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INDIAN ACTUARIAL PROFESSION
Serving the Cause of Public Interest

RISK Management



President's Message

opportunities in India and abroad
for Actuaries

Editor's Message

Actuarial profession and
Nation Building

5th Enterprise Risk Management Seminar

Advisory Group Update on Risk Management





CLAIMS RESERVING

Mumbai, 11th - 12th May 2017

10.00 a.m. - 5.00 p.m.

Program

Reserving Context

Stakeholders and management implications
Products particularities and conditioning factors for reserving

Work Preparation and Methodologies

Reading data and building the Run-Off triangles
Types of data and yardsticks for claims origin year
Triangles results, accounting reserves and reserves balance

Deterministic Classes of Methods: Estimation using Excel

Grossing-Up, Link Ratios, Average Costs, Cape Cod, Bornhuetter-Ferguson
Shall we work with the Chain-Ladder?
Reserves discount, inflation and Solvency II economic reserves

Stochastic Methods

Volatility of estimates, fair value and Solvency II risk margins
Stochastic methods beyond Chain-Ladder

About the Workshop

The workshop's scope is to lead the participants to learn and master the analysis of claims reserving:

- Understand the features and restrictions of claims reserving
- Get knowledge on reserving methods advantages and disadvantages
- Calculate claims reserves using Excel for all the methods
- Understand the concepts of stochastic methods and its main methods
- Get knowledge on Solvency II approach to claims reserves

The workshop will have 12 hours with a strong practical component and a permanent tutorship. Its participants will develop all the methods using **Excel** with their **Laptops**. They may do it alone or in groups of two or three people.

This workshop on Claims Reserving is also available as private in-house event. For this alternative contact us: infoMumbai@actuarial.pt, www.actuarial.pt.

More Information

More information may be obtained through infoMumbai@actuarial.pt or 91 22 6179 3841

About ACTUARIAL Group

ACTUARIAL Group Mumbai is a representative office of ACTUARIAL Group Dubai which belongs to ACTUARIAL Group Portugal (Grupo Actuarial) and inherited the same line of businesses related to insurance industry (Insurance and Actuarial Consulting, Insurance and Actuarial Software and Training).

Grupo ACTUARIAL is certified by DGERT, the Portuguese certifier entity on education quality.

This event is a joint venture of ACTUARIAL Group Mumbai and the Lisbon office.



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"A noble man's thoughts will never go in vain. -Mahatma Gandhi."
"I hold every person a debtor to his profession, from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to help and ornament thereunto -Francis Bacon"

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Mr. Sanjeeb Kumar

Dear Readers,

With the passing exam diet I would like to put up a famous quote for all the exam takers "Success is no accident. It is hard work, perseverance, learning, studying, sacrifice and most of all, love of what you are doing or learning to do". I am sure you will see the shine of your hard-work when the results are declared in June.

In the last column, I picked up an important and growing area for actuaries – Risk Management. In this month's column, I am touching an equally important area "**Big Data and Predictive Analytics**". During the recent years, the Big Data & predictive analytics has emerged as one of the rapidly growing areas across the globe. It has enabled the business analytics to take a big leap into the future and has advanced data based analysis & decision making into the forefront of things. In this context I would like to discuss my views on the relevance of Actuarial professionals in the field of Big Data and Analytics.

To summarize briefly "Predictive analytics" is a process of using modeling and data analysis techniques on large data sets to estimate predictive patterns, intertwined relationships and visualizing data more interactively.

Analogous to the actuarial world, predictive modeling has become synonymous to generalized linear models (GLMs) which is only one of the many aspects of predictive modeling, and also includes, optimization, regression (linear, multiple, logistic, probit, tobit, non-parametric, clustering etc.) Some of you might have observed that many companies are big time focusing on Big Data & Predictive analytics and are making best use of the descriptive statistics, predictive modeling, complex optimization techniques etc to enhance their business outcomes, particularly in the area of customer profiling. The common tools currently being used in analytical methods extend to R, SAS, Python, Hadoop etc.

Of late I have noticed that the actuarial profession in some of the jurisdictions particularly in UK and US has shown a good pace in terms of expanding the actuarial skills to also include the predictive analytics. Globally, to the large extent, Insurers have also realized the potential benefits of Big Data analytics in risk segmentation and quantification e.g. mortality risk in life underwriting for Life Insurers, ascribing behavior-based credit scores for auto insurers etc. Fueled by analytics driven tools, actuaries may increase the efficiency and accuracy of the businesses decision making and may also create a robust control framework. **More importantly, I would like to stress upon the upcoming opportunities in India and abroad for our students, associates and fellow Actuaries in this area. With our rigorous academic abilities, modeling skills and problem solving capabilities, I believe the actuarial professionals are best poised to become Analytics experts/Data Scientists and can take lead in this area. I have asked the Education Advisory Group to work on this area & design a course and/or practical training module**

so that we, within the Indian Actuarial Profession, sooner than later, build the capacities so as to make best use of this upcoming opportunity for our members. Given that our students and members have varied academic background of Economics, Mathematics, Statistics, Finance, Engineering aside the business experience, we are therefore well poised to expand our wings in this emerging and high growth area.

With each opportunity, the challenges also come together. The real challenge for actuaries in Big Data would be to create valid models with good predictive power with the help of large volumes of data. The focal point of challenge lies not only in creating a model which is adaptable to the data at hand but it should have reasonable predictive power outside the experience or should I say, lower residuals/relatively smaller error term.

The opportunities for data scientist are also immense in health insurance and disease management programme. This is an area which is still widely untapped in India and is likely to present a whole range of opportunities, more so in the light of increasing impetus on public health programme. Similarly there are other areas such as Motor Telematics, Banking etc where there would be a plethora of opportunities for the data scientists.

I would like to conclude by encouraging our students, associates and fellow members to welcome this opportunity and pursue this area seriously in their scheme of priorities. The Institute shall support our members in all possible ways. Any member or volunteers to work in this area for the Institute is most welcome and may write to me at president@actuariesindia.org



Mr. Dinesh Khansili

'the Actuary India' is a medium to speak about the actuarial profession in India. This also gives a platform for introspection e.g how #actuarial #profession is aligned to #nation #building.

Our profession could be quizzed at any time how you are contributing to nation building. The profession need immediate answer. Hereunder are a few examples on which the answer to the pertinent question could be developed. Actuarial profession could link the models on which they work and their other workings to bigger picture.

- The Actuaries' role was felt by country when they touched the lives of Government, Public and Private sectors' employees and their family members by designing and setting up the superannuation schemes. The employees or their nominees started getting pensions post exit from the services due to death, withdrawal, ill-health retirement or normal retirement.
- The Actuaries are helping in managing the Government of India (Gol) initiatives providing the insurance coverage to masses under Pradhan Mantri Suraksha Bima Yojana, Pradhan Mantri Jan Dhan Yojana and Aam Admi Bima Yojana for BPL families. This is done through

analysing the experience, keeping reserves, assessing sustainability in longer run and Gol support needed, if any.

- They are also helping in providing the health coverage to masses through setting minimum prices, reserving and analysing the experience for universal health insurance schemes for APL families, Jan Arogya policy and Janata Personal Accident schemes. The students' safety, Ashraya Bima yojana, Rural and Agriculture Insurance, Swavalambanetc are other schemes.
- The Actuaries helped private employers to provide the gratuity payment to their employees under payment of gratuity act 1972 by setting the contribution amount to be paid by the employers and managing the schemes by keeping reserves and asking additional contribution so that employers could comply with the Act.
- Small and large scale businessmen are helped to carry on their businesses. The coverage schemes are priced by Actuaries, they keep reserves and monitor the schemes. Some are like Jewellers Block policy, shopkeepers' policy, etc.
- The Bankers and Insurance companies are prone to risks of looting, fraud etc while carrying cash from one place to another. Bankers indemnity policy helps covering such risks.
- LPG has reached to door steps of poor. LPG dealers ensure the regular supply and so their safety net is of utmost importance. Multi-Peril policy for LPG dealers is in place. The Actuaries help in pricing, reserving and monitoring experience of scheme.
- There are certain schemes which help sports personnel and Artists. Insurance sector manages such schemes and Actuaries role is to ascertain the funds needed, analyse

schemes and provide reserves.

- Meritorious sports personnel scheme is in place which provide pension to meritorious sports personnel who have won medals at Olympics and/or Asian Games.
- Similarly, Ministry of Culture helps Artists by providing multiple benefits. The Insurance Company and Actuaries manage the scheme.
- The health and insurance coverage is being provided to various groups. One example is the self-employed women's association. SEWA is providing insurance and health insurance to their members. The schemes have been designed and priced by actuaries. They keep reserves and monitor the scheme. The countries like Ethiopia and South Africa are learning from the experience.
- Similarly the social schemes for beedi workers, carpenters, brick kiln workers, fishermen, cobblers, handicraft artisans, hamals, rickshaw pullars, bidi patta collectors, handloom and khadi weavers, leather and tannery workers, lady tailors, physically handicapped self-employed persons, papad workers, rickshaw pullers and auto drivers, primary milk producers, salt growers, safari karmcharies, tendu leaf collectors, seri culture (silk farming), forest workers, powerloom workers, toddy tapers, hilly area women etc are being managed by insurance company and actuaries.
- The railways, aviation and marine are other areas.

Hence there are innumerable areas where Actuarial personnel are supporting nation building and we need to be aware and same time proud.





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Welcome Address

With rapid innovation as well as disruption in the global economic environment, increased geo-political & technology risks, Enterprise Risk Management (ERM) is becoming critical for successful businesses. While developments in ERM was mainly driven by the aftermath of the Global Financial Crisis, and by Solvency II in Europe for insurance companies, risk management is gaining recognition with the Indian Regulator with recent regulations on Corporate Governance, emphasis on three lines of defence and separation of control functions. With that background, the seminar was organized to bring the best practices on risk management to the forefront and share hands-on experiences and challenges faced by practitioners. Sanchit Maini, Chairperson of the Risk Advisory Group, welcomed the participants.

The seminar was structured in two parts. The first half of the seminar was focused on risk governance and evolving role of the risk function. The second half was on key emerging risks faced by life and general insurance companies.

Inaugural Address

Mr. Sanjeeb Kumar, President of IAI, extended a warm welcome to all the participants. In his inaugural address, he emphasized that there's still a long way to go in the risk management journey,



and could be one of the fastest growing areas for actuaries. He stated that actuaries have a versatile skill set and requisite business knowledge to become Chief Risk Officers (CROs) and add lots of value to ERM. He stated that ERM is a game of challenges and opportunities. Challenges and opportunities lie in turning risk management from being a cost-centre to a value creator and in changing perceptions of the risk function from being obstructers to enablers.

Session 1: Corporate Governance and Risk Management Framework – A Global Perspective

Speaker – Sanchit Maini, Director, Insurance and Market Risk Management, Prudential Corporation Asia



Mr. Sanchit Maini started with why risk management is gaining global prominence. Capital being the currency for risk, its allowance in value management made good business sense. According to him It helps sharpen strategy, focus on what matters and accepted levels of variability, and ultimately make business outcomes less volatile and more predictable. On the

other side of the “carrot and stick” approach, regulatory push with emphasis on corporate governance, customer protection, and risk based prudential norms became another driving force for development of risk management. With this, risk management practices were influenced to adopt the Three Lines of Defence Model which segregates risk taking, risk oversight, and independent assurance. He alluded to how this was a similar framework to Democracy with independent executive, legislative and judicial functions. However, the effectiveness of this framework in companies varies a lot currently, with strong risk culture being a critical success factor. With this, the CRO role has been gaining prominence. Certain European and Asian Insurers have made the CRO a part of the Executive Committee. This is in line with the requirements of separate control functions of Actuarial, Risk, Compliance and Audit as part of Solvency II. Risk management practices are also influenced by the development of risk-based capital regimes in Europe and certain parts of Asia.

Mr. Sanchit then discussed key corporate governance themes emerging globally. The governance increasingly structured around the three lines of defense, appropriate Board composition of executive and non-executive directors with breadth of experience, separate risk management and audit committees, regulators adopting International Associations of Insurance Supervisor's (IAIS) Insurance Core Principles (ICP) on corporate governance framework & control functions, role of key personnel in control functions and the need to strengthen the risk culture being a few of them. He also showed an illustrative governance map to demonstrate the difference between committees that are taking/managing risks and oversight committees. A key point brought out was the role of a Technical Actuarial

Committee, that even though is a 1st line committee, supports the oversight committees as well.

Mr. Sanchit then presented key regulatory developments in Asia-Pacific. The most important change was the introduction of China Risk Oriented Solvency System (C-ROSS) in China from January 2016 which uses the three pillar approach of quantitative risk assessments, qualitative risk assessments and disclosures. Other significant changes were implementation of Own Risk and Solvency Assessment (ORSA) by Monetary Authority of Singapore (MAS) from December 2015 with MAS looking to adopt Risk-Based Capital (RBC2) by 2018/19, and movement towards RBC and ORSA requirements in Taiwan and Thailand. The International Association of Insurance Supervisors (IAIS) is also developing a common framework to supervise Internationally Active Insurance Groups (IAIG) as well as issued Insurance Capital Standards (ICS) which are becoming increasingly a global standard. The common framework also has a more onerous requirement from Global Systemically Important Insurers (G-SII) which are deemed "too big to fail" and include Aegon, Allianz, AIG, Aviva, Axa, MetLife, Prudential Financial, Prudential plc.

Lastly, speaker gave a brief description of the main components of the risk management framework being risk governance, risk appetite, risk policies, risk based decision making processes, risk definition & categorization, and risk culture. He depicted the role of risk across processes as per an Ernst and Young (EY) survey where the risk function was mostly leading processes relating to risk appetite and tolerance setting, stress and scenario testing, capital management and risk mitigation. Further, the risk function was only a part of or having limited role in product approvals, reinsurance, strategic



decisions and reserving. He also noted the key success factors for the risk function are early intervention, knowing the competition, keeping abreast of regulatory changes, reputational risk management, skills of risk manager and strong risk culture.

Session 2: Role of Control Functions in Solvency II: How the 3 Lines of Defense Speaker – Rajesh Dalmia, Senior Partner, EY India

Mr. Rajesh Dalmia started with introducing the 3 Lines of Defense as per the Solvency II Framework. Pillar 1 is related to Quantitative Requirements and includes measurement of assets, liabilities and capital requirement. Pillar 2 which is Governance and Supervision includes effective risk management



practices, Own Risk and Solvency Assessments (ORSA) and supervisory review. Lastly, Pillar 3 is related to Disclosures and Transparency which include detailed public disclosure requirements, improve market discipline and regulatory reporting. He then drew comparisons of the current model with the 'Classical 3 Lines of Defense Model'. In this, the 1st line

dealt with accountability of taking risks, 2nd line to ensure that risks are identified and controlled, and 3rd line to provide independent assurance and review on interaction between risk taker and risk controller.

Mr. Rajesh then described the set-up of the control functions of Risk Management, Compliance, Actuarial and Audit within the Solvency II Framework. The Risk Management, Compliance and Actuarial functions were 2nd line roles whereas the Audit function was a 3rd line role. The role of the Risk Management function was to facilitate the risk management system, the governance systems, and to perform an ORSA, while the role of the Compliance function was to evaluate internal control process and to ensure compliance with local regulations. The role of the Actuarial Function was to coordinate calculation of technical provisions, and contribute to the risk management systems. Sanchit Maini had then remarked that this was indeed an interesting change for the Actuarial Function. He also shed light on the set-up within his organization. They had split the role of the Actuarial function in two – the first, which dealt with the actual calculation of the technical provisions and capital requirements used to sit under the Finance Function in the 1st line, and the second which was responsible for setting the framework and methodology for setting assumptions, calibration of stresses and diversification factors etc. was part of the Risk Function in the 2nd line.

Lastly, he briefly depicted relevant extracts about the role of the Risk Function, Compliance Function, Internal Audit and Actuarial Function as per Article 44, Article 46, Article 47, Article 48 respectively from the Solvency II Regulations.

Session 3: Panel Discussion on Charting the evolving role of Risk Function in India

Moderator – Heerak Basu, Appointed Actuary, Tata AIA Life Insurance Co.

Panelists – KS Gopalakrishnan, CEO, Aegon Life Insurance Co.; Satyan Jambunathan, CFO, ICICI Prudential Life Insurance Co., Sanjeeb Kumar, Appointed Actuary and Chief Risk Officer, Aviva India Life Insurance Co.



The first question **Mr. Heerak Basu** asked of the panel was 'where the Risk Function was performing well and areas for improvement'.

Mr. KS Gopalakrishnan responded saying that the risk function was managing quantifiable risks well (e.g market risks, insurance risks), but could do better on other risks (e.g. operational risks). **Mr. Satyan**

Jambunathan commented that the life insurance industry is still in the early stages of its evolution and therefore, the natural tendency of the Risk Function to manage market and insurance risks particularly as market risks have been managed by Banks for far longer. He also added that the way forward would be for the Risk Function to influence business strategy.

Mr. Sanjeeb Kumar said that the Risk Function was doing well on the risk

governance systems as well of implementing risk policies, having risk appetites, monitoring and reporting to the Board, but was far from "doing well".

The question to the panel from the audience was that shouldn't the development of the Risk Function be market driven when it is currently regulatory driven. Satyan responded saying that the regulator forms the benchmark for the minimum requirements from the insurance companies. Companies, particularly those affiliated to Insurance Groups falling under Solvency II, have gone beyond the regulatory requirements and have more developed risk management systems than technically required. Mr. Heerak also cited examples from Europe where only the regulatory change to Risk Based Capital (RBC) regimes pushed most of the reforms on the risk management side and that regulatory push is important for a nascent function. Mr. Sanjeeb also added to this by drawing light that the role of the Appointed Actuary also required regulatory push when it first started out in UK

The next question Heerak posed to the panelists was 'how do people see risk function questioning actuarial assumptions'. Mr. Sanjeeb Kumar responded to this saying that while they are trying to build actuarial expertise to review the assumption setting process within the Risk Function in his organization, the methodology of setting assumptions as well as the final assumptions used by the Actuarial function undergoes a thorough review from their Group Risk Function of their foreign partner. Satyan added that currently the Appointed Actuary performs the role, which puts a lot of load on one person. It could also lead to false traps due to being within their comfort zones. Gopalakrishnan however had a different point of view. He said

that currently the assumptions are reviewed by both the Peer Reviewer as well as the Indian Regulator, and is there a need of one more person. He countered that the actuaries in the Risk Functions should stop focusing solely on actuarial assumptions and methodologies (being areas where they might have more comfort) and look at the broad spectrum of risks faced by the organization. He referred to the inherent discontinuity risks as mentioned in the Bose Committee Report or some of the large operational failures as brought out in various IRDAI inspections/fines. He urged that the Risk Functions needs to also make a start with focusing on strategic risks as it is one of the most critical factors determining the success path for an organization.

The next question Mr. Heerak posted was on the role of the Risk Function in listed Companies. Mr. Satyan responded that the shareholders are keen to understand and appreciate the risk orientation within the organization, and that the risk function can add a lot of value in identifying opportunities for the company. A question from the audience to Satyan was how important is the Risk Function in investments and strategy. Mr. Satyan responded by saying the role of the Risk Function in to optimize investment strategy subject to constraints rather than exploit market opportunities.

The last question the audience asked of the panelists was on the role of the Risk Function in future and important areas of development. Mr. Gopalakrishnan said it's important to have the right people in the correct positions during the development of the risk management systems. Heerak also outlined other key areas of development to be – increased awareness of new risks, collaboration with sales and strategy, need to be more forward looking rather than reactive, support instant decision making, assumption setting and pricing,

opportunities to leverage Big Data, point of sale illustrations, and most importantly, the risk culture within organizations.

Session 4: Digital risks for Insurance and Financial Institutions in India

Speaker – Anup Dhingra, Senior Vice President, FINPRO and PE M&A Leader, Marsh India



Mr. Anup Dhingra started this session with explaining how people understand that 'cyber' is same as the 'internet', while cyber risks arise in any business which uses a network or which stores confidential information (e.g. client or employee data). He then described some key numbers behind cyber risk with some statistics. Cyber risks which was only an emerging risk a few years back, has become the 3rd largest risks for organizations in 2016 with cost of cyber crime being more than 500 billion dollars to the global economy as per the Allianz risk barometer report 2016. In India, cyber crimes have been growing at 107% CAGR having touched 3, 00,000 in 2015 itself. It is also ranked 3rd in the world for phishing attacks and ransom wares. Phishing attacks are calls or emails appearing from reliable sources trying to get personal information (eg. Passwords or credit card details), while ransom wares are where parties penetrate the information systems of a company, encrypt the whole or part of its data, and then ask for ransom to decrypt it.

An important part of managing cyber risks was to understand what's at risk in

a business. Common exposures include customer data (E.g. net-banking login credentials), or Employee Data (E.g. personal identifiable information), or loss of profits from network outage or security failure. It was critical to note that the company is responsible for data breaches even if they occur on a third party data processor, or when customer's data is in transit (E.g. when making a payment on a e-commerce website).

Mr. Anup also shared some of the key regulatory changes driving cyber risk management around the world. The Securities Exchange Commission (SEC) on Security Breaches in US recently increased penalties for breaches, passed rules for data protection and privacy and made it mandatory for disclosure in the event of a breach. The New EU General Data Protection Regulation (GDPR) also increased the penalties for breaches, mandatory disclosures to authorities and data subjects, and extra-territorial scope. In India, the two main developments were Data Privacy Rules for Indian Companies as part of the IT Act and the circular on guidelines for Clear Data Protection as per RBI. In particular, the circular from RBI makes it mandatory for banks to have a cyber incidence response plan, crisis management plan, and reputation management plan in place.

On management of cyber risks, Anup had quoted "In short, cyber risk cannot be eliminated; rather, must be managed" by James R Clapper, Director of National Intelligence. One of the primary routes for transferring cyber risks is via cyber insurance. He'd indicated that the cyber policies cover more than 30 risks on themes of privacy and data liability, cyber theft, business interruption, and first party expenses. The tailored cyber insurance policies help in filling the gaps in the traditional insurance solutions. The cyber insurance uses a variety of underwriting

factors like industry, size of company, type and volume of data, risks management systems for people & processes, past claim record and existing cyber security policies.

Session 5: Anti-Microbial Resistance – Bad Bugs, Few Drugs

Speaker – Sheetal Salgaonkar, Medical Director, Global Support RGA Services India Pvt Limited



This session was on one of the key developing emerging factors which could have serious implications to the mortality rates in the long-term contracts issued by insurance companies.

Ms. Sheetal Salgaonkar started by going through the story so far on the discovery of anti-biotics to cure diseases, the good period anti-biotics significantly brought down mortality rates from infectious diseases, finally the evolution of anti-microbial resistance. Alexander Fleming, who was the first to discover the use of antibiotic substance (penicillin) to cure disease and subsequently awarded the Nobel Prize in Physiology or Medicine, also warned against the usage of too small doses which educate the microbes to resist the drug rather than clearing the infection. Since his discovery, mortality rates decreased by 8.2% per year between 1938-1952, and ultimately reduced deaths from infectious diseases from 787 deaths per 100,000 in 1900 to 36 deaths per 100,000 in 1980. However, since then, anti-microbial resistance (AMR) grew rapidly, not just for penicillin, but for each new antibiotic subsequently developed.

The causes for AMR was increase in global consumption of antibiotics by 36% between 2000 and 2010 (lead by the increase in the BRICS countries by 76%), inappropriate usage, inappropriate antibiotic prescriptions and drying antibiotic pipeline. Possible reasons for inappropriate usage are desire to meet customer needs, lack of appropriate knowledge and incentives for pharmacists. Almost 30% of antibiotic prescriptions were inappropriate in US in 2010-11, and that ratio is much higher for India. In a simple show of hands, almost everybody attending the seminar confirmed that they had either bought antibiotics without prescriptions or had self-medicated themselves with it at some point. Lastly, the number of new antibiotics developed in 2008-12 reduced to just 2 from around 16 developed in 1983-87. The problems are further compounded for India which has a high background of infectious diseases, weak regulatory systems, and large inappropriate antibiotic usage.

Ms. Sheetal just touched upon the advent of certain 'Super Bugs' which are resistant every known antibiotic. Alarming, drug resistant TB is also seeing occurrences, where mortality is 7 times more than those seen in drug-susceptible TB. Further, the current treatment of drug resistant TB is 200 times more than drug susceptible TB (ranging from 18-25 lakhs for 6 months).

Going forward, there needs to be a global stewardship to solve this problem. Further, reduction in treatment costs, finding alternatives to antibiotics, exploring new avenues of bacterial diversity is critical for controlling the next global health crisis and the reign of super bugs which could lead to more than 10 million deaths by 2050 on a conservative estimate if no action is taken.

Session 6: Emerging Risks in General Insurance

Speaker – Tushar Chatterjee, Senior Risk Officer, Swiss Re Singapore



Mr. Tushar Chatterjee introduced to the audience the risk landscape of key risks, and how emerging risks is included within the framework at Swiss Re. At the very core, Emerging risks arise due to discovery of new previously unperceived risk factors or risk exposures, or discovery of previously unidentified or underestimated exposures to known risk factors, or changes in interdependencies of risk. Emerging risks are an important area as looking back is never sufficient to prepare for tomorrow's risks. However, the challenges of foresight information is by definition unstructured, often unquantifiable, long-term, usually involves looking beyond natural horizons, disputed in importance & impact and difficult to incorporate into an actuarial driven environment. However, picking up early indicators ensures freedom to act and time for adaptation and ultimately mitigate claims and losses.

Emerging risks driven by global macro trends on changes in societal, political, business, technological and natural environment. Societal environment is affected by growing middle class in high growth markets, radical medical innovation affecting mortality and longevity, mass migration and urbanization. The major changes seen in the political environment are the geopolitical instability, increasing

regulatory influence, and the public sector passing risks to private sector. The technological and natural environment are seeing massive expansion of cyber risk, climate change, Internet of Things, and enhanced economics of non-carbon energy.

Swiss Re has a dedicated risk framework where they analyze risks emerging from these major changes in the environment to monitor their development closely. The set-up involves multiple discussions globally, and information feeds from various sources. The 2016 edition of their emerging risks programme (called SONAR) had identified 21 new emerging risks themes. Few key ones highlighted were – rising number of human-induced earthquakes which affect property claims, automation of work-places which could lead to increased productivity but mass unemployment, mass migration seen globally from the refugee crisis, ocean pollution from micro-plastics, viral leaderless mobilization which could hurt company reputation or lead to riots, geo-engineering which involves deliberate large scale intervention in the Earth's natural systems to counteract climate change and sea-bed mining affecting fragile marine ecosystems.

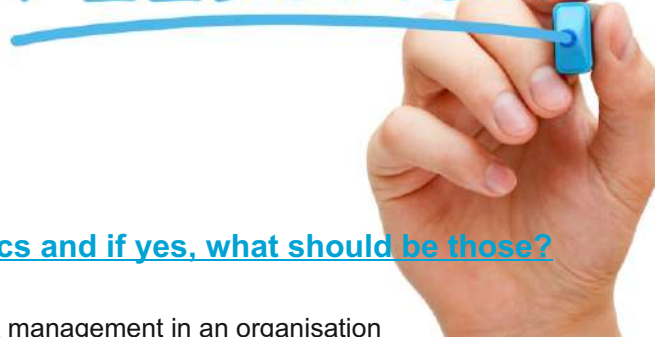
In the end, **Mr. Sachin Garg**, part of the Risk Management Advisory group, thanked all the speakers and participants on behalf of IAI.





Seminar Name	5 th ERM Seminar Feedback
Seminar Date	10 th March, 2017
Venue	Hotel Sea Princess

FEEDBACK



Should the seminar include wider / specific topics and if yes, what should be those?

- More topics concentrating on General Insurance
- Wider topics should include implementation of proper risk management in an organisation
- More GI driven sessions or at least balancing is required. So far it has been primarily life insurance driven Certification based course
- More demonstrative risk management practices in Insurance could be included (with specific examples)
- Yes, ERM in other Sector/ industry shall be covered. Professional managing risk in different sectors shall be invited as speaker.
- Actuaries from International Companies should be invited
- More Panel discussion covering key Challenges in ERM Frame work
- Include topics on Risk Modelling, Economic Values alignment, interdependence of risk
- The discussion were good, but I would prefer the topics to be more specific something like capacity building seminar
- More insights into operational risk, Fraud Management, Op. risk of Data Security
- How 2nd opinion should deal with pricing and reserving separately
- Topics involving hands on applications would help in capacity building for the Indian Insurance Industry
- Practical uses of Copulas
- More representation for non -life Business
- Yes, Speakers from Banking would be welcomed for a change

Other Comments / Suggestions, if any for future event, with respect to speaker, topic or venue?

- Should be separate seminar for life & GI, Should focus on practical approach. What to do for specific issue rather than how the theory suggests
- The topic are focused on only insurance sector, but ERM as a subject can go beyond Insurance. Speakers & Topics should be beyond Actuarial or Insurance.
- Including case studies in the seminars, based on own experience of a company or a consulting Firm
- Munity of expanding job creation for actuaries in ERM field
- It would be better if future programs will be more technical & also workshop based for better understanding of topics. Also case studies based programs will be more beneficial as per my understanding
- Timing of the seminar in the first week attracts less people because of valuation time. This time it was exam time also. Seminar content & conduct was very good.
- More risk related topics from GI & Banking Sector
- We can have such events more after
- Emerging risk should be explained were natural peril should be added & their impact on Indian Industry
- Many companies are yet at the recent stage & implementing them with understanding of obvious risk would be more relevant

Abstract

The valuation and accounting of leave benefit schemes in India suffer from a lack of homogeneity in application of the applicable accounting standards. A variety of approaches are adopted by the employers and their actuaries at various stages of the accounting process. This paper presents an overview of the leave benefit schemes, an analysis of various approaches that are currently being used, and then recommends a holistic approach to bring uniformity and remove the gaps that currently exist.



Background about leave benefits

Leaves, or compensated absences, are an integral part of the overall remuneration package for the employees of a company. These leaves entitle the employees to remain absent from work, for a qualifying reason, for a certain number of days every year and they still get paid for those days. In certain cases, a cash payment in lieu of unutilised leaves may be offered, either during service or on exit. The rules and benefits of leave schemes are usually specified in a company's HR policy.

Companies are usually free to choose their own rules for the leave schemes they choose to run, subject to certain regulatory minimums. Therefore, rules of leave schemes vary greatly between the companies.

Most companies have different types of leave schemes running in parallel. For example:

- ▶ Privilege or earned leaves (this is usually the main leave scheme)
- ▶ Half-pay leaves (usually observed in government undertakings)
- ▶ Sick leaves
- ▶ Leave awards
- ▶ Maternity leave

The accounting standards applicable to the employers will generally require that a liability is recorded in respect of various leave schemes in their financial statements.

Actuarial valuation of leave benefits

Most types of leave schemes will require the employers to hold some liability under most accounting standards such as AS15, IndAS19 or IAS19. However, before rushing to get an actuarial valuation done, it is important to understand what types of schemes require an actuarial valuation in the first place. There are three important issues to understand:

1. Actuarial valuation will be required when an employee has 'earned' or accrued some leaves in the past (i.e. prior to the balance sheet date) and is entitled to consume those leaves in the future, at least 12 months after the balance sheet date. For simplicity, let's call these types of leaves, Type 1 leaves. If the unused leaves are set to lapse before the next 12 months, an actuarial valuation will not be applicable. This rules out any leave scheme which does not allow carry forward of unused leaves beyond 12 months from the balance sheet date from the scope of actuarial valuation.

2. Actuarial valuation is also required where the leaves may not have accrued, but the employees will become entitled to a block of leaves after rendering service for a certain period. Let's call these Type 2 leaves. For example, an award of say five paid leaves on completing three years of service.

3. Even though an actuarial valuation is not applicable on many leave schemes, employers still need to hold liability in respect of most schemes. Any accrued leaves which are expected to be wholly consumed within the 12 months following the balance sheet are classified as short-term benefits under most accounting standards. Any accumulated leave balances in respect of any leave scheme, such as privilege leave, sick leave or even maternity leave, irrespective of whether they are encashable or not, gives rise to an obligation which must be recorded on the balance sheet. Currently, most of the employers make no provision against this short-term liability.

A review of current market practices for accounting of leave benefits

Currently, the accounting of leave benefits suffer from a lack of a holistic framework. Employers and actuaries follow a variety of approaches related to the classification of leave benefits, their valuation and disclosures. However, there are reasons why this heterogeneity arose in the first place:

- Unlike gratuity, companies design their own leave policies. There are varied provisions related to carrying forward, lapse, conditions for approval etc. This means each employer is unique and each of them could be running several different leave

policies. Compare this with gratuity, where one single set of rules are applicable for a large proportion of employers.

- The provision to carry forward unused leaves, more or less indefinitely, is not common in other parts of the world. This is more uncommon in the developed world, where the major accounting standards such as IAS19 originated. Therefore, these accounting standards may not provide an adequate explanation about how the leaves schemes should be treated from an Indian perspective. Since the Indian accounting standards are aligning ever more closely with IFRS, this gap continues to expand and employers apply their own interpretations of the accounting standards.

Classification of leave schemes

Even though most employers have several leave schemes, very few perform a due diligence to understand how their leave schemes should be classified as per the applicable accounting standards. The way a scheme is classified will ultimately determine how it should be valued and accounted.

The general market practice is to only value privilege leaves, actuarially, with little consideration to the terms of the policy. Consequently, most privilege leaves are subjected to an actuarial valuation.

Method of valuation

Three common methods are currently being used to value leave benefits:

1. First-in-first-out (FIFO): Under this method, it is assumed that the leaves that were earned by an employee first, will be utilised first whenever leaves are consumed in future. For example, let's assume that an employee has 30 leaves to

their credit as at the balance sheet date, and a further 15 are due to be credited over the next year. If this employee is expected to avail 10 leaves over the next year, it is assumed that they will first utilise the leave balance that existed at the last balance sheet date (i.e. 30 days) and the next year's entitlement will get added to their leave balance. At the next balance sheet date, they will have 30 (existing balance), plus 15 (yearly entitlement), less 10 (availed during the year), i.e. 35 leaves to their credit.

2. Last-in-first-out (LIFO): This method is the opposite of FIFO; it assumes that the leaves earned last are utilised first. Going by the same example as the previous paragraph, the 10 leaves the employee is expected to avail, will first be taken out from their next year's entitlement. This means that the 30 leaves that existed as at the balance sheet, will remain intact at the next balance sheet date, plus a further 5 will be added (annual entitlement of 15 less 10 leaves that are availed). The number of leaves at the end of the year under this method will be the same as FIFO method; the only difference is 'hypothetical' related to the composition of the leave balance that exists at the next balance sheet date.

3. There is another method currently being used by many actuaries. It is not clear if this method has any specific name, but for the purposes of this article, it is referred to as LIFO with excess provisions, or x-LIFO. This method is same as LIFO, except that an explicit assumption is made that some employees will exceed their annual entitlement and therefore draw upon the leave balance that existed at the last balance sheet date. In the above example, if an employee availed, say 20 leaves instead of 10, they

would first consume their annual entitlement of 15 leaves and then use 5 leaves from their previous leave balance.

It is also important to note that out of the three methods listed above, FIFO and x-LIFO make an explicit allowance for 'availment' of leaves; i.e. the act of utilising leaves by being absent from work, rather than letting them accumulate. Accounting standards have prescribed that even though availment does not require making an explicit payment, it does represent an economic cost for the employer and therefore the liability should be measured.

These methods require an assumption to be made regarding availment pattern. A fixed annual rate of availment, either absolute (e.g. 10 leaves per year) or percentage (e.g. 40% of opening leave balance per year) are generally used. Further, some actuaries set the availment pattern at an individual employee level, whereas others use an umbrella assumption applicable for all employees.

The LIFO method does not make any assumption related to availment, unless evident from the scheme rules. Where no allowance for availment is needed, LIFO method essentially assumes that the leaves that existed on the last balance sheet date will be consumed only on exit from the company. If the leave benefits were non-encashable; e.g. sick leave, no liability exists in respect of such a scheme. In contrast, a FIFO method may lead to a significant liability for the same scheme as the existing leave balance is expected to be consumed by availing leaves.

As far as the current market practice goes, all three methods are widely used, and often without due consideration to the scheme rules or the circumstances of the employer.

Level of disclosures

The information 'required' to be disclosed depends on how the leave schemes are classified. Accounting standards classify benefit schemes into one of the following:

- **Short-term benefits (STB):** those which fall due wholly within the 12 months following the balance sheet date.
- **Post-employment benefits (PEB):** where the benefits under the scheme are payable only when an employee leaves service. Gratuity and pension fall under this category.
- **Other long-term benefits (OLTB):** those benefits which do not wholly fall due within the 12 months following the balance sheet date, but are not post-employment benefits. Such benefits are usually provided in-service.

Actuaries classify leave schemes as either PEB or OLTB. Both classifications are in use if LIFO assumption is used, whereas if FIFO or x-LIFO assumption is used, then usually the schemes are classified as OLTB.

Where leaves have been classified as OLTB, actuarial reports only mention the value of the actuarial liability. Where leaves are classified as PEB, usually full disclosures are provided. Both practices are in line with the applicable accounting standards.

However, where full disclosures are not provided, there is nothing in the actuarial reports to understand the drivers of change in actuarial liability.



The issue is exacerbated when an employer switches to another actuary, who might use a different approach to the valuation.

An approach for valuation and accounting of leave benefits

As described in the previous section, employers and actuaries use a variety of approaches for accounting of leave benefits. Often, the approach chosen is neither described nor appropriate for the given scheme. There is a clear need for a coherent and justifiable approach. One such approach is described in this section, but it is recognised that other approaches may exist.

Classification of leave benefit schemes

Any accounting exercise must start with a due diligence of all the leave benefit schemes. Companies' leave policies change very often, so the need to perform due diligence could be a recurring one. All leave schemes should be analysed and classified as STB or OLTB.

Leave schemes should not be classified as PEB even when the LIFO method is used for valuation, since the scheme rules allow the leaves to be availed while in service, before attaining the retirement age.

For example, where scheme rules explicitly mention that the unused leaves will expire after 5 years, an allowance can be made to ensure that the existing leave balance will be availed during the fifth year.

Method of valuation

For all leaves classified as STB, estimation should be done separately by considering how many of the accrued leaves under each scheme are expected to be consumed within the 12 months following the balance sheet date.

Actuarial valuation should be performed for all leave schemes classified as OLTB. All the methods previously described have their merits. However, the use of the x-LIFO method, in the way it is sometimes used, appears to be technically flawed as explained in the following paragraphs.

For the valuation of leaves of Type 1 (accumulated leaves from past service), it is essential to make a logical estimate of when those accumulated leaves are expected to be consumed. The timing of consumption of leaves has a direct effect on the DBO in the following ways:

1. It determines what would the exit salary be and how long the benefits needs to be discounted for
2. It also determines the salary that will be used; leaves are availed on a cost-to-company (CTC) basis, whereas encashment is done on the basis of salary prescribed in the scheme rules, which could be zero in case of non-encashable leaves.

The central assumption of the x-LIFO method, that some of the employees will use leaves in excess of their entitlement is a reasonable assumption. However, this assumption is valid only for the 12 months following the balance sheet. Again, one needs to go back and assess when the accumulated leaves are expected to be consumed.

Let's consider the following example:

1. A company has 10 employees, each with a leave balance of 30 as at the balance sheet date, 31 March 20X7. The annual leave entitlement is 15 and the company expects [any] two employees to exceed their entitlement and consume 20 leaves over the next twelve months. Eight employees will consume 10 leaves only.
2. As at the next balance sheet date, 31 March 20X8, two employees are expected to have 25 leaves, and eight will have 35 leaves. Effectively, from the 'opening' balance of 30

leaves each, two employees used 5 leaves and remaining employees used none.

3. For the 12 months following 31 March 20X8, let's assume the chances of exceeding the annual leave entitlement are the same; i.e. two employees will exceed their entitlement and consume 20 leaves while the remaining eight employees will consume only 10 leaves. Here, it will help if we consider two scenarios:

- ▲ If the two employees expected to exceed their entitlement are those which did not exceed their entitlement the previous year, then they will first use the 5 leaves that were added to their credit last year. This effectively implies that the 30 leaves that existed on 31 March 20X7, are still intact. In this scenario, where anyone can exceed their annual leave entitlement, the assumption that some employees will continue to exceed their annual leave entitlement does not hold good beyond the first year!
- ▲ The only way in which a consistent over-utilisation assumption could be valid is when the same two employees exceed their entitlement, year after year. However, this assumption is also contradicted by the fact that they have a positive leave balance to start with, developed over time by not exceeding their annual leave entitlements. This assumption is not supported by the past experience.

Therefore, the central assumption of the x-LIFO method is a suspect and it is advised that this method be subjected to further scrutiny. However, this method does bring out a need to allow for the excess consumption that will be observed for the following 12 months –

the expected 'availment' payout needs to be estimated and the resulting liability should be recognised as 'current liability' of the overall DBO of the scheme.

The most appropriate method to value leave benefits would be the one that reflects the scheme rules and circumstances of the scheme. Here are some scenarios:

1. If the scheme is a going concern and the leaves are accumulating and encashable, LIFO method would be the best in such a situation.
2. If the scheme is a going concern and the leaves are accumulating but non-encashable, it would be fair to assume that employees will eventually avail some portion of the leaves prior to exit from the company. Therefore, LIFO method, with an availment outgo prior to exit would be reasonable.
3. In the case of sick leaves which are accumulating but non-encashable, it will be worthwhile to understand how the sick leaves are usually approved by the employer:
 - o If a medical evidence is needed, then there would be no reason to believe that employees will fall sick just before the exit. A LIFO method will result in nil liability in this case.
 - o If a medical evidence is not needed, the method of valuation will be similar to point number 2 above – a LIFO method with some additional availment prior to exit, though the extent of availment may not be as much as that of a privilege leave.
4. If LIFO method is used, the excess availment in the first 12 months, as described in the previous section, should be undertaken if this is expected to be material.
5. A FIFO method is justified when the scheme is not a going concern; for example:
 - o In a merger or takeover, the value placed on the leave liability should

be done on a FIFO basis as the purchasing party may not be under any obligation to continue the leave schemes of the selling party.

- o If there is an expectation that the leave scheme is about to be curtailed or settled, the value placed on accrued leave balances should be assessed on FIFO basis.

6. Where a leave valuation requires making an assumption about the leave availment pattern, it should be done at an aggregate level for all employees. Setting the availment pattern at a member level is not expected to provide any meaningful results, because the data usually will not be sufficient. For example, if a company has 10 employees, and supplies historical leave data for the last three years, member level assumptions will be based on three observations. On the other hand, an aggregate assumption will be based on 30 observations.

The valuation of Type 2 leaves (which are awarded on an ad-hoc basis upon satisfying certain vesting conditions) should be valued in the same way as other benefits with future payment outgo. Most accounting standards prescribe that their cost should be recognised on a straight-line basis as the service is rendered.

Level of disclosures

Accounting standards do not usually require anything more than an assessment of liability for schemes that are classified as OLTB. However, where the liability being assessed is as complex as leaves, this disclosure is not enough. The liability estimate remains opaque and cannot be subjected to any validation by the employers or their auditors.

Actuaries should voluntarily disclose more information for the employers and auditors to understand the reasons for

the change in DBO and to further validate their workings. The following disclosures will be useful:

1. Reconciliation of opening and closing DBO

This is a standard disclosure in PEB schemes. An example disclosure for a

Opening DBO	1000
Current service cost	250
Interest cost	125
Benefit payments; of which	(120)
In-service encashment	(25)
Encashment upon exit	(20)
Salaries paid for availed leaves	(75)
Actuarial loss; of which:	(5)
Leaves lapsed	(50)
Assumption changes	25
Scheme experience	20
Closing DBO	1250

leave scheme is given in table

2. Enhanced disclosures related to the following are required to aid understanding of the employer and their auditors:

- Plan description – detailed explanation
- Justification of a choice of method and detailed explanation
- Assumptions related to availment and how they were derived
- Duration of liability and how that was used in setting discount rate

Conclusion

Accounting of leave benefits is a complex topic and a coherent framework is urgently needed to eliminate the lack of transparency that currently exists. Particularly, the use of a popular method for leave valuation, the one which allows for exceedance of the annual entitlement consistently, should be reviewed.

Enhanced voluntary disclosures are

required so employers and their auditors can understand the drivers of movement and the justification of choice of method should be provided.

Adopting the approach set out in this paper will require making a significant transition from the current market practices and a significantly more effort will be required, both on part of the actuaries as well as employers. It is recommended that a Guidance Note is issued by Institute of Actuaries of India to be followed consistently by all practising actuaries.



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About the Author

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Francis Bacon says, all professionals [actuaries] are debtors:

"I hold every man a debtor to his profession; from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to be a help and ornament thereunto."

Professionals are getting name, fame, money, recognition, etc. A real professional is the one who always tries to be helpful to the public and who tries to become thereby ornament to the profession.

If we feel that we are not debtors, the profession will get bad name, and eventually may lose faith of public. Visible in case of certain professions—doctors, lawyers, police. Ultimately it is public [users of actuarial profession] who judge us [being actuaries of the actuarial profession]—whether we perform actuarial functions or not. An actuary who is convicted due to some other reasons not related to actuarial profession, may damage the image of profession, unknowingly. Preserving highest standards of ethics is main object. We, as professionals, should behave in the manner what others expect.

It becomes our duty to delivering the actuarial goods or services according the expectations of stakeholders. The stakeholders are usually the insurers, regulators and clients [e.g. clients interested to use actuaries for evaluation of employee benefits, mergers and acquisitions, etc.]. In order to achieve this duty, we should have knowledge of --

- the applicable law in the areas in which we give our professional advice;
- the professional standards [actuarial practice standards, principles, etc.] in the respective areas;
- Communication --communicate effectively [If what is written is not what is meant, what ought to be done remains undone].

It is, therefore, necessary that we should always update our skills, continuously professionally develop the skills to benefit the public. So we need to write, speak, deliver, think, develop ---- all these to benefit the public and us.

If we are useful to the society, the profession will automatically develop and enjoy the fruits. Finally, I congratulate the new entrants --[who passed the CA3 exams]-whose names as fellows may be entered shortly in the Register: Vamsidhar Ambatipudi; and Kartikey Laxmanprasad Kandoi.



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- Finalizing technical reports and ensuring that F&U guidelines are adopted as per extant regulations. Suggest top management on various issues such as price adequacy, solvency ratio etc.

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Dr. Verghes Kurien, best known as the “Father of White Revolution” was the founder Chairman of the National Dairy Development Board. As a social entrepreneur, he had a vision for improving the lot of villagers in Anand, Gujarat and he succeeded in his efforts.

“Operation Flood” was his idea, involved the world's largest agricultural dairy development programme. The success of this programme led to India's becoming the world's largest milk producer. Dr. Kurien helped establish the Amul cooperative where three-fourths of the prices paid by the consumer go into the hands of the producer, who is both a member farmer and part owner of the co-operative.

Dr. Kurien believed that the true development of a nation was possible only if the farmers at the grassroots' level were entrusted with the responsibility of organizing democratic enterprises.

Dr. Kurien studied at Diamond Jubilee Higher Secondary School in Gobichettipalayam and later completed his graduation in Physics from Loyola College, Madras in 1940. After graduation, he obtained Bachelors in metallurgical engineering from the College of Engineering, Guindy. After his studies, Dr. Kurien joined Tata

Steel Technical Institute, Jamshedpur. He received specialized training in dairying at the National Dairy Research Institute, Bangalore. Earning a scholarship from the Government of India, he went to the United States to earn a Master of Science in Metallurgical Engineering (Distinction) from Michigan State University in 1948.

1949-1957

On his return to India, Dr Kurien arrived at Anand on May 13, 1949. (He had to serve in a rural area in lieu of the scholarship that he had received from the government). When he arrived at Anand, Dr Kurien was appalled to note that the farmers were being exploited by those who distributed milk in the region. This made him take an important decision – a decision that would change his life forever.



Saddened by the exploitation of farmers who were not given their legitimate dues for supplying milk, Dr. Kurien dedicated his life to empower farmers. He was not an activist. He believed in action. He believed in following the dictates of his heart. Even though he had strayed into Anand unwillingly, he chose to spend the rest of his life in this place to do what his heart commanded him to do.

Dr Kurien lost no time in leaving his government job. He joined forces with Tribhuvandas Patel and the farmers to start the Milk Cooperative movement in the region registered under the name of Kaira District Cooperative Milk Producers



Union Ltd (KDCMPUL), which was later renamed as “Amul”.

The collateral benefit of his noble intention was that India became one of the largest milk producers in the world. His “Operation Flood” scheme made India self-sufficient in dairy production.

Dr. Kurien joined the cooperative as General Manager in 1950. In 1951, Dr. Kurien and Tribhuvandas bought new machineries due to which the procurement capacity of the cooperative rose from 200 litres of milk in 1948 to 20,000 litres in 1952.

1963-1969

In 1963, Prime Minister Lal Bahadur Shastri visited Anand and the village milk cooperative societies in the district of Kaira. Having noticed the successful dairying operations in the villages and the progress of the milk producers in and around Anand, the Prime Minister asked Dr Kurien the following year to replicate the same model of Anand across the country as this model was helping the farmers to improve their economic condition. In 1965, Lal Bahadur Shastri created the National Dairy Development Board (NDDB) to expand the cooperative program to all corners of the country and Dr. Kurien was named Chairman of the organization.

The year 1965 was momentous for Dr. Kurien as Michigan State University conferred on him an honorary degree of “Doctor of Science”. In 1969 when the



President of World Bank came to India, Dr Kurien asked him to donate money for Operation Flood so that the Anand model could be replicated across India.

1970-1996

Dr. Kurien was conferred the Ramon Magsaysay Award in 1983 for his extraordinary work. The fund Dr. Kurien managed from the World Bank kick-started the Operation Flood which was implemented in three successive phases. In the first phase, distribution of milk was extended to Bombay, Delhi, Calcutta, and Madras. City bred cattle were resettled in Anand to increase the production of milk.

In the second phase, he increased the number of milk sheds with support from World Bank and European Economic Committee. The third phase involved increasing the participation of women in the cooperative societies. The procurement and marketing infrastructure were strengthened with a greater focus on research and development efforts in animal health and animal nutrition.

1997-2012

Post the success of Operation Flood, Dr. Kurien fought hard to keep multinational companies from entering the dairy business. Following globalization, India opened its markets for foreign participation.

In 1998, Dr Kurien requested the then Prime Minister Mr Vajpayee to appoint Dr. Amrita Patel as his successor at NDDB. (Dr. Patel had been groomed under Dr. Kurien). He was particular that government bureaucrats should not be appointed as then bureaucratic interference would impinge on NDDB's independence. In 2006, he quit the post of the Chairman of GCMMF.

Dr. Kurien passed away on 9 September 2012 after a brief spell of illness at the age of 90 at Nadiad near Anand.

Awards

Dr. Kurien won the following awards for his path-breaking work.

- Ramon Magsaysay Award (1963)
- Padma Shri (1965)
- Padma Bhushan (1966)
- World Food Prize (1989)
- Padma Vibhushan (1999)

He received 15 honorary doctorate degrees from universities in India and around the world. He was also awarded the Order of Agricultural Merit (1997), International Person of the Year (1993), Distinguished Alumnus from Michigan State University (1991), Wateler Peace Prize (1986), and Krishi Ratna (1986).

Trivia

Dr. Verghes Kurien's passionate speech at a conference in Rome led to many European countries donating milk to kick-off Operation Flood. He sold this milk in the metropolis to raise money for the establishment of milk corporations across the country. Operation Flood culminated with around 72,000 villages in India producing milk! This brought India to the forefront in dairy production all over the world.

It is interesting to note how the name "Amul" was arrived at. Employees and farmers were asked for suggestions regarding the name. Dr. Kurien wanted a name that was simple and easy to pronounce. A quality control supervisor recommended "Amulya" which meant "priceless". Later on, the name was shortened to Amul. The shortened name, besides retaining the meaning of Amulya, also turned out to be the acronym for Anand Milk Union Limited!

He experimented with ways of producing milk powder from buffalo milk. This culminated in the establishment of India's first ever milk powder plant. The plant, upon Dr. Kurien's request, was inaugurated by Pt. Jawaharlal Nehru on October 31, 1955.

The White Revolution led to the development of Mother Dairy. Dr. Kurien's perseverance and innovative ways of improving the dairy industry earned him recognition as the Milkman of India. Other important institutions established under his leadership included GCMMF (Gujarat Cooperative Milk Marketing Federation Ltd) and NDDB (National Dairy Development Board).

Shyam Benegal's film 'Manthan,' a story set in India's milk cooperative movement, was funded by the farmers of Gujarat for which Dr. Kurien wrote the story. When Benegal was unable to fund the film, Dr. Kurien asked his farmers to contribute two rupees each to the film. Later, they all went to watch the film together, relating to not only the story but with a strong sense of pride for contributing to its fruition.

Dr. Kurien's birthday (26th November) is celebrated as 'National Milk Day'. Organizations owned and managed by Dr. Kurien include Gujarat Co-operative Milk Marketing Federation (GCMMF), IRMA, and NDDB. From 2006 to 2011, he also served as the first Chancellor of the University of Allahabad

He authored 'I Too Had a Dream,' an inspiring narrative about empowerment of farmers and development of milk cooperatives in India. Dr Kurien was also honored by a special Google Doodle on his 94th birth anniversary on November 26, 2015. The Doodle shows the 'milkman of India' with a can in his hand as a buffalo looks on. Kurien's revolutionary ideas led to a self-sustaining dairy industry in India. India is now the largest milk producer in the world, and this was mainly due to the vision and the drive of Dr Verghes Kurien.

Management lessons from Dr. Kurien's leadership:

- Dr. Kurien was a great visionary



and a leader with a constant zeal to improve things.

2. He strongly believed that bureaucratic interference would ring the death-knell for an organization like GCMMF that had been formed with the intention of improving the lot of dairy farmers. He made the farmers “partners in progress”.

3. Today the concept of “cooperative society” is known to all. Kudos to Dr. Kurien for having established a society during a time of paucity of inspiring Indian business models. He was a true pioneer.

4. As a leader, he believed in taking risks. He always fought for justice and was blunt without mincing words. Inefficiency and lethargy were anathema to him.

5. Dr. Kurien believed in succession planning and he spared no efforts in training his successor at GCMMF.

6. Dr. Kurien believed that diversification was crucial to the sustainability of a business. Today Amul has become a well-known brand due to the huge portfolio of products it offers to consumers.

7. Dr. Kurien believed that innovation was essential for a business' success and sustainability. He believed in the successful commercialization of research efforts. Today, GCMMF has successfully deployed technology for improving its marketing and operations.

8. Dr. Kurien has left behind a rich legacy that serves as an inspiration to millions of Indians. He promoted “micro entrepreneurship” when the concept was alien to a developing country like India.

To sum up

Dr. Verghes Kurien will always be remembered as a man with strong will and self-belief. History will always remember Dr. Kurien as a man who made great efforts to uplift the farmers and improve the fortunes of the dairy sector. He is an excellent role model for all Indians.



Innovation cannot be mandated or forced on people; it is everywhere, a function of the quality of the people and the environment. We need to have enough skilled people working in a self-actuating environment to produce innovation

Quotes of Dr. Verghes Kurien

- ✍ India's place in the sun would come from the partnership between wisdom of its rural people and skill of its professionals
- ✍ India needs to show an honest face, a kind face, a human face - and not an arrogant face as the powerful nations of today (do). What you need is good management with farmer power. Good management gives this power the right direction and thrust. Nothing can stop the farmers then - least of all the MNCs.
- ✍ Milk is the only commodity which has to be collected twice a day, every day of the year. Thus, cooperatives are the only logical system for the dairy industry. About 85% of the industry in the US, Denmark and Australia is run by cooperatives. No other system will work for milk. Who told you there is one Amul? There are more than 175 Amuls across various districts (in Gujarat).
- ✍ Innovation cannot be mandated or forced on people; it is everywhere, a function of the quality of the people and the environment. We need to have enough skilled people working in a self-actuating environment to produce innovation.
- ✍ I am like a cat, throw me wherever you want to, I will still stand on my feet, Eight hours for dairy, eight hours for family and eight hours for sleep.
- ✍ My philosophy in life is to do as much good as I can to those who are less fortunate, but I would like to live my life as a common man.
- ✍ In every successful grassroots cooperative, members trust their leaders. Trust is the most cost-effective way to manage cooperatives.
- ✍ If we can again create the environment, the opportunity, and the education, our villages will provide a new generation of leaders who will not only rebuild our cooperative movement, but who will help us to build a truly great nation.



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Welcome to this update on risk management developments, on behalf of the Advisory Group on Risk Management (AGRM). We recently hosted our 5th seminar on risk management in Mumbai. The seminar was organized around two themes: governance and risk management framework followed by select emerging risk topics such as a session by a medical doctor on anti-microbial resistance. I do hope those of you who were able to attend found it engaging and insightful; a shout out to others to be sure to attend the next one coming to town!

Risk Management Activity in Asia

Across Asia, I see increased activity in risk management:

- Insurers looking to strengthen risk governance, embed the three lines of defence model and enhance risk reporting across the risk spectrum. The latter includes areas such as reputational risk management that have perhaps not received as much attention as financial or operational risks.
- Regulatory interaction with key persons in the control functions continues to be developed, and this includes regular communication with the CRO. More regulators in Asia now expect insurers to perform an Own Risk and Solvency

Assessment (ORSA) and this is leading to further demand for risk professionals.

- Increased demand for risk professionals, particularly actuaries, especially to cover areas such as model validation but more general risk roles including ERM. This includes CRO positions in country roles but also regional roles focusing on financial risk. At the Board level as well, insurers are looking at Non-Executive Directors who can chair the Board Risk Committee.

Risk Culture

The Australian Prudential Regulation Authority (APRA) released an information paper in October 2016 on risk culture (<http://www.apra.gov.au/CrossIndustry/Documents/161018-Information-Paper-Risk-Culture.pdf>) which makes for very interesting reading. It highlights the role of poor risk culture in financial institutions leading to weak risk management. A recent example of this quoted by APRA is the lack of pricing and underwriting discipline in group insurance in Australia due to a focus on growth over appropriate risk taking. I'm sure this resonates with many of our members. APRA's aim is to raise greater awareness of the challenges faced by



financial institutions in setting an appropriate risk culture that enables them to consistently operate within their risk appetite.

Future Events

The AGRM is planning several events this year including capacity building seminars and focused workshops on topics such as economic capital, ORSA and operational risk. Please do write to me if you have suggestions on topics that you'd like covered in such events.

The International Actuarial Association is currently preparing a Risk Book which will be a very handy and useful resource once published.



About the Author

Mr. Sanchit Maini
Chairperson - Advisory Group
on Risk Management

People's Move



Mr. Rabbitte has joined Directional Alpha Global Macro as a Senior Partner. The firm advises insurance and other companies on macro risk issues including how to improve on Solvency 2 risk management and how to price bonds coherently. He also works as an advisor to IMD business school in Lausanne, Switzerland. Mr. Rabbitte has over 20 years of experience in various actuarial roles, including 3 with Swiss Re in Mumbai. Areas of work included pricing, modeling and project management. His interest in macroeconomics can be traced back to a dinner at Mahalaxmi Racecourse in September 2008. A fellow diner had to leave the table because his employer, Merrill Lynch, had been sold for a song to Bank of America. Mr. Rabbitte will be based in Switzerland but is considering a business trip to India.



About the Author

Mr. Sunil Bhatia
Student Member of IAI
bhatiasunil4@gmail.com

Need?

Operational risk is "the risk of a change in value caused by the fact that actual losses, incurred for inadequate or failed internal processes, people and systems, or from external events (including legal risk), differ from the expected losses" as defined by Basel.

Current approaches for the measurement of operational risk

The existing Regulatory framework provides three approaches for the measurement of the capital charge for operational risk. The simplest is the Basic Indicator Approach (BIA), by which the regulatory capital charge is computed as a percentage of Gross Income (GI), a proxy for operational risk exposure. The advanced methodology is the Advanced Measurement Approach (AMA), which allows use of internal models to calculate economic capital requirements, which is more risk sensitive to the losses specially the large operational risk losses.

The third approach, The Standardized Approach (TSA), is an intermediate approach between the BIA and the AMA.

Operational Risk Management (ORM) is being practiced for more than a decade now, however the existing approaches (BIA/TSA/ AMA) have failed to correctly estimate the operational risk capital. The BIA/ TSA approaches are based on the use of Gross Income as a proxy

indicator for operational risk exposure with the assumptions that the operational risk exposures increases linearly in proportion to revenue or gross income.

Post financial crisis, the GI of most of the financial institutions has gone down substantially challenging the underpinning assumption that revenue, and more specifically GI, is the most effective proxy for operational risk when firms continue to experience high operational risk losses.

Being inherently complex, advanced measurement approach (AMA) lacks comparability arising from a wide range of internal modeling practices have worsened variability in risk-weighted asset calculations, and do not enjoy complete trust of either regulators or industry as a best proxy to measure operational risk of an institution.

The Emerging Approach- Standardized Measurement Approach

The new Standardized Measurement Approach (SMA) provides a single non-model-based method for the estimation of operational risk capital. It builds on the simplicity and comparability offered by a standardized approach, also incorporates the risk sensitivity of an advanced approach.

It combines the Business Indicator (BI), a simple financial statement proxy of operational risk exposure, with own experience represented through operational loss data. BI is made up of almost the same P&L items that are found in the composition of Gross Income (GI). The main difference relates to how the items are combined. The proposed method demonstrates that operational loss exposure increases more than proportionally with the BI, and thus the proposed calibration includes progressively increasing marginal coefficients with the capital by making several buckets of increasing



size of capital. The BI Component increases linearly within buckets, but the marginal effect of the Business Indicator on the BI Component is greater for the higher buckets than for the lower ones. This progressive increase of the marginal impact of the BI is motivated by analysis which showed that operational loss exposure increases more than proportionally with the BI.

Although the BI is stable and comparable, business volume is only one factor that influences exposure to operational risk. SMA suggests historical loss experience as a relevant risk indicator of future operational risk loss exposure.

SMA BI is made of following six components

1. Financial Income
2. Financial Expenses
3. Service Income
4. Service Expenses
5. Net Financial Profit
6. Net Financial Loss

The internal loss multiplier requires to include 10 years of historical operational loss data in the SMA calculation – which means the SMA will be more risk sensitive, albeit backward looking.

The quantitative study for this approach by the regulators have concluded that SMA is more risk sensitive as it includes the proxy measure as well as the loss component which were previously used separately in different approaches.

This matter is being published in the Actuary India magazine, the in-house publication of the Institute of Actuaries of India, in accordance with the decision of the Executive Committee (now Council) in its meeting held on 4th March, 2003 applicable to all such cases and keeping in view IAI's membership requirements of the International Actuarial Association.

Name of the members accused:

Ms. Swati Sinha (MID: 29729) and Mr. Ranjan Kumar (MID: 29734) who appeared for exams in October 2015 Examination diet from Ranchi Centre.

The case:

While evaluating it was noticed that some of the answers in both the answer scripts of these two candidates are similar.

Detailed investigation was carried out as per the IAI policy, which ultimately concluded as a clear case of wrongdoing. The Examination Advisory Group and Finance and Admin Committee have analyzed all the related

documents and other information of this case and finally recommended that both the candidates be debarred for at least three years

Final Decision:

The Council deliberated the matter in its meeting dated 4th February 2017 and reviewed all documents and correspondence available on record and as a principle of zero tolerance on any wrongdoing in the examination system of the Institute decided to suspend Ms. Swati Sinha and Mr. Ranjan Kumar from the examinations (for all the subjects) for a period starting from 17th December, 2016 till 17th December, 2019.



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NOTE:

On successful registration you will get one sample Question Paper and Solution under your login. After passing the ACET you can take admission as student member of IAI and pursue the actuarial course.

DATE OF RESULT:
1st July 2017

Notice on Annual Membership fees for the financial year 2017-18

Class of Membership	Fees in Indian Rupees (INR)
Fellows and Affiliates	7,500
Associates	2,500
Students	1,500
For Fellows, Affiliates and Associates above age 60 as on 1 st April, 2017, and not gainfully employed in profession or practice or medically unfit to be gainfully employed in profession or practice.	1,500
Life membership (optional) who are more than 60 years as on 1 st April, 2017	Ten times the normal Annual Membership as mentioned above
Members more than 75 years of age as at 1 st April, 2017	No Annual Membership
Change of Category within a Annual Membership year	Will attract full Annual Membership fees for new category

Failure to make payment: The payment should be made online on or before 30th June 2017 failing which membership will lapse resulting in to removal of name from the register of the Institute.

Mode of payment: Online or by Demand Draft. For details visit IAI website at www.actuariesindia.org.

Reinstatement of Membership: Reinstatement can be requested in accordance with the following terms and conditions.

i) Members whose Annual Membership is outstanding only for year 2017-18:

- If the request for reinstatement is received within three months (i.e. on or before 30th September) of his/her ceasing to be a member (after 30th June), the payment of the Annual Membership fee plus a penalty of 25% thereon,
- If the request for reinstatement is received after three months (i.e after 30th September) of his ceasing to be a member, he/she has to pay existing Annual Membership fee, in addition to penalty of 50% of the Annual Membership fee.

ii) Members whose Annual Membership is outstanding for more than one year:

Where Annual Membership fee is in arrears for more than one year, reinstatement will be made on payment of 1.5 times of current year applicable Annual Membership fees for the number of years where Annual Membership fee is in arrears in addition to the current year Annual Membership fee.

NOTE

For Students and Associates

Members whose Annual Membership fee is outstanding for more than ten years can do reinstatement of membership offline only.

For Fellows and Affiliates

Members whose Annual Membership fee is outstanding for more than one year can do reinstatement of membership offline only.

Help

Kindly contact Ms. Prajakta Bhosle at actsoc@actuariesindia.org or at 022-67843333 for further details on reinstatement of membership or any other matter relating to Annual Membership fee.



The Actuary India wishes many more years of healthy life to the fellow members (Who have attained 60 years of age) whose BIRTHDAY fall in April and May 2017

April

-  Mr. A. Balasubramanian
-  Mr. Sambasiva I. Rao
-  Mr. M. U. Upadhyaya
-  Mr. Sampad N. Bhattacharya

May

-  Mr. S. Chidambaram
-  Mr. N. M. Govardhan
-  Mr. Nick Taktet
-  Mr. A. R. Prabhu
-  Mr. P. I. Majmudar
-  Mr. Smit Shah
-  Mr. Manalur Sandilya

PUZZLES



Puzzle No 259:

What do the following words have in common?

CLAIRVOYANT SHIVERY AMNESTIES
CRUSTY ACCIDENTAL SCOOPFUL

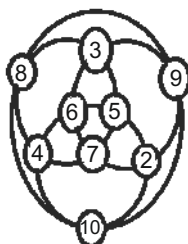
Puzzle No 260: 285546163639253?

What number should replace the question mark?

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

Solutions to puzzles

Puzzle No 255



Puzzle No 256:

1 second.

Imagine that each ant is holding a flag and that when an ant bumps into another ant it gives its flag to the other ant. In this way, every ant always has a flag and a flag would never change direction. So each flag would head towards the edge at a rate of 1 meter per second and since the stick is 1 meter long, it would only take 1 second at most for each flag to fall off, and in turn, each ant.

Puzzle No 257:

The sequence is formed by the integers that do not contain the letter 'e'. The next two terms are 42 and 44

Puzzle No 258:

Answer: Peace, oasts, octet and nests



Correct solutions were received from

Puzzle No 255

1. Shilpi Jain
2. Hemant Rupani
3. Geeth Sannala
4. Sampada Kelkar
5. Parth Vira
6. Dilip Anand
7. Palash Shah
8. Graham Lyons
9. Harmeet Singh
10. Kruti Malde
11. Shubham Jain
12. Vivek Rana
13. Abhilekha Baid

Puzzle No 256

1. Hemant Rupani
2. Dilip Anand
3. Graham Lyons
4. Harmeet Singh



About the Author

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shilpa_vm@hotmail.com

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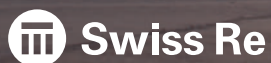
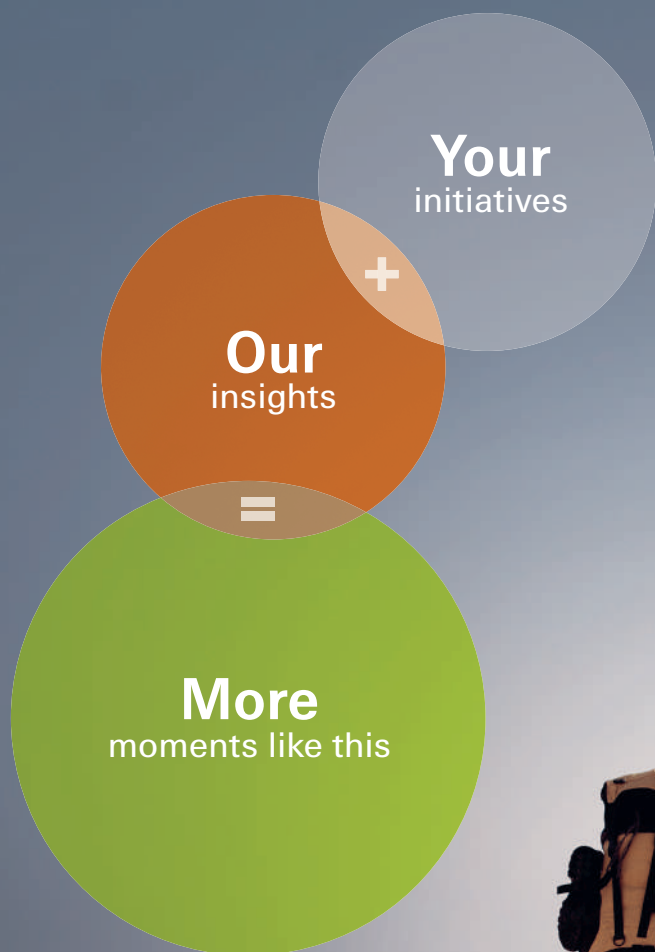
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