failure and its impact on the insurance industry.

HIH Origins

The origins of HIH can be traced back to 1968, when Ray Williams and Michael Payne incorporated MW Payne Liability Agencies Pty Ltd to underwrite insurance business in Australia as an agency for two Lloyd's of London syndicates.

At the time of liquidation the HIH group consisted of over 250 subsidiaries in a highly complex structure. Their operations were worldwide with businesses functioning in numerous countries such as Hong Kong, the UK, the US and New Zealand.

Collapse

With \$7.8 billion in assets, HIH was considered one of Australia's largest insurance firms. However, due to rapid expansion, unsupervised delegation of authority, extensive and complex reinsurance arrangements, and other reasons detailed in the next section, HIH was left, on paper, with net assets of only \$133 million by early 2001.

In 2001, the board appointed a provisional liquidator (McGrath & Riddell) to take control of HIH and 17 of its controlled entities. McGrath estimated that HIH had lost over \$800 million over the six months to 31st December, 2000.

HIH insurance is currently in run-off, which means it is managing its outstanding claims and not writing any new business.

Reasons for Collapse

Following the failure of HIH, the HIH Royal Commission (HIHRC) was established by Australian Prime Minister John Howard to enquire the collapse. Justice Neville John Owen headed the Royal Commission, which tabled its report to Parliament on 16th April, 2003. The report provided the following reasons for the collapse:

Under-reserving

Systematic under-reserving was one of the main factors for the failure of the company.

Reserving Date	Reserving Basis	Actuary	Reserve
31st Dec 2000	Going Concern	HIH Actuary	\$3.1 Billion
15th March 2001	Going Concern	Independent Actuary	\$5 Billion
15th March 2001	Break-up		\$5.7 Billion
15th March 2001	Break-up with prudential margin		\$7.4 Billion

The table above compares the reserve estimates of HIH's Consulting Actuary with those of the independent actuary

Failed UK and US operations

HIH suffered losses in its UK and US operations. The losses emerged mainly due to problems in provisioning data, the lack of a consistent underwriting approach and incoherent business philosophy. The losses could not be sustained and both the operations were finally put into run-off.

FAI acquisition

Poorly conceived and badly executed acquisitions were another factor leading to failure of HIH.

The acquisition of FAI in 1998 was the most controversial one. Mr. Rodney Adler, who later became a member of HIH's board of directors, sold his own majority-owned insurance company FAI for \$300 million to HIH. The purchase was based on the assurances given by Mr. Adler and neither board consultation nor a due diligence was completed; instead reliance on FAI's recently completed accounts was used.

Winterthur exit

Winterthur Swiss Insurance Company was a majority stakeholder in HIH Winterthur. In 1998 it sold off its shareholding and HIH Winterthur

changed its name to HIH Insurance Ltd. The disposal of Winterthur's holding by way of a public offering profoundly changed HIH's shareholder base. It also led to a relatively small and declining institutional shareholder base.

Allianz Joint Venture

The final blow was dealt when HIH decided to enter into a JV with Allianz involving the sale of profitable retail lines of business. The HIH management failed to analyze the cash flow and ALM consequences of the resulting transfer of reserves and future premiums. This hastened the inevitable demise of HIH Insurance.

About the Authors



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Debarshi Chatterjee is a Fellow of the Institute of Actuaries - UK, with over 12 years of experience in the General Insurance domain



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Alap Mehra is an Associate Member of the IAI. He has over 4 years of experience in both Life and General insurance.

The table below summarises the above reasons for failure and their estimated loss.

Event	Failure	Estimated Loss
Rapid expansion in the UK market	Underwriting risks for which it had no expertise	\$1.7 billion
Re-entry to US workers compensation business	Lack of due diligence in reasons for re-entry	\$ 620 million
Takeover of FAI	Lack of due diligence in study of Balance sheet of FAI	\$590 Million
Winterthur exit		Loss of Institutional Shareholder base.
Allianz Joint Venture	Involved the sale of Profitable lines of Business.	Sudden requirement of Cash for transfer of reserves.

Poor Corporate Governance

As the Royal investigation report of HIH disclosed, there were some flawed aspects regarding HIH

Corporate governance practice, particularly:

- Lack of independence for non-executive director from the management
- Dominance of Ray Williams, the CEO of HIH
- Inadequate risk management
- Lack of independent information resources for Non Executive Directors to fulfill their responsibilities.

Proceedings

On 14th April, 2005, Mr. Rodney Adler, one of the Directors of HIH, was sentenced to four and a half years in jail after he pleaded guilty to the following criminal charges:

- Disseminating information knowing it was false
- Obtaining money by false or misleading statements
- Being intentionally dishonest and failing to discharge his duties as a director

Mr. Ray Williams, the CEO of HIH was imprisoned for three years.

Actuarial Proceedings

submissions to HIHRC on behalf of IAAust. The Taskforce published its report on 5th May, 2003. It concluded that the conduct of a number of actuaries involved in matters investigated by HIHRC may constitute Actionable Conduct under the IAAust Constitution and/or a breach of the IAAust Code of Conduct. Accordingly, the Taskforce recommended that IAAust should conduct relevant professional disciplinary hearings.

Based on the recommendations of HIHRC, the President of IAAust made complaints against seven of its members. The most significant complaint was against Mr. David Julian Slee, a principal of DS Consulting Pty limited, who was the consulting actuary for HIH. The IAAust sub-committee investigating the complaint concluded that Mr. Slee engaged in Actionable Conduct, because:

- he failed to meet the requirements of the Professional Standards, relating to contents of reports in general insurance
- his conduct in relation to those reports fell below the standard of professional care and diligence expected of a reasonable and competent actuary.

As a result of this decision Mr. Slee was suspended as a member of the Institute for a period of 12 months.

1973.

Mr. Slee was found not to meet the 'fitness and propriety' requirements set out in APRA's prudential standards under the Act, in particular that "the person has adequate experience and demonstrated competence and integrity in the conduct of business duties."

APRA's decision to disqualify Mr. Slee was based on his use of unrealistic assumptions in his capacity as a consulting actuary to HIH to arrive at an unreasonably low estimate of the Group's claims liabilities. APRA also found that Mr. Slee allowed his independence to be compromised.

This decision was further confirmed by a delegate of APRA on 30th September, 2004.

The delegate in the schedule to his decision confirming the disqualification set forth the findings upon which he relied as that Mr. Slee:

- failed to give adequate consideration to the validity or accuracy of certain assumptions, data and techniques underlying his actuarial reports to HIH
- adopted optimistic assumptions on a number of occasions that he knew or should have known were not reasonably open in all the circumstances
- failed to consider and discuss in his reports whether certain assumptions were consistent with relevant professional standards and failed to discuss in his reports the implications of divergence from those standards
- made calculation errors in his actuarial assessments that should not have been made if he had been giving the matters sufficient consideration

HIH Collapse 15th March, 2001	HIHRC Taskforce Report 5th May, 2003	Complaint - 7 members June, 2003	5 Complaints finalised Mid-2004	APRA disqualifies Slee 6th September, 2004	IAAust suspends Slee 7th Feb, 2005
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The above timeline chart describes the chronology of events relating to the disciplinary action.

Further, the Institute of Actuaries of Australia (IAAust) established a HIHRC Taskforce to monitor the work of the HIHRC and coordinate the formal

APRA's Action

APRA, on the other hand, conducted its own investigation and dealt out a harsher punishment to Mr. Slee. On 16th September, 2004, APRA announced the disqualification of Mr. Slee from holding any appointment as an actuary of a general insurer under the Insurance Act

- supported provisions that you should have known were materially less than the central estimate, by reason of the cumulative effect of errors and optimistic or invalid assumptions.
- failed to adequately document certain analysis, assumptions and methods underlying his reports.

By doing the above, Mr. Slee breached paragraphs 23 to 25 of the Actuaries' Code of Conduct and paragraphs 47, 51 to 54, and 56 of Professional Standards 300.

Industry Outcomes

The Insurance industry constantly evolves to face emerging challenges and to make sure that mistakes of the past are not repeated. Even though the problems that led to the HIH disaster started only 15 years ago, the chances of a collapse of such magnitude are much lesser today.

The Financial Condition Report (FCR) with its numerous financial indicators would have given a much earlier warning, and has been introduced as a mandatory requirement since then. Actuaries today have much more statutory responsibility and are involved in a lot more areas within the insurance industry itself. The requirement for an Actuary to certify the reserves and the FCR coupled with the involvement of actuaries in pricing, ALM, business modeling, reinsurance

modeling, etc. may have resulted in a different fate for HIH if it happened today. Modern day actuarial practices like the peer review process, actuarial audit and audit trails too are outcomes of previous mistakes like this one. In the Solvency II Risk Based Capital framework, any company expanding as rapidly as HIH or with a similar corporate governance structure, would not be allowed to operate without the support of an extremely large amount of capital.



ALF AT 7thGCA, February 2005

It did not require more than a moment to be one with Alf. He came over to New Delhi as IAA President to be part of the 7th Global Conference of Actuaries, the annual mega event organised by the Actuarial Society of India (ASI), the predecessor to the current Institute of Actuaries of India.

I was then President of the ASI.

Alf almost instantaneously made a bondage of togetherness. We met on the sides of the IAA and other international events ever since on number of occasions – always stole few moments of warmth out of our busy schedules. The bondage at personal level and with Indian actuarial profession was refurbished.

Few happy moments of being together – how valuable such moments are!

One experiences only when a moment arrives.

Born 1944 in Stockholm, Sweden and educated in Filosofie kandidatexamen, University of Stockholm, Sweden and Certificat d'aptitude a l'administration

for but rarely gets, IAA President. Alf occupied this position for the year 2005 which brought him to India.

Communique from IAA

"Many of you will remember Alf best in his role as President of the IAA in 2005. Alf was most passionate of the work of the Sections and made it a focus of his presidency to promote their value to individual actuaries. The international actuarial profession was fortunate to have had such a devoted and professional individual as one of its leaders.

Additionally, he served for many years as a representative of the Swedish association on several IAA committees. Notably, he Chaired and was a member of the Executive Committee, Nominations Committee and Strategic Planning Task Force. He also served as Chair of the International Education Program Committee and most recently was a member of the Audit and Finance and of the Advice and Assistance Committees. Even through

illness, Alf always found a way to contribute and share his wisdom."

That moment did arrive when IAA Secretariat informed the passing from this world on August 8, 2012 of Alf Guldberg.

My thoughts peeped in to the past – the last moment, a day in October 2010 in a boat in Vienna. Alf so warm and happy enquired about Mrs Saleha Khan, my wife who he met some years back, remembering her Sari and persona. We sunk into deep sadness as I told him of her departure from this world on 24th June, 2009 under tragic circumstances. For both of us, I believe such moments of togetherness are rare in ones lives.

Alf I miss you.

Liyaquat Khan



When someone you love becomes a memory, the memory becomes a treasure – Author unknown

continued.. from June issue

ECONOMIC CAPITAL: INDIVIDUAL CAPITAL ASSESSMENT (ICA) PART 2

by Saket Vasisth

INDIVIDUAL CAPITAL ASSESSMENT EXERCISE PROVIDE RELEVANT INPUTS FOR CONSTRUCTION OF INTERNAL MODELS UNDER PILLAR 1. OF SOLVENCY 2. THIS ARTICLE DISCUSSES CORRELATION BETWEEN DIFFERENT RISKS, NON LINEARITY QUANTIFICATION AND ASSESSMENT BY FSA OF ICA.

This is the last part of the article on Individual capital assessment. This follows June 2012 article on ICA. This covers the following topics:

- ❖ Significance of correlation between risks and different types of correlations
- ❖ How limitation of correlation can be reduced by non linearity analysis. Particularly (i) Medium bang and (ii) Killer scenario approach – with mathematical example
- ❖ Valuation basis: Whether to use (a) best estimate assumptions or (b) prudent assumptions for ICA base?
- ❖ Measurement of (i) Investment risk, (ii) Insurance risk, (iii) Persistency risk, (iv) Expense risk, (v) Operational risk, (vi) Market risk
- ❖ Documentation of ICA and FSA submission
- ❖ FSA's arrow visit
- ❖ FSA assessment process – Individual capital guidance (ICG)
- ❖ Challenges involved in ICA calculation
- ❖ ICA's link with Solvency II and conclusion

HOW CORRELATION BETWEEN DIFFERENT RISKS IS DETERMINED?

Most insurers use correlation matrix approach for ICA capital quantification. Correlations are determined using historical data with some bespoke adjustments based on actuarial judgement. There can be other basis also apart from historical trends which go in to computation of correlation assumptions between different risks.

Example: Computing correlation between interest rates and inflation: One way of computing this by plotting past realised observations of changes in interest rates and changes in inflation. In that data plot, fit a regression line and the slope of that regression line is closer

approximation of the correlation between interest and inflation.

Correlation between some risks is described below:

Equity and persistency (lapses): Normally there is positive correlation between both risks. If equity market goes down, some policyholders may opt for policy surrender. This is likely to happen where funds are invested in risky funds. Policyholder may want to move in for safe investments. Probability of such movement increases where there is guaranteed surrender value. Other reason for positive correlation is because economic circumstances which give rise to equity falls may also lead to higher lapses if policyholders have to cash in their policies to meet short term needs.

Annuitant longevity and assurance mortality: The two sets of lives are generally not linked. Therefore, mortality stress is unlikely to have full impact on longevity assumptions. This is because; the non annuitant lives are likely to be mainly younger policyholders who are saving prior to retirement. Events which lead to fewer young people dying are often different from those which lead to fewer older people dying. However, insurer may assume slight negative correlation between these two risks.

Persistency and operational: Higher surrenders will have an impact on the operational area. Operational areas include (i) the customer service area dealing with surrenders, or (ii) the IT systems, which may be unable to cope with large volumes of surrenders at the same time. Therefore normally there is a positive correlation between these two risks.

Also processing failures (which is an operational issue) may lead to dissatisfaction amongst policy holders and as a result higher surrenders.

About the Author



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Persistency and mortality: Normally these two risks are independent.

DIFFERENT TYPES OF CORRELATION:

The most common and simplest form of dependency structure between two variables is linear correlation. Normally this is calculated using by the Pearson's correlation. There are many different types of dependency though that may be better captured by other correlation measures such as rank correlation. Rank correlation measures the relationship between different rankings of the same set of items. Popular rank correlation statistics include:

- Spearman's ρ
- Kendall's τ

Rank correlations may be more appropriate when there is a non-linear relationship between risk factors. Examples:

- Tail correlation
- Causal relationship, e.g. big earthquake and stock market crash, unidirectional nature of causality
- Derivative: non-linear price relationship to their underlying security.

A Pearson correlation of 1 implies the relationship between X and Y can be described by a linear equation. A Spearman correlation of 1 occurs when the two variables being compared are monotonically related, even if their relationship is not linear.

NON-LINEARITY:

Required capital from an individual risk scenario may be different from the capital requirement when multiple risks occur simultaneously. Correlation matrix approach doesn't pick up non-linear interactions between risks. For example, increasing life expectancy may make annuity liabilities more responsive to a

fall in interest rates. And the resulting capital requirement of the combined scenario of increasing longevity and falling interest rates, may exceed the capital computed using (i) the individual capital requirements (i.e. 99.5% VaR) and (ii) correlation between the two variables. Non-linearity could lead to understatement (or overstatement) of ICA. Scenario analysis helps in tackling non linearity. Scenarios may be generated which, for a given model, accurately reflect the selected confidence level for a number of risks when considered simultaneously. Non linearity can be incorporated in the ICA model using following two approaches: (i) Medium bang approach and (ii) Killer scenario approach.

Medium bang approach: ICA capital so computed is adjusted for scaling factor to include the impact of non linearity. This scaling factor is determined by computing additional stresses at a lower confidence level (e.g. 93%). These results are compared to the results of a 'medium bang' scenario where all the stresses are assumed to occur simultaneously at this lower confidence level. Let us continue with the numerical example discussed in part 1 of this article. Let us assume that the combined stress scenario leads to a capital requirement of £ 6,000. Scaling factor then becomes $\text{£ } 6,000 / \text{£ } 5,000 = 1.2$. Therefore, ICA capital requirement post non – linearity adjustment becomes $= \text{£ } 3,106 * 1.2 = \text{£ } 3,727$.

Killer scenario: This approach is similar to medium bang approach. In this approach major risks are given more weight in stress computations.

VALUATION BASIS:

INSPRU 7.1.36 provides that the valuation of assets and the liabilities should reflect their economic substance. A realistic valuation basis should be used for assets and liabilities taking in to account the actual amounts and timings of cash flows under any projections used in the assessment. In carrying out the ICA, wherever possible the value of assets should be marked to market (MTM). Where marking to market is not possible, the ICA should use a method suitable for assessing the underlying *economic benefit* of holding each asset. The method and assumptions used in valuing the liabilities should contain no explicit margins for risks, nor should the

approach be optimistic. The valuation of liabilities should be consistent with the valuation of assets. To the extent market price includes an implicit allowance for risk, this should be included within the valuation.

Capital requirements for individual risks are determined by applying instantaneous shocks to 'economic balance sheets'. Most insurers built on Realistic Balance Sheet (RBS) or Market Consistent Embedded Value (MCEV) models. This means that, to create ICA assumptions for stresses, RBS or MCEV models and assumptions are used without any modifications or with minor modifications.

RISK MEASUREMENT:

Investment risk – This includes bond default risk. It can be measured in Value at risk (VaR) model by using normal or lognormal or some other statistical distribution. Economic Scenario Generator (ESG) can be used where risk is to be measured stochastically. Jarrow-Lando-Turnbull can be used for measuring credit spreads for fixed income securities. Major challenges in measuring investment risk are goodness of risk measurement model and fitting historic data in the risk measurement model. The variation in market prices and proceeds from corporate bonds could either be treated as a credit risk or as market risk. The exposure under derivative contracts can be considered to be net of margin payments and collateral arrangements. Where regular marking-to-market margining occurs, the maximum loss in an extreme scenario is the movement between margin intervals, less the value in that scenario of any collateral.

Insurance risk – Insurance risk refers to the inherent uncertainties as to the occurrence, amount and timing of insurance liabilities. Insurance risk measurement and Actual / Expected (A/E) analysis cannot be separated. Analysis of A/E may help in setting mis-estimation stress. Estimation of life insurance risk will involve estimating (i) probabilities of future mortality improvements (as per CMI prescribed CMI(Continuous mortality investigations - a committee for mortality investigations formed by IoA) model), (ii) policy holder specific mortality adjustments, (iii) base mortality tables (provided by CMI) and (iv) insurer's bespoke adjustments in

base tables and improvement tables.

(a) Medical advances in the treatment of a significant critical illness of the aged (e.g. cancer or heart disease) or
(b) the development of a commonly available treatment to delay significantly the normal ageing process could be considered while setting up stresses for a portfolio of annuities or guaranteed annuity options.

Where valuation is made on assumption of no new business the number of policies in force would be expected to reduce over time. The effect of increasing diseconomies of scale should be brought into account in an appropriate manner. Long-term adverse trends are particularly important where policy terms are guaranteed (whether assurance or annuities).

The ICA should consider firstly, with justification, how any historically observed trends might continue, or might continue to accelerate or decelerate. Extreme adverse events should then be significant worsening of the expected trend or its rate of acceleration or deceleration. It may be necessary to assume different rates or even directions of change for different groups of lives or at different ages.

If a one-year timeframe or instantaneous stress approach is used, care should be taken to ensure that the liability valuation basis assumed after the period or stress allows for adequately stressed future longevity expectations. If it is intended to use a combined economic and mortality stochastic model to value deferred annuities, guaranteed annuity options or other liabilities, the stochastic variation most relevant for mortality is likely to be in the rate of mortality improvement rather than mortality levels (i.e. base mortality). The possibility of adverse selection by policyholders (terminating their life contracts early) may need to be taken into account in assessing the range of possible future mortality experience.

Persistency - Rates of early termination and option take-up can be affected both by a general change and by specific causative factors (including large scale events). Both a general change and possible causative factors should be considered in an ICA. General changes in persistency could be modelled (i) stochastically, if a reasonable distribution

can be derived, or (ii) deterministically. In both cases historic variations in experience not attributable to specific causative factors should be taken into account. Consideration should also be given to step changes due to external factors, to the extent that these are reasonably foreseeable. Under either approach (stochastic or deterministic), it may be necessary to assume that the 'central' rate of persistency varies over the lifetime of a policy, reflecting both the early experience of recently written business and, in time, the possibility of improving persistency as term remaining to maturity reduces. The take-up rate of options or the persistency of business subject to guarantees should be assumed to be adversely correlated or dynamically related to the variation (or trend) of factors which increase the value of the option or guarantee. Care should be taken to ensure that the liability valuation basis assumed thereafter allows for adequately stressed future persistency and option take up rates.

Expense risk: Expense inflation assumption should be considered in the context of other economic assumptions. Components of per policy expense should be adequately studied to build stress scenarios for expenses. Allowance should also be made for the risk of mismanagement of expenses. Generally the extent of the allowance reflects the effectiveness of the controls in place.

Operational risk: As per Basel II regulatory framework, operational risk means risk of loss from inadequate or failed internal processes, people and systems, or from external events. This definition includes legal risk, but excludes strategic and reputational risk. Measuring of operational risk is a challenging task. Here help of process owners can be requested by the AFH to estimate impact of operational risk. It can be computed using a simple factor-based approach (e.g. x% of assets) or Value at risk (VaR) approach.

Market risk: Market risk is the risk of losses due to movements in financial market prices or volatilities. It causes adverse variation in costs or returns resulting from market price or rate. Market risk will normally either be modelled stochastically, or by selecting appropriate deterministic scenarios. The cost of the inefficiencies associated with

dynamic hedging strategies needs to be allowed for either by stochastic modelling of the strategies or by estimating the costs in an extreme, deterministic scenario. Fixed interest exposures should be subject to stresses which allow for changes in the shape of the yield curve, as well as to uniform changes of level (i.e. parallel shift), where the impact of this may be material.

If it is considered that inflation is an unhedged material risk, care should be taken to ensure that the liability valuation basis assumed after the period or stress allows for adequately stressed future inflationary expectations.

Documenting of ICA submitted to FSA: INSPRU 7.1.49R requires that the written record of a firm's ICA must:

- (i) In relation to the assessment comparable to a 99.5% confidence level over a one year timeframe that the value of assets exceeds the value of liabilities, *document* the reasoning and judgements underlying that assessment and, in particular, justify:
 - (a) The assumptions used;
 - (b) The appropriateness of methodology used; and
 - (c) The results of the assessment
- (ii) Identify the major differences between that assessment and any other assessments carried out by the firm using a different confidence level.

Firm's capital resource assessment which it uses in management of its business may well be at a different confidence level than the 99.5% required by INSPRU 7.1.42R (e.g. 98% or 99.8% or 95%) for a number of reasons. This can be for example, because (i) insurer's view of capital adequacy is different, or (ii) to satisfy the demands of rating agencies, (iii) or to meet the proposition to policyholders as to the strength of the firm. Purpose of asking the firm to identify the major differences between those assessments and the assessment documented under INSPRU 7.1.49R is to enable the FSA to better understand the firm's approach to capital adequacy and risk management in running it business.

ARROW RISK ASSESSMENT:

ARROW stands for advanced risk responsive operating framework. It's the name given to FSA's risk assessment process. Arrow defines the essence of

the FSA's risk based approach to regulating financial markets, services and firms. Here briefly FSA's statutory objectives are worth mentioning:

- Market confidence: Maintaining public confidence in financial systems
- Public awareness: Promoting public understanding of financial systems
- Consumer protection: Securing an appropriate degree of protection for consumers
- Reduction of financial crime: Reducing the use of business practices for criminal purposes or activities.

FSA assessment process – Individual capital guidance (ICG):

INSPRU 7.1.91 provides that when forming a view of any individual capital guidance to be given to a firm,

- (i) the review of the firm's ICA along with
- (ii) the ARROW risk assessment and
- (iii) any other issues arising from day to day supervision will be considered.

Any ICG given will reflect the judgements reached through the ARROW review process as well as the review of the firm's ICA. In giving ICG, the FSA seeks a balance between delivering consistent outcome across the ICG it gives to all firms and recognising that such guidance should reflect the individual features of the firm. Comparison with the assumption used by other firms will be used to trigger further inquiry. The FSA also takes account of the quality of the wider risk management around the development of numbers used in the ICA. The aim is to deliver ICG that comes closest to ensuring that there is no significant risk that a firm is unable to pay its liabilities as they fall due. Following an internal validation process, the FSA will write to the board of the firm being assessed providing both quantitative and qualitative feedback on the results of the FSA's assessment. This letter will notify the firm of the individual capital guidance considered appropriate. The letter will include reasons for any capital add ons identified, where applicable.

If a firm considers that the ICG is inappropriate to its circumstances, then the firm should inform the FSA that it does not intend to follow that guidance. The FSA expects that most disagreements about adequacy of capital will be resolved

through further analysis and discussion. However, FSA retains the power to require a firm to hold capital in accordance with FSA's view of capital necessary.

Challenges faced in ICA calculations:

- Availability, inconsistency and limitations of data. GN 46 provides that if there are any doubts about the accuracy of the data, additional allowance must be made for the risk that the actual value of the liabilities will be greater, or the value of assets less, than that derived from the available data. If any potential data inaccuracy is material, any statement or report must make reference to this. TAS-D (Technical Actuarial Standard on data) should be complied with in the ICA exercise.
- Model calibration: Determining appropriate model requires lot of judgement based calls.
- Computation of correlation between different risks: It is at times very tough to quantify correlation between different risks to which an insurer is exposed to.
- Scenario testing can be used to expose any non-linearity, but choosing the relevant confidence limit for stressed scenario is a challenge.
- Setting a 1 in 200 stressed assumption for the calculations that are not done stochastically i.e. not done by Monte Carlo method, is also very tough and subjective.

How Solvency II differs from ICA?

Non-hedgeable risks: ICA base is used to compute technical provisions. ICA base which is also used for ICA stresses should contain assumptions which should be market consistent. In Solvency II, technical provisions include an explicit risk margin based on the cost of holding required capital in respect of non-hedgeable risks.

Solvency II has floor of MCR unlike ICA: In Solvency II, there are two capital requirements under Pillar 1, the Solvency Capital Requirement (SCR) and the Minimum Capital Requirement (MCR). The MCR is the level below which the SCR cannot fall and is defined as a simple factor based formula. There is no such equivalent in the (Pillar 2) ICA. The SCR is similar to the ICA as it is also based on a 99.5% confidence interval over a year, or 1-in-200 year event. In

addition, both regimes allow for correlations between risks. It can be calculated using a standard formula which has prescribed stresses and correlations. Alternatively it can be calculated using an internal model, but this must be approved by the FSA.

Standard formula: The standard formula approach in Solvency II differs from the ICA approach. In Standard formula it is not up to the insurer to decide stresses and correlation. Stresses and correlation are prescribed already for capital computation.

FSA review: Pillar 2 under Solvency II is the supervisory review process. In Solvency II pillar 2, additional capital may be required to be held if the FSA feels risks haven't been covered in Pillar 1. This is similar to the ICG review currently performed by the FSA on the ICA under ARROW assessment.

ORSA: Every insurer will be required to calculate an Own Risks and Solvency Assessment (ORSA). The insurer has to identify risks to which it is exposed to, and the risk management techniques and controls to enable it to still meet the

requirements from Pillar 1 in the future. The ORSA has similarities with the ICA, which also needs to take into account all risks to which the company is exposed. However, the need to continue to meet the Pillar 1 requirements over the business planning horizon is not required under the ICA.

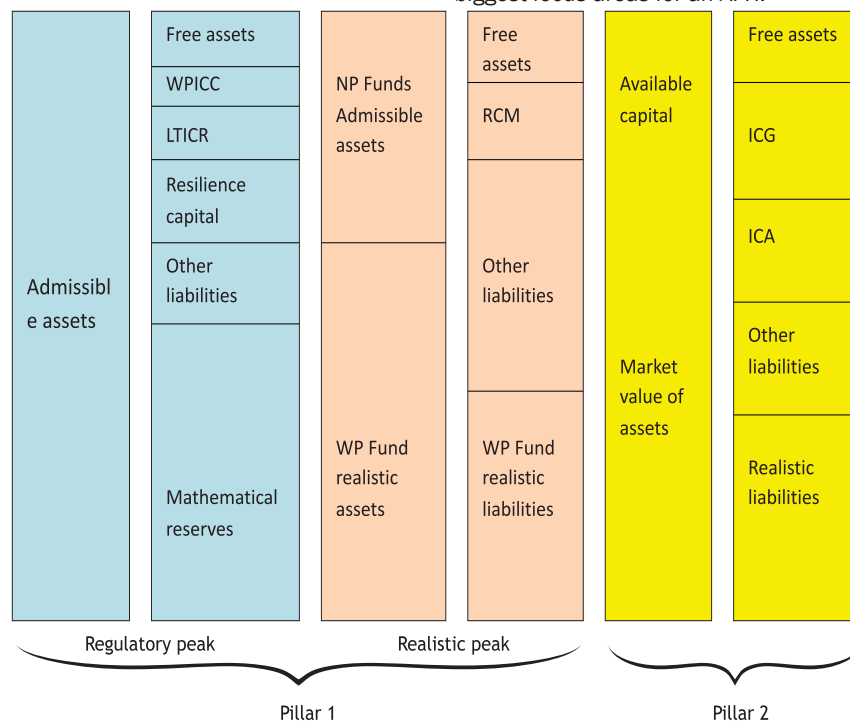
Public disclosure: Under Solvency II, Pillar 3 companies are required to disclose a report on Pillar 1 and Pillar 2 to the public, although items which are deemed to be of a confidential nature can be excluded. However the ICA results are not publically available.

Geography: Solvency II is a European wide regime whereas the ICA regime was applicable in the UK only.

It is expected that ICA models (for most insurers) in future will feed into Solvency II internal models. (Ref: Sept 2011 SA2, IoA)

Conclusion:

There is lot of scope of creativity in determination of ICA capital computation models. Availability and reliability of data, determination of correlations, and impact of non linearity are some of the biggest focus areas for an AFH.



Annexure: Twin peak approach: \Regulatory peak Realistic peak

References:

Chapter 7 of INSPRU-ICA: <http://fsahandbook.info/FSA/html/handbook/INSPRU/7/1>
Guidance Note 46 - ICA: [http://www.frc.org.uk/documents/paganager/frc/gn46%20individual%20capital%20assessment%20v2.0%20\(bas%20amendment%201\).pdf](http://www.frc.org.uk/documents/paganager/frc/gn46%20individual%20capital%20assessment%20v2.0%20(bas%20amendment%201).pdf)

My sincere thanks to Rajiv Mukherjee and Manoj Bhudolia for inputs.



MOVING FORWARD WITH CT9: BUSINESS AWARENESS MODULE

by Pranshu Maheshwari

At last we are on track to progress with CT9 : Business Awareness module!

On 20th August 2012, President, Liyaquat Khan inked an agreement with Imparta, UK for providing the technical and module delivery to IAI mapping the IFA so that the IAI members taking up CT9 would have mutuality of exemption between IFA and IAI.

The subject of Business Awareness Module starting in year 2005, though structured after getting input and assistance from the Institute of Actuaries, London (IOA) so as to ensure mutuality of exemptions started with difficulties right from the beginning. Contracted with National Insurance Academy, Pune for service and some module delivery, the quality and content remained an issue. The IOA (now IFA) did not and continued not to accord exemption, hence IAI students even though having passed the CT9 exam from IAI failed to get IFA exemption. Aside from the fact that if IAI student wanting to qualify from IFA (as many of IAI students are members of IFA as well) have had to take CT 9 from IFA, the consequential result was less than adequate level of CT9 competence perception by the employers. The IAI examinations in CT9 therefore had to be stopped for more than two years now (except for repeaters) and efforts were started to engage IFA for common delivery of the CT9 examinations. I was given the responsibility to steer this project and I am happy to share with you all that our diligent efforts paid dividends.

The agreement with Imparta covers effective and engaging online tutorials covering wide ranging concepts on

Strategy, Professionalism, Business theories etc as part of the new online approach towards CT9 exam. Imparta's engaging animated tutorials combine genuine business insight with clear concise explanations that make even the most complex ideas accessible and will provide for a very refreshing approach towards learning.

We have a backlog of approximately 700-800 candidates who are waiting to take CT 9 exam and the plan is to smoothen out the flow by going the online route which is also expected to standardize the course delivery.

The first such revised online module is expected to get conducted towards later part of this year. From then on CT9 would be conducted at a pre-specified frequency. You may expect the exam to be offered approx 6 – 12 times a year and this would help lot of backlog to be cleared.

The Agreement with Imparta is the first step and finality of the Project will come with agreement with the IFA and other course vendors. This is in progress at fast speed.

The new CT9 online exam will be designed in such a way so as to help those joining the Institute of Actuaries of India to understand / develop:

- The general business environment and its related challenges
- Business problem solving skills
- Professional responsibilities
- Relevant legal principles applicable to the work of actuaries

The online exam is intended to cater to the growing student base of IAI and will also not be subject to the limitations on the frequency of conducting the face to face practical exam.

About the Author



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Pranshu is Fellow of IAI and also serves as member of Advisory Group on Examination.

This exam will involve students taking part in a ten day online business game and submitting a set of completed exercises. For taking the online exam students will be required to do advance study involving online tutorials, and also an online exam following the ten days of business game.

The main content of this practical exam will involve looking at:

- Industry developments and challenges - an overview covering all practice areas
- Strategic thinking - case studies and problem solving techniques
- Business game - supporting the learning objectives of the course
- Professionalism and ethics - principles and case studies
- Personal development - an overview of lifelong learning
- Legal principles

Based on this, students will be required to do some advance study, which should take approximately 20 hours. Advance study would consist of:

- Online tutorials
- Reading material to prepare for the business game
- A case study to analyse on strategic thinking

We are excited and keen to offer the revamped CT9 exam to IAI students and are working hard towards making this happen in next few months.



IAI VALUE : INTEGRITY

To give real service you must add something which cannot be bought or measured with money, and that is sincerity and integrity.

- Donald A. Adams

ENTERPRISE RISK MANAGEMENT: THE ACTUARIAL WORLD OF THE FUTURE

by Varun Gupta, FIAI, FIA, CERA

COLUMN

STUDENTS

Subject ST9 – Enterprise Risk Management (Specialist Technical) was introduced by the UK Actuarial Profession from April 2010 examination Diet. Aside from the growing importance of the ERM as a subject of academic importance, its usage in managing the enterprises has increased over the last some years. The actuarial profession globally through International Actuarial Association has taken initiatives in the matter leading to CERA (Certified Enterprise Risk Actuary) accreditation (<http://www.ceraglobal.org/>). This is a new risk qualification that the profession is looking towards to push itself into areas beyond the core insurance and Pensions domain.

For IAI to be able to award this qualification it needs to be a CERA treaty Signatory. In order to fulfil the requirements, the IAI will need to provide the ST9 (Enterprise Risk Management) examination to its members. The matter was discussed in the Council in its meeting on 12th June 2011 and it was decided that we too take appropriate steps preferably in conjunction with the Institute and Faculty of Actuaries, UK (IFA). Prima facie the option of conducting our own ST 9 examination was ruled out for lack of ST 9/ CERA qualified actuaries to take up the responsibility of Examiner/s and other requirements for CERA accreditation which would probably take years before we could even initiate the process of CERA Treaty application. A route taken by Institute of Actuaries of Australia (IAAust) and Actuarial Society of South Africa was examined and

accordingly we engaged ourselves with the IFA. While IFA agreed in principle to take IAI along with them a la IAAust, there were number of admin issues to be examined and mutually agreed upon. A very positive factor was IAI's Mutual Recognitions Agreement (MRA) with IAAust a la the UK Actuarial Profession – then IAO and FOA. Significant way forward was achieved during discussions with IFA Team on the sides of the 14th GCA in February, 2012 and the President, Liyaquat Khan signed an arrangement with the IFA UK for IAI members to take UK ST 9.

Although the agreement was signed at a time when the last date for applications for IFA's September, 2012 were already over, we managed a short window of extension as a special request. Three candidates from IAI have already applied for the exam and I am sure in future many more would take this as an area of specialization.

Some important points to note as per the ST 9 agreement with IFA;

- 1) IAI members can appear for IFA ST9 examinations which are held in April and September each year. IFA has number of examination centers within India.
- 2) The Application for ST 9 has to be made to IAI keeping in mind the application date deadlines set by IFA. The Students who pass this examination will be treated as pass in IAI ST9 examination. If they need an exemption/credit from IFA, they

About the Author



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Varun Gupta, a fellow member of Institute of Actuaries of India, is working with Max New York Life and chairs Advisory Group on Examination.

would need to make an application to IFA.

- 3) Fee for IAI Fellow candidates is £300.00, while those for IAI non-Fellow candidates is £135.00.
- 4) Candidates need to make an application for ST9 in the prescribed form (available on the IAI website) within prescribed date along with necessary fee by way of Demand Draft in favour of UK Actuarial Profession. All the exam applications will be scrutinized by IAI and forwarded to the IFA.
- 5) Examination will be held at IFA exam centers across India.
- 6) IFA will provide hall tickets to candidates and also determine success/failure result for each individual IAI Candidate.
- 7) Result of ST9 will be available on IFA and IAI Websites.

IAI is going global indeed. Important step towards VISION of the IAI.



IAI VALUE : ACCOUNTABILITY

"Some favorite expressions of small children: "It's not my fault... They made me do it... I forgot." Some favorite expressions of adults: "It's not my job... No one told me... It couldn't be helped." True freedom begins and ends with personal accountability."

- Dan Zadra

IAI VALUE : CONTINUING LEARNING/RESEARCH ORIENTED LEARNING

"The growth for education and training will be in continuing adult education. Online delivery is the trigger for this growth, but the demand for lifetime education stems from profound changes in society. We live in an economy where knowledge, not buildings and machinery, is the chief resource and where knowledge-workers make up the biggest part of the work force."

- Peter Drucker

CERTIFIED ENTERPRISE RISK ACTUARY (CERA) – THE ACTUARIAL WORLD FOR THE FUTURE ACTUARY

by Sanchit Maini, FIAI, FIAA, CERA

Quite some months of hard work and very collegial relationship between IAI and IFA has brought conclusion to number of issues that enabled President, Liyaquat Khan to sign off on 8th August, 2012 the CERA Treaty application to the CERA Board. In number of ways a historical step.

The CERA Qualification – What it means for you?

The IAI has been keen to introduce the CERA qualification to its members. I am pleased to share that the IAI has made a formal application to the CERA Treaty Board in order to be admitted as a treaty signatory enabling it to grant the CERA qualification. The key requirements for an actuarial association to become a treaty signatory include an examination system covering the syllabus objectives of ERM, CPD opportunities in ERM and disciplinary procedures being in place. While there are several steps yet to complete before we can grant this qualification to our members, it is an important milestone. The qualification is designed to equip actuaries to perform the chief risk officer role and other roles that require knowledge and skills in

enterprise risk management..

Route to CERA

In order to qualify, Fellow and other members opting ST 9 as one of the two ST subjects, members of the IAI would need to sit for the ST9: Enterprise Risk Management exam from the Institute and Faculty of Actuaries, UK. In order to facilitate this, the IAI has made arrangements for our members to appear for the IFA exam without having to become members of the IFA. The details are being announced separately.

The annual seminar on ERM of the IAI would serve as a good CPD opportunity in risk management. In addition, there are other opportunities including the Global Conference of Actuaries which typically has some sessions on risk management.

There are four variants of the CERA title, Certified Enterprise Risk Analyst, Chartered Enterprise Risk Analyst, Certified Enterprise Risk Actuary and Chartered Enterprise Risk Actuary and countries are using different variants of the international CERA designation. The IAI has chosen Certified Enterprise Risk Actuary.

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Que CERA CERA

The CERA qualification is unique in that it is global, comprehensive and rigorous with a strong actuarial underpinning along with a code of professional conduct and CPD requirements. All this means that CERAs are well placed to address various risk types including financial, operational and strategic risks. In recent years we have seen a greater focus on risk management within the financial services industry including a greater thrust by regulators on increasing the risk management capabilities within firms. This is one of the key driving forces in the financial services space and a well recognized risk management credential is a great supplement for actuaries looking to consolidate their credentials for these industries as well as looking at wider opportunities.



THE ACTUARY INDIA SCHEME OF AWARDS

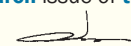
The Actuary India Scheme of Awards for Best Article & Reportage for the Calendar year 2012 and thereafter till amended

The objectives: recognition of the efforts put in and encourages members to write for the Actuary India magazine either in the form of Articles and/or reportage for various IAI events.

Process of selection: Three member Selection Group will be appointed by the President in Dec. 2012 and every December thereafter to set parameters for selection and recommend best two Articles and best two Reportages in order of merit.

The Awards and recognition: Based on the Selection Group's recommendations, the following rules shall apply;

- The awards will be given by the Chief Editor during the AGFA held immediately after the end of the calendar year 2012. The awards will be in the form of **cash prize and recognition plaque**.
- The three member selection Group will send its recommendation by January each year based on editions published in a calendar year 2012 and each Calendar year thereafter.. Every member of the selection Committee will come out with his/her own list of best five articles/reportages. Thereafter, the Group will meet in the second week of January and come out with a commonly agreed upon best two. In the event there is no unanimity the Selection Group will decide on how to select the best two (e.g. going by majority view, draw of lots from the five best drawn by each or any other). This list, along with justifications, will be sent to the President well in time for him/her to announce.
- The Author/s of first best Article and Reportage will receive a prize of ₹ 10,000/- for the Article and the Reportage and the next best will receive ₹ 5,000/- accordingly. In case there are more than one Authors, the amount will be allocated equally, however the recognitions plaques will be given to each.
- In order to qualify each article/reportage should meet the following minimum criteria;
 - at least about 500 words.
 - should not be reproduced from articles elsewhere (while sending the article the author should give a declaration to this effect.
 - Should be written by a member of the IAI (in the case of joint authors, all should be members of the IAI) at the time the article is published.
 - Reportage should be based on event organized by IAI only.
- The award winning authors along with the Selections Groups key points on selection will be published in the **March** issue of the **Actuary India** each year.


Liyaquat Khan

I AM A MEMBER OF RESEARCH TEAM OF INSTITUTE OF ACTUARIES OF INDIA

by Arpi Bhavsar

I carried only a general understanding and literary meaning of the term "research" at the time of joining as a member of Research team in Institute of Actuaries of India. There were number of questions in mind about the role of research team in the profession, research activities and role of the member in the team. Months later, many questions answered and more importantly about the creation and existence of the research team as the result of implementation of one of the missions of the Institute referred as "to promote research to advance actuarial science/application". Activities of the Research team are focused to achieve this goal. On a broad sense, the team stands to promote, to facilitate and to encourage research activities predominantly in the area of actuarial science among actuarial community in India. Does this require a member to carry experiences in all important functional areas, financial market and much more? A sensible question to ask. Indian market or any global financial market so far not generated such candidates in adequate numbers and

not so many actuarial bodies across the world have developed such research teams. What is understood about the member of the team is that, they require a good skill set to manage projects, understanding of actuarial concepts, awareness of social and financial events and development beyond boundaries, sources of information and above all motivation and dedication. Each member of the Research team need to target to achieve and/ or to develop all required skill sets and understanding of market within a reasonable time of their joining. This means, a member needs to target their overall development beyond the level of academics to become successful in the team.

At this stage, its worth to understand how research team of important actuarial bodies outside India have been operating, keeping in view of most of their track records and years of existence in order to reach to the current model and level of activities. It is understood that, the soul and source of all successful team across the world are Individual volunteers, member led groups and members of the profession who

About the Author



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Arpi is student member of Institute of Actuaries of India. She is working as Actuarial Research Executive at IAI.

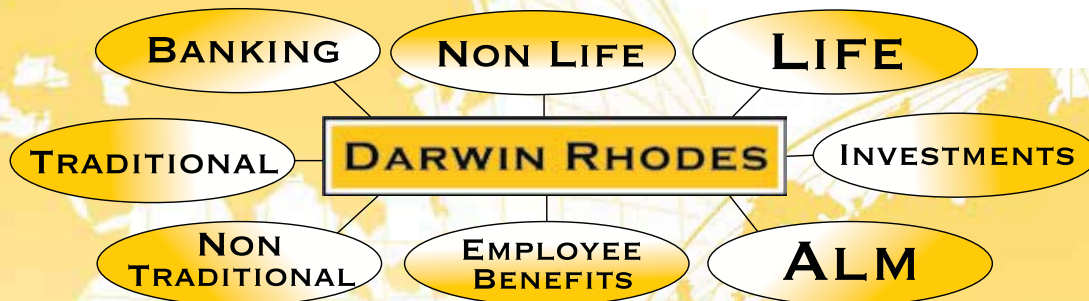
understand and shoulder their primary responsibilities to the profession. We also need to have all these resources to take off our projects.

Actuarial profession countries like UK, Australia, South Africa, US and Canada are prominent among such actuarial bodies that have developed successful research teams with tremendous support from members/ teams/ working parties/ Practice area committees and from their governing bodies. For strategic projects undertaken by their profession are normally funded, which can be substantially large. The International Actuarial Association where most of the actuarial bodies of the world are members who stands for "Developing the role of actuaries" and "Advancing Knowledge of Actuarial Science" is also prominent in promoting Actuarial research activities.



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REVISED ICPS REQUIRE A BALANCED PERSPECTIVE

Republished from : "Insights - IAIS Insurance Core Principles" (May 2012) with the kind permission of Towers Watson.

In October 2011, the International Association of Insurance Supervisors (IAIS) published the long-awaited

revised Insurance Core Principles (ICPs).

The previous version of the ICPs was issued in 2003, and a number of draft versions made available for industry comments were developed in the interim. The ICPs are an internationally developed set of principles, standards and guidance applicable to supervisors (that is, regulators) of insurance companies. They seek to encourage convergence towards a globally consistent supervisory framework and serve as a benchmark for insurance supervisors in all jurisdictions.

The ICPs have the support of supranational organisations such as the IMF and World Bank. Consistency between local regulation and the ICPs is considered when these organisations review loan provisions and trading status. This encourages insurance supervisors to identify areas where the existing regulatory frameworks do not conform to the ICPs and to move towards compliance.

Consultation prior to the publication of the October 2011 ICPs drew significant commentary because of the more comprehensive treatment of points of debate (such as valuation) than their 2003 predecessor. Much of the feedback has been incorporated.

Key implications

The global insurance industry has served policyholders well for many decades – in some countries, for many centuries. The principle of insurance – to protect against adverse and unexpected events via pooling – is a condition for economic growth because it supports enterprises that take necessary risks. Insurance also fulfils an important social function by allowing individuals to protect their families, and organisations to protect their people. Essentially, the insurance product is a promise: the insuring entity indemnifies the policyholder when a covered event occurs. Insurance regulation requires a balanced perspective. Sparse regulation may lead to ill-suited products, weak financial positions or failures, and unfulfilled

promises. The industry's reputation may suffer and be accompanied by reduced availability or public interest in coverage. But too much regulation may discourage or even prevent insurers from taking necessary risks. This could stifle innovation and competition, and eventually cause a lack of capital funding and insurance availability.

We believe that the ICPs' development and adoption requires a balance to be struck. It is to the benefit of policyholders – and ultimately society – that regulators seek good practice techniques and gradually move toward convergence. Efforts to change too quickly may lead to significant compliance costs and raise the cost of insurance for policyholders, distract companies from running their businesses and prompt capital providers to question their investments. A balanced approach would allow the industry to improve its risk management and continue to serve policyholders and other stakeholders.

The ICPs hold some specific implications for insurers:

Groupwide Supervision

There are likely to be broader reporting requirements at the group level than in the past, compelling the disclosure of intra-group arrangements to the supervisor. At a group level, risk limits and risk identification systems must be established. Group supervision goes beyond solvency assessment and includes a review of the board of directors (that is, for example fitness and propriety), senior management and shareholders, and group corporate governance and risk management processes.

The degree of group diversification benefit permitted by the ICPs is presently unclear. In the future, the extent to which subsidiaries' capital requirements can be met by guarantees from their parent company is likely to be debated.

The IAIS is developing a Common Framework to make the supervision of internationally active insurance groups operational, and establish the guidelines for global supervisory cooperation and information sharing.

Current assumptions

The ICPs specify that an insurer's financial position must not be 'obscured by hidden or inherent conservatism or optimism in the valuation.' Risks are to be covered by capital margins rather than by conservatism in the provisions, and thus require 'unbiased current assumptions' for valuation purposes. Where possible, these assumptions are to be based on experience analysis of the portfolio in question. This represents a significant change from the current solvency valuation basis in a number of developing markets where various assumption bases may be used. For many insurers, this change will involve more frequent experience analyses, a more rigorous actuarial control cycle and related systems development. The potential shift away from prudent margins and towards a risk-based assessment of capital could also lead to greater volatility of distributable profits and significantly alter ratios of available-to-required capital. Insurers should be prepared to consider the impact on stakeholder communication and education.

Enterprise risk management

A company must also demonstrate its ability to control, mitigate and manage its risk exposure (including reputational, legal and group contagion risk) as part of an enterprise risk management (ERM) framework. This makes it necessary to develop a risk tolerance statement, an Own Risk and Solvency Assessment (ORSA) and a continuity analysis that measures the ongoing ability to meet regulatory capital requirements over the business planning horizon under adverse circumstances. These requirements will challenge companies to put risk management responsibility on the board's agenda. The amount of effort and skill needed to assess and develop these risk management frameworks (such as new procedures, policies and reporting) will create greater demands on regulator and insurer resources. Insurers should perform an internal gap analysis to identify how their risk processes currently work under these new developments so they can identify and address any shortcomings.

Regulatory convergence

Insurers operating globally would almost certainly benefit from the greater uniformity between national regulatory systems and these new requirements. An evaluation of the impact of emerging consistent regulatory standards may suggest strategies, products and operating methods that could provide further advantages (for example, consolidating product development and wider product introductions).

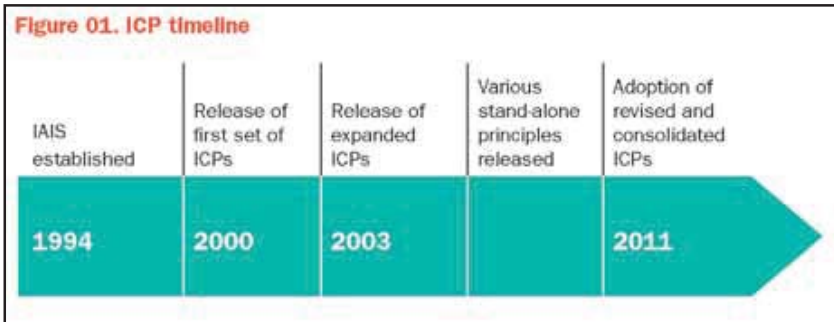
Small to midsize firms need to engage with industry bodies and national supervisors at a sufficiently early stage of implementation to fully explain their circumstances and positions. Experience with Solvency II in Europe suggests that these firms are often less proactive with regulators and are consequently left dissatisfied with the outcome.

Financial and regulatory reporting: convergence or divergence?

In many countries, existing accounting and regulatory requirements are well aligned. While the IAIS ICPs may lead to global regulatory convergence among regulatory regimes, convergence with financial reporting may be more challenging. The IAIS states it has crafted the ICPs in parallel with the Insurance Contracts Project developed jointly by the International Accounting Standards Board (IASB) and the US Financial Accounting Standards Board (FASB). But there are a number of measurement and disclosure aspects that could lead to the future divergence of financial and regulatory reporting. These points may reflect the different purposes of regulatory reporting (to protect policyholders) and financial reporting (to inform shareholders and other capital providers), but will pose practical and communication challenges because of the variety of stakeholders concerned.

Background

Created in 1994, the IAIS is an independent membership organisation for insurance regulators worldwide that promotes cooperation, harmonisation and stability in developed and emerging insurance markets (Figure 01). The IAIS has no regulatory power or legal authority, but influences national and regional regulators by publishing supervisory principles, offering training and support, and advancing the latest developments



in international regulation.

The IAIS activities are carried out from its base in Basel, Switzerland, under the guidance of its globally diverse executive committee. Membership includes regulators from over 190 jurisdictions in some 140 countries. Members are joined by observers to participate in IAIS discussions and consultations. Observer status is granted to over 120 organisations, which include international associations, (re)insurance companies, financial institutions, and audit and consulting firms.

The ICPs establish global principles for insurance supervision for all insurance companies. Each ICP statement is presented within a three-tiered hierarchical structure (Figure 02), accompanied by supporting standards and guidance.

The IAIS anticipates that the October 2011 ICPs will continue to evolve to reflect changing market practice. In particular, it notes that the ICPs on

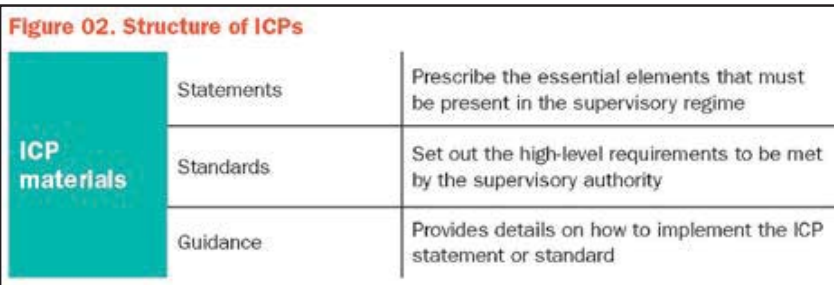
ComFrame's objective as a reference point for groupwide supervision that promotes interaction among supervisors and represents the practical application of the ICPs for internationally active groups.

ICP summary and implications

In this section, we summarise the 399-page IAIS document, detail the 26 ICPs under six key themes, and identify some implications for developing regulation and for insurers. While some of the ICP themes are already prevalent in developed countries' regulatory systems, it is helpful to outline the principles to better understand the IAIS' direction and intention.

1. ICPs 1 – 3: system of the supervisor

The first few ICPs develop the role of the supervisor and the need for clearly defined responsibilities, operational independence and adequate resources. A supervisor needs to protect confidential information but also be willing to exchange information, as needed,



valuation and public disclosure may reflect proposals from the IASB and raise the possibility that further guidance material may be produced for the ICPs on supervisory review and macro-prudential surveillance. Future plans also include better tools to assess member compliance.

The Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame) is another current IAIS project. The concept paper published in June 2011 describes

with other relevant supervisors and authorities.

Insurers are interested in how their confidential information is protected by supervisors, especially where information sharing occurs. In particular, time- and price-sensitive activities such as cross-border mergers and acquisitions require information-sharing safeguards such as the precautions outlined by ICP 2. The implications of local freedom of information, open government or similar laws require consideration.

2. ICPs 4 – 8: structure of the entity

A legal entity that intends to engage in insurance activities needs to have a certain structure. It must be licensed in a jurisdiction, and establish and implement a corporate governance framework that oversees the business and protects the interests of policyholders. This framework must also have effective risk management and internal control systems including functions for risk management, compliance, actuarial and internal audit. The ICPs also require supervisory approval for any merger or acquisition activity.

ICP 8 requires the existence of an actuarial function that must provide independent actuarial advice on matters such as solvency and risk modelling. Solvency II in Europe has a similar requirement that has raised issues relating to:

- *How smaller firms can find the resources for independent risk management and actuarial functions.*
- *How companies operating in jurisdictions without a local statutory actuarial role can demonstrate the fitness and propriety of their actuarial function.*

The ICPs do not impose a formal or legal separation of life and non-life liabilities, but only require that insurers that write both types of business be able to manage the risks of each business line separately. The IAIS intends that the ICPs be equally applicable to both the life and non-life sectors, with certain exceptions mainly related to disclosure. This intended convergence may prove difficult to put into practice because of differences between life and non-life approaches such as the allowance for risks arising from new business written over the shock horizon.

3. ICPs 9 – 12: ongoing process for performing supervision

The ICPs in this section describe how the supervisor should perform its duties. Each insurer's business should be inspected and evaluated for the effectiveness and compliance of its board and senior management with laws and regulations. Sanctions should be structured to enforce corrective actions. Finally, the supervisor is to define insolvency and the treatment of insolvent legal entities. Policyholder protection takes priority in any wind-ups or market exits.

The IAIS intends to further develop standards and guidance in this section of the ICPs, with ICP 9 identified in particular as a priority for 2012.

4. ICPs 13 – 17: principle-based requirements to promote solvency

ICPs 13 to 17 detail the principles and standards around insurer activity and associated risk. Standards for reinsurance, investments and capital adequacy that address an insurer's solvency position are to be established. Specifically:

a. ICP 14: valuation. This ICP establishes valuation requirements when assets and liabilities are measured to determine solvency. It requires the valuation of assets and liabilities to be undertaken on a consistent basis and to be an economic valuation not obscured by conservatism. The ICP permits both market-consistent and amortised cost measurement techniques. Under an amortised cost approach, tests should be performed to assess asset impairment and liability adequacy. The measurement of all liabilities should not reflect an insurer's own credit standing, although the value of subordinated debt may reflect the lower probability of repayment.

b. ICP 16: enterprise risk management for solvency purposes. This ICP outlines ERM as a self-assessment of all risks and states that related risk decisions should be coordinated with capital allocation processes. In essence, insurers should integrate ERM into their corporate governance framework. This ICP also highlights the key features of an ERM framework, including risk policies, risk tolerance statements, capital assessment and an ORSA process.

c. ICP 17: capital adequacy. Figure 03 shows capital requirements defined by ICP 17. Capital adequacy for regulatory purposes should use a total balance sheet approach and recognise interdependence of assets and liabilities. That is, the determination of capital needs should consider potential impacts to the value of assets as well as changes in obligations. The supervisor should guide these capital needs with a specified level of safety over a defined time horizon as set by the local regulator, and capital resources should be broadly defined as the difference between assets and liabilities.

In a change from an earlier draft, the final version of ICP 14 now permits amortised cost as well as market-consistent approaches under the 'economic value' umbrella. This topic has provoked worldwide debate over whether market-consistent approaches have an exclusive claim to be considered economic. In some markets, where book-value-type techniques are widespread within the regulatory regime, this amendment within ICP 14 is likely to be welcomed by insurers for whom market-consistent valuation may have increased balance sheet volatility and risk of procyclicality. ICP 14 requires an appropriate allowance for embedded options and guarantees regardless of whether the valuation uses market-consistent or book-value-type techniques. Stochastic and simplified methods are permitted, but insurers are required to demonstrate that the selected approach is appropriate to the nature, scale and complexity of the risk. In many jurisdictions, this will require significant investment in modelling systems, depending on the extent to which the cost of such embedded options is allowed for under current statutory and supplementary reporting.

ICP 16 could require a significant investment in ERM to meet upcoming ORSA requirements. (For further reading on ORSA, see Towers Watson's April 2011 Insights, 'ORSA: Engaging the Business in Solvency II.') Most likely, documented risk policies and risk capital assessment processes that adequately address a firm's key risks based on its selfassessment will be required. Accordingly, formalised risk appetite principles and enterprise-wide risk tolerances will need to be in place.

5. ICPs 18 – 22: promoting fair and legal market practices

The supervisor is to establish standards and requirements for how business is conducted, and for timely disclosures of relevant information for use by policyholders and other market participants. Insurers should be required to take effective measures to combat illegal activities.

ICP 18 requires intermediaries to disclose their relationships with insurers to customers, as well as how they are remunerated when a potential conflict of interest exists. Although it is at the

supervisor's discretion whether the levels of fees and commissions are disclosed, this could lead to some regional market changes and mirrors recent developments in a number of countries.

6. ICPs 23 – 26: wider role of supervisors

The supervisor should supervise insurers as standalone legal entities as well as on a groupwide basis. The supervisor should also work with other national supervisors to monitor related financial developments to better manage cross-border crises.

The development of ComFrame illustrates how putting the principles on groupwide supervision into practice may pose numerous problems. Although regulators generally agree that greater cooperation and coordination are desirable, important differences in quantitative capital standards (particularly between North America and Europe) make practical group supervision difficult to achieve.

In addition, ICP 23 permits multiple group supervisors even though various regulators have expressed their view that group supervision is only workable in practice with a single group supervisor.

Figure 04 summarises the perspectives and implications of the developing ICPs from selected countries and regions, highlighting the impact on the evolution of insurance regulation.

How Towers Watson can help

It is clear that the implications of the ICPs will be different among jurisdictions and will cover a wide range of an insurer's activities. Towers Watson's global reach and understanding of emerging best practice can help companies comply with the ICPs and can add value as a result of improved risk management practices encouraged by the IAIS.

Our worldwide group of consultants support firms with:

- Implementation of a change management programme
- The development of processes for the financial and regulatory reporting function
- The development of a pro forma financial and risk metric dashboard for external reporting, continuous
- solvency monitoring and management information
- The improvement of actuarial models

Figure 04. Regional perspectives on the ICPs

Territory/ jurisdiction	Regulatory/ supervisory authority	Implications	Emerging developments
Americas			
Bermuda	Bermuda Monetary Authority (BMA)	Developing its groupwide supervisory regime but broadly aligned with IAIS principles	Ongoing assessment for equivalence with Solvency II; substantial equivalence with the Bermuda Solvency Capital Requirement (BSCR) and the new group supervision regime
Brazil	Superintendência de Seguros e Previdência (SUSEP)	Would require movement away from formulaic approaches to reserving for claim liabilities toward realistic assumptions and practices	A liability adequacy test has been implemented, for which realistic assumptions are required.
Canada	Office of the Superintendent of Financial Institutions (OSFI)	Developing guidelines on key aspects of the ORSA and capital requirements that are aligned with risk	Third quantitative impact study responses were due in January 2012
Mexico	Comisión Nacional de Seguros y Fianzas (CNSF)	Would require movement away from formulaic approaches and prudent reserves	New law being discussed in congress to implement a plan similar to Solvency II; the regulator is working on the specific requirements, including reserving and capital aspects
United States	National Association of Insurance Commissioners (NAIC)	Move from prudent reserves and factor-based capital requirements to more economic risk-based approach under ICPs	ORSA for the Solvency Modernisation initiative and principle-based approaches to reserving and capital
EMEA			
European Union	European Insurance and Occupational Pensions Authority (EIOPA)	Work already undertaken as part of Solvency II should ensure the supervisors and industry are largely aligned with IAIS principles	Solvency II requires best-estimate reserving with capital requirements set either via an internal model or a standard formula, typically representing the change in available capital over a one-year horizon after a one-in-200 shock event
South Africa	Financial Services Board (FSB)	Introducing a risk-based solvency regime with more emphasis and guidance on reporting and disclosure	Developing and field testing the Solvency Assessment and Management (SAM) regime due to become effective by January 2014
Switzerland	Swiss Financial Market Supervisory Authority (FINMA)	Risk-based Swiss Solvency Test (SST) targeted to be compatible with Solvency II	Ongoing assessment for equivalence with Solvency II; reviewing the SST calibration in light of Solvency II developments
Asia Pacific			
Australia	Australian Prudential Regulation Authority (APRA)	Transitioning to improved risk management from a rule-based compliance approach	Second impact study on reforms to capital standards completed; new capital requirement likely to be more onerous for life companies
China	China Insurance Regulatory Commission (CIRC)	ICPs require moving toward risk-based regulatory capital requirements and for companies to develop ERM frameworks	CIRC issued comprehensive risk management guidance for life insurers including the requirement to calculate economic capital requirements as part of the risk management process beginning in 2014
Hong Kong	Office of the Commissioner of Insurance (OCI)	Move from prudent reserves and factor-based capital requirements to economic risk-based approach under ICPs	Considering a move to risk-based capital framework but have not started formal consultation or evaluation process
India	Insurance Regulatory and Development Authority (IRDA)	Risk-based capital regime; embedding of risk management via development of ERM frameworks and self-assessment of risks	Working party established to consider risk-based approach to regulatory capital requirements
Japan	Financial Services Agency (FSA)	Compatible with IAIS principles; insurers have commenced ERM implementation studies	Ongoing assessment for reinsurance regulation equivalence with Solvency II
Malaysia	Bank Negara Malaysia (BNM)	Inclusion of explicit allowance for options and guarantees in regulatory capital calculations; development of internal risk assessment and capital allocation processes	BNM issued a consultation paper on Internal Capital Adequacy Assessment Processes for insurers
Singapore	Monetary Authority of Singapore (MAS)	Inclusion of explicit allowance for options and guarantees in regulatory capital calculations; development of internal risk assessment and capital allocation processes	Announced that it is considering developing its regulatory framework and risk-based capital requirements to be consistent with the ICPs

- Industrialisation of reporting systems
- Internal model support
- ORSA gap analysis
- The development of an ORSA policy
- The motivation to refresh risk appetite within the organisation
- The measurement and benchmarking of the risk culture and the degree of embedding within an organisation
- The development of internal stress and scenario tests (and reverse stress tests) at both the solo and group level
- Linkage of risk information into existing asset/ liability management, strategic decisions, pricing, product design and risk transfer strategy
- "The time frame for convergence of local insurance regulation with the ICPs is unclear, but we believe that companies should act now to seize the business benefits that adoption of

these best practices can provide."

- Link to ICPs on the IAIS website: iaisweb.org/Insurance-Core-Principles-material-adopted-in-2011-795
- Link to ICPs online tool on the IAIS website: iaisweb.org/ICP-on-line-tool-689
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LIFE INSURANCE - OVERVIEW & REGULATORY ENVIRONMENT

PAKISTAN

by Nauman Cheema

Overview

Life Insurance in Pakistan is still at its stage of infancy. With a population of approximately 180 million, life insurance penetration is estimated to be between 0.3 to 0.4 per cent of GDP. There are 9 companies in Pakistan providing life insurance coverage. Out of these 7 are conventional insurers while 2 are Takaful operators.

The number of life insurance operators in Pakistan is very low. This can be mainly attributed to the nationalization of this sector and formation of State Life Insurance Corporation, in 1972. Growth in this sector started only when licences were issued to 3 private operators in 1992.

Private sector in Pakistan has recently shown significant growth in the volume of business written. Total gross premium written during 2011 stood at approximately PKR 22 billion, almost doubling from 2009. Market share of the private life insurance companies in new business has been around 40%. The main reason for success of private players has been the emergence of bancassurance channel. Products offered by the private sector mainly include individual life unit linked products with flexible benefits and terms and conditions.

Regulatory environment

Insurance Ordinance, 2000 regulates the insurance industry in Pakistan. Unlike neighbouring India, Pakistan does not have an independent Insurance Authority. Since 1999, the sector is governed by the Securities and Exchange Commission of Pakistan (SECP). SECP's authority also extends to regulation of other companies including non-banking finance companies and private pensions. SECP's powers to make rules and regulations are however diluted, since it generally requires permission from the Government which tends to delay the implementation unnecessarily.

As per the regulations, life insurance can only be offered by a separate legal entity, i.e. composite insurers are not allowed, although a life insurer may offer accident and health coverage provided that the business is conducted in a separate statutory fund. Foreign insurers are allowed 100% ownership in Pakistan, however, branch operations by foreign insurers are not permitted. More recently, the minimum paid-up capital

requirement has been increased to Rs. 500 million.

Some of the key regulatory developments are as follows:

1. SECP has made mandatory to all insurance companies closing their accounts from December 31, 2009 onwards, to comply with International Financial Reporting Standard 4 (IFRS 4). However, there are compliance issues which need to be addressed by SECP.
2. SECP has issued of a comprehensive set of illustration guidelines for Life Insurance and Family Takaful Companies with effect from January 1, 2010. These regulations have restored greater order in the market by standardizing the disclosure to the policyholders.
3. Guidelines for Bancassurance were issued by SECP, which became effective from July 31, 2010. These guidelines include:
 - a. code of conduct to be observed by the Bank,
 - b. specification of responsibilities of the Bank and the Insurer.
 - c. maximum remuneration payable to Banks for various policy years under Direct Sales and Referral Models.

These guidelines have resulted in curtailing bank commissions but the benefit has generally not been passed on to the policyholder.
4. SECP has recently issued "Fit and Proper Criteria" for the insurance sector, under the "Sound and Prudent Management Regulations". These regulations state that insurance companies must be run by competent persons with adequate qualifications and knowledge of the insurance business. This criteria applies to CEO's/Principal Officers, Directors and relevant key executives of the insurance companies. The intent of these regulations is to promote good corporate governance, however, they do not clearly specify SECP's powers to approve and remove these key individuals.
5. With effect from 31st December 2012, the new solvency regulations will be applicable on both life and general

insurers in Pakistan. The solvency regime has moved away from flat solvency margin of Rs.75 million for life insurers to a flat margin plus a factor based solvency margin (flat base has also been increased). The factor based solvency margin has to be determined by applying specified percentages on policyholder liabilities and sum at the risk. New solvency regulations allow some leeway till 31st December 2014 before the flat base is increased to Rs. 165 million and the insurer has to hold 100 per cent of the factor based solvency margin.

The solvency regime will need to be updated with the passage of time as the margins required are relatively low by international standards and do not incorporate specific risks of the life insurer.

6. New Takaful Rules are about to be promulgated. Apart from minor changes in the earlier set of rules, one major deviation is the permission to offer Takaful products through window operations.

With rapid expansion of bancassurance sector and especially in view of increasing complaints of mis-selling, it is vital that SECP adopts a more proactive approach to protect consumers. Moreover, SECP also needs to restrict product charges in order ensure a minimum level of value to the policyholders. This is essential in order to build consumer confidence and maintain the healthy momentum of life insurance sector development.

(NB: As of June 30, 2012 the exchange rate is US\$ 1 = PKR 95.6)



About the Author



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Nauman Cheema is Chief Executive of Nauman Associates, an actuarial consulting firm stationed at Lahore, Pakistan. The firm offers a wide range of actuarial services in South Asia, Central Asian States, Middle East and Africa.



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Simon is a Manager with Deloitte Consulting in Delhi, India. He is a Fellow of the Institute and Faculty of Actuaries (UK), and a member of the Pension Benefits and Social Security Committee of the Institute of Actuaries of India. Simon has extensive experience in consulting on employee benefit issues in a wide range of markets, including Australia, India, Thailand, the UK and the US. Prior to joining Deloitte, Simon worked in the London office of Towers Watson.

Simon's consulting experience include:

- Analysis of the liabilities associated with employee benefit plans, from both sponsor and beneficiary perspectives
- Preparation of surveys to determine trends in accounting for pension and post-retirement medical plans
- Review of pension plan investment/de-risking strategies, including placement of liabilities with insurers and performing ALM studies
- Evaluating the potential liabilities under executive compensation arrangements

Simon has a degree from the University of Oxford, where he read Mathematical Sciences.

PERSONAL

What jobs and experiences have led you to your present position?

I began my career in the London office of Towers Perrin, within their employee benefits consulting practice. In addition to core retirement actuarial work, I was fortunate enough to get exposure some less traditional fields, such as pension plan de-risking and the modeling of shared-based payment schemes.

Whilst at Towers, I was pursuing the UK actuarial exams. Upon completing the qualification process in 2009, I was keen for a new challenge in an exciting market. I arrived in India in 2010.

Describe your current roles and responsibilities?

Within India, Deloitte has a fairly sizeable (and growing) actuarial team. We provide support to Deloitte consulting teams across the globe. The team has historically focused on the US market, but an increasing proportion of our work now emanates from Europe and Asia, including India itself. I play a role in managing our actuarial operations in India, with particular focus on our work connected to pension and other post-employment benefit plans.

What are the key qualities required in your position?

Beyond the technical component, there is a considerable focus on people management. There is a strong commercial aspect too: it is important to be comfortable monitoring the practice financial performance, as well as developing new business.

Challenges that you faced on the route to becoming an Actuary?

As with most aspiring actuaries, I had to juggle my ongoing job commitments with completing the actuarial exams. Over time I found a balance.

How did you balance your job, studying for exams, and personal time?

After allowing for job/personal commitments, it was difficult to eke out enough time for studying. Fortunately I enjoyed the actuarial exams, so seized any spare moment to read the notes.

PROFESSION

Please describe a typical day at work?

I normally start the day by catching up on emails; given we work with teams across a wide array of time zones, there can often be frenzied activity over night, and consequently much to catch up on in the morning. The rest of the day is consumed with a mixture of client work, in-person meetings and conference calls with colleagues across the globe. I try to make time to enjoy the company of my colleagues too.

What can you tell me about the employment outlook in your occupational field?

Firstly, we should note there is considerable opportunity within the employee benefits domain. The breadth of topics is vast. There is an ever-increasing scope for us to add value to our clients.

Regarding the employment outlook, this varies between markets and experience levels. In India, I believe the market is currently healthy, across both the global co-delivery and local market consulting sectors.

What do you consider to be the key areas where actuaries add value to the business?

I view the actuarial qualification as a broad training in analytics and commerce. As such, actuaries have are well-positioned to add value to many aspects of a business. Within Deloitte, we see actuaries embedded in a wide variety of roles – not just the traditional technical roles. There are few boundaries to what we can do.

What impact do actuaries have on consumers and society? What should they do to connect with the society?

The work of actuaries underpins the design and security of many widely used financial instruments. As such, actuaries are an important cog in public life.

There may not currently be widespread recognition of this linkage in the general public. Moreover, perhaps actuaries could be doing even more to help shape our financial

environment. These are among the ever-present challenges the IAI and other actuarial bodies continually seek to manage.

How do you think IAI can support better its members?

The IAI provides considerable support to its members. The various seminars it lays on (most notably the GCA) are very helpful for sharing knowledge and strengthening the community.

I am aware of the IAI's recent initiative to set up a platform for greater research in the Indian market. I think this is a very valuable step.

You being a member of both the IFA as well as IAI, what do you see commonality of approach amongst these two organizations?

There is much commonality between the two bodies. This is the result of considerable collaboration and knowledge-sharing between the organizations. Above all, there is a shared sense of integrity and professionalism.

Off shored Actuarial Work in India

Your current area of responsibility is helping manage the actuarial work delivered by Deloitte within India. Can you expand more on the nature of Deloitte's operation in India?

The team was founded seven years ago. We have now grown to almost 50 actuarial practitioners (with many more working in closely related fields), based collectively out of our offices in Hyderabad, Delhi, Mumbai and Bengaluru.

Our team encompasses practitioners specializing in life, health, P&C and retirement plans. We operate under a fully integrated global delivery model, wherein we provide support to Deloitte teams in a wide variety of markets across the globe. We are performing an increasing volume of work in the Indian market.

What is your view on the volume of such work being carried out within India, and the range of countries hosted?

For many global consultancies, using India for the delivery (or co-delivery) of work has become a financial imperative. This is likely to perpetuate the growth of the sector in India.

Most of the work still emanates from North America. However, there are increasing volumes flowing from Europe and Asia. Further opportunities in new markets are continually arising.

Any specific challenges facing actuarial workers in this area of employment within India?

When performing work for clients on the other side of the world, it can be difficult to get broader consulting experience. We can face this challenge through deployment of our practitioners with our client teams across the globe, or by integrating them into our work in the Indian market.

Suggestions for the IAI which can support better such work in India?

Many of the senior gentry of the IAI (including President Khan) helped lay the foundations for the global co-delivery model, and continue to facilitate the growth of the industry in India.



**All IAI members It's that time of the year again!!
The time to mark your calendars for the
15th Global Conference of
Actuaries!!**

Dear IAI members,

Re: Theme Contest for the 15th GCA, 17th -19th February, 2013

The Theme for the 13th GCA on 20th - 22nd February, 2011: Emerging Risks...Daring Solutions by K Ganesan had captured the underpinning of the whole event and in line with the same, the Theme for the 14th GCA on 19th -21st February, 2012: Meeting the Challenges of Change by Amrita Kaur caught attention of all. Around the themes the whole program of both the GCA's was structured. The Theme for the **15th GCA to be held over 17th -19th February, 2013** has to capture not only the reality within India but what is happening around the world, because that affects India as well.

The stability and growth of the Insurance Industry within India is perceived to be on track, except the life insurance which has been struggling for the last about two years and is yet to look up. There are expectations around product structures and regulatory approvals. Besides the attitude and capacity of the Indian population to use mechanism of life, Health and General Insurance for wealth creation and protection appears to be on somewhat shaky grounds.

The theme of the 15th GCA, therefore, has to capture essence of the above so that the event revolves around the same. The members are requested to give it a thought and send their submission latest by **30th September, 2012** to Gillian Almeida at Gillian@actuariesindia.org with subject line: **15th GCA Theme Contest**.

The winners will be chosen by the 15th GCA Organising Group based on laid down principles & procedures and will carry a reward to be presented during the 2013 AGFA on 17th February 2013.

With Warm Regards

Liyaquat Khan
President

FROM THE DESK OF CHAIRPERSON - ADVISORY GROUP ON EXAMINATION

Varun Gupta

Gupta.Varun@maxnewyorklife.com



CHALLENGES OF MANAGING IAI EXAMINATIONS – LOOKING BEHIND

It's almost now two years ago that I got a call from one of my professional colleagues asking me whether I would be interested in chairing the Examination group of the IAI. I took some time to think through what real differences I could make to the examination system, after all it was very probable to consume oneself in burdensome administrative affairs like finding exam centers or hunting down perennially difficult to find examiners!. After a week I called up the President, Liyaquat Khan to discuss my apprehensions and what exactly his expectations from the examination group were. He explained to me in detail and his christening the group as 'Strategy' Exam Advisory Group answered a lot of my concerns. After a few round of discussions we also got other members of the team on board.

There were multiple issues to begin with and one of the more immediate ones was the relationship with the IFA UK where they had raised certain concerns over some of our exam papers leading up to apprehensions around non renewal of our mutual exemption / [Mutual Recognition arrangement](#). I am pleased to share with you that past [about two years](#) have seen a marked improvement in relationship between the two bodies on multiple fronts. I can't thank enough the President, Examiners, IAI staff and IAI office bearers who have supported this initiative to an extent that now IAI has managed to get one to one CA level exemption arrangement with the IFA UK, [aside from bonding of relationship that focuses on the global branding of IAI students and qualified members](#).

Next real issue was some of the exams that had been modified/ introduced by UK profession and where IAI needed to get arrangements in place. CA 3-

Communications module was the first in line where the format had been changed to Oral presentation and written from an earlier written format only. The entire course workbook was prepared with the help of IAI actuaries and an external communications expert firm. We did a pilot module with the help of five IAI student volunteers who went through a dummy run of the course. The course content that included workbook, sample exam papers and video recording of the pilot course were then sent to UK for their feedback. CA3 course module is now live and running. My special thanks to Mr Sanchit Maini, Mr Heerak Basu and the student volunteers who helped in smooth transition of CA 3 module to its current form.

CERA is a new risk qualification that the profession is looking towards to push itself into areas beyond the core insurance domain. For IAI to be able to award this qualification it needs to be a CERA treaty Signatory. In order to fulfil the requirements, the IAI will need to provide the ST9 (Enterprise Risk Management) examination to its members. Since ST9 is a new course it would have taken some time for experienced practitioners to emerge in this discipline to act as potential examiners. In view of this and the fact that the IFA has entered into similar arrangements with the Institute of Actuaries of Australia (IAAust) and the Actuarial Society of South Africa, IAI inked an agreement with UK. The first batch of ST 9 aspirants consists of three candidates and I sincerely hope more people would take this exam in future.

IFA had concerns on IAI's CT 9 (Business Awareness Module) owing to its content and other exam related matters. We therefore decided to discontinue the exam to make required amendments to this module. Although it has taken

more time than anticipated, we are now very close to launch of the revamped CT 9 module. The President has already signed agreements with the service providers who would help us conduct this examination. The exam in its new avatar would be fully on line and can be taken from the comfort of one's home. The on line functionality is expected to standardize the course delivery, reduce costs as well as enable conduction of more frequent examinations.

Coming to the all important issue of more 'traditional' of actuarial examinations CT series, it was always a concern whether we have been fair to students who have entered the IAI actuarial examination system without being fully aware what to expect from the course. It was with this thinking and a host of other issues in mind that, with the approval of Council, we launched Actuarial Common Entrance Test (ACET). The test is based on areas of mathematics and statistics and therefore gives an opportunity to aspirants to experience in a more secure setup what they are likely to encounter later. I am not under any illusion that things would change overnight but two ACET exams conducted till now reveal that only around 50% could make it through despite very modest pass mark criterion. Statistics are prone to differing interpretations and I leave it to the judgment of readers to interpret this, but according to me, at the very least, even if we have managed to save precious years of a few aspirants then a lot has been achieved. Needless to mention the collateral benefits that accrue to overall examination system.

There were other initiatives that the exam group took like increasing examiner remuneration to provide better compensation for the effort that examiners put in round the year,

announcing exam dates in advance, exam refund rules, examiner's seminar etc. There is also a need to recognize IAI's social responsibilities in a country that still has wide sections of its population precluded from an enriching education and rewarding career opportunities. Recognition of this responsibility requires action on several fronts like financial support, support for the physically challenged in the IAI's education/examination policies and procedures, creating a pan-India infrastructure to enable students from geographically distant areas etc. The social responsibility that IAI demonstrates would form an important constituent of its value system and would critically reflect in how the IAI is perceived by broader sections of the society. There are benefits to be had from this superior

perception as IAI would increasingly find itself in competing situations with other professional bodies. Whilst President personally ensured that we broad base exam centre network to now 35 centres', I recognize that there is room for action on other fronts. I am also aware that there are more immediate matters like exam pass rates. To me the bigger worry has been the variation in pass rates than the pass rates themselves. I can assure members on behalf of IAI that there is no grand design behind this and this is as much a worry for us. Whilst ACET would help address some of this (ACET student pass percentages were significantly better in June 2012 exams) this would take effect only over a period of time. Moreover there are other measures that need to be put in place but that require certain strategic interventions on part of IAI.

I am also aware that this journey is not complete and there are other elements of an examination system like facility of re-totalling/re-evaluation etc that need to be introduced. I also take this opportunity to thank President, Liyaquat Khan to have offered me this immense learning experience. My sincere thanks to members of my advisory group and who have partnered me in this journey- Puneet Nayyar, Abhay Tewari, Samreen Asif, Akash Gupta, Pranshu Maheshwari, Pravir Chandra, Dr. Dheeraj Mishra, Subhendu Bal. A special mention of Gururaj Nayak, Gauri Totla and Vibhor Agarwal (left the IAI some months back) who have supported IAI's examination efforts untiringly.

It has been only the beginning of the journey – great goals and path worth treading lies ahead.



OFFSHORED ACTUARIAL WORK IN INDIA - COMPANY PROFILE

India has a fast growing actuarial talent pool and a matured outsourcing industry, and is thus increasingly recognized as a force to reckon in the actuarial outsourcing arena. With regulatory environments changing, and greater focus on driving costs down around the world, India can emerge a preferred destination for actuarial services off-shoring besides location of Actuarial Consulting a la Hong Kong and Singapore. This month we present company profile of KPMG.



Think beyond

Complexity: It's among the biggest challenges facing businesses today. KPMG professionals across a network in 152 countries are helping clients navigate change, think through the biggest trends and find the way to a more profitable and sustainable future. KPMG employs over 700 actuarial professionals worldwide, each dedicated to finding tailored solutions for our clients as they manage financial risks within their business.

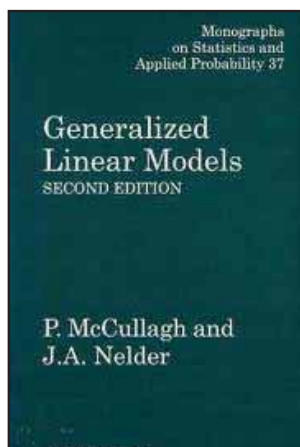
The actuarial team in KPMG Global Services provides services to clients in partnership with KPMG member firms. It is an extension of KPMG's Global Actuarial Services, underpinned by an international footprint of diverse actuarial practices. Services are provided in areas of actuarial modeling, risk and capital, audit and assurance, and analytics and predictive modeling which span across life, health, and property & casualty insurance.

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GENERALISED LINEAR MODELS (1983)

by P McCullagh, FRS and J A Nelder, FRS

Book Number : 11121

Status : Available at IAI Library

Reviewed by Kirti Kothari, FIAI, FIFa

This is monograph number 37 on Statistics and Applied Probability and is the second edition on this topic.

The monograph deals with a class of statistical models that generalises classical linear models to include many other models that have been found useful in statistical analysis. An important aspect of the generalisation is the presence in all the models of a linear predictor based on a linear combination of explanatory or stimulus variables.

The second edition is aimed at bringing the first edition up-to-date and providing a more balanced and extended account of the core material by including examples and exercises.

The monograph is written mainly for applied statisticians, particularly dealing with medicine, biology, agriculture, social science and engineering. It is also useful for actuarial students interested in working in non-life insurance as it focuses on various dimensions of generalised linear models which could

very well be applied to pricing, reserving and experience analysis.

The initial chapters provide a good introduction to generalised linear models. They cover briefly some of the reasons for model fitting as an aid for interpreting data, the process of model fitting, presenting generalised linear models as an extension of classical linear models, models for binary and polytomous data and log-linear models and their connection with multinomial response models. The interesting examples and exercises illustrate well the scope and flexibility of generalised linear models when faced with similar non-standard modelling problems.

The later chapters cover more advanced topics.

In the chapter on conditional likelihood, the authors discuss modified likelihood functions that depend on as few of incidental parameters as possible while, at the same time, sacrificing as little information as possible. The chapter on models for survival data demonstrates

that censored survival data can be transformed to fit into the generalised linear modelling framework. The chapter on quasi-likelihood models is presented to make the concepts very clear. The chapters on formal parametric methods along with informal graphical methods for assessing a fitted generalised linear model are essential and represent much of the recent research on generalised linear models.

The final chapter looks at what the authors see as the important topics for future research.

Thus, this monograph gives a nice overview of how linear models can be generalised to derive things like log-linear models and survival models. For the most part, the monograph is self-contained, requiring simple knowledge of matrix theory and the basic ideas of probability theory. Since the monograph was published in 1983, more recent statistical methodologies of general applicability are not discussed here, and appear under areas of future research.

For actuaries planning to move to non-life insurance, this monograph, with its worked examples, plentiful exercises and topics of direct use, offers a refreshing and interesting update on some of the concepts we learnt as students. I would recommend it as a good self-study and reference book for all actuaries and students wanting to gain more knowledge on the technical aspects of generalised linear models.



MANY HAPPY RETURNS OF THE DAY

the Actuary India wishes many more years of healthy life to the following fellow members whose Birthday fall in **August 2012**

BADRI PRASAD GUPTA	N. SEETHAKUMARI
O. LAKSHMINARAYANA	N. H. THANAWALA
D. C. CHAKRABORTY	P. S. VEDI
JOHN CHARLES POOLE	M. S. VENKATARAMAN

(Birthday greetings to fellow members who have attained 60 years of age)



Shilpa's Puzzles

Puzzle No 175:

The word CIVIL consists entirely of Roman numerals. Although the word taken as a whole doesn't satisfy the rules of Roman numerals, it is possible to select one or more letters from CIVIL, without changing their order, so as to produce legitimate Roman numeral constructions: for example, CVI = 106. (In case you're wondering, a standard Roman numeral is built by splitting its Arabic version into place values and translating piece by piece. For example, 49 splits into 40 + 9,

so its Roman numeral equivalent is XLIX, not IL.)

In all, 13 such numbers can be created from CIVIL. Is the sum of those 13 numbers odd or even? (you don't need to list them in order to get the answer.)

Puzzle No 176:

The number 1234 needs seven words in its usual English description, namely "one thousand two hundred and thirty four". What is the smallest whole number which requires exactly three words?

Answers to puzzles:

Puzzle No 171:

Missing letter is "R"

Puzzle No 172:

One of the solutions is..

3	7	6	2	4	5	1
1	34	4	36	5	30	5
4	6	3	5	7	1	2
5	35	7	32	1	28	4
7	2	1	5	3	4	6
6	28	2	25	2	35	3
2	3	5	1	6	4	7

Correct solutions were received from:

Puzzle No 171:

1. Shriram Ganapathy
2. Farzin Writer
3. Pettina D'souza
4. Karthik
5. Binita Bhimani
6. R. Mythili
7. Mahesh Saini
8. R. Umamaheshwari
9. Cherry Agarwal
10. C. T. Narayanan
11. Neha Podar

Puzzle No 172:

1. Graham Lyons



shilpa_vm@hotmail.com



HOW TO PLAY

Fill in the grid so that every horizontal row, every vertical column and every 3x3 box contains the digits 1-9, without repeating the numbers in the same row, column or box. You can't change the digits already given in the grid.

- Sudoku Puzzle by Vinod Kumar

Sudoku puzzle No. 3 for the month of Aug. 2012

		6			3	7		
	2				8	4		
	9				2	5		
5				6				2
8				7				3
1				9				4
		3	1				6	
		7	4				8	
		1	5			9		

Solution of Sudoku Puzzle No. 2
Published in the Month of July 2012

Medium

5	6	2	8	3	4	1	9	7
8	7	1	6	2	9	4	5	3
9	3	4	1	7	5	2	6	8
1	5	3	2	9	8	6	7	4
6	2	7	3	4	1	5	8	9
4	8	9	7	5	6	3	1	2
2	4	6	9	1	7	8	3	5
3	9	8	5	6	2	7	4	1
7	1	5	4	8	3	9	2	6

Hard

3	5	7	4	8	1	6	9	2
6	8	2	7	3	9	5	4	1
9	4	1	5	6	2	7	3	8
7	1	9	3	4	5	2	8	6
8	2	6	1	9	7	4	5	3
5	3	4	6	2	8	9	1	7
4	9	3	8	7	6	1	2	5
2	6	5	9	1	3	8	7	4
1	7	8	2	5	4	3	6	9



Lead Actuary

Malaysia

Composite insurer in Malaysia seeks non-life actuary to lead a large team of analysts across all P&C and A&H lines of business. Fantastic opportunity for senior actuary with skills in reserving and pricing to take their career to the next level.

Head of Portfolio Management

Singapore

Multinational retail insurer is looking for a Head of Portfolio management for their local office. Reporting in at CUO level this person will take responsibility for pricing strategy portfolio profitability and retail sales.

Consulting Actuary

South East Asia

Global consulting firm is looking for a qualified actuary to lead exciting projects across reserving, pricing, capital and M&A with clients throughout South East Asia and support the business' rapid expansion plans.

Catastrophe Modeller

Singapore

World renowned commercial lines insurer is looking for an experienced Catastrophe Modeller to work on its specialty lines of business, focusing on Nat Cat, Terrorism & Warfare and lead/ develop a team of junior analysts.

Pricing Director

Singapore

My client is looking for a senior actuary with over 8 years' experience to join their team as Pricing Director. Fantastic opportunity to lead a team in one of the market leading non-life insurance companies.

Senior Actuary

Thailand

I am working with a large Health Insurance Broker that is looking for a lead actuary with 8 years' experience in Health or General Insurance. Communication skills a must as the role is integrated to all areas of the company.

SAS Modeller

Singapore

There is huge demand from several of my clients in Singapore for candidates with 1 year+ actuarial experience who are proficient in SAS modeling. Amazing opportunity to progress into pricing roles in South East Asia.

Signing Actuary

Malaysia

My client is looking for a qualified actuary to lead their team in Malaysia. The role works across Pricing and Reserving and will require good interpersonal skills in order to further build the team and drive the business forward.

Oliver James Associates are specialists in actuarial recruitment. We have the largest and most successful actuarial search team in Europe, offering services from manager level up to executive appointments. We have specifically designed teams to deal with each market in the UK, Ireland and mainland Europe, and in 2011 we opened our Hong Kong office where we have built a team to service the increasing demand in the Asian markets.

The non-life insurance sector is growing throughout Asia at a tremendous rate, with established multinationals expanding and new entrants coming into the market, particularly Lloyds and London market firms who are targeting South East Asia as an area for growth. As a result there is an increased demand for overseas actuaries with excellent communication skills and technical knowledge across reserving, pricing and capital.

If your skills fall into the above criteria and you are interested in learning more about potential opportunities, then please contact one of our experienced consultants on the details below.

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To see whether a risk poses a threat,
don't we have to see the big picture?

The future is like an iceberg. Most of the time what we can see before our eyes is only half the story. So how do we know the unknowable? Only those with relentless drive, expertise and foresight can see the whole picture — the risk that lies beyond. At Munich Re, seeing more is what we do. We work in interdisciplinary teams, each pair of eyes viewing something from a different perspective, all focusing on the best solution. With our worldwide network we can pinpoint complex global patterns when they arise. When it comes to grasping our future, we are never satisfied with half the story.

To find out more about what lies beyond,
check out our website at www.munichre.com