Institute of Actuaries of India
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the Actuary INDIA

THE MAGAZINE OF THE INSTITUTE OF ACTUARIES OF INDIA

Feb21 - Mar21 Issue
Vol. XIII - Issue 2-3
Pages 69• ₹20

INDIAN ACTUARIAL PROFESSION
Serving the Cause of Public Interest

Mega online event

Virtual Actuarial Conclave (VAC 2021)

"Navigating Through Uncertainty"

10th to 13th March, 2021

THE ORIENTAL INSURANCE COMPANY LIMITED

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"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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Printed and Published monthly by Vinod Kumar Kuttierath, Head of Education and Training,
Institute of Actuaries of India at PRINT VISION, 75/77, 1st floor, Punjani Ind. Estate, Near Abhishek Hotel,
Khopat, Thane (W) 400 601, for Institute of Actuaries of India L & T Seawoods Ltd.,
Plot No. R-1, Tower II, Wing F, Level 2, Unit 206, Sector 40, Seawoods Railway Station, Navi Mumbai 400 706
Email: library@actuariesindia.org, **Web:** www.actuariesindia.org

From Chief Editor's Desk

Ms. Bhavna Verma

I must start this editorial by congratulating the Institute and Conference Taskforce for a fantastic first **Virtual Actuarial Conference** held in March 2021! The experience was great and interestingly didn't feel dramatically different to an in-person conference. For those of you that missed any sessions, this issue of the magazine includes detailed coverage of the entire conference. There was a good mix of content for various interest groups; students (in the areas of examinations and actuarial hiring), for new entrants and aspirational experienced professionals (to understand opportunities in wider areas of banking, data science, Artificial Intelligence) and for subject specialists (effects of pandemic on insurance, IFRS17) among others. The reportages will give you a good overview of the various sessions.

There were encouraging messages conveyed by both the Chief Guests to the actuarial fraternity at the conference. Shri Subhash Chandra Khuntia, Chairman, IRDAI, reiterated that the number of actuaries should increase rapidly to cater to the real need of the actuarial skillset. Shri Anurag Thakur, Minister of State of Finance & Corporate Affairs, encouraged the actuarial community to come forward and actively give feedback on initiatives taken the government and offer new suggestions.

The previous financial year was a unique one. Just as Covid-19 accelerated the digitization journeys of nearly all organisations, it also put the need for sufficient individual safeguards via insurance protection (especially life and health) in the priority

list of many people. Expectedly, it also led to insurers incurring excess claims. The new financial year has again started on a challenging note as the second wave of Covid-19 has picked up pace in India and continues the upward trend at the time of writing. The actuarial control cycle should really be spinning at full speed now. Actuarial considerations aside, my sincere hope is that the loss of lives due to this virus can be controlled soon.

On this hopeful note, I would like to sign off. I again urge members of the actuarial community to carve some time off from their work from home schedules and contribute some features for the Actuary India magazine on any topic of relevance. Stay safe and please continue to write into us at library@actuariesindia.org.

From President's Desk

Mr. Subhendu Bal

The first thought came to my mind while I start writing this column is a brainy quote by one of the famous business man in US, Arnold Henry Glasow *"Success is simple. Do what's right, the right way, at the right time"*. This is what we may call as "SUCCESS" that we could achieve during the one month time just over.

I am referring the first ever Virtual Actuarial Conference 2021 (VAC 2021) conducted successfully on dates 10th -13th March, 2021. It appears as a full and final recovery from all restricted situations which we all have passed through during year 2020 by the best ever voluntary contributions from our members and by the incredible team work by the IAI staff. Hats off to all who have made the event unique, ever memorable, grand and successful.

The month of Feb-Mar of every year brings in spontaneous memories of the most celebrated signature event of the Indian Actuarial Profession, the GCA and AGFA; the year 2021 was also not very different for us. The decision to go for a similar or better event in a virtual platform had been taken by the Council just about a month in hand; and the countdown started immediately. Many thanks to the immediate past President, Mr. Sunil Sharma for leading from the front as the Chairperson of the VAC 2021 task force. Tasks have been divided and sub-task forces swiftly moved for actions.

Considering the VAC 2021 as a shell pearl necklace, it joins and displays: 4 days, 25 sessions, 65 speakers, around 1900 registrations and 29 partners. The event was designed with four honourable Chief Guests in four days Mr. Anurag Thakur, MoS, Finance and Company Affairs, Dr. Subhash C Khuntia, Chairman, IRDAI, Mr. Supratim Bandyopadhay, Chairman, PFRDA and Mr. Jan Kars, President, International Actuarial Association. I feel happy and proud to acknowledge the first ever appearance of Honourable Minister of State, Finance and Corporate Affairs in our Institute's conference. There was a special session in this event was Presidential Town Hall with Ms. Jessica Leong, President, Casualty Actuarial Society, Mr. Lusani Mulaudzi, President, Actuarial Society of South Africa, Mr. John Taylor, Immediate Past President of the Institute and Faculty of Actuaries and Mr. Jefferson Gibbs, President, Actuaries Institute of Australia, Mr. Jan Kars, President, International Actuarial Association and President, Institute of Actuaries of India. We could also connect with many industry and professional experts from India and abroad. The program also included four award ceremonies, entertainment, games and networking platforms. A detailed coverage of the VAC 2021 has been included in this edition.

In the process of strengthening the administration by filling in vacancies of the office, we have appointed a Chartered Accountant in the Finance & Accounts department. The pending appointment of Executive Director is also on cards shortly. Other few junior level recruitments in different departments are in progress which will be completed soon.

The March 2021 examinations were scheduled from 23rd March. In order to familiarise students for online examinations, two mock examinations were conducted for regular examination candidates. ACET examination candidates were also trained through a mock examination. Since we have more learning on pros and cons of online format of examinations, it is expected that the March 2021 examinations would be smoother and smarter than November 2020 examinations. I candidates had their best of experience for online examinations and wish them good luck.

The column will definitely fall short if I do not express my deep appreciation and thanks to all those who have volunteered and immensely contributed for the overwhelming success of VAC 2021. Beside Mr. Sunil Sharma, it include, Mr. Heerak Basu, Mr. Kulin Patel, Mr. Kailash Mittal, Mr. Pankaj Tewari, Mr. Kunj Behari Maheshwari, Mr. Ashish Ranjan, Mr. Gopal Kumar, Mr. Mahidhara Davangare, Mr. Sumit Ramani, Mr. Kapil Agarwal, Mr. Prasun Kumar Sarkar and Ms. Peuli Das. Last but not the least, name of volunteers who have contributed in the role of selection committee for best articles and reportage awards, Mr. Bharat Venkataramani and Mr. Mayur Ankolekar also deserve a place here. From the execution point of view, the IAI office team has also done a fabulous job without affecting all other regular and year end activities.

Shri Subhendu Kumar Bal, President, IAI with Hon'ble Finance Minister Smt. Nirmala Sitharaman

VAC 2021 Cultural and Award Function

Date: 10th – 13th March 2021

If one had experienced live 'Award and Cultural functions' held during past 'Global Actuarial Conferences', likewise, he/she could vouch for the grand success of 'Certificate and Award function' hosted by the Institute of Actuaries of India in 1st 'Virtual Actuarial Conclave' during 10th-13th March 2021. Award Ceremony and Cultural performances were organised into 4 sessions of around 35-45 minutes with one session taking place each day. Attendees were delighted by a virtually live experience from the comfort of their homes/offices. Diamond Sponsor for this event was SBI Life Insurance Company Ltd. Emcee of the event was Kashyata Bhatia.

On 1st day, session started with Ganesha vadana, as per the tradition, through first cultural performance by Shreyas Maheshwari who performed an instrumental piece. It was followed by award segment of felicitating 17 new Fellow members of IAI. Fellowship was bestowed to all the esteem members by Subhendu Kumar Bal, President, IAI. Most of the new Fellows narrated their roller coaster journey to Fellowship and they inspired all listeners. One of the Fellow recited words from Einstein 'You never fail until you stop trying'.

Then melodious compositions were performed on Piano by Shreejith Nair followed by a semi-classical dance performance by Anjali Joshi.

Day 2 session was set out by Aravindaan with a musical performance on a Violin. Afterwards felicitation function for 29 new Associate members of IAI was organised. All new proud Associate members were honoured by K S Gopalakrishnan, Vice President, IAI. To the end Jaspreet Singh presented a harmonious song.

On day 3, Awards for 'The Actuary India' magazine- Best Article and Best Reportage for year 2020 were presented by Sunil Sharma, Chairperson of VAC 2021 Group.

Winners for Best Article were -

1. **Sanjeev Kumar Pujari** for 'LIC of India IPO' - May 2020 issue
2. **Vishwanath Mahendra** for 'COVID-19 and Health Insurance' - May 2020 issue

Winners for Best Reportage were -

1. **Sunita Bhatt** and **Archana Sonaikar** jointly for 'Webinar on Current Issues in Retirement Benefits' - August 2020 issue
2. **Deepa Pandit** for 'Webinar on Ayushman Bharat-Actuarial Perspective' - July 2020 issue

Then it was time for a cultural performance by Associate member Soham Wadke who played an instrumental melody. In this session 81 Volunteers were felicitated for their support by IAI President. Next Academic Excellence Awards for ACET February 2020, May 2020 and January 2021 exams were distributed. Then Fellow member Anupam Bansal presented a contemporary dance piece.

4th day's opening performance was made by Tanvi Kini with a semi-classical dance. In this session too another 81 Volunteers were felicitated by IAI President. He also extended his gratitude towards all Volunteers for their support. IAI Vice President took the honour of felicitating IAI President for his contribution.

After that Aditya Shah presented a Stand-up Comedy performance, which indeed spread a laughter and joy at attendees' homes/offices. Next Academic Excellence Awards for June and November 2020 exams were distributed to all the toppers of IAI Actuarial Exams for Core and Specialist subjects.

Emcee has done a prominent job in engaging audience throughout the sessions. Voting polls were held after each performance and final winner was announced at the time of closing ceremony with 50% weightage to attendees' votes and rest 50% by judges.

After each Award function there was 15 minutes time for 'Meet, Play & Refresh' session which could be utilised for Fun Zone, Networking opportunities. Daily Quiz was organised during this time slot. IAI encouraged networking with the help of Network Lounge and Leader Board. Overall, it was a well-designed event.

Written by

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Inaugural & Chief Guest - 2021

Date: 10th March 2021; Wednesday Time: 10:45 - 11:30 IST

Address by Sunil Sharma, Chair VAC 2021 Taskforce, Chief Actuary & Chief Risk Officer at Kotak Mahindra Life Insurance Co Ltd

Chair VAC2021 taskforce opened the session, and heartily thanked the chief guest and other esteemed speakers for gracing the session and sharing their views. Pandemic times require changes in the way we do business hence the 2021 conclave was themed "Navigating through the Uncertainty"

Further, he acknowledged the efforts of the task force together with the staff of IAI who made the flagship program of IAI possible on a virtual platform. This catapulted IAI towards digitalization, and to conduct any future meetings of any scale on the digital platform within stipulated timeframe and deadlines. He also acknowledged the contributions of all 29 financial partners.

Elaborating on the conclave, he informed that there will be 21 sessions including some special sessions on the future outlook of the industry with the regulatory developments. Student members also came to know about the opportunities in the industry and most importantly about the tips for actuarial exams.

Cultural programs and rewards and recognition made the conclave engaging and interesting till the last 4th day of the conclave.

Keynote Address by Chief Guest - Shri Subhash Chandra Khuntia, Chairman- Insurance Regulatory and Development Authority of India (IRDAI)

Sh. Subhash Chand Khuntia, Chairman IRDAI, alumni IIT Kanpur, Ph.D. in economics and law graduate and joined civil services in 1981. With a career spanning over 36 years, he served in various capacities for various government departments. He was chief secretary of the Government of Karnataka, he served for the ministry of human resources department, department of finance revenue and urban development, and ministry of petroleum and natural gas.

Sh. Kunthia conveyed warm greetings to the fraternity of actuaries in the conclave. He acknowledged the role of IAI in supplying actuarial talent to the Indian and global economies. he appreciated that the conclave will help to improve the knowledge of the actuarial profession. Further, he stressed the distinct role of the appointed actuary in a company while complying with all the regulatory requirements. They play such a critical role that all the prudential decisions of the company depend on their advice. Moreover, they have a responsibility to balance policyholders' interests along with the operation of the insurance company. Also, they are responsible for the maintaining solvency of the insurance company with product development, it's pricing, and expenses and are thus deemed to be the eyes and ears of the regulator.

Sh. Kunthia complimented the Indian insurance providers that despite the difficult pandemic situation and less business they have been successful in maintaining their position and catching up with the difficult times. Further, he advised that Covid-19 has demonstrated a need to be careful about future pandemics as well. This needs to be taken care of by the actuaries and will have a larger role to play in calculating them. The effects of these uncertainties and designing appropriate products and pricing these products will provide a kind of protection to the public at large. He urged the actuarial fraternity to rise to the situation and change with the changing times. It is also the responsibility of the IAI to enable capacity-building programs to improve the professional standard of the actuaries in the country.

Although Sh Kunthia was worried that the total number of actuaries is not in line with the increasing demand. He conveyed that out of a total of 458 fellow actuaries, some fewer actuaries specialize in general insurance. Increasing members is pertinent considering the increasing opportunities of the actuaries, not only in the traditional insurance industry but now the banking industry in kind of investment areas. Sh. Kunthia urged on the capacity-building programs to increase professional standards. IAI should strive to increase awareness among colleges and universities for talent acquisition.

As a regulator and for the growth of the actuarial profession, Sh. Kunthia promised full assistance to the institute and invited feedback from actuaries to make the insurance industry not only robust but also insure as a vehicle of investment generation for the growth of the economy. This also includes innovative insurance products for insurance penetration to the micro-level. Actuaries should also focus on areas like superannuation in annuity space as a result of people living healthier and longer life.

Sh. Kunthia wished all the luck to the institute and wished them to keep contributing to the profession and the development of the country.

Written By Kunal Bansal

President Town Hall

Date: 10th March 2021; Wednesday **Time:** 11:45 - 13:00 IST

The session was hosted impeccably by Sinjini Sengupta, Founder of LIGHTHOUSE, who started off the session by introducing the panel of our esteemed dignitaries:

1. Subhendu Kumar Bal, President, Institute of Actuaries of India and Chief Actuary & Chief Risk Officer, SBI Life Insurance Company Limited
2. Jan Kars, President, International Actuarial Association,
3. Jessica Leong, President, Casualty Actuarial Society,
4. Lusani Mulaudzi, President Actuarial Society of South Africa,
5. John Taylor, Immediate Past President of the Institute and Faculty of Actuaries,
6. Jefferson Gibbs, President of Actuaries Institute of Australia

The Discussion

The first topic that came up for dialogue was about how the globe re-emerged overall professionally, financially, economically in the last year due to the current pandemic situation. Each speaker elaborated on their views of the current state of the actuarial profession in the country. They expressed how new normal created to the use of digitalization, conducting the first-ever conference via virtual environment from 1999 when IAI first started conducting Global conference, other virtual meetings & forums without the need to travel leads to saving time and related cost. New normal world leads to explore new skills and significant demand in risk management particularly in banking. Actuaries have stepped up to gauge the impact of the pandemic in terms of longevity, investment volatility, and other areas. However, we have all missed the social gatherings.

The next topic that came up for dialogue was the evolving nature and strategic initiatives that have given the drastic changes. Speakers elaborated on how we learn from each other and can expand our horizons. They provided an example of the climate change index launched by the Institute of Actuaries of Australia and related risk study initiatives. This raises awareness and educating society on the sensitivity of the matter. Actuaries need not be only in the field of Insurance or banking but can expand beyond the issues of ecology with limited limitless.

Another topic comes up for dialogue was on the vision to develop actuaries for the changing environment for the actuaries. Speakers elaborated that the revolutionary future actuaries need to be Unicorn with skill sets - (1) Advanced analytical skills, (2) Problem solving and strategic thinking, (3) knowledgeable about the domain.

Another topic comes up on how actuarial students should deal with the pace-changing needs to develop their careers. Speakers elaborated along with the conventional Insurance domain, actuaries are now involved in non-traditional areas as well. These being in Banking, Universities, Government Actuarial Department, Risk management, Data Science, Investment and so on. Actuaries are already involved in IFRS 17, leading to the enhanced credibility of financial statements. We should encourage actuaries to advocate and sign off with appropriate qualifications.

The last round revolved around the instrumental skills required in addition to the academic to advocate the authentic roles in different departments/sectors/industries. Speakers elaborated the importance of three C's, (1) Communication - in a non-technical manner, (2) Creativity - New skills and opportunity, (3) Curiosity. Besides, one should develop entrepreneur skills, focus on the bigger picture, understand the real problem, develop skills to bring the solution to the business problem, Stay agile, Support others especially the new generation and be a good listener. Finally, stay hungry to keep learning.

Concluding Remarks

The penultimate topic was about the Navigation through uncertainty will require changes for the future generation of actuaries. We are now growing actuaries who are revolutionaries, responsible, sensitive, gender-balanced, justice-oriented actuaries. Each of the speakers expressed views on the future of the required skill sets. The discussion also touched upon the other non-traditional areas which actuaries can explore and prove to be instrumental.

Vote of Thanks

Subhendu Kumar Bal, President of the Institute of Actuaries of India, delivered a heartfelt vote of thanks to everybody on the panel for their time and responses which will benefit all of us, and concluded the session.

Written by

Kunal Bansal

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Kunal Bansal is working with Mercer India Pvt Ltd.

Opportunities for Applying Actuarial Techniques in Banking

Date: 10th March 2021; Wednesday Time: 18:00 - 19:00 IST

Day 1 of the Virtual Actuarial Conclave 2021, organised by the Institute of Actuaries of India, came to an end with an exciting session by **Michael T. Tichareva** - an Actuary from South Africa, that highlighted the opportunities for applying actuarial techniques in banking. For those Actuaries desirous of working in a bank, below are the opportunities available in risk management, analytics etc.

The risk management area is the one that provides maximum opportunities for Actuaries in the banking sector. The opportunities available can be broadly classified into three categories: banking risk, banking strategy, and banking regulations. These opportunities may exist either within the bank or with consultants or consulting companies providing consultancy services to the bank.

1. Credit Scorecard Development
2. Credit Risk Management and Reporting
3. Design and Pricing of the Banking Product
4. Customer and Product Profitability Analysis
5. Customer Behaviour Analytics
6. Balance Sheet Management
7. Credit, Operational and Market Risk Modelling
8. Capital Modelling
9. Pricing and Trading of Derivative Products - especially in Investment Banking
10. Provision Model Development - Calculation of Expected Credit Loss.

An area of interest for actuaries in banking could be assessing the adequacy of capital requirements. Actuaries can add values to banks in modelling and applying judgment when determining the additional capital requirements. 'Credit Risk Capital' has enormous potential for applying actuarial skills in banking.

Banking Actuaries can help answer questions about the bank's capital requirements. They can advise on how to strategically position the bank, price the increase in capital, and allocate the cost of holding higher levels of capital.

Actuaries have the skillset to build models that can consider all these unknowns and produce practical implementation plans. Following are the pillars under Basel norms required to be followed by banks in which Actuaries can be useful to the banks.

- Pillar 1 - Quantification of capital and liquidity requirements
- Pillar 2 - Supervisory review process
- Pillar 2B - Capital buffers
- Pillar 3 - Requirement for public disclosures

The Basel framework requires modelling, and Actuaries are well equipped with it.

Actuaries are familiar with banking risks and operating under professional standards. Actuaries can help the banks in understanding current risks and emerging risks and how to manage them. A few of the non-traditional areas in banking where they can play a pivotal role are: dealing with rising banking frauds, customer analytics in the world of big data, and systems and technology.

Mr Tichareva explained that the actuarial syllabus has a base that covers the banking sector's requirements as well. Actuaries can walk into a bank with their skillsets and can make a mark there, he said. He emphasised that Actuary should start selling their skills and abilities and not the qualification. He ended the session urging the Actuary to keep abreast of new technologies such as AI, ML, data science and that being an Actuary, don't wait for walking into the bank!

Written by

Gaurav Raval

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Gaurav Raval is working for one of the largest public sector banks in India and has a keen interest in FinTech, RegTech.

Opportunities for actuarial professionals in wider fields

Date: 11th March 2021; Thursday Time: 12:15 - 13:15 IST

Speakers: Erik Wenzel FSA, Chicago US, Head Actuary, Assured Allies

Philip Darke, UK Actuary and machine learning PhD researcher

Moderator: Caitlin Stronach, Royal London, Pricing Strategy

General Trends

The session began with an overview of the changing landscape of actuarial work in the US and UK.

Erik Wenzel discussed two major trends he has observed in the U.S insurance industry. Firstly, an increased regulation in the insurance sector. More time is spent in understanding regulations and building models that are more complex and compliant.

Secondly, he sees a huge wave of disruption coming with the growth of data science and technology. Data science is changing the way actuaries price, underwrite and sell policies. He explains how data science is a complex mix of statistics and computer science. Data scientists can develop models and build systems, but they do not understand risks associated with insurance industry. This is where actuaries can apply their expertise.

Philip recognizes some of those general trends in UK as well. He mentions how there has been a growing trend of transfer of risk to individuals. He emphasises the need for people to be better educated on how schemes work, how it fits their purpose and how to ensure they get the benefits as promised.

Impact of Covid 19

Given the current pandemic environment and the uncertainties they bring, both Erik and Philip discussed how there is an opportunity to bring in data science, complex algorithms and artificial intelligence to improve predictive analysis and apply real benefits to profession in multidisciplinary areas.

It is an opportunity for actuaries to look at modern best practises and borrow different tools and analyses used by data scientists. Actuaries are comfortable with statistics and domain knowledge, but they should also invest their time in learning new skills in data science and machine learning.

How Automation is changing actuarial work

Phillip's current role is based around predictive analysis in health care space. In the UK, all health related documents are recorded at the National Health Service. They have a wealth of data on population health and it can be challenging to work with, as it can be very untidy and sparse. His work uses machine learning to model and predict health related projectories using electronic health record data.

Data Science vs. Actuarial Science

One important aspect of actuarial profession is curiosity of finding different and better ways to do one work. Actuaries most likely work in insurance industry and face challenges of integrating regulations and ensuring the models comply with them. Data Science and AI are touching every single industry and it widens the scope of actuarial science beyond just insurance. Given the rise of data science, there will be more collaboration.

Advice to aspiring actuaries

- Building predictive models or analysing big data sets applies equally to both data science and actuarial work. Actuaries must invest their time in learning to code and also learn various tools that can help in data visualization. Actuaries must equip themselves with relevant skills and demonstrate them at work.
- One of the important tools used by actuaries is Excel, but it is time to move to different tools. Python and R are most popular among data scientists. For someone coming from a statistics background, R can be a good software skill to develop on. If someone 's focus is on machine learning, Python is a great choice.
- If one wants to explore opportunities in a non-traditional field, it is advised to pass exams as quickly as possible, so that they start exploring other areas, learn about actuaries working in different fields and industries.

Written By Alisha Basha

Opportunities for Actuaries in Banking

Date: 11th March 2021; Thursday Time: 15:30 - 16:30 IST

Speaker: Iain Allan, Former Group Director, Strategy, RBS Opportunities for Actuaries in Banking

Moderator: Kuntal Sur, Partner, Financial Risk & Regulation Leader, PwC in India

This was a wonderful session with Ian Allan, who has about three decades of actuarial experience. He currently works as an independent consultant and is also a visiting faculty of actuarial science at the CAS Business School.

Banking vs. Insurance industry

The session began with Ian hightlighting the importance of banking to the economy and comparing it to the insurance industry. Banks support economic growth and their performance varies over cycles. The systemic risk of the banking system is different from that of the insurance. Failure of one bank can have an impact on others as it did in the 2008 financial crisis. He is of the view that banking and insurance sector are very much similar but differ mainly in the terminology, asset-liabilities and risks.

Current Issues in Banking

Further Ian discussed about the current issues pertaining to the banking sector such as -climate change, Covid 19, disruptive innovation, product pricing, negative interest rates and non-financial risk.

As the tension shifts to climate change, banks are facing issues in seperating physical risks from transition risks. As companies are moving to low carbon environment, banks have to asses the impact of this transition on the customer and themselves. This requires a stress testing to be done for over 30 years. Bankers normally do a stress testing for 5 years, however for actuaries a stress test for 30 years is normal. So, he believes that actuaries can help with this and think of scenarios where physical risks can be severe. According to him actuaries who have done ORSA will find ICAAP a very interesting opportunity to use stress testing. Bringing actuaries to work in teams in these subjects will bring different inputs and make teams diverse.

Traditionally, banks have focused on credit and market risk. There is an increased regulatory focus on operational resilience, conduct risk, IT/cyber risks. Banks are trying to recognize, identify and understand these trends. According to World Economic Forum, environment risk is the main concern for regulators.

Talking about Covid 19, he mentioned it is a difficult time to quantify expected credit loss. Actuarial expertise in claim reserving can help a lot in this area.

Scope for Actuaries in Banking

Ian mentioned that many actuaries are currently working in the capital adequacy and risk management areas of banking. He is of the view that barriers to entry in the banking sector are very low as banks need skilled people to tackle these challenges.

Actuaries are required to have an understanding of banking products, current issues, risks and regulations. They also need to be efficient in financial modelling skills with limited data.

Actuaries can also work in data science, product pricing, fraud detection, cyber security.

Ian believes that the credibility of being an actuary with knowledge of financial modelling and risk management, gives them a better edge at handling challenges.

In the end he added that the IFOA is expected to introduce fellowship exams in banking in two parts: principles and advanced. They have a working party research on banking and are making suggestions for inclusion of banking examples in core subjects. They are also going to establish a digital online banking community to help actuaries get acquainted with the latest developments in the banking sector.

Written by

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Alisha Basha is a post graduate in Chemical Engineering with specialization in Safety and Risk management.

Artificial Intelligence/ Machine Learning Across Insurance Value Chain

Date: 10th March 2021; Wednesday **Time:** 15:00 - 15:45 IST

Speakers: Cherry Chan, Partner, Barnett Waddingham LLP, UK

Karthik Patel, Head - Insurance Analytics & Products, TransUnion CIBIL Ltd, India

Moderator: Mahidhara Davangere, Managing Director, PRAMARTHA GROUP

Mahidhara Davangere initiated the session with a welcome address.

Cherry Chan and Karthik Patel contextualized the need for upskilling of actuaries using Artificial Intelligence (AI)/ Machine Learning (ML) to explore new ways of doing actuarial work.

Contents covered in the session are:

Insurance value chain:

- **Product development:** data collected using ML techniques help developing more personalized insurance products and services
- **Marketing and distribution:** more data gives improved knowledge about customers which helps in effective marketing
- **Underwriting and practices:** Data analytics can aid in accelerating underwriting and selecting better risks.
- **Quote and renewal:** Actuaries and data scientists working together to develop AI chatbots to make the buying process for customers as simple as possible, providing them full support throughout the buying process, and suggest better quotes while reducing the operational costs.
- **Claims and servicing:**
  Fraud detection - additional data helps in building much more complex models which can help to achieve granular yet credible segments to improve predictive power and hence making fraud detection easier.
  Automated claim adjuster - helps to prioritize claims and achieving a much faster settlement

Used cases of the Insurance value chain:

Within the UK

Personalize industries use AI and ML techniques to access damages to cars involved in insurance claims by analyzing the photos submitted to them by policyholders. Algorithms can be used to provide an estimate of the cost of repairs and to make an instant cash settlement.

Commercialize industries access claims by collecting pre-and post-event data including satellite, aerial, radar imageries; CCTV data; social media feeds; or any other publicly available data after extreme events like hurricanes, and an ML algorithm is used to estimate the extent of losses to the properties.

Systems like these help insurers to achieve a much faster settlement and a more accurate reserving compared to the conventional model, thus, reducing reliance on loss adjusters ultimately leading to cost-saving for insurers and better customer experience.

In India

Although the insurance value chain is on a huge rise globally and insurers are embracing the technology to cater to customers, India is yet to discover used cases.

At present, there is still a lack of synergy in data science and actuarial science.

Relevance of InsureTechs in the Insurance value chain, efforts are taken by Insurance info bureau of India, General insurance council and credit bureaus were discussed.

Telematics:

Young drivers are considered high risk and end up paying a high premium. The major part of telematics would be offering incentives to people exhibiting good driving behavior that can result in lower premiums for drivers and reduced claim frequency.

Despite its benefits, there are few challenges to the implementation of telematics. Sharing so much data can raise privacy concerns among policyholders. Problems of adverse selection and moral hazard can also rise.

Challenges in ML

- Garbage in garbage out approach- biases in data can result in biased results
- lack of protocols or guidelines raise the concern of data privacy
- customers can unknowingly give away their data such as on social media platforms which increases the risk of inappropriate use of data.

Lastly, career opportunities for actuaries outside the traditional domain were discussed. Karthik focused on the need for junior actuaries to gain coding skills which will empower them to apply the knowledge they already have and senior actuaries to be the supporter of change.

Written By Sakshi Gulati

Practical Actuarial Data Science: An experience analysis case study

Date: 13th March 2021; Saturday Time: 11:00 - 11:45 IST

Speakers: Valerie du Preez, Dupro, UK Insurance Advisory Executive - Specializing in actuarial, Finance, innovation & change. Embracing technology.

Patrick Moehrke, Durpo, Junior Actuarial Consultant, South Africa

Moderator: Shailesh Dhuri, Executive Director, Decimal Point

Shailesh Dhuri initiated the session with a welcome address and the introduction of the speakers. To set the context, Valerie du Preez shared some interesting statistics collected through different case studies about the importance of data science for actuaries.

The course content that she covered is as follows:

Recent trends that make data science important for Actuaries:

- Availability of data is increasing
- Better and faster computing power
- More research in statistical fields and applications combined with computer science
- More pressure to use business knowledge to add value
- The need for data science skills is growing
- Growing online communities and availability of training courses
- R included in the actuarial syllabus

Initiatives by IFoA in the data science field

- Launching data science certificate course
- Published "A guide for ethical data science" 2019 (with Royal Statistical Society)
- Modelling, analytics, and insights from the data working party 2016
  - Practical Application papers
  - Collaboration between Life and non-life actuaries
  - Data Science member interest group
  - Virtual Conference Data Science and opportunities for Actuaries
  - Optimize use of data science techniques

Barriers preventing teams to make use of data science:

- Lack of infrastructure or computing software
- Low quality of internal data
- Challenges in obtaining and aggregating data from multiple internal data sources
- Lack of executive support
- Difficulties assessing internal data
- Difficulties in finding and collecting external data
- No or few used cases identified
- Privacy issues
- Lack of right skills

Lapse analysis case study:

The next segment of the session was taken over by Patrick Moehrke. To explain the importance of data science in lapse analysis, some useful statistics of used cases were presented. Different parametric and non-parametric models were used in these case studies to predict the lapsed policies. He explained how actual vs predicted lapses can then be plotted to visualize the results and root mean squared error is used to compare the performances of different models to validate the results.

Using predictive analysis, algorithms are developed, based on big data analytics and trends, that can help insurers to predict policyholders' behavior, identify the policies that can potentially lapse, and build an appropriate strategy to increase customer satisfaction and retain profitable customers.

To conclude the session, the panel discussed the right skills required to make the optimal use of data science; programming languages for data visualization, data management, data analysis. The speakers also talked about the data science pipeline and key factors to run an effective Proof of concept (POC) in data science.

Written by

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Sakshi Gulati is a student member of IAI and IFoA.

Future Outlook of Insurance Industry and Regulatory Development

Date: 10th March 2021; Wednesday **Time:** 13:00 - 14:00 IST

Speaker: Mr. Joydeep Roy, Global Health Insurance Leader, PwC - moderated this panel discussion

Panelists: Mr. G Murlidhar, CEO, Kotak Life

Mr. Pramod Arora, Member (Actuary), IRDAI

Mr. Eric Bleekrode, Head of Insurance, KPMG China & APAC and IFRS17 lead

The discussion touched key topics around digitalization, retirement protection, impact of increase in FDI and implementation of Solvency II and IFRS17 in India.

The first topic of discussion was **"Digitalization"**. Mr. Murlidhar noted that although the process of digitalization started few years ago but it accelerated during the pandemic. The most important change is the shift in the mindset of customers and distributors for accepting the digital world. The business processes adapted quickly and IRDAI extended support by taking swift actions - for example use of electronic signatures, issuance of electronic policies, Aadhar linked KYC, Issuing Life certificate without physical presence etc. These in turn improved customer/distributor experience and they participated more.

He also added that digitalization in the following two areas will benefit Insurance Industry immensely -

- Adopting complete digital payments
- Integration of Medical records

The discussion then directed to the **"status of longevity protection"** in India. Mr. Pramod Arora acknowledged that there is a longevity protection gap however latest financial figures indicate that 23% of the total premium received by the Life Insurance Companies is attributable to pension/annuity products, which translates to half of the new business written in the latest year.

There has been a lot of activity in this space recently. Joint Life annuity, which is a popular product, now allows relationships other than Spouse. There is also an increase in availability of deferred annuity plans in the market. From the insurer's standpoint, these long-term liabilities can be better matched as Government securities are now available for term as long as 40 years.

There are suggestions to consider index linked annuity products based on changing interest rates just like floating rates for housing loans. Mr. Pramod also noted that lack of understanding of these products could lead to customers buying products different to their needs. IRDAI is working on standardizing some products in near future.

In relation to the recent announcement on **increasing FDI's** in insurance industry, Mr. Eric recognized that it is a long awaited step and a win-win for India and other countries. India's size of market, potential in resources, innovation capabilities attracts other countries and we should see increased involvement through more Joint Ventures and partnership projects in future.

The next half of the session focused on Regulatory developments. My Joydeep requested Mr. Murlidhar to share his views on **Listing of Companies**. Mr. Murlidhar explained that the primary reasons for listing are - solvency, financial resources and disclosure. While disclosure has to be enforced irrespective of the listing, for the other two objectives the need is to be assessed. If there is no need for resources, listing should not be forced. There will be someone in the chain listed e.g. parent company and forced listing can cause issues in the relationship of the parent company and the subsidiary.

Proceeding, Mr. Pramod Kumar contributed his stance on **implementation of Risk Based Capital framework** in India. The main limitation of our current approach is that it treats all companies at par. In practice, each company will have its own risk management framework and might need less or more capital due to its management. Therefore, RBC regime is required.

There are committees formed who are working relentlessly on this as we speak and liaising with other countries and regulators to learn from their experience.

Mr. Pramod highlighted an interesting point that the recent FDI relaxation and listing can help the companies where additional capital is required due to change in regime.

IFRS 17 implementation although has an international deadline but IRDAI's priority is minimum disruption given that these changes require lot of effort and energy.

Towards the end, Mr. Eric emphasized that Insurance Industry and the Regulator need to walk hand-in-hand to close the protection gaps. Whilst the Insurance companies should focus on developing products based on changing customer's need, the Regulator is a facilitator for Insurance companies.

Key Take-way

There is some stability in the market however there is a lot of activity happening and is expected in near future in the Insurance industry as well as the Regulations. Actuarial Science, Data Analytics, AI, ML are all means to an end - where end is increased protection, better insights and being closer to customers.

Written By Manisha Sharma

Fast Track to Future Ready Operations for Insurance Companies

Date: 11th March 2021; Thursday **Time:** 10:30 - 11:00 IST

Speaker: Mr. Kaushal Mody, Senior Managing Director - Growth, Strategy and Innovation - Accenture

Mr. Kaushal has an extensive experience in incubating and helping scale several high growth and innovation led businesses using Intelligent Automation/AI, digital marketing operations and analytics. Accenture undertook a global survey among 1000+ executives globally - 44% of whom were C-level equivalent - across multiple countries and industries. The survey reveals that 7% of organization report a high level of maturity as their current state - we call them 'future-ready'.

What is 'future-ready'?

For every organization, the path to operations maturity has distinct milestones.

1. Stable
2. Efficient
3. Predictive
4. Future Ready

The differentiation between these four stages can be viewed under four aspects - Technology, Talent, Process and Data.

	Stable (Foundational)	Efficient (Automated)	Predictive (Insights driven)	Future Ready (Intelligent)
Technology	Foundational tools	Robotic automation	Advance data systems	AI/Cloud/Block chain enabled
Talent	Human only	Machines augments human for many processes	Machines augments human for many processes	Agile workforce at scale
Process	Non-Standard and fragmented	Industry leading practices	Industry leading practices	End to end digitized
Data	Siloed or Incomplete	Aggregated at organization level	Leverage analytics	AI at scale

Why 'future-ready'?

Our survey showed that currently only 7% of the organizations are at the highest level of maturity. On average, organization we found to be future ready showed a 2.8x boost in corporate profitability and 1.7x higher efficiency than at lower maturity levels.

In addition to profitability and efficiency, there are additional performance benefits achieved by the organizations. For example - increased market share, better customer experience, higher employee engagement and retention, better employee talent mix and reskilling, additional business value generated from data etc.

Where does 'Insurance Industry' stand?

Insurance industry is marginally ahead in being 'future-ready'. There are 10% organizations in the industry at the highest level of maturity compared to 7% average.

Whilst Data and Agile workforce is at par with the average of all the industry, there is a lot of work required on AI and Analytics front. Technology is identified as a key challenge to the operations maturity path.

Overall, although the industries have been slow but they are accelerating now. A majority of organizations have made dramatic progress towards next level of maturity. 34% of organizations are expected to be 'future ready' in next 3 years.

How to become 'future-ready'?

- Know your goal
- Know the key steps
- Know how to leapfrog maturity levels

Mr. Kaushal has highlighted that collaboration between the business and technology functions is one of the key aspects to operational maturity. Around 86% of future ready organization have a high level of collaboration. It is also important to use the leading practices in the industry.

Although the journey is unique for each organization but there are some key aspects of this journey for all -

- Automate at scale
- Augment human talent with technology
- Commit to data driven decision making
- Scale cloud investments

Recommendation

Mr. Kaushal concluded the session by highlighting six actions that will help an organization to outsmart, outperform and outpace the competition.

Think big and beyond incremental change, *Foster* a human + machine specialized workforce, *Enhance* intuition with high quality/diverse data, *Put* a cloud infrastructure at heart, *Scale* automation and analytics and integrated solutions with leading practices, *Build* complimentary third party and ecosystem relationships.

Written By Manisha Sharma

India - leading Offshore Actuarial Services Partner

Date: 11th March 2021; Thursday Time: 17:30 - 18:30 IST

Objective

- Evolution of Actuarial offshoring India
- Is India really a leading offshore partner?
- Types of offshore models in India
- Actuarial capabilities and talent
- Skillsets required
- Outlook of Actuarial career in India

The panel members consisted of the leaders of two big Actuarial Employers in India - **Mr. Murshid Kuttihassan**, Vice President - MetLife and **Ms. Deepika Goel**, Director - Knowledge Services, Marsh & McLennan Companies. **Mr. Gopal Kumar** moderated the discussion.

Contributions by the Panelists

- The discussion started with the progress of actuarial services in India. Ms. Deepika pointed out that Insurance industry offshoring specifically Actuarial accelerated Post 9/11 when the Insurance companies wanted faster claims processing and increased cost margins. It has been a decade and there is an upward trend favorable to India since then. However, most of the employers are concentrated in few locations only which should change gradually.
- Mr. Murshid added that India has advantages over other countries to provide offshore partnering because of multiple dynamics. The macro-economic factors in our country are favorable, there is ease of doing business, and availability of cheap, ambitious and agile workforce that provide high quality of work.
- On the types of Operating Models, he talked about the two common models found in India - Third party and Captive. The latter is an entity set up by the Parent Insurance Company and is an extension of the group. The Captives tend to be more flexible and have common goals, cultures, career path like rest of the group.
- Ms. Deepika elaborated on the second model - the third party model. These are more popular in situations where there is a need of faster set-ups, defined SLAs, lower installation costs etc. The stage of development of a parent company determines the model suitable for them for operating in India.
- She further highlighted the increasing demand across the breadth and depth of actuarial services across all domains - Life Insurance, General Insurance, Pensions/Investment and Health Insurance. In fact, the increase in the work being offshored is mirroring the growth of insurance industry. While the market was more inclined to Pensions and Life Insurance earlier, we see an increased opportunities in General Insurance actuarial work, which earlier was a hesitant area for offshoring.
- Mr. Murshid noted that although there is an increase in variety of work coming to India, it is still unlikely for the roles requiring closer interaction with the regulators to be offshored.
- Both the panel members were in concurrence on the state of the actuarial market in India - it is not steady and different companies adopt different levels of aggressiveness in their hiring process. The major challenge is at senior technical roles where there is a huge gap between the supply and demand.
- Mr. Gopal requested the panel members to share their stance on the ideal skillset in actuarial workforce. Ms. Deepika mentioned the 3 C's - Clarity of concepts, Curiosity and Communication. Mr. Murshid added that as one moves up the ladder the importance of being a team player, problem solver, high Emotional quotient increases.
- The outlook of actuarial career is optimistic. COVID-19 has changed the mindset of many international employers who are no more apprehensive of offshoring because of confidence in remote working.
- Ms. Deepika specially highlighted the opportunities for actuaries for the Government in future. They invest in large infrastructures, run massive schemes and prone to more risk. Risk management and mitigation is the need of the hour for them.
- To conclude the session both the members encouraged the actuarial workforce to develop programming skills and communication. With the big data advent, programming skills are and will be the must-have in near future at all levels.

Key Take-away

- Actuarial market is growing since a decade and will accelerate in future. All types of work in all domains are being carried out in India now.
- There is a supply shortage of senior resources in India. Focus of the workforce should not be exams but a right balance of exams and experience.
- Develop 'hot skills' and look forward to increased involvement of actuaries in wider areas with many employers.

Written by

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Manisha Sharma is currently working as Senior Actuarial Manager in Accenture.

Effects of Pandemics on Insurance

Date: 11th March 2021; Thursday Time: 11:00 - 12:00 IST

Speakers: N S Kannan CEO, ICICI Prudential Life Insurance Company Limited

Anil Kumar Singh Appointed Actuary, Aditya Birla Sun Life Insurance Company Limited

Vishwanath Mahendra, Appointed Actuary, Max Bupa Health Insurance Company Limited and Chairperson of Advisory Group on Health Care Insurance, IAI

Moderator: Pankaj Kumar Tewari, General Manager (Actuarial) IRDAI

Pandemic is a disease that affects mass human population like a country, a continent or world at large. Few examples of pandemics in India are smallpox, plague, swine flu etc. Recent pandemic that hit the world is Coronavirus Disease 2019 (Covid-19).

It adversely affected world's economy including insurance sector. There was increase in death claims, confusion among customers regarding cover for pandemic illness, loss of income for distributors and decrease in growth value of assets.

Initially, Covid-19 created a lot of panic and chaos in insurance organizations. Insurance companies responded by ensuring safety of their employees, uninterrupted customer experience and distributors' service. Processes and systems were set up to ensure work from home for employees. For customers and distributors, self-service mode for filing claims, servicing and issuance of policies was adopted through digital platforms.

In order to minimize the adverse effects of pandemic, healthcare experts started pandemic modeling and built scenarios to maintain company's solvency and loss ratios. Main focus was on resilience of business on book rather than generation of new business. To meet increasing claims requirement adequate liquidity was maintained. Asset quality was monitored well especially where investment was made in travel, tourism and other areas which were affected the most by pandemic. On liability side, more stringent reserves and adequate capital were maintained. To maintain persistency, customers were provided policy loan in case of default of renewal premium. Tier II bonds were issued to maintain solvency ratio at 225%.

Overtime, the impact of pandemic was not as significant as expected. This can be due to the stringent regulatory norms and quick bounce back of equity markets. In addition, claims experience was better than expected due to which initial reserves were realized.

Pandemic provided great avenues for growth of insurance sector. Due to increasing digital mode of operation, insurance companies could work more efficiently. Virtual meet ups saved time on discussions. New partnerships opportunities were availed as potential partners were approachable with ease. It also widened the scope of designing new products covering pandemic risks. Supply side improvement areas came to light, due to increasing demand of insurance products. Increase in demand can be attributed to increase in awareness among masses for the need of insurance especially for remote areas.

Pandemic emphasized the need for insurance companies to become more vigilant about the quality of business and pricing strategies to incorporate unforeseen pandemics, expense management, wise assessment of risk appetite while underwriting, capital requirement, risk management practices and maintain reserves focusing on longer term.

Insurance industry could minimize the adverse effect of pandemic by being resilient.

Written By Pratiksha Aggarwal

IFRS17

Date: 12th March 2021; Friday Time: 16:15 - 17:15 IST

Speakers: Aditya Jain, heads the IFRS 17 implementation program for Prudential Indonesia

Kamran Foroughi , Global IFRS 17 Advisory Leader at Willis Towers Watson

Sai Cheong Foong, Group Chief Actuary of AIA Group Limited

Moderator: Kunj Maheshwari, Advisory Group on IFRS17 Ind AS117, IAI

IFRS 17 is an International Financial Reporting Standard that was issued by the International Accounting Standards Board in May 2017. It will replace IFRS 4 on accounting for insurance contracts and has an effective date of 1 January 2023. This transition requires detailed planning, robust implementation and close coordination amongst people with various skills.

There are 3 approaches for this transition: Premium Allocation Approach, Variable fee Approach and Contractual Service Margin Approach.

Appropriate approach depends on the nature of insurance company. For insurance companies which issue short term policies (less than 1 year) , Premium Allocation Approach is suitable. Companies where insurance contracts are substantially investment related contracts, Variable fee Approach is suggested.

A comprehensive survey was conducted in June -July 2020 where 254 insurance companies participated. According to that survey, 22 large MNCs have made great progress irrespective of coronavirus disease in last 10 years.

Implementation of IFRS 17 is not mandatory for a few Asian countries like India. India is likely to adopt approx. 2 years later than 2023.

Transition from IFRS4 to IFRS17 is a complex process and requires a lot financial modernization of huge data. It involves close coordination between various departments like senior stakeholders, Human Resource, risk compliance, IT support etc.

The team which is involved in transition consists 50% of actuarial and 50% of accounts and IT experts. It involves setting up a dedicated project management team with strong governance who can provide their useful insights for successful implementation of the standard. This team is solely responsible for transition and is not involved in any BAU work (Business as usual) as managing both will lead to inefficiency.

This project requires careful planning as a lot of cost is involved. In case insurance company doesn't have sufficiently skilled resource and is unable to hire people,some work can be outsourced.

The companies can also take help from other companies or financial experts who have already figured the way out towards implementation of IFRS 17.

The methodology used varies as per the nature and business mix of the insurance companies. Another approach can be to set up a pilot team to work on conversion for a particular business unit and then same approach with a little tweaks can be used for other business units as well.

Since the process is complex and time consuming, well planned approach and early action will be helpful in timely implementation of IFRS17.

Written by

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Pratiksha Aggarwal has worked in pension valuations, P&C pricing and asset modelling for life insurance.

Ensuring Sustainable Retirement Outcomes in Old-Age Whilst Building A Long-Term Financial Market Offering

Date: 12th March 2021; Friday Time: 12:15 - 13:00 IST

Speakers: Sivananth Ramachandran, Director of Capital Markets Policy, India, CFA Institute

Arun Muralidhar, PhD, Founder, Mcube Investment Technologies LLC and Founder and Client CIO of AlphaEngine Global Investment Solutions

Moderator: Kulin Patel, CEO Partner, M/s KA Pandit Consultants & Actuaries and Chairperson, Advisory Group on Pensions, Other Employee Benefits and Social Security, IAI

Introduction

Most Defined Benefit (DB) Pension Systems have faced increased pressure due to factors such as ageing populations, reduced investment returns and increasing dependency ratios. Further challenges emerged from the move from DB pension plans to Defined Contribution (DC) pension plans which meant individuals were expected to play a greater role in deciding on matters such as investment of monies. This has resulted in an erosion of trust in pension systems across the globe.

The session focussed on how the pension ecosystem could be improved.

Sivananth apprised the audience of the recent findings from the Mercer CFA Global Pension Index and suggested what reforms could be undertaken by India to improve its score.

Arun introduced an innovative product that could be used to improve retirement outcomes from DC plans.

Mercer CFA Institute Global Pension Index

The Mercer CFA Institute Global Pension Index ranks 39 pension systems based on their scores on the following parameters:

- Adequacy i.e., what the beneficiary receives?
- Sustainability i.e., will it continue to deliver in the future?
- Integrity i.e., its trustworthiness

A country's score on the above parameters is aggregated to arrive at the overall score. The report for 2020 indicated that Netherlands ranks 1 while India is currently placed on the 34th spot. Sivananth mentioned that India could improve its rank by focusing on increasing the coverage of existing schemes and reducing leakages prior to retirement.

In light of COVID-19, the Indian government took many measures including introducing temporary means-tested benefits and permitting members to access funds early from pension pots. It also reduced EPF contribution requirements and paid in contributions for low-income members.

Such measures mean that pensions systems are facing additional challenges stemming from:

- A reduction in asset values and returns reducing funding levels and requiring higher contributions.
- A decrease in pension contributions and increased withdrawals.
- Increasing government debt meaning it cannot afford to pay benefits.
- Reduced migration impacting the dependency ratio (ratio of dependant population to working age population) adversely.

These challenges need to be adequately addressed to ensure better retirement outcomes for all members.

SelFIES

Traditional DC plans focus on maximising the member's wealth 'at retirement' as opposed to maximising the 'post-retirement income', which is the individual's goal). And this is further worsened by the fact that most people are not financially aware enough on how to save for retirement.

The cashflow pattern received by a DC plan member has no payments during the pre-retirement phase followed by regular payments to the beneficiary post retirement. Most assets today, however, do not provide such a pattern e.g. fixed interest bonds would pay coupons immediately. To tackle this, Arun described a new form of savings product called SelFIES (Standard of living Indexed Forward setting Income-only securities) which would provide inflation-linked coupons to the holder from a specified future date onwards. A DC plan member could purchase SelFIES over their working life to provide the required income in retirement e.g. if each bond promises a coupon of Rs 100 real after 30 years and a 30 year old wants a post-retirement income of Rs 50,000 real, they could purchase 500 such bonds.

SelFIES can be issued by governments to finance their expenditure in a cheap manner with repayments potentially starting as much as 40 years in the future. For individuals, buying SelFIES means their retirement planning is simplified to just specifying the income needed and the date of retirement. Retirement goals could also easily be adjusted e.g., by buying or selling the securities. Moreover, these securities could be passed on to the member's heirs to provide income or be sold prior to redemption to provide a lump sum.

Arun mentioned that countries such as Chile, Brazil and Brazil have expressed interest in launching such products to improve retirement outcomes. Uruguay has issued a product similar to SelFIES to help its insurance companies hedge risks in their annuity books.

The Mercer CFA Global Pensions Index Report for 2020 can be found here: https://www.cfainstitute.org/en/research/survey-reports/2020-mercer-cfa-institute-global-pension-index
SeLFIES: A-New(-ity) Look for Retirement can be found here: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3548324

Written By Kathan Jain

Crop Insurance Pricing Techniques/ Pricing Insurance without data

Date: 13th March 2021; Saturday Time: 16:45 - 17:30 IST

Speaker: A V Karthikeyan, Appointed Actuary of Reliance General Insurance Company Limited

Moderator: Mayur Ankolekar, Consulting Actuary

Introduction

India is the world's third largest crop insurance market with annual premiums worth USD 4 billion. A key issue that actuaries face in the crop insurance sector is on how to price the product given the humungous number of variables (each with diverse properties) that affect the crop yields. This means actuaries need to be in sync with various experts such as underwriters, crop and weather scientists. The session focused on the pricing of crop insurance policies and explained how the various components of the premium could be determined.

The speaker also discussed how recent changes in the PMFBY could affect the pricing process.

Update on Pradhan Mantri Fasal Bima Yojna (PMFBY)

The PMFBY scheme has been in place for over 5 years and has undergone the following major changes in 2020-21:

- Tenure of cover extended to 3 years,
- Opting for cover voluntary for all farmers,
- Basic cover for standing crop risks only (other risks such as prevented sowing, post-harvest losses, etc. to be optional),
- Threshold yield can now be fixed, laddered or variable,
- Capping of central government subsidy,
- Compulsory use of smart sampling to optimise crop cutting experiments (CCEs).

The speaker remarked that most states have continued with the bundled cover i.e., as per the older all risks policy, and are using a fixed threshold yield (except for 1 state).

Considerations for the company

Companies should consider:

- Its own strategy, capabilities and past experience on the product,
- Reinsurance arrangements and the corresponding premium ceded,
- The scheme's nature and cover (including the sum insured),
- Choice of states,
- Competition.

Companies should also consider greater involvement in CCEs to improve the efficiency of the process.

Components of the premium

The premium is split into the following components:

1. Historical burn cost (representing past claims incurred by the company)
2. Cost of add on covers (representing risks not covered by yield data)
3. Heterogeneity loading (required due to mismatch in data granularity used to price the product and the data used to settle claims)
4. Catastrophe loadings
5. Long-term considerations (given that the cover will be for 3 years)
6. Administrative and capital costs
7. Tactical considerations.

Actuarial skills required

1. Historical burn cost calculation

Data of past claims and yields would need to be cleaned with emerging trends in yields identified. Judgement would need to ensure appropriate allowance for changes in factors such as cluster/ crop selection and any special events such as natural disasters.

2. De-trending yield data

A trend is a change in the mean value of a variable over time. De-trending removes this impact to ensure the data is appropriate for modelling purposes. Linear de-trending is commonly used to de-trend the yield data and can be done easily via a spreadsheet model. Actuarial judgement is required in order to decide upon when to de-trend and the extent of de-trending. Its appropriateness can be judged via the T-Test p-value and coefficient of determination.

3. Determining heterogeneity loading

Past data on yield data that is only available at the block/ district level needs to be adjusted to arrive at the yield data on a gram panchayat level. This is done via a simulation technique relying on trends observed in the recent data that is available at a gram panchayat level. The simulation would produce values at a gram panchayat level based on the block level data.

4. Pricing the add-on covers

Covers of post-harvest losses (applicable to crops being dried outside in the field) and prevented sowing losses are not captured by the yield data and thus are priced separately using weather-based criterion to determine frequency of claims.

5. Allowing for laddered threshold yields

The fixed threshold yield is projected forward and adjusted for trends to arrive at the laddered yield. This means the actuary must focus on trends that should be allowed for.

Written by

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Kathan Jain is an associate member of the Institute of Actuaries of India.

Actuarial Hiring – A Perspective from Global Consultants

Date: 12th March 2021; Friday Time: 14:00 - 15:00 IST

Speaker: Noriel De Vera, Asia Pacific Life Insurance Recruiter, Hong Kong SAR

Moderator: Sana Konnur, Head Actuary, SBI General Insurance Company Limited and Chairperson Actuarial Job Placement

This session was a gripping session on actuarial hiring on a global scale. Alongside appearing for exams examinations, actuaries are looking for apt and interesting job opportunities - but very often are unable to succeed in the process. This session described some key things-to-remember during a job search; covering topics from having the right mindset to drafting your CV and interviews.

Hiring Prospects

The session began with a discussion on the hiring prospects for actuarial students who are appearing for examinations from different institutes (namely IFoA, IAI, CAS amongst others). The speaker emphasized that qualification should be the ultimate goal. She added that employers recognise almost all institutes and their equivalents.

When considering new job opportunities, Noriel advised students to try and perceive the skills they will contribute and what they will gain. She recommended key attributes that every candidate should strive to possess -

- Technical knowledge
- The Right Mindset
- Communication Skills
- Enthusiasm
- Curiosity

When a person wants to switch to another geographical region, Noriel suggested to start there in a familiar role, and then gradually explore newer options.

Kick-Starting Your Career

The speaker pressed that the first 3 years of one's working life are crucial. In a way these years determine the base for the rest of one's career - most people to continue working in the field they began.

She stressed that students should balance the number of papers passed and work experience. However the goal, without doubt, should be to complete all the exams.

Noriel threw some light on how a fresh graduate should approach their first role. She suggested graduates to be open minded and curious about the work assigned; to ask questions and think beyond the task at hand.

Tip - All jobs should be used as an opportunity to understand yourself and your likes and dislikes. It is a good practice to have career conversations with mentors and peers.

Switching Roles

When looking for new opportunities as an experienced professional, Noriel recommended considering internal job placements before looking outside the organisation. When looking elsewhere, the speaker suggested making connections on LinkedIn and checking job boards. Both the speaker and moderator reminded job-seekers to be courteous and polite when connecting with new people. Nowadays, hiring managers are inclined towards watching a short video about the candidate.

Drafting a CV and Preparing for Interviews

Noriel specified that a CV should be clean, crisp and authentic. It should bring out your best achievements that an interviewer would want to see.

Lastly, the speaker advised candidates to ensure they know everything that's on their CV. Candidates should also be able to explain their reasons for switching roles. She emphasised on the importance of research about the role and organisation.

Tip - On the day of the interview, dress well and to be punctual. You could carry name cards to share with interviewers, alongwith copies of your CV.

This enlightening session concluded with a short discussion on how actuaries are exploring non-traditional roles in recent times. The speaker and moderator finally motivated actuaries to aspire for the best jobs and put in all efforts to attain their career goals.

Written By Ekta Mehta

Chief Guest's Speech

Date: 13th March 2021; Saturday Time: 10:30 - 11:00 IST

Chief Guest: Anurag Singh Thakur, Minister of State for Finance and Corporate Affairs, Government of India

Honourable Minister of Finance and corporate affairs Shri Anurag Singh Thakur graced Day 4 of the Virtual Actuarial Conference 2021 as the chief guest. He began his talk by acknowledging the contribution of actuaries to the nation and congratulating the Institute of Actuaries of India on completing 75 years.

He highlighted how India is an emerging power nation having a young work force, fuelled by professionals in different sectors - to push India towards achieving 'Atma Nirbhar Bharat'. He then spoke about some of the historical reforms undertaken by the government for the progress of the nation. Further, he highlighted some note-worthy points from the recent Union Budget -

- Health is a top priority for the ministry. The government has worked towards opening more medical colleges and improving the health facilities in districts around the country. It has also announced huge allowances for Covid-19 vaccines as well.
- Next, infrastructure and growth is of importance and the government has increased its allocation towards this sector by 34.5%
- Establishment of Development Finance Institutions under the name of National Bank for Financing Infrastructure and Development, to enhance development in the country
- Increase of FDI in insurance from 49% to 74% which is expected to bring capital infusion, competition and benefits to the common man
- Reduction in financial deficit
- Ease of doing business and compliance through various tax reforms
- 'Atma Nirbhar Bharat' is an economic strategy for self-reliant and sustainable India, which creates value and wealth. Opening up of new sectors for young entrepreneurs in fields of renewable energy, agriculture, infrastructure and defence production to the space sector
- National Education Policy helping to expand the future of the country along with empowering the youth to be future ready
- Increased investor confidence towards India

Finally, he urged attendees to talk and discuss the various reforms by the nation amongst other peers and take advantage of the policies implemented. MoS also called upon assistance and advice from all actuaries on improving risk management and regulatory framework of the financial sector - to build a conducive Indian ecosystem.

Written By Ekta Mehta

युनाइटेड इंडिया इंश्यूरेन्स कंपनी लिमिटेड

UNITED INDIA INSURANCE COMPANY LTD.

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Tips for Examination Success

Date: 13th March 2021; Saturday **Time:** 13:45 - 14:45 IST

Speaker: Marjorie Ngwenya, Leadership Coach, Non-Executive Director, Author, Consultant, Past President of the Institute and Faculty of Actuaries, UK

Moderator: Sunil Sharma, President, Chief Actuary & Chief Risk Officer, Kotak Life Insurance Company Limited and Chairperson of Advisory Group on Education, IAI and Immediate Past President, IAI

This session was specially targetted towards the student members attending the conference. Examinations are an important aspect of the actuarial journey. The session covered tips for success in actuarial examinations. The talk was structured to describe examination planning, preparation and the actual exam attempt.

Exam Planning

First and foremost, Marjorie Ngwenya emphasized that there is no prescribed order of attempting the 13 actuarial exams. She suggested that the Foundation/Core Principle papers should be completed first, followed by the specialized ones. When asked about choosing which exam to appear for, she said that students should go for the one that interests them the most. The decision about the number of examination to appear for per session depends on the student's prior experience and possible time commitment. If a student has no prior experience in the subject, it is advisable to attempt for only exam. Being clear on the time commitment will corroborate clarity and success. She strongly believed that it is better to pass one exam than to fail two.

Exam Preparation

Always Remember - START EARLY. The speaker mentioned that one must aim to prepare and study for atleast the prescribed recommended study hours. Forming a study group with fellow students, colleagues and friends was another suggestion by the speaker. Another simple, but effective, tip was to make prompts, revision lists and abbreviations to memorise and revise difficult parts. She also pressed on the fact that students should be informed of the meanings of the command verbs.

Marjorie also suggested that it's a good practice to get answer scripts reviewed, by peers or through marking vouchers.

Attempting the Exam

The speaker advised students to remain calm during the exam. She said reading and understanding the question well, paying attention to the command verb, is very important. Moreover on completing the solution to a question, a good practice would be to re-visit the question and check if the solution uses most of the given information.

Both Marjorie and Sunil were in unison that students should ensure that their handwriting is legible. A final tip while attempting the exam was to try and think what the examiner is looking for and ensure the solution is aligned accordingly.

Final Tips

Towards the end of this informative session, Marjorie spoke about some general tips and key practices, which contributed to her own success. Few of them being -

- Be realistic about what is achievable
- Recognise your hierarchy of priorities and where studying fits in- this will help to plan and prepare
- Be curious and you'll end up grasping more
- Determination, Prioritization and Planning - the three word mantra to success!

The session concluded with a short discussion on the importance of practical experience along with examinations and that connecting the two enhances assimilation of knowledge. Marjorie also urged students to continue to believe in themselves and to never give up.

Written by

Ekta Mehta

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Ekta Mehta is an Associate member of the Institute of Actuaries of India and currently works as a Junior Manager at Ageas Federal Life insurance.

Unit Power: exploring new dimensions from unitization

Date: 11th March 2021; Thursday Time: 16:30 - 17:30 IST

Moderator: Kamlesh Gupta

Panelist: Sashi Krishnan, Preeti Chandrashekhar, SaiSrinivas Dhulipala

This session was in panel discussion format. Kamlesh Gupta addressed the participants and then introduced the panelists. Before starting with his questions, he briefly established the context of the discussion.

Introduction: Unitization

Fund value is simply number of units multiplied by net asset value (NAV). NAV is publicly available information. This concept revolutionized the entire financial industry as everyone can evaluate the performance of the fund and compare the performance of their fund with other fund(s) and/or a benchmark. It has also enabled growth of other services like Systematic Investment Plan (SIP), Systematic withdrawal plan and Systematic Transfer plan. Corporate actions like interest coupon and dividends are outsourced to a particular fund house and an individual need not bother about their accounting. It has also led to professionalization of various service manager like custodian, fund manager, rating agency.

Growth in India:

In 1993, first private sector mutual fund was set up. In 2001, first ULIP Policy was written and in 2004 national pension system (NPS) was launched. Since then, ULIP fund value has reached a value of ₹ 4 trillion as of March 19 and it has grown significantly after that. Also, mutual fund industry grown has to 31 trillion rupee by Dec 2020, growth of more than 13% in last one year. Again, NPS also shows a steep graph with ₹ 5 trillion asset under management (AUM) as at Jan 2021.

Amount of disclosure is widely available under ULIPS including fund value, investment objective, NAV, AUM, detailed asset allocation by different sector and by different company within each sector. Also, past performance information is available for different time periods and at different benchmarks. The concept of unitization and the associated disclosure have significantly changed the industry and in this session, the impact was discussed in depth with the panelist.

Q - Do the UL fund frequency and content of disclosure control potential credit losses?

Sashi Krishnan: He replied in affirmative that yes, a lot of disclosure helps investor make an informed decision. Explaining, he pointed out there are three main disclosures which adds value in decision making. First is Year to Maturity (YTM) which is used to understand credit risk in the portfolio. For funds with similar investment strategy, a higher YTM typically should raise an alarm with an investor as it tends to indicate lower credit quality. Also, if YTM increases over time, it could be that fund manager is going to lower credit. Second is, modified duration which is sensitivity of bond portfolio to interest rate increase. Higher duration means higher sensitivity to interest rate risk and thus indicates credits that are lower in quality. The duration information can be used by analyzing spread between average maturity and duration. A higher spread typically indicates the portfolio credit is masked. Third being the simple information of credit disclosures which disclose credit information of the portfolio.

Overall, he pointed to the fact that there has been defaults even with highly rated credits. Therefore, the investors should look beyond just the credit rating and look for other information like those mentioned above. Especially now, as access to such information is easy due to the amount and frequency of disclosures available.

Q - Daily NAV practice, helped in assessment of credit spreads but what does those improve prospects of defined benefit (DB) pension plans?

Preeti Chandrashekar: She answered the questions in three parts. First, she established the need of ALM strategy for a pension plan by explaining that pension liabilities are typically long term, real as linked to earning inflation and exposed to interest rate risk. ALM helps in asset allocation and informed funding, considering both liabilities and assets together as an overall impact.

Second, she talked about funding behavior of DB plans before unit linked plans. India do not mandate funding for DB plans. But in case they are funded, and even though they are allowed 50% exposure to equity, they are primarily invested in debts as asset class. Also, portfolio is not disclosed, and they are not marked to market. This made it difficult to do ALM on these traditional plans.

Thus, she established that even though ALM studies are beneficial for DB plans, there were challenges associated to carry out these activities because of limited information. Lastly, she explained how disclosures have made these ALM studies possible. For example, NAV helps to calculate various types of return like point-to-point returns, rolling returns; the asset allocation related disclosure helps to compare it with desired allocation; and disclosure related to duration helps you in choosing funds that have desired level of duration. Thus these key items under ALM strategy - expected return on debt and equity, volatility and correlation helps understand risk-return characteristics of the portfolio.

Thus, she agreed that yes, the MTM daily NAV practice helps improves daily prospects of ALM strategy for DB pension plans.

Q - ULIPS provide additional amount of information on asset side and under new accounting system, additional disclosures are required for liabilities w.r.t DB pension plan. Does weighted average duration disclosed in liability report led to greater utility of date UL fund's modified duration?

Preeti Chandrasheker: "To very little extent" is what she answered. She explained that while duration statistics are important in matching assets and liability characteristics, there are practical challenges. Firstly, ULIPS are influenced by multiple investors. Any small change in investment, be it due to withdrawals or calls taken by manager to generate alpha, leads to change in duration. Secondly, there is mismatch in duration of bonds available in India and that of pension fund liabilities. The average duration of governments bonds in India is roughly 8-8.5 years while that of corporate bond is even lower. On the other hand, duration of DB plans is typically much higher than 8 years.

Lastly, organizations in India have very limited technical support to understand duration information w.r.t assets and liabilities, match them and find a way to rebalance the portfolio. Especially, because asset duration is available monthly but liability valuation, at best, are done on yearly basis. Thus, essentially, historical weighted average duration is to be matched with modified duration of assets which changes from month on month.

Q - What is the current role and future prospect of actuarial function in assurance underlying UL pricing?

SaiSrinivas Dhulipala: He explained that even though the product is transparent, is similar to mutual funds and has clear rules from regulatory perspective, it is not easier as compared to other products to manage it. The issue is balancing the requirements of different stakeholders including design, pricing and product management aspects, policyholder expectation and regulatory requirement of policyholder protection. For example, there are conflicting expectations like sticking to charging structure as prescribed by the regulators while ensuring customers get a good deal; managing expenses while meeting distribution requirements; and ensuring profitability for shareholders. The other critical area is that of assumption setting of such a sophisticated product. One cannot be conservative with assumptions and since it is a long-term product, one cannot be too aggressive.

With respect to future prospective, he explained that the investment landscape is too dynamic with emergence of new products. Also, on assurance side, these customers are SEBI customers and hence it can be expected that a customer may require far more flexibility (for example, ability to modify investment strategy, invest in different sectors etc.). Hence it is very critical to be prepared to incorporate all these complexities not just from actuarial perspective but also from operational and system perspective.

Q: Are credit spread better discovered due to growth of asset management and life insurance industry?

Sashi Krishnan: He explained that when it is said that there are many players in the market, it means market is liquid. If this liquidity is reflected in the credit spread, then it means only liquidity risk is accounted for in the credit spread. However, credit spread reflects other risk as well including default risk, risk w.r.t to accounting transparency, business risk , political risk and others.

He sort of put a disclaimer that sometimes these risks might not be reflected as market is forced to deal in a particular area (like direct market lending) which distorts credit spread.

Q: How relevant, then, information around credit spread to evaluate loss given record or expected lossess?

Sashi Krishnan: Credit risk reflects investor perception of riskiness in the bond. High credit risk imply investors perception of risk is high and hence there is high risk aversion. Thus, higher credit spread implies investors perception of potentially higher loss. But it may not reflect loss given default as it may be dependent on characteristics of bond and underlying security. But it does reflect expected loss or probability of default to a great extent.

Q - For an individual, volatility is the key risk with market linked investment. Therefore, which ideas are relevant for smoothing in a life insurance UL investment plan?

SaiSrinivas Dhulipala: He agreed that volatility remains the key risk for investors and solutions like BOX method or systematic switching can be considered. However, each has their own pros and cons which should be addressed while choosing the method. If BOX method is to be considered, evaluate what should be the terms and conditions for the box surrender? what are the bands?

what is shareholder view if cost is born by them when it goes beyond prescribed band? What if limit to which volatility is protected is breached? Should the cost be translated to policyholder?

Similarly, while choosing systematic switching, it should be considered whether investor be allowed to gradually shift money from equity to less volatile instrument in the last three years? If the customer is SEBI customer, should he/she be given investment freedom to make the switch themselves?

He suggested that no option should be mandated as policy feature and various options should be considered and provided to policyholders. This investment freedom is in-line with spirit of ULIPs. This gives policyholders independence to decide according to their risk appetite.

Q - This question was w.r.t volatility for institutional investor for pension funds. How was the greater forbearance to asset volatility afforded by IND AS 19 affected the uptake of UL funds.

Preetik Chandrasheker: To explain if change in accounting behavior has affected the investment behavior, she described what changed in the accounting standards. Before adoption of IND AS 19, gain/loss due to asset investments were routed through profit and loss. Therefore, a very conservative approach was preferred to get steady returns which increases predictability and minimizes volatility of the income statement. Under IND AS 19, gain/loss are now routed through other component called other comprehensive income (OCI) which forms part of reserve or surplus. Therefore, profit and loss account are not impacted by investment behavior. This gives investor an opportunity to take up more aggressive investment.

Therefore, the question is whether uptake of UL funds was impacted? According to the latest asset investment statistics, no such trend is noticed. She explained that ULIP do not appeals much to these institutional investors because of limited technical support (as she previously explained in the Q2). Again, ULIPs are interesting to only those investors who are unhappy with falling returns on traditional plans and believe that in long term inflation risk associated with pension liabilities can only be hedged by increasing exposure to equity investments. However, such investors are very limited.

She believes, as professionals, we can nudge the investors to consider such opportunities by educating them about such investments.

Q - If UL annuity were to be demonstrated as product design idea, which features would drive the product value?

SaiSrinivas Dhulipala: There are two risk associated with annuities, one is risk of living longer and second is inflation risk. This inflation risk becomes more profound if an investor lives longer and relies on fixed amount of annuity. Therefore, some inflation protection is required and that is where UL annuity can be helpful here. One feature that could add value is inflation i.e. some part of annuity be linked to inflation. The challenge is how to manage post retirement strategy such that there is some minimum guaranteed benefit along with inflation protection.

According to the panel, the product design should be such that the customers have the flexibility to choose their annuity amount which match their risk appetite. That is, what portion of the benefit needs to be fixed and what needs to be inflation linked.

On the side note, Sai mentioned that according to him there is huge need for such a product as individuals are not prepared for their retirement due to inadequate retirement planning. A debate, regulatory facilitation and industry participation is required to drive introduction and growth of such products in the market to ensure better retirement outcome.

Q - Would development of bond index facilitate risk management? If such an index exists, can greater education on such indices facilitate risk management?

Sashi Krishnan: He confirmed that such an index exists in India and are quite popular across the world. These indices give indication of the riskiness of the portfolio. The thing to consider here is - Will there be zero tracking error with such an index? The answer is no! So, how do customer decide if bond portfolio is risky or not?

He explained the construction mechanism of these bond indices. Basically, bonds with certain characteristics are taken. Then based on the underlying liquidity of the portfolio bond index is built around the associated liquidity. This essentially directs most investor to opt for most liquid bonds without looking at their own interest like yield return etc.

Another aspect to look at is that these indices are asset driven. They do not refer to liability portfolio which should ideally be referred in order to reduce mis-matching risk.

Written by

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Mahima Gupta is an associate member of IAI.

The unchartered territories of Ayushman Bharat: World's largest Group Health Scheme

Date: 12th March 2021; Friday Time: 17:15 - 18:00 IST

Speakers: Sathya Sai Muddigonda, Senior Actuarial Consultant, Honorary Professor Sri Sathya Sai Institute of Higher Learning

Gomathi Venkatachalam, Managing the implementation of Ayushman Bharat

Moderator: Ritu Kotnala, Pricing Head Royal Sundaram General Insurance

The session started with Ms. Gomathi listing out for the benefit of the audience the current landscape of, 'Ayushman Bharat'.

Started by the government of India in September 2018, it is unique in the world for covering more than 500 million Indians. The claims settled till now are almost to the tune of 15 million claims across a colossal network of more than 24 thousand hospitals spread across the country. This makes this the largest group insurance in the world today. Under this schema, under this group medical program the beneficiary families are assured for a sum of 500,000 Indian rupees, where the treatment can be availed, on a cashless-basis in any of the empaneled government hospitals. Covers more than 200,000 tertiary treatments.

The scheme was started with the aim to address the very high OOP (Out-Of-Pocket) expenses seen to be incurred in the Indian diaspora which is now further aggravated by the pandemic to almost 68.1%.

The session then progressed under the guidance of Sathya Sai, into exploring the uniqueness of this scheme.

Four Main Uniqueness of 'Ayushman Bharat'

This uniqueness is mainly due to four aspects of this scheme:

1. Tackling large data using Machine Learning and Deep Learning
2. Complexity in calculation
3. Stakeholder conflict management
4. State specific special features

Tackling large data using Machine Learning and Deep Learning

This scheme uses actuarial and data science techniques to tackle and predict the experience of the scheme. This entails leveraging techniques of data pre-processing besides using various tools from data science field. Actuarial & statistical aspects of credibility theory are leveraged extensively. Descriptive statistics, data visualization are core to these exercise, besides using Generalized Linear Modelling and Ruin Theory which are in regular use in the modelling undertaken. Fraud Detection entails Extreme value theory while Clustering is used to identify the homogeneous groups.

Complexity in calculation

The sheer volume of data renders excel grossly insufficient and hence the use of new age open-source data handling tools like python and R become imperative. Added to this challenge, is the lack of homogeneity amongst the different states' experience and different implementation of the scheme to suit their own electorates. Besides these the different impact of frauds as well as the top ten diseases occurring in each state are vastly different.

Stakeholder conflict management

There are twelve key or main stakeholders like, beneficiaries, the hospitals, the TPAs, NGO(s), insurers, reinsurers, government and regulator, to name a few. These make conflict management a key factor in the day to day functioning of this scheme. Conflicting objectives of each of the stakeholder need to aligned to the aim of the scheme. The success of the scheme thus depends on the reward and penalty method to resolve these differences and aligning the interests.

State specific special features

Actuarial product pricing are different across states as target population differ vastly. Besides this, the hospital specialities also differ as well as their

availability, not to mention the 'portability' option given to beneficiaries of this scheme. The mode of operation also differs across states: Trust/Insurance/ hybrid and this further results in very different claim characteristics.

These unique features of this scheme is indeed an opportunity for actuarial professionals to be part of this flagship scheme to learn and tackle such challenges. Besides this will add new technologies like ML and DL to any actuary involved in the working of such a flagship scheme.

The session then took the audience through the pricing framework through the five blocks:

1. Portfolio Claim Experience
2. Target population and demographic considerations
3. Package rate analysis
4. Risk management effectiveness
5. Hospital availability and utilisation

Then the session ventured to enlighten the audience about the Ayushman Bharat Analytics which entailed Ayushman Bharat data to be leveraged using amongst others:

- Prescriptive analytics
- Predictive Analytics
- Diagnostic Analytics
- Descriptive Analytics

The data analysis is done using both the actuarial & statistical analyses like exploratory data analysis, data imputation, actual versus expected analysis, as well as data science technologies like distributed computing, high performance computing, visualizations using amongst other RShiny, ggplot2, Matplotlib etc.

The various items were explained in deriving at the Risk premium , addressing the usage of ChainLadder and BF method being available as R-packages, as well as different neural networks being used. But the choice of techniques depends on the data as well as the context. The frequency and severity of the data are thus estimated using suitable techniques. Adjustment for seasonality, change in private-public hospital mix, change in packages as well as impact of hospital empanelment are significant factor in the expected experience of the future. These further add complexity and challenge into arriving at the frequency-severity figures in risk-adjustment. Besides these, other complexity to the risk-premium calculation like those due to portability option availability were also discussed. Other handling techniques for imbalanced dataset were also highlighted. The main emphasis being laid on the need to integrate data science and actuarial techniques.

The session was then guided by Gomathi, to take a quick peek into the future of the scheme like the total digitization of the scheme, 'health-stack' implementation, which were praised for their benefits and hoped to benefit all in future.

The last phase of the enriching discussion was on the effect of Covid19 pandemic. These were illustrated as the four main areas:

1. Changes in package consumption
2. Upcoming period may have more claims
3. Packages for covid19 are incorporated into Ayushman Bharat
4. Scope of claim investigation

Finally the speakers were thanked for their wonderful insights on behalf of the audience and the curtains drawn on yet another insightful session.

Thank You

Written by

Arunima Sinha

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Arunima Sinha is a Fellow of Institute of Actuaries of India, with extensive experience in actuarial consulting and a keen interest in early Renaissance art and sculpture.

VAC 2021 Press Coverage

Press Coverage published in print and online media dated March 2021

PRINT COVERAGE

Publication: The Economic Times
Editions: All

AS COMORBIDITY RISKS RISE AMID COVID-19 AND GLOBAL REINSURERS RAISE RATES

Term Life Covers Set to Become Pricier in FY22

Premium set to be raised at least 10-15% by most pvt sector insurance cos

New Cover Story

REASONS

WHO WOULD BE IMPACTED MOST

Publication: The Hindu Business Line
Editions: All

PFRDA in talks with IRDAI for introducing variable annuities

KR SRIVATS
New Delhi, March 12

The Pension Fund Regulatory and Development Authority (PFRDA) is in talks with insurance regulator IRDAI to explore if variable annuities could be introduced.

The need for variable annuities – where the returns vary according to the market-related bench-

Supratim Bandyopadhyay, Chairman of PFRDA

ment to invest at least 40 per cent of the retirement funds in annuities. The PFRDA will soon launch a product that gives minimum assured return.

"We propose to have innovative products to attract more and more customers. Their your (actuaries) inputs will be welcome. The first product we will be targeting is minimum assured re-

Publication: The Economic Times
Editions: All

Rejection Rates may Increase

Publication: Financial Express
Editions: All

Indian economy is looking at 'V-shaped' recovery: Thakur

PRESS TRUST OF INDIA
Mumbai, March 13

THERE ARE GREEN shoots visible in various sectors of

February, FPI inflows were ₹25,787 crore," Thakur said at a virtual conclave organised by the Institute of Actuaries of India.

Publication: The Hindu Business Line
Editions: All

Need to quickly ramp up actuary professionals base: IRDAI Chief

Insurance firms should champion adoption of IFRS17 and actuaries should play a role here: Subash Chandra Khuntia

KR SRIVATS
New Delhi, March 10

India should aspire to have atleast 1,000-1,200 actuaries as quickly as possible given the huge requirement of such professionals in the country, IRDAI Chairman Subash Chandra Khuntia said on Wednesday.

"This is the minimum we should [illegible] the

dustry, our number of actuaries is inadequate", he said.

He urged IAI to increase the number of actuaries in the country by persuading students in the undergraduate programme to take up actuarial profession. "There is not much awareness among college and university students about the

Subash Chandra Khuntia, Chairman, IRDAI

counting Standards Board of CA Institute seeking deferment in the implementation date to April 1, 2024.

Transition

The Effective date of implementation of IFRS 17 as decided by the International Accounting Standard Board (IASB) is January 1, 2023. This may mean that comparative balance sheets are to be prepared effective January 1, 2022.

"In Indian context, an implementation date of April 1, 2023 would mean that we have to

Publication: Business Standard
Editions: All

Insurers may soon be able to launch covers without regulator nod

SUBRATA PANDA
Mumbai, 10 March

Irdai wants to move to a 'use and file' system where insurers can market products without first obtaining an approval from the regulator, said Chairman Subhash Chandra Khuntia.

This is in contrast to the current 'file and use' system where if an insurer wishes to introduce a new product, it has to file an application with the Insurance Regulatory and Development Authority of India (Irdai) and can sell the product only after getting all the [illegible] approvals.

"LOOKING AT THE SIZE OF OUR INSURANCE BUSINESS, WE SHOULD AT LEAST ASPIRE TO HAVE 1,000-1,200 ACTUARIES AS SOON AS POSSIBLE"

assesses and manages the risks of financial investments, insurance policies, and other potentially risky ventures.

"... looking at the number of insurance companies we have and the size of our insurance business, which is 1.7 per cent of the global insurance industry, and considering the fact that we have 60,000 actuaries globally, I think we should at least aspire to have 1,000-1,200 actuaries in the country as soon as possible," he added.

Khuntia said there is a need to change to the IFRS 17 accounting system for the insurance sector.

"The regulator is also in the

Publication: The Statesman
Editions: All

Irdai considering change in product approval system

It is looking to shift from 'file and use' procedure for product approvals to 'use and file' system

PRESS TRUST OF INDIA
MUMBAI, 10 MARCH

The Insurance Regulatory and Development Authority of India is looking to shift from the "file and use" procedure for product approvals to the "use and file" system, its chairman Subhash C Khuntia said today.

"We would like to move over from the "file and use" system of product approval to the "use and file" system to the extent possible. We have already started this in some of the segments and we would like to go further," he said.

"We would like to move over from the "file and use" system of product approval to the "use and file" system to the extent possible. We have already started this in some of the segments and we would like to go further.
SUBHASH C KHUNTIA
CHAIRMAN, IRDAI

market products without the regulator's prior approval.

He said the first and fore-

sised.

Khuntia said actuaries are the eyes and ears of the reg-

ing for financial protection in their old age. He said actuaries, through a committee system, has helped the regulator to develop a standard annuity product.

"We have also asked a committee of actuaries to develop an index-linked product. The report is also ready. I will continue to depend upon your people (actuaries) to help us in developing new products and methods to improve insurance penetration in the country," he said.

Khuntia also urged actuaries to develop micro insur-

Publication: The Pioneer
Editions: Hyderabad

IRDAI considering shifting to 'use and file' for product approvals: Chief

PNS ■ MUMBAI

Insurance regulator IRDAI is looking to shift from the 'file and use' procedure for product approvals to the 'use and file' system, its Chairman Subhash C Khuntia said on Wednesday.

"We would like to move over from the 'file and use' system of product approval to the 'use and file' system to the extent possible. We have already started this in some of the segments and we would like to go further," he said while addressing a virtual actu-

Under the use and file sys- as climate change and future

Publication: The Statesman
Editions: All

PFRDA plans to bring assured-return product

PRESS TRUST OF INDIA
MUMBAI, 12 MARCH

The Pension Fund Regulatory and Development Author-

to-market (MTM) accounting method, and so giving a guarantee, even if it is a floating guarantee, calls for a lot of skill and thought in designing the

Publication: Indian Express
Editions: All

'Economy looking at V-shaped recovery'

ENS ECONOMIC BUREAU
NEW DELHI, MARCH 13

GREEN SHOOTS visible across

After two straight quarters of contraction, the country's gross domestic product (GDP) entered the positive territory with a growth of 0.4 per cent during the

Publication: The Asian Age
Editions: New Delhi

'Economy poised for V-shaped recovery'

Mumbai, March 13: There are green shoots visible in various sectors of the economy and the country is already looking at a 'V-shaped' recovery, minister of state for finance and corporate

Publication: Telangana Today
Editions: Hyderabad, Telangana

Economy looking at 'V-shaped' recovery: Thakur

Minister of State for Finance says, along with green shoots in various sectors in February, FPI inflows were Rs 25,787 crore

Publication: The Pioneer
Editions: All

Indian economy looking at 'V-shaped' recovery: Anurag

Mumbai, Mar 13 (PTI) There are green shoots visible in various sectors of the economy and the country is already looking at a 'V-shaped' recovery, Minister of State for Finance and Corporate Affairs Anurag Thakur said on Saturday. "India is already looking at 'V-shaped' recovery. Along with the green shoots in various sectors, in the month of February, FPI inflows were Rs 25,787 crore," Thakur said at a virtual conclave organised by the Institute of Actuaries of India. After two consecutive

Publication: The Hitavada
Editions: Nagpur

'Indian economy looking at 'V-shaped' recovery'

MUMBAI, Mar 13 (PTI)

THERE are green shoots visible in various sectors of the econo-

with a growth of 0.4 per cent in the October-December quarter of the current fiscal, according to the data released by the

Publication: The Asian Age
Editions: New Delhi

Insurers to migrate to IFRS 17 by 2023

MADHUSUDAN SAHOO
NEW DELHI, MARCH 14

Insurers are gearing up for implementation of the International Financial Reporting Standard 17, or IFRS 17, and risk-based capital (RBC.) Standardising the insurance accounting IFRS 17 will improve the global comparability of insurers books and increase transparency while the RBC will ensure better solvency capital for the insurers.

Irdai chairman Subhash Chandra Khuntia said in a virtual event said the regulator is working on the implementation of the IFRS 17 and the RBC regime, urging actuaries to drive this plan.

A senior Irdai official told Financial Chronicle that an exposure draft in this regard has been shared by the regulator among the insurers, and is still in the discussion stage. Besides, the Institute of Actuaries of India (IAI) has also set up an advisory group on IFRS 17 (Ind AS 117). "It will provide users of accounts with the information they need to meaningfully understand the insurer's financial position, performance, risk exposure etc.," the official said.

The chief of the Insurance Regulatory and Development Authority of India further asked the insurers to develop products that provide cover after superannuation, saying, we find that people live longer and they need financial protection for their longer age. "How to develop some interesting products in this area should also be the focus of insurers. Some of you can develop such standard products," he said.

Subhendu Kumar Bal, IAI president and chief actuary & chief risk officer, SBI Life Insurance, said actuaries are committed to play pivotal role in driving implementation of IFRS 17.

"The effective date of IFRS 17 implementation is January 1, 2023, internationally. However, neighbouring countries like Indonesia and the Philippines would transition to new norm in 2025 and unlisted insurers in China will transition in 2026. The IAI has requested Accounting Standards Board (ASB) for deferring the implementation at least by a year," Bal said.

The IFRS 17, issued by the International Accounting Standards Board in May 2017, is supposed to replace IFRS 4 on accounting for insurance contracts on the effective date of January 1, 2023.

Publication: Millennium Post
Editions: New Delhi, Kolkata

Indian economy eying 'V-shaped' recovery: Thakur

MUMBAI: There are green shoots visible in various sectors of the economy and the country is already looking at a 'V-shaped' recovery, Minister of State for Finance and Cor-

Publication: Bizz Buzz
Editions: Hyderabad

BIZZ BUZZ WEDNESDAY 31 MARCH 2021 15

There's need for saving through pension products

Females' higher life expectancy signifies that women should also invest in pension plans

In Indian context if you look at it, people prefer liquidity more than the need to save for the future. "Hence, there is a need to create an awareness for saving through superannuation products," says Subhendu Kumar Bal, President, Institute of Actuaries of India and Chief Actuary and Chief Risk Officer, SBI Life Insurance Company in an exclusive interview with *Bizz Buzz*

Publication: Deccan Chronicle
Editions: Hyderabad

Insurers to migrate to IFRS 17 by 2023

MADHUSUDAN SAHOO
NEW DELHI, MARCH 14

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Publication: Jansatta
Editions: Kolkata

नए बीमा उत्पाद पेश करने के बाद उसकी मंजूरी ले सकेंगी कंपनियां, नियामक बदलेगा व्यवस्था

मुंबई, 10 मार्च (भाषा)।

बीमा क्षेत्र नियामक इरडा बीमा क्षेत्र में नए उत्पादों को मंजूरी देने के मामले में 'फाइल करो और इस्तेमाल करो' से हटकर अब 'इस्तेमाल करो और फाइल करो' प्रणाली को अपनाने पर विचार कर रहा है। इसमें बीमा कंपनियां बिना मंजूरी के लिए बाजार में नए उत्पाद पेश कर सकेंगी। इसके

फाइल' करो। कुछ वर्गों में हमने इस प्रणाली को शुरू कर दिया है और हम इस पर आगे बढ़ना चाहेंगे।' फाइल करो और इस्तेमाल करो प्रणाली के तहत किसी भी बीमा कंपनी को अपने नए उत्पाद को बाजार में पेश करने के लिए उस उत्पाद को लेकर भारतीय बीमा नियामक व विकास प्राधिकरण (इरडा) में आवेदन करना होता है। नियामकीय मंजूरी मिलने के बाद से

ONLINE COVERAGE

www.economictimes.com

IRDAI considering shifting to 'use and file' system for product approvals: Chairman

www.thehindubusinessline.com

Need to quickly ramp up actuary professionals base: IRDAI Chief

www.businesstoday.in

Only 459 insurance actuaries in India, need at least 1,200: IRDA Chief

www.outlookindia.com

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IRDAI considering shifting to "use and file" system for product approvals: Chairman

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IRDAI Considering Shifting To 'Use And File' System For Product Approvals: Chairman

www.asiainsurancereview.com

India: Number of actuaries is insufficient and their deployment skewed

www.zeebiz.com

INSURANCE REGULATORY AND DEVELOPMENT AUTHORITY OF INDIA

www.economictimes.indiatimes.com

Term life covers set to become pricier in FY22

www.thehindubusinessline.com

IAI in talks with FinMin to set up actuary dept

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India regulator's chief laments low number of actuaries

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IAI in talks with FinMin to set up actuary dept

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Pension Fund Regulator Looking To Introduce Minimum Assured Return Product

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Insurers gear up for implementation of IFRS17

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V-shaped recovery, GST collection over Rs 1 lakh cr each month due to steps during pandemic: Anurag Thakur

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www.lokmatnews.in
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Institute of Actuaries of India

Institute of Actuaries of India (IAI)

June 2021 Home Based Online Examination

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Date of Result
3rd July 2021

022 - 62433333/3334
acet@actuariesindia.org

For More details on home based examination format and requirements.
Kindly refer Registration announcement and Student guide available on the IAI website.

Module 3 of 16th CILA Seminar

Date: 12th January 2021; Tuesday Time: 14:00 - 17:30 IST

Welcome Address: Prithesh Chaubey, Chairperson - LIAG

Keynote Address: K. Ganesh, Member (Life) - IRDAI

Introductory Remarks: Ranabir Ghosh, Member - LIAG

Session 1: Recent trends in Life Insurance Products

Panelists: BN Rangarajan, Appointed Actuary & Chief Risk Officer - Exide Life

Srinivasan Parthasarathy, Appointed Actuary - HDFC Life Insurance Co. Ltd.

Sanjeev Pujari, Ex-President SBI Life Insurance Co. Ltd.

Moderator: Akshay Dhand, AA - Canara HSBC

Session 2: Underwriting and Distribution developments

Panelists: Srinivas Iyangar, COO - Reliance Nippon Life Insurance Co. Ltd.

Anand Pejawar, President - SBI Life Insurance Co. Ltd.

Soeren Kurse, Hannover Re - Head of Business Acquisition and Development

Paramvir S Chatha, Chief Underwriting Officer - RGA

Moderator: GLN Sarma, CEO - Hannover Re India Branch

Introduction

The third module of CILA Seminar began with a welcome address from Prithesh Chaubey wherein he summarized the key topics to be discussed in the module. This was followed by the keynote address.

K Ganesh provided perspectives from the viewpoint of the regulator:

- IRDAI guidelines for electronic issuance of policies (such as allowance of OTP authentication for policy issuance, exemption for mandatorily sending physical policy document during the COVID era)
- The trend of shrinking physical branches of insurers and its possible impact on policy servicing
- Key challenges still faced by the industry in the form of mis-selling and low persistency
- Risks pertaining to data privacy and cyber-attacks related to increased digitization across insurers

Session 1: Recent trends in Life Insurance Products

The session started with discussion around whether the 2019 product regulations had met their objectives. Panelists agreed that the regulations did provide a higher value proposition for the customers, led to more freedom in certain product design areas and simplified product approval process. However, it was suggested that too little time had elapsed since the introduction of the regulations to gauge their entire impact.

It was agreed that the industry did well in response to the limitations put forth in the COVID era. It was suggested that **efforts should be made to sustain the favorable trends that had emerged from the industry's response to COVID in the form of high level of digitization throughout customer engagement lifecycle and higher perceived value of protection products.** There was some skepticism on whether the uptick in sales of protection products would be sustainable.

Other topics of discussion included:

- The hike in reinsurance rates for term insurance - it was mentioned that a significant hike in one iteration may not go down well with the policyholders – on whom the cost of rate hike would pass.
- Future introduction of Index Linked products
- Regulatory push towards introduction of standardized products (Saral Jeevan Bima Yojana)

Session 2: Underwriting and Distribution developments

The session started with commentary on recent changes in distribution mix of insurers including significant investment in, and transition towards digital channels.

Reinsurance response to the pandemic in India and South Africa was discussed: In India, transition to Tele and Video MER for underwriting was highlighted, along with flexibility offered by the reinsurer in accepting alternate

medical tests that could take place at a policyholder's home. In South Africa, facilitating digital underwriting using 3rd party medical data and allowing flexibility in premium payment was highlighted.

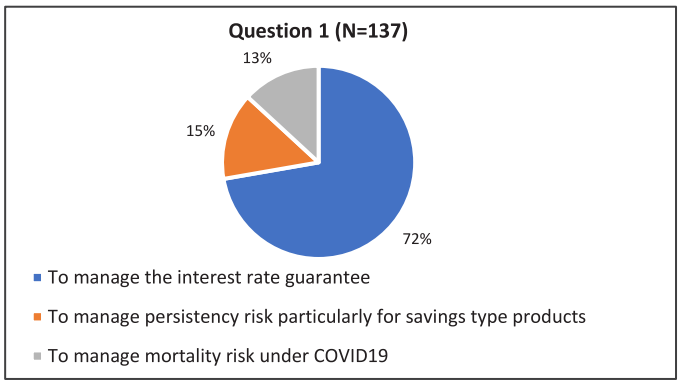
Evolving underwriting risk was a pervasive theme throughout the session. It was suggested that the credibility of information obtained through tele MER had deteriorated over time. Implications of section 45 (incontestability clause) on Insurers and Reinsurers was also discussed. A concern was also raised on the credibility of customer risk profiling when onboarded through digital channels.

Several measures to manage these risks were discussed:

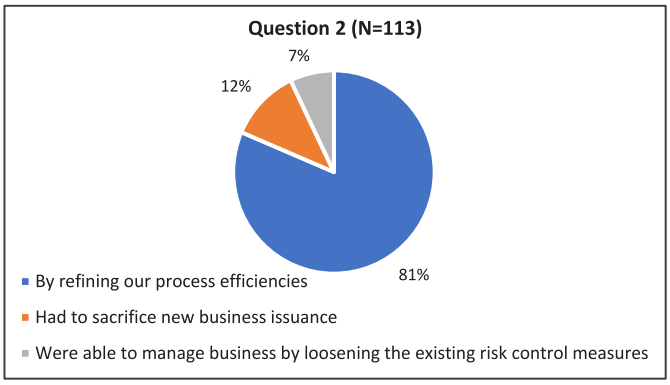
- Increased vigilance at the point of policy sourcing and pre-issuance risk verification
- Efficient use of 3rd party data (e.g. IIB and Credit Bureau)
- Leveraging AI and ML based analytic tools
- Possible use of other innovations such as social scrubbing of data

Several poll questions for put forward to the audience which provided valuable industry insights:

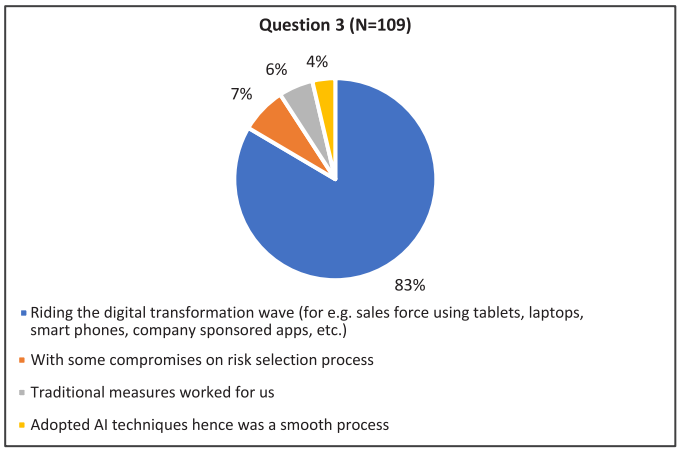
Question 1: Currently what is the major challenge facing insurers?



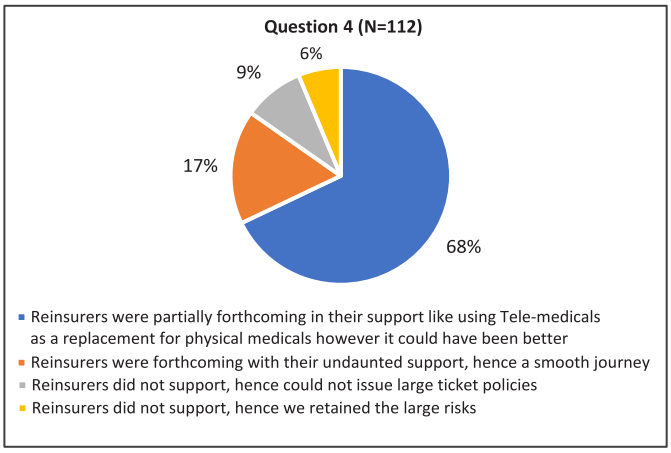
Question 2: How did you manage operational challenges during lockdown period?



Question 3: How did you manage on-boarding of new policy sales during lockdown period?



Question 4: How did you manage issuance of large ticket policies?



Written by

Surbhit Ahuja

surbhitahuja@gmail.com

Surbhit is a fellow of Institute of Actuaries and is currently working as a Senior Consultant with Deloitte Consulting.

Webinar - Shareholder Value disclosures and Risk Based Capital

Date: 13th January 2021; Wednesday Time: 14:00 - 17:30 IST

Presenters: Shareholder Value disclosures

Satyan Jambunathan, Chief Financial Officer, ICICI Prudential Life

MW Kim, Head of Asia Equity Research JP Morgan

Kunj Maheshwari, Partner, Willis Towers Watson

Risk Based Capital

Philip Jackson, Principal & Consulting Actuary, Milliman, India

Clement Bonnet, Principal & Consulting Actuary, Milliman, Hong Kong

Panellists: Phanesh Modukuru, Consulting Actuary

Anil Kumar Singh, Appointed Actuary Aditya Birla Sun Life Insurance Co. Ltd.

Moderator: Heerak Basu, Member, LIAG

Introduction

The Institute of Actuaries of India is proactively conducting webinars on various relevant topics. For the 4th module of the Current Issues in Life Assurance (CILA), the level of shareholder value disclosures of India, its comparison with other markets, and the RBC regime and its implication for India moving forward were the key topics.

Shareholder Value disclosures

Heerak started the session by providing introductory remarks on the shareholder value disclosures by insurance companies. The key points presented in this segment were:

- China is the most important market for this comparison with respect to the amount of growth in industry. With the IFRS 17 applicability, focus will be on contractual service margin(CSM) and Best estimate liability. Insurance companies in China have good disclosure about CSM.
- In China, de - rating in companies' share price happened due to asset risk, back book quality and the source of profit. This leads to an implication in India as bond rates are falling and companies are going to allocate more capital in guaranteed savings products. The asset liability allocation might give more pressure on asset side as assets for longer duration liabilities might not be available.
- Earlier, metric of shareholder value were acquisition measures and new business growth like new business premium. Now it is more value focused.
- Kunj explained that having appropriate shareholder metrics isn't only important for new shareholders but also for existing shareholders as it helps in estimating the value of the company.
- Actuaries should ensure consistency in disclosures i.e. of reporting over time and across companies. The information should not be just limited to how the values are calculated but what their implications are and how the shareholder can judge the value of the company basis the report.
- While insurance companies have a range of mandatory and voluntary disclosures, Satyan highlighted that sometimes these don't help the shareholders as the important information is usually not properly disclosed which can lead to the setting of incorrect benchmarks.
- The considerations for management should be to maintain a balance between not disclosing so little that the specific risk isn't addressed which will lead to less credibility, and not disclosing so much that strategic information is shared and the level of disclosure is not sustainable.
- In conclusion, insurance companies needs to be aware of the high guarantees in the products and ensure how their risks can be communicated to the shareholders. Also, there is scope for more disclosures by companies after listing as once listed, the disclosures are currently voluntary. This will help in more consistency across the industry.

Risk Based Capital

- Clement introduced the risk based capital regime by giving a brief overview of RBC regimes across Asia. The latest developments of capital regimes highlighted - the discussion of a new capital regime in China - C ROSS II, recent introduction of RBC 2 in Singapore and discussions to introduce RBC in India.
- For the liability valuation basis, it was discussed how countries like India, Malaysia and Hongkong used Gross Premium Valuation(GPV) while countries like South Korea and Japan use Net Premium

Valuation(NPV) method. Additionally, the regimes following GPV method are further divided into countries that have a floor for their liabilities at Cash Surrender Value (India) and at zero (Malaysia). The regimes following the NPV method have a floor at zero for the liabilities.

- The discount rate used for the liability valuation varies across the regimes. While countries like China and Singapore use government bond yield as the base yield curve and a specified ultimate forward rate, Indian insurance companies use a best estimate investment return for their base yield curve with no specific ultimate forward rate.
- Additionally, Clement discussed the inclusion and materiality of Time Value of Options and Guarantees (TVOG) in various regimes. In regimes like India and Indonesia, TVOG is often not material because of level of guarantees and product mix of more ULIP products. In regimes like China, TVOG can be material in case of savings products with management action.
- Philip concluded the session by shedding light on possible positive and negative impacts of moving towards a more economic framework.
  - ULIP and protection products can have a potential release of Value in Force(VIF) if floors are removed and non-participating products can have a release in prudence in valuation interest rate
  - Risk charges may increase for some lines of business with possibility of higher capital requirements for participating business

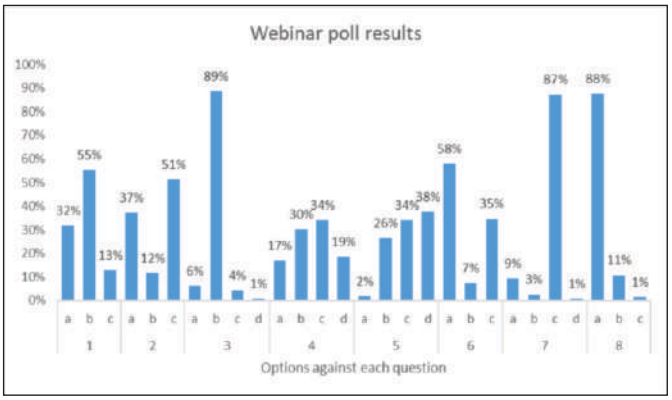
The last segment of the webinar was the panel discussion on how RBC can be implemented in India and the opportunities and challenges for the actuarial profession in the coming years. The key points discussed were as follows:

- Will help to align with global standards and provide comparable value for global investors
- Risk management will be more effective and give better perspective on types of risks
- Important that the calibration is done carefully for Indian market conditions
- Industrywide testing would be important to ensure smooth implementation of the same
- More sensitive to type and term of product which will lead to change in behavior of selling business
- More transparency in disclosures leading to better appreciation and understanding by shareholders

The Webinar was concluded with Vote of Thanks from Keyur Parikh on behalf of the LIAG, IAI.

In order to make the webinar more interactive, the organizers also arranged for few online poll questions.

1. What is your view of the quantity and quality of disclosures in the industry at present? (a - Too much data, not much use, b - I can get some sense, but could do better with more, c - Enough to understand)
2. What do you expect India's RBC to look like? (a - Risk-based: 'More complex', b - Factor-based, c - Risk-based: 'Simple')
3. Which market risk do you expect to be most material to your company? (a - Equity Risk, b - Interest-rate risk, c - Credit-spread risk, d - Other Risks)
4. When do you expect RBC to be implemented in India? (a – 31/3/2023 , b – 31/3/2024 , c – 31/3/2025 , d - Later than all of the above)
5. What do you think will happen to solvency ratios as a result of RBC ? (a - Stay the same, b - Not Sure, c - Increase, d - Decrease)
6. Do you think there should be a floor for the policy liability under RBC ? (a - No, b - Not Sure, c - Yes)
7. Do you think the influence of the profession will increase or decrease within life insurance companies post - RBC? (a - Stay the same, b - Not Sure, c - Increase, d - Decrease)
8. Minimum disclosures in respect of embedded value at the time of an IPO are described in which of the following APSs (a - Insurance risk / Market Risk / Other risks ,b - Mortality risk / persistency risk / interest-rate risk, c - Parameter risk / volatility risk / catastrophe risk)



Written by

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34th India Fellowship Webinar Module 1 – Professionalism

Date: 22nd January 2021; Friday Time: 09:30 - 13:00 IST

Speakers: Professionalism session with Videos and discussion lead by Anuradha Lal, FIAI, Secretary and Vivek Jalan, FIAI, member Advisory group on Professionalism, Ethics and Conduct.

Introduction

Anuradha Lal, Secretary AGPEC gave the introductory remarks on the India fellowship seminar in the new webinar format and the format spread over four sessions compared to the earlier IFS format.

Rajesh Dalmia, chairman AGPEC welcomed the participants and expressed his appreciation and thanked the prospective fellows and guides for selecting the concurrent issues both technical and professional domains.

In his inaugural address Shubendu Bal, President IAI said this is the second IFS in webinar format and IAI has been successful to conduct over 38 webinars in the current year with over 5000+ participants. The response from students on the first home-based examination too has been encouraging with over 89% students voting for it. He said, going forward, IAI will look into and rectify any issues faced by other 11% students. Subhendu also mentioned that IAI is planning to organize the first ever Virtual Actuarial Conclave (VAC) in March 2021 in place of the GCA. He wished the students and prospective fellows all success and urged them to take advantage of the IFS to understand and always uphold the professionalism and ethics in their careers.

Session-1: IAI Disciplinary process

The session was ably handled by K S Gopalakrishnan, Vice President IAI. He took the audience through the constitution of IAI disciplinary committee, the disciplinary process, powers of the council, Appellate authority and other related topics. He also touched upon the relevant aspects of Actuaries Act, PCS, APS, GN, the rules, regulations and directions. A video of IFoA disciplinary committee on How to speak up to clients was also played. He concluded the session with a note that the purpose of the disciplinary process is to uphold the professionalism and integrity of the members and protect the public interest. The Q&A session that ensued delved whether there is any reward for upholding the professionalism and who all can make a complaint against a member.

Session - 2: Professionalism Video -1

The first video was on two senior members of the profession attending a news channel interview, the differences of opinion between them which was inadvertently noticed by the news anchor and possibly ended up in showing the profession in poor light. The video was followed by four questions for discussion among the groups. One of the student members Aman Sanganeria opined that that the participants of the news debate should have prepared notes and clearly bifurcated the institute's point of view from their personal opinions. Amit Khurana felt there should have been a common understanding, balanced approach and possibly a disclaimer. Other student members who participated in the discussion were Ankit Sethi, Spurthy Reddy, Vishal Grover, Piyush Goel, Shrey shah and Jatika Sinha. Diverse opinions were expressed by the participants that included to acknowledge other persons point of view, avoid presenting others point of view, go well prepared to the press, run past your opinions and comments with the internal legal department, not to express negative views, consider the implications on all stakeholders, etc. A few senior members of the profession too expressed their comments. One of the senior members by Mr. Kulin Patel recognized the need for a media training for those who are expected to handle the media on behalf of the profession.

Session - 3: Professionalism Video -2

The second video was on the very common and practical aspect of General Insurance reserving, IFRS preparation, HR appraisal, the examination leaves and work pressure for actuarial students. The topic was particularly related to young appoint actuaries, facing the Board, appraising senior actuarial colleagues and granting leaves to junior actuarial students for exam preparation. On the topic of reserving, it was stressed that an Actuary need to balance his/her role as a professional and as well as part of the business. Senior actuaries, Jose John, Sanket Kawatkar and Gayle Adams shared their experience on managing the pressure and practical

aspects of Actuarial work. The students who participated in the discussion were Jayasager, Abhilasha Goyal, Mohit Arora, Jose John and Avnit Anand also actively participated and gave their respective points of view.

The second question was on the age and experience of the Appointed Actuary. It was felt that once a person is appointed to the post; the age and other aspects should not matter. The actuary should be identified by his/ her work. Student members Sewantika Jain, Pallavi Agarwal, Shruthi Shirhati expressed their opinions well supported by senior actuaries Rohit Ajgaonkar, Supriyo Chakki, Sai Srinivas and Peuli Das.

The second scenario was on the procedures or lack of them for implementation of IFRS and the way the Appointed Actuary in the Video presented to the Board. The students who attended the discussion were Phani Krishna Kandala, Khim Singh, Rishi Ranjan, Vishal Vermani and others. The members felt the need to be better prepared for the Board meeting and avoid technical jargons. The question on the Appointed Actuary's reaction when asked to take the lead to implement IFRS was discussed by Debjyoti Lahiri, Kathan Jain and others. Kanchan Goel felt that the AA should have placed an implementation proposal before the Board.

The criteria for evaluation of senior actuarial colleagues was another question discussed by Akhil Jain, Palash Shah and Twinkle Agarwal. The senior actuarial manager refusing examination leave to a junior colleague was another topic that touched the participants. Parmeshwar Shelke, Satvinder Kharb, Neerav Bhomaj Surekha Tambe and Rishabh Prakash felt that the procedures and culture of the organization should encourage and support the student members progress with examinations without affecting the work. There were opinions expressed as to whether the Appointed actuary should intervene or not.

The session was followed by the CPD questions for the fellow members. Anuradha Lal thanked the fellows, participants, IAI team and all others who contributed to making this session lively, informative and successful.

Written by

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34th India Fellowship Webinar Module 2

Date: 23rd January 2021; Saturday Time: 09:30 - 13:00 IST

Introduction

Rajesh Dalmia, Chairperson, AGPEC started the webinar by welcoming all participants and presenting the agenda for the session. He introduced the three groups and their guides, the topics they are presenting and the relevance of all topics for the actuarial domain.

Group 1 - Implications of term insurance rate increase

Group 1 presented as the Appointed Actuary of a Life Insurance company whose reinsurer has increased its rates by 40-45% but the regulator has capped the increase in premium rates for insurer at 20%. Subhash Khanna introduced the group members and the problem statement.

Sewantika touched upon the unknowns about the scenario and assumptions made by the group. She also talked about the impact of rate increase on the company's new business, market reputation, profitability, reserving and capital requirements. Aman then introduced the applicable actuarial practice standards (APSs) and various regulations applicable on pricing, reserving, solvency and reinsurance. Rishabh concluded the session with the group's suggestions to the company as follows:

- Bargain with the reinsurer;
- Revise product strategy like underwriting, T&C, benefits etc.;
- Tweak the reinsurance structure; or
- Improve internal processes like experience monitoring, expense control etc.

Group 2 - Adequacy of Reserves

Group 2 presented as the Appointed Actuary of a small Life Insurance company looking to raise capital whose CFO is asking the actuary to release some mathematical reserves temporarily. Balachandra Joshi introduced all members of the group.

Amit started with setting the background of the case study and CFO's request and arguments. He also provided details on relevant Insurance Act sections and IRDAI (ALSM) regulations. Palash then continued to talk about the relevant APSs and professional conduct standards (PCSs). He also presented the business aspects of the case study including:

- Why is the capital required for financing the expenses and solvency requirements?
- How COVID-19 can impact the need for capital?
- What is the impact on the company if capital is not raised?

Debjyoti suggested to reply to CFO that reserves can't be released by mentioning about the regulatory and professional requirements and why this release can't be justified. He also suggested alternate routes to **reduce capital requirements by expense reduction strategies, new business reduction and use of capital efficient products.** He also suggesting making representation to IRDAI for temporary relaxation in capital requirement.

Group 3 - Participating business and Fund for Future Appropriation (FFA)

B N Rangarajan started the session by introducing the group members. Ankit first explained what is asset share of a policy and the areas where it is utilized. He then talked about the relevant IRDAI regulations, EoM regulations and guidance notes and implications of charging expense overruns to FFA and shareholder funds. Vishal talked about expense overruns including reasons, and implications. Pallavi explained what FFA is, sources for FFA buildup, utilization of FFA and appropriate level of FFA. Jayasager concluded the session by talking about the Actuary's role in solvency management during declining FFA and the courses of action that can be adopted by the company in this scenario.

Written by

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34th India Fellowship Webinar Module 3

Date: 29th January 2021; Friday Time: 09:30 - 13:00 IST

Group 4: Surekha Dinkar Tambe, Abhilasha Goyal, Neerav Sagar Bhomaj, Spurthi Reddy Rapol

Guide: Vandana Baluni

Moderator: Sanket Kawatkar, Member, AGPEC

Appointed Actuary - Pricing and Implications of uncertain Economic Environment

Group discussed the case study involving pricing considerations for non-linked par and non-par (savings and Term) product for a small and new Life insurer who was planning to expand rapidly.

Group discussed in detail product design factors to meet expectations of policyholders and shareholders while adhering to regulations, Guidance Notes and Actuarial Practice Standards. The group also highlighted the risks faced by the insurer under suggested possible product structures in a COVID-19 hit market with falling interest rate environment.

Group suggested a range of analyses and investigations that insurer will need to perform to quantify the impact of an aggressive pricing strategy and subsequent business decisions. It would be essential for the insurer to monitor Asset mix, investment returns, bonus rate, lapse rate, expense ratio, cost of guarantee and future solvency considering interactions between them. Group also highlighted the importance to evaluate different risk mitigation strategies that insurer could deploy and need to evaluate impact of secondary risks arising thereof.

Group highlighted the need : 1) To have MAD, interest rate guarantee reserve and adherence to other APS, while projecting liabilities and 2) for adherence to other prescribed guidelines and regulations related to a) use of hedging instruments and b) stipulated asset mix, while projecting asset cashflows. Range of results under plausible scenarios need to be considered to highlight underlying uncertainty. Cost-benefit analysis can demonstrate effectiveness of different Management actions used as a part of risk management.

Group 5: Kathan Jain, Vishal Grover

Guide: Dr. K Sriram

Moderator: Sanket Kawatkar, Member, AGPEC

COVID-19 Impact on Actuarial Assumptions and retirement benefit liabilities in India

Group discussed the possible implications of the proposed change in benefit package to save costs by an entity in hospitality sector. Firstly, any benefit change would require amendment to trust deed and an approval from Commissioner of Income Tax. While there would be a need to communicate tax implications and impact on benefit levels to all generations of members, the group also highlighted the need to disclose proposed changes in notes to accounts.

The group discussed the difference in accounting treatment related to recognition of gains, past service costs and treatment of curtailment under US GAAP and Ind AS. While COVID-19 could have short term impact on assumptions for salary growth rate and attrition rate, possibly the long-term mortality rate assumptions would stand. Group mentioned that Discount rate would largely be based on market rates as at valuation date and would not be influenced by the entity. Accounting implications of each proposed change item was discussed in detail.

Group concluded that an Actuary could add value by making sure that reporting and accounting of special events are in line with Accounting Standards. The group further mentioned that actuaries could play a significant role in assumption setting, benefit redesign and reviewing funding strategies.

Group 6: Phani Kandala, Mohit Arora, Shruti Shirhatti, Twinkle Agarwal

Guide: Gopal V Kumar

Moderator: Archana Anoor, Member, AGPEC

Mandatory Pricing in an Unpredictable Environment

(COVID)

Group discussed the case study where insurers were required to launch within a month, a short term, not renewable standardized health product to cover COVID-19 related hospitalization costs.

Group Discussed challenges related to data availability, product construct, Actuarial pricing and reserving along with other operational challenges keeping in mind the requirements of different stakeholders. The group discussed in detail, assumption setting for claim frequency by covering underlying process to determine infection rate and hospitalization rate. The group then discussed in detail, various drivers for claim severity. The group also highlighted special risks related to COVID-19.

Group discussed considerations related to having a stand-alone COVID product or having a mainstream health product from insurer's and policyholder's perspective.

Group then discussed specific considerations - like family floater discount, possibility of anti-selection, high COVID-19 claim severity, possibility of full burn-out in low SI policy and requirement to protect policyholder's interests - related to family floater option applicable for a special product covering communicable disease like COVID-19.

Module 3 case studies highlight how a communicable disease like COVID-19 can impact 1) evaluation of new non-linked par and non-par (savings and Term) product for an insurer eying rapid growth 2) considerations in benefit restructuring by organizations facing financial difficulties and 3) launch of new standalone Health product covering treatment costs of COVID-19.

Module 3 case studies highlight how a communicable disease like COVID-19 can impact 1) evaluation of new non-linked par and non-par (savings and Term) product for an insurer eying rapid growth 2) considerations in benefit restructuring by organizations facing financial difficulties and 3) launch of new standalone Health product covering treatment costs of COVID-19.

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CALL FOR ARTICLES

Institute of Actuaries of India

We invite articles from the members and non members with subject area being issues related to actuarial field, developments in the field and other related topics which are beneficial for the students of the institute.

The font size of the article ought to be 9.5. Also request you **to mark one or two sentences that represents gist of the article.** We will place it as **'break-out' box** as it will improve readability. Also it will be great help if you can suggest some **pictures that can be used with the article, just to make it attractive.** Articles should be original and not previously published. All the articles published in the magazine are guided by **EDITORIAL POLICY of the Institute.** The guidelines and cut-off date for submitting the articles are available at
http://actuariesindia.org.in/subMenu.aspx?id=106&val=submit_article

34th India Fellowship Webinar Module 4

Date: 30th January 2021; Saturday **Time:** 09:30 - 13:00 IST

Sai D Srinivas, Member, Advisory Group - Professionalism, Ethics & Conduct (AGPEC), Institute of Actuaries of India (IAI) commenced the 34th India Fellowship Webinar (IFW) module 4 as the moderator for Group 7 and Group 8.

Group 7: Life Professional

Guide: Suresh Sindhi

Presenters: Khim Singh Pujari, Satvinder Kharb and Shrey Apurva Shah

In this case study, the team had to act as the Appointed Actuary to a company which was paying negative returns or IRR to matured or maturing participating policies and this was in line with the benefit illustration from the time of sale. Further, there was little surplus in the participating fund and the shareholders have refused to infuse capital. The team had to suggest the way forward i.e. either to continue to paying negative IRRs to maturing policies or to pay a higher amount.

The team started the discussion by exploring what could have gone wrong in either the product design or pricing or in the company performance such that a negative IRR was being provided and if there had been a gap in the sales and marketing practices of the company. They went on to discuss the impact of the available courses of action on various stakeholders such as maturing policyholders, other existing participating policyholders, policyholders whose policies had already matured with a negative IRR and shareholders. They also discussed various investigations that can be undertaken such as quantifying estate, asset share, sources of surplus to gain more insight into the situation.

The team then covered the possible courses of action, including making IRR positive via payment of an ex-gratia amount for matured policies, by paying higher terminal or a special reversionary bonus, making special arrangements with financial institutions or reducing shareholder' share in surplus and concluded the case study by highlighting the importance of meeting Policyholders' Reasonable Expectations (PRE), all professional and regulatory requirements, and consideration of implication of the decision for all stakeholders and clear communication to all off the same.

Group 8: General Professional

Guide: Anirudh Bansal

Presenters: Parmeshwar L Shelke, Piyush Goel and Avnit Anand

In the 2nd case study of the day, the team enacted as a new Appointed Actuary of a mid-size general insurance company which primarily writes property and liability business and the Appointed Actuary has been asked to prepare a business proposal for the company to enter into a space of crop insurance. The Appointed Actuary doesn't have any expertise in the area and has to present this proposal to the management.

The team starts by going over the professional and ethical standards the Appointed Actuary must adhere to in particular those related to adequate knowledge and competency before undertaking any such assignment, as well as technical requirements that may arise if the company were to enter this space. They discussed the communication related guidelines as per professional conduct standards in a situation where the Appointed Actuary is unsure of due course of action.

They then discussed the various courses of action available to the Appointed Actuary in this situation such as refusing the assignment, hiring experts on the matter, market research or approaching a reinsurer with relevant expertise and also the regulatory requirements that the Appointed Actuary will have to fulfill if this business was taken up such as ensuring adequate reinsurance, solvency and adherence to reserving concepts such as IBNR, pricing etc. They concluded by highlighting that in deciding the way forward, the Appointed Actuary must keep in mind all professional and regulatory requirements that he or she is subject to right now and may be subject to later if this new tranche of business is taken up.

Group 9: Life Professional

Guide: Ranabir Ghosh

Presenters: Akhil Jain, Rishi A P R Ranjan, Kanchan Goel and Jaitika Sinha

In The final case study of the day, the team enacted as a

consulting actuary engaged by a private equity investor to undertake the due diligence of a life insurance company. The investigations have found that there are 100+ crores of litigated claims between policyholder and the company and no provisions against these claims have been made by the insurer. Although 70% of the claim amount is reinsured, the reinsurer has rejected the claims and there are differing contract terms between policyholder and insurer as compared to the insurer and reinsurer.

The team suggested discussing the matter with the Appointed Actuary of the company to understand their judgement and interpretation of terms with the reinsurer. They also suggested going through reports such as the peer reviewers report, financial condition report and the auditor's report or annual report to get a better understanding of the matter.

To conclude, they discussed the possible courses of action in both scenarios - 1. If court ruled in favour of policyholders, 2. If court ruled in favour of insurer; both of which involved investigation of claims under litigation, estimating future projected claim pay-out, calculation of provisions to be held by the insurer, impact on value of the company and proper detailed communication of the situation to the private equity firm.

Closing remarks

Vivek Jalan, Member, AGPEC, IAI concluded the seminar by expressing his gratitude towards the IAI team that had worked tirelessly to ensure that the session went seamlessly even in a virtual environment. He also thanked the guides, participants and AGPEC members for their hard work in conducting the session successfully.

Written by

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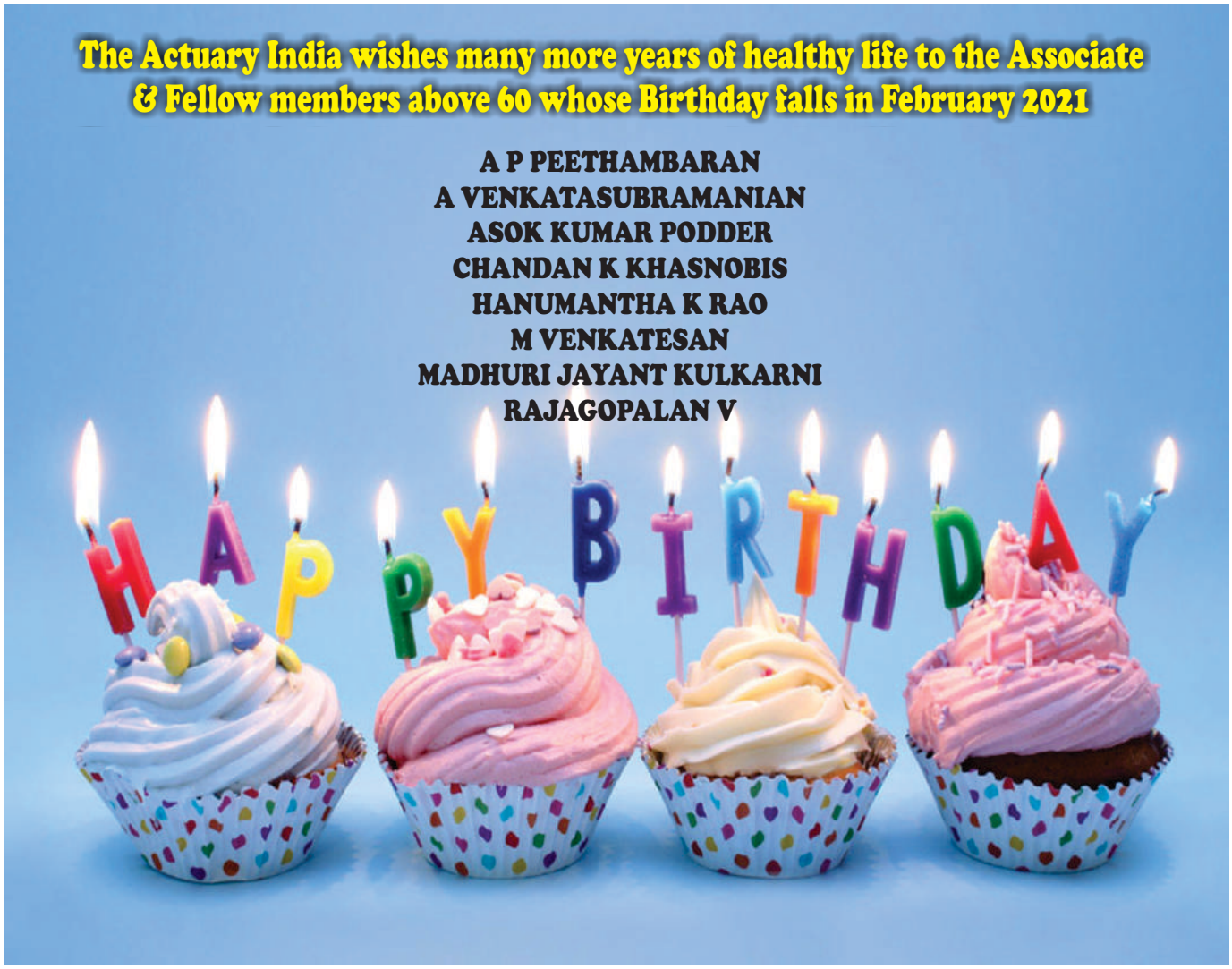


7th Capacity Building Seminar in Retirement Benefits - Online Edition 2021

Date: 5th February 2021; Friday **Time:** 11:00 - 13:15 IST & 15:00 - 17:15 IST

Topic 1: Code on Social Security, 2020;

Topic 2: People Data Analytics - Employee Benefits;

Chair: Kulin Patel, PEBSS Advisory Group

Speakers & Facilitators: Khushwant Pahwa, Arpan Thanawala, Chitra Jayasimha, Kartikey Kandoi, Hemanshu Jain

Introduction

IAI organized a day-long webinar on Capacity Building Seminar in Retirement Benefits (7th CBRB) on 5th February, 2021. This session is usually organized annually as a full day event in Gurgaon, Haryana. To maintain the traditional flavor of the CBRB, this session was conducted using additional audience participation tools such as virtual breakout rooms and group exercises. Kulin Patel addressed the participants and set the context of the webinar by explaining that it is divided into two sessions. Session 1 covers Code on Social Security and its impact of actuarial valuations. He set the context by explaining that the impending code impacts the corporate clients in many ways and it's a critical area which actuarial community should be familiar with while working on year end valuation. The session intends to discuss various interpretation of the Code; its implication on clients and how it can be implemented.

Session 2 intends to cover data analytics opportunities in employee benefits and is an adapted and modified version what was planned for last year's session. Data analytics is an opportunity for those privileged to work on employee data. Lot of insights could be derived from it which could add value to our clients.

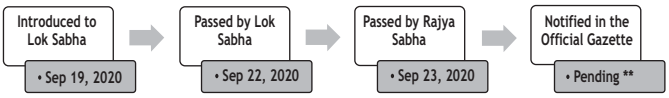
Session 1:

Introduction:

Labour falls under the concurrent list of the constitution which means both parliament and state legislative assembly can regulate labour. There were over 100 state labour laws and 40 centrals labour laws which made governance around this area very complicated. With the objective of simplifying and consolidating some of the laws the government came out with the proposal to introduce four bills to consolidate 29 laws under major theme of (i) Wages, (ii) Industrial Relations, (iii) Social Security and (iv) Occupational Safety, Health and Working Conditions. The first, Code on Wages received ascent of Parliament in 2019. The Code on Social Security received ascent of Parliament in 2020. These bills are not yet not notified i.e., implemented as of February 5th 2021.

Code on Social Security - Journey so far

It was passed by Rajya Sabha by Sep 23, 2020. However, the notification in the official Gazette is pending. It is expected that the government intends to implement / notify the Code of Social Security, 2020 and other labour codes from April 1, 2021.



The Code on Social Security subsumes following 9 existing laws:

1. The payment of Gratuity Act, 1972
2. The Employee's Provident Fund and Miscellaneous Provisions Act, 1952
3. The Employees' State Insurance Act, 1948
4. The Employees' Compensation Act, 1923
5. The Employment Exchanges (Compulsory Notification of Vacancies) Act, 1959
6. The Maternity Benefit Act, 1961
7. The Cine Workers Welfare Fund Act, 1981
8. The Building and Other Construction Workers' Welfare Cess Act, 1996
9. The Unorganized Workers Social Security Act, 2008

The first two laws are more important from actuarial perspective. One of the important things to note is that, this code is not just consolidating the above laws but also about expanding the overall governance in the area of social security and seek to extend its influence on unorganized sector as well.

Key changes impacting actuarial Valuations:

Following are the changes which impacts actuarial valuations of employee benefits:

- Change in definition of wages - under section 2 (88)
- Change in vesting criteria for fixed term employment - currently 5 years
- Change in vesting criteria for journalists

Definition of Wages:

Currently, gratuity is paid based on a qualifying wage which is defined as basic pay and dearness allowance; and there is no minimum limit on what proportion of total compensation should these elements constitute. Under the New code on Social security, the qualifying wage is defined more inclusively. That is, the code defines what needs to be included and what is not included and if a component of the compensation is not explicitly defined in the "do not include" list, it is by default considered as part of the qualifying wage definition. In fact, variable bonus that is paid at the end of the year needs to be included in the qualifying wage. Also, the new definition has a minimum limit which imply that the qualifying wages will be at least 50% of total compensation.

New Definition

Qualifying wages means **all remuneration**, whether by way of **salaries, allowances or otherwise**, and **includes**, -

(a)basic pay;
(b) dearness allowance; and
(c) retaining allowance, if any,

But **does not include:**

(a) any bonus payable under any law
(b) the value of any house-accommodation
(c) contribution to any pension or PF plus interest accrued
(d) conveyance allowance
(e) sum paid to defray special expense
(f) house rent allowance;
(g) any award or settlement under order of a court/ Tribunal
(h) overtime allowance;
(i) commission payable to the employee;
(j) any gratuity payable on the termination of employment
(k) any retrenchment compensation or other retirement benefit payable

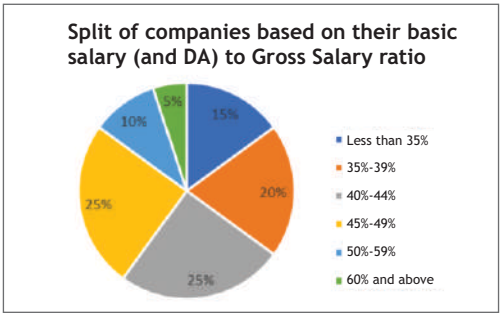
Fig 2

Implication of change in definition of wages:

To qualify the impact of change, the speaker collected data from his clients and analyzed the basic salary (and DA) to CTC (cost to company i.e. gross salary) ratio. About one-third companies are sitting below 40% of basic to CTC ratio. Under the new law, these companies will see an increase in the qualifying wage by at least 25%. To illustrate, if a company's basic to CTC is 40% and it increases to 50%, we see a jump of 10 basis point which is 25% increase in the qualifying wage.

Also, the companies for which the current ratio is more than 50%, given the inclusive definition of the wages, there is likely to be some impact.

For indexed companies from Nifty 50, reported liability for gratuity were pulled out and the total is around 70,000 crores. It is expected that there will be incremental liability in tune of ₹ 15,000-20,000 crores that needs to be recognized for the gratuity. This is one of the major impacts that needs to considered when the code gets notified.



Implication of change from actuarial perspective:

The "applicable wages" considered in the gratuity calculation is expected to increase which shall result in one-off increase in gratuity liability. Also, it will increase the year-on-year cost which will be reflected as increase in service cost. How the one-off increase in gratuity liability should be reported in the accounting books will be debated in the upcoming breakout sessions.

Apart from impact of gratuity liability, it is expected that liability might also be impacted for non-statutory benefits like earned leave/leave encashment. Generally, such benefits are based on basic salary and not gross salary. If the companies decide to restructure their compensation package by increasing basic salary to 50% of the gross salary, it will directly increase the wage definition of these benefits and thus a direct increase in the value of these liabilities. However, the extent of impact on these liabilities will differ from company to company based on company's leave policy and the requirements of the Shops and establishment Acts of the state(s) in which the company operates.

Fixed Term Employment: Vesting Criteria to not apply

The code removed the minimum service requirement for fixed term employees. Under this code, the gratuity pay-outs will be made upon the expiry of the fixed term, irrespective of whether 5 years have been completed or not. This is expected to result in increase in gratuity liability for companies that offer fixed term employment. This increase shall be treated as Past service cost and charged to income statement either immediately or over a period of time (depending upon the applicable accounting standard).

Vesting for Journalists: Reduced to 3 years from 5

Currently, for all professionals, the minimum service

requirement to be eligible for gratuity is of 5 years. Under the new code, the requirement is relaxed to 3 years for journalists. From actuarial perspective, this shall mean that while preparing results for companies that employ journalists, the analyst needs to collect data that segregates journalists and non-journalists. Again, the increase shall be treated as Past service cost and charged to income statement either immediately or over a period of time (depending upon the applicable accounting standard).

Breakout Discussion:

At this point, participants were divided into nine groups and during discussion period each participant was automatically transitioned to their allocated breakout room. Each group includes 8-9 members and is a mix of fellows, associates, students and others and includes a core-practitioner. There were three broad themes with three groups discussing the same topic in their respective breakout room. A pre-read material was provided to the participants which included a set of questions that were to be discussed with the group members during the breakout sessions. A speaker was chosen in each group who had to collate all the points of the discussion and present them in the main conference room later in the webinar. It was instructed to present all the views and counter views to the entire group. To facilitate the discussion, Arpan rotated between Room 1-3 supported by Kartikey, Khushwant rotated between room 4-6 supported by Chitra and Kulin Patel rotated between room 7-9 supported by Hemanshu.

The following questions were discussed:

(Group 1-3)

1. Based on your interpretation of definition of Wages, which of the components for the given package will be considered in determining the 'Wages' for the purposes of determining contribution to PF and Gratuity? Explain giving reasons for each component.

2. Based on your interpretation of the definition of Wages, suggest the components to be considered in determining 'total remuneration' when assessing whether or not the total of Clauses (a) to (i) exceeds 50%

3. Based on your interpretation of the definition of Wages, whether variable / non statutory bonuses is to be considered in determining the 'Wages' for the purposes of determining contribution to Provident Fund and Gratuity?

4. What impact may the potential inclusion of variable/non-statutory bonuses on the precise monthly/yearly wages to use? What may that mean for companies in their valuation of long term employee benefits?

Overall, what is the impact expected of definition of Wages on Gratuity Liability, PF Contribution and take home salaries of employees?

Group 4-6

1. How will the impact on gratuity liability due to implementation of the definition of Wages be treated in Accounting? Will it be routed through Income Statement (as past service cost) or Other Comprehensive Income (OCI)? - What is your rationale?

2. What actuarial process considerations will practitioners need to bear in mind when doing the first such valuation?
   A. For data requests, reliances and checks
   B. Any impact on assumptions
   C. Other

3. Given the effective date is not yet notified, and we are embarking on 31 March 2021 year end work, how should March 2021 year end valuations allow for these changes differently depending on when such notifications / effective dates become known? In particular: If the notification date is 1 April 2021, will the impact be taken in FY2021-22 or will the auditors insist that it being a "known event" or an ""Event Occurring after the Balance Sheet date but before finalization of accounts"" the impact is to be considered in FY2020-21?

	Salary Head	Campensation Structure (in INR, p.a.)
1	Base Pay	420,000
2	House Rent Allowance	273,000
3	Medical Reimbursement	15,000
4	Leave Travel Allowance	37,000
5	Conveyance Allowance	120,000
6	Sodexo Meal Vouchers / Meal Allowance	24,000
7	Telephone reimbursement	18,000
8	Supplementary Allowance	222,408
9	Leave Travel Concession (reimbursement)	50,000
10	Provident Fund (Employer's Contribution @ 12% of Basic Pay)	50,400
11	Gratuity provision (Monthly Basic Pay * 15/26)	20,192
	Total Fixed Pay	1,250,000
12	Variable Bonus (can vary from 0% to 100% and depends on various factors, including the Company and individual performance)	300,000
	Total CTC (including variable)	1,550,000

Group 7-9

1. Impact on non-statutory benefits: Definition of Wages is likely to result in impact on non-statutory benefits also (e.g. leave encashment, pension etc.) as the level of basic salary within CTC may change. How can an organization manage and minimize impact on such benefits?

2. Impact on PF Contribution: Based on your understanding of the Code on Social Security, is the ceiling of ₹ 15,000 of Wages for PF contribution continue to apply under the new law? Please quote

relevant section / rule in answering your question. Also, if the same is applicable, does the definition of Wages really have any impact on the PF contributions?

3. Fixed Term Employment: Given the definition of Fixed Term Employment given in the Code on Social Security, 2020, please explain how will you practically differentiate between a Consultant, a Retainer and a Fixed Term Employee. Also, who all of the three will be entitled to gratuity and other benefits under the Act. And what is the minimum period of service after which gratuity will be payable to a fixed term employee (6 months or one year)?

After the discussion, each group presented the views of their group.

Post discussion remarks:

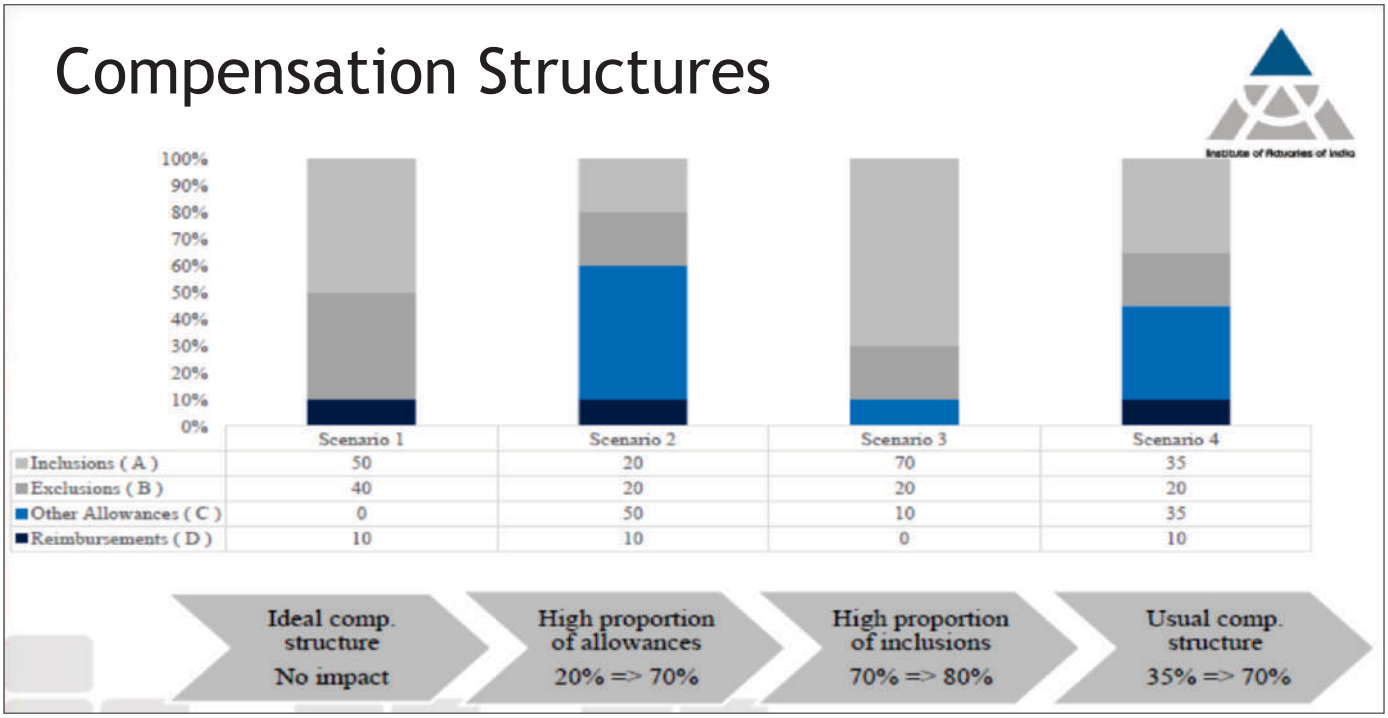
Arpan concluded the session by sharing his view on the implication of the code.

A) Changes in wages definition: It is inclusive and more comprehensive.
B) Mandatory funding requirement the code introduces mandatory funding requirement. It is similar to provision in The Payment of gratuity act 1972 which was inserted in 1989 but was never notified/implemented. It remains to be seen if government will implement it with the Social security code. Therefore, it is probably a clause that needs to be proactively monitored.
C) Fixed Term Contract Employees: For employers who employee fixed term employees for less than 5 year of service are likely to be impacted. There could be direct or indirect (via third party provider) fixed term contracts. While under direct contracts, the employer will see an impact of change in gratuity liability, under indirect cost, it is third party provider who will bear the cost. However, it remains to be seen if the principal employer will compensate the third-party provider for the increase in cost.

Arpan then highlighted that there is no clarity if reimbursements would be considered as part of qualifying wage or not.

He also demonstrated the impact of the change in wage definition for different compensation structure. Under scenario 1, where inclusions, as defined under new law, are 50% of the total component and there no other allowances, no impact is expected. Scenario 2 and 3 are extreme cases.

Under scenario 2, basic is very small proportion of the entire compensation structure. But other allowances account for 50%. Qualifying wage would move from 20% to 70%. Under scenario 3, while inclusions are high, there is 10% income under other allowance which is not included in current definition. Here qualifying wage would increase from 70% to 80%. Under scenario 4, where most of the clients are expected to be currently, only 35% of total compensation is part of qualifying wage as per current law. It is expected to increase to 70%.



	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Inclusions (A)	50	20	70	35
Exclusions (B)	40	20	20	20
Other Allowances (C)	0	50	10	35
Reimbursements (D)	10	10	0	10

Inclusions: Basic, Dearness Allowance, Retaining Allowance
Exclusions: HRA, Overtime, Commission, Bonuses
Other Allowance: Supplementary / Special Allowance
Reimbursement: Reimbursements for travel, meals etc.

He concluded that following are expected to be impacted most

- Basic salary is low as % of total remuneration
- Large proportion of employees with high past service
- Companies providing gratuity benefits without ceiling
- Companies having a higher accrual rate than prescribed under the gratuity act
- Large proportion of FTC employees
- Companies with unfunded gratuity plans

Implication of the Code

- Large P&L for employers
- Restructuring of compensation packages
- Increased administrative workload for calculating gratuity
- Employers may move towards minimum statutory benefit
- More employees are likely to hit the ceiling of 20 lakhs
- Employees' take-home salary will reduce
- Employers may cut-down on other non-statutory benefits
- Employees' who leave employment in less than 5 year of service will loose more benefits under gratuity benefits

Open Issues:

- Clarify on what is included/excluded as per new wages definitions e.g. ESOP. Otherwise, there could be multiple interpretations or scope of litigations.
- Will the new wages definition be extended to leave encashments?
- Assuming notification date of 1 April 2021, will the impact be taken in FY 2020-21
- Confirmation that wages ceiling limit of INR 15,000 will continue for PF
- Notification date for mandatory funding?
- Minimum funding rules for mandatory funding?
- Transition arrangements for funding of gratuity benefits?

People Data Analytics- Employee Benefits

Session 2:

Introduction

The second session of the capacity building webinar highlighted the importance of people's data in the world of actuaries. The objective of the session was to discuss the ways to leverage data used for actuarial analysis for more sophisticated data analytics, to help our clients to arrive at data driven solutions.

Hemanshu Jain kicked off the discussion highlighting the role of data in laying foundation of actuarial work, the types of data and the possibilities of extending the area of data analysis. Furthermore, he explained the role of data discussed in APS 27, concerning the actuarial work.

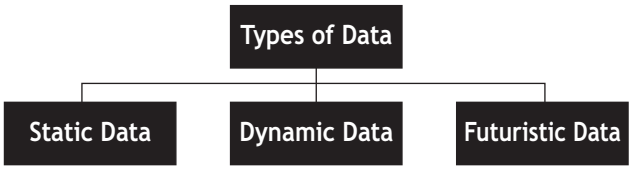
Chitra Jaisimha provided three case studies based on different scenarios within employee benefit schemes. The participants were grouped into nine breakout rooms, within which each group brainstormed on one of the scenarios for 45 minutes. One representative from each group then presented their views and ideas to the participants.

Kartikey Kandoi interacted with the group representatives and concluded the session with his viewpoints and remarks.

Role of data

Data plays a crucial role in performing the actuarial analysis. Based on historical data, actuaries can help clients in identifying trends, resulting in accurate estimation of various actuarial assumptions like salary growth rate, attrition rate, pension inflation rate, etc.

The data required to perform an actuarial valuation can be divided broadly into three categories:



Static Data is the data that do not change over period. For example- employee's birth date, joining date, name of an employee, etc.

Dynamic Data is the data that varies with time and needs to be updated at the time of valuation. For example- employee's salary, leave balances, etc.

Futuristic Data is the estimated data based on historical trends.

Actuaries can analyze historical data using various techniques and enable clients in determining and validating actuarial assumptions. The data received can also be combined into various homogeneous groups like companies in similar sectors or industry to facilitate broader analysis.

Actuary and Employee Benefits Data: APS 27

APS 27 highlights the responsibility of an Actuary related to data handling whilst performing an actuarial valuation work. The standard states the following-

- Member must indicate what information is required.
- Actuary must indicate the reason for requiring such information.
- There may be specific information required for certain type of employee benefits for the core data input.

- There may be information required to provide advice on appropriate assumptions to be recommended.
- Actuary may place reliance on information received from a third party.
- The information relied upon, its source and the extent of the checks applied by the Actuary must be disclosed in the report.

Broadly, following data requirements may arise based on the scope of work-

- Employee level information such as dates of birth, joining dates, salary information, employee category, etc.
- Benefit plan information such as governing plan documentation, HR policies or practices or employee communications.
- Information to analyze trends in the development of assumption recommendations.
- Asset information where it is required to be included in the reports.
- The data sought for any exercise shall include information about any relevant practice concerning the discretionary benefits. Relevant practices may include previous grants of discretionary benefits, and any existing policy regarding the exercise of discretion.

Breakout Discussions

The webinar included a brainstorming session for all the participants by creating multiple breakout rooms. The idea here was to have an interactive session wherein all the participants were given an opportunity to contribute to the discussion and share their views. The participants were grouped into nine breakout rooms, with each group having 8-9 members. The rooms had a mix of fellows associates, students, and a core-practitioner.

The discussion was conducted on three different case studies based on employee benefit schemes like gratuity, leave and post-retirement medical scheme. The case studies constituting a problem statement and the supporting data were shared with the participants by the Institute a day before.

Below is the summary of three case studies that were discussed during the breakout session-

Case Study 1 -Gratuity Data
(Assigned to Room 1, 2 and 3)

- Scheme- Company's gratuity scheme with no upper cap
- 6 years of data for period 2015-2020
- Key assumptions

Tasks-
- Perform Trend analysis
- Assumption analysis for reasonableness of assumptions
- Impact of change in salary due to Social Security Code
- Approximate cost saving if Benefit formula changed
- Key steps while performing valuation as per revised scheme

Case Study 2 -Leave Data
(Assigned to Room 4, 5 and 6)

- Scheme- 24 days annual entitlement, maximum accumulation is 90 days, 10 days carry forward, encashment only up to 45 days on basic at the time of separation and retirement, month is assumed to be 30 days
- 4 years of data for period 2016-2019
- Key assumptions

Tasks-
- Perform Trend analysis
- Rework on assumptions including those specific to leave for suggesting to the employer
- Any suggestions on design changes to reduce cost
- Impact of Social Security code

Case Study 3 -Post Retiree Medical Scheme (PRMS)
(Assigned to Room 7, 8 and 9)

- Benefits- Hospitalization, Domiciliary, Life Insurance benefit
- 4 years of data for period 2016 2019
- Detailed rules and assumptions provided along with worksheet
- First time valuation for scheme with task for the group to:
  - Discuss different assumptions needed for valuation
  - Use data to share recommendations for few assumptions

Each group was given 45 minutes to brainstorm the tasks allocated and to prepare a note for a short presentation post the discussion. The speakers facilitated the discussions happening in their allocated rooms by periodic check-ins to ensure the group progresses around the topic.

A spokesperson from each group collated the views of that group and shared the summary with all the participants post breakout session. Below are the key takeaways of the discussion-

Room 1, 2 and 3

The key task for rooms 1-3 were to ascertain the reason for significant movement in other comprehensive income (OCI) year on year for gratuity scheme of the company. Additionally, the impact of Code of Social Security on the gratuity liability needs to be accessed, along with the ways to optimize the same. The key highlights of the discussions are as follows-

- The groups ascertained the salary growth rate and attrition are assumptions using the available past data. It was observed that the company's experience was significantly different as compared to the assumptions adopted. The gap between the assumptions and actual experience was resulting in significant OCI movement.
- The other reason suggested for movement in OCI was the change in discount rate assumption year on year. However, there was no data to support this argument.
- For code of social security, the groups brainstormed on the revised definition of the qualifying wage as per the salary components given in the data. An approximate impact due to the change in the salary was also discussed by each representative.
- The company's gratuity scheme was with a higher

benefit as compared to the Payment of Gratuity Act without any maximum cap. Therefore, the impact of change in applicable salary had a significant incremental impact on the liability. To combat the same, the groups suggested change in the scheme benefit and revisiting the actuarial assumptions like salary growth rate and attrition rate.

- The salary growth rate was suggested varying by year of projection i.e., a low salary increase rate for initial few years considering the impact of COVID and then taking a long-term view for further years.
- For change in the benefit structure, it was mentioned that the company does not want to change the past benefit, hence, it was suggested to bring the future accrual of the benefit as per the revised scheme which will help in liability optimization.

Room 4, 5 and 6

The key tasks for room 4-6 were to perform assumption analysis for leave benefit using the past data, to suggest options for liability optimization and carrying out an impact analysis on leave valuation considering the implementation of Code of Social Security.

The key findings of the room were as follows-

- The trend analysis covered the assumptions like salary growth rate for applicable encashment salary and CTC salary, availment rate and attrition rate. Here, each group suggested the percentages as per their calculations using the historic data. It was suggested to have different assumption based on employee's age and location.
- Revisiting the assumptions like salary growth rate and availment rate was one of the suggestions for achieving the liability optimization.
- Other suggestion for liability optimization was to revisit the leave policy in line with the applicable Shop's and Establishment Act.

Room 7, 8 and 9

The key task for rooms 7-9 was to evaluate the assumptions required for a PRMS scheme and back up the assumptions using the provided data. The key highlights of the discussion are-

The assumptions to be considered were divided between financial and demographic. The suggested demographic assumptions were-

- Mortality rate assumption- different mortality tables were suggested for a pre-retirement (which covers active members) and post-retirement scenario (which covers retirees or dependents). Due to the long-term nature of the plan, incorporating some mortality improvements were also suggested.
- Spouse age gap- between 3 to 5 years which was also validated using the data.
- Percentage of employees opting for spouse benefit- to be aligned with past trend.
- Attrition rate- recommendations were given to have service-linked or age-linked attrition rate rather than a flat rate.
- Rate of voluntary retirement or early retirement and percentage of members opting for life cover- should be based on company's experience.

The suggested financial assumptions were-

- Discount rate- the approach of determining the same should be based on the expected life expectancy of the organization, unlike for gratuity or leave encashment benefit, where the expected future working life is considered.
- Premium Inflation rate- salary growth rate given in the data seems irrelevant as the benefit was not salary dependent. The more appropriate assumption was to have a premium inflation rate. It was also suggested to have a different cost inflation rate for domiciliary and hospitalization benefit, which was validated using the given data.

The breakout session was concluded with the panel's comments on the summaries of all the case studies.

Closing Remarks

Both the sessions covered under the webinar were concerning the latest developments around the area of employee benefits. With the Code of Social Security likely to be implemented soon, this platform facilitated all the participants with an understanding of expected changes and the likely impact.

The webinar was concluded with vote of thanks from Kulin Patel on behalf of Advisory Group on Pensions, Other Employee Benefits and Social Securities. Lastly, the organizing committee expressed gratitude towards the speakers and announced planation of trees on their behalf.

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Surfing the wave of India's Social Security Code, 2020

Legislative changes often have a profound impact on employee benefit liabilities. The recognition of higher liabilities from legislative changes is an issue this article contends with.

The Social Security Code, 2020 (SSC 2020) received the presidential assent on September 28, 2020 but at the time of this writing, its effective date is yet to be notified. The SSC 2020 consolidates nine employee benefits' laws (e.g., provident fund, employee state insurance, gratuity, etc.) into a single legislation. It was formulated to address the issues of non-standard definitions of various items such as wages, employee, etc., exclusion of fixed term employees from the existing gratuity, recognising the need of providing social security to the gig economy workers, modernizing the labour regulations and digitising of records, among others.

The SSC 2020's introduction has engaged employers, professional bodies, employees' unions, and consultants in a multi-dimensional dialog on interpretation, effective date and impact on employer obligation and employee benefits. Among the important changes in respect of the statutory benefits embodied in the SSC 2020, the discussion focuses on the increase in employer obligation and its appropriate recognition due to the new definition of 'wages'.

The new definition of "Wages"

Wages are used to determine a statutory benefit and previously varied across the various acts. The Payment of Gratuity Act (PoGA), amended 2018 and the Employees' Provident Fund (PF) and Miscellaneous Provisions Act, 1952 stated that the 'wages' to be used to determine benefits (PoGA) and contributions (PF) would include 'basic + dearness allowance (DA)' and 'basic + DA + retaining allowance (RA)' respectively.

SSC 2020 defines wages, under Chapter I, Section 2 (88), as "**all remuneration,** *whether by way of salaries, allowances or otherwise, expressed in terms of money or capable of being so expressed which would, if the terms of employment, express or implied, were fulfilled, be payable to a person employed in respect of his employment or of work done in such employment.*" This is a three-pronged definition as shown in Table 1 below:

Includes	Excludes	Additional Condition
a) Basic pay, b) DA, and c) RA, if any.	(a) any bonus payable which does not form part of the remuneration payable; (b) Any house-accommodation, or of the supply of light, water, (c) medical attendance/ other amenity or of any service excluded from wages by a general or special order of the Government; (d) any contribution paid by the employer to any pension or PF, and any interest accrued; (e) any conveyance allowance/ any travelling concession; (f) any sum paid to defray special expenses entailed due to the nature of his employment; (g) house rent allowance; (h) remuneration payable under any award or settlement between the parties or order of a court or Tribunal; (i) any overtime allowance; (j) any commission payable to the employee; (k) any gratuity payable; any retrenchment compensation or other retirement benefit payable, or any ex-gratia payment.	if the payments made to the employee toward the exclusions (a) to (i) exceed 50% of the total remuneration, then the part that exceeds such a percent shall be considered as wages.

Table 1 : SSC 2020's definition of 'wages'

Hence, employers would need to examine the salary components of what constitutes 'wages' within the three parts: a) included items, b) excluded items, and c) the additional condition.

This definition of wages is also inclusive in nature, therefore, any salary head not "explicitly excluded" will get added to 'wages' for the purpose of statutory benefit calculations. For example, if a "grade allowance" - not listed in the list of exclusions - is a part of salary, it would be added to the 'wages.'

Example: Impact of a change in the definition

A monthly salary structure:	Basic	HRA	Grade Allowance	Commissions	Variable Bonus	Total
Amounts in ₹	100,000	25,000	50,000	30,000	100,000	305,500

Wages under PoGA	*Wages under SSC 2020*
Gratuity would be calculated on the basic pay of ₹ 100,000.	Variable (and hence uncertain) bonus would be excluded from the "total remuneration" calculation. The HRA and commission are excluded by the definition of wages and represent (₹ 25,000 + ₹ 30,000)/ (₹ 100,000 + ₹ 25,000 + ₹ 50,000 + ₹ 30,000) = 27% of total remuneration. The excluded components do not exceed the 50% threshold of remuneration. However, as the grade allowance is not specifically excluded, by the inclusive nature of the definition of wages, it will be 'included' in wages. Gratuity would be calculated on the 'Basic + Grade Allowance' i.e., ₹ 100,000 + ₹ 50,000 = ₹ 150,000. **Gratuity payable has increased by 50% and so the liability will rise by 50%.**

A precedent in regulatory changes

A previous situation around a regulatory change was examined to appreciate how the effect of regulatory changes on a plan's defined benefit obligation (DBO) are measured and recognised. In 2018, in Lloyds Banking Group Pensions Trustees Limited vs. Lloyds Bank plc and Others, the UK High Court required Lloyds Bank Plc to equalize benefits payable to men and women. The inequalities were due to statutory differences in the retirement ages and rates of accrual of benefits for men and women related to Guaranteed Minimum Pension (GMP) benefits in the U.K. defined benefit pension plans. This ruling affected every plan differently depending on a plan's existing benefit structure. Under the US GAAP ASC 715, defined benefit pension plan changes (including changes attributable to legislation or court rulings) that result in a retroactive increase or decrease in benefit levels for plan participants are recognised as "Prior service cost." There were also instances under IAS 19 (revised 2011) where companies that allowed for the equalisation in some form before the court ruling could recognise any subsequent impact under "Other comprehensive income."

Increased liability in P&L or OCI?

Due to the revised definition of wages, the SSC 2020's application would likely lead to higher 'final salary' benefits payable e.g., gratuity and pension. Employer liabilities toward such 'final salary' defined benefit plans would need to be measured and recognised in the financial statements. The emerging point of contention - and with perhaps no clear consensus - is whether to recognise the increased liability due to the SSC 2020's changes to the 'wages' definition as either a) Past Service Cost (PSC) i.e., recognised in the Profit and Loss Account (P&L), or as b) 'Remeasurements' i.e., recognised under Other Comprehensive Income (OCI) in the Balance Sheet.

The PSC represents changes in the present value of the defined benefit obligation due to the introduction, amendment or curtailment of the defined benefit plan, or changes to the benefits payable under the defined benefit plan (paragraphs 8 and 129, Ind AS 19). The following scenarios are explicitly stated as not constituting PSC (paragraph 108, Ind AS 19):

a) if the actual salary hike is different than that assumed as assumptions allow for projected salaries,
b) underestimates and overestimates of discretionary pension increases when an entity has a constructive obligation to grant such increases,
c) in the absence of new or improved benefits, employees complete vesting requirements which gets recognised as current service cost as the service was being rendered,
d) the entity is obliged, by either the formal terms of a plan (or a constructive obligation that goes beyond those terms) or legislation, to use any surplus in the plan for the benefit of plan participants, then there is no past service cost because the resulting increase in the obligation is an actuarial loss.

The change in DBO due to SSC 2020 is not an employer's constructive obligation, but a mandatory commitment; hence it could be strongly argued to fit within 'an amendment to the original definition of wages.'

The counter-argument is to treat the SSC 2020-driven liability rise as re-measurements i.e., recognised as OCI. For this purpose, it would be appropriate to understand the OCI's genesis. The concept of OCI was introduced by the International Accounting Standard Board (IASB) in 2009 as fair value accounting led to volatility in the reported earnings. Income and expenses are recognised either in the P&L or the OCI. The P&L is the primary source of information about an entity's financial performance which is tracked by market analysts. The IFRS has a 'true and fair' disposition in its underlying principles. This means that the balance sheet has to give a true and fair view of the affairs of the company and failure to comply with that exposes the company and its auditors to misfeasance and professional misconduct. This means that if any information that is not included in the P&L, distorts the financial results, then such financial information should certainly not be left out. This makes a definitive point in the PSC vs OCI argument that regulatory changes which affect future cashflows of the company and thus are informative of the firm's financial performance.

Only large, volatile and unrealized revenue is charged to or appropriated from OCI because it is expected that either the uncertainty will 'even out' over long periods or that the asset or liability variation should not be recognized as reported earnings, unless realized.

An illustrative list of OCI items reads:

I. Unrealized gains and losses on available-for-sale securities
ii. Gains and losses on derivatives held as cash flow hedges (only for effective portions)
iii. Gains and losses resulting from translating the financial statements of foreign subsidiaries
iv. Actuarial gains and losses on post-employment defined benefit plans recognized
v. Changes in the revaluation surplus
vi. Gains and losses due to remeasurement of investments in equity/ debt instruments
vii. Gains and losses due to shadow accounting
viii. The effect of the time value of money and effect of financial risk

As seen from the above list, all items that are recognized in the OCI stem from revaluation or remeasurements of an economic item which are due to forces largely out of the reporting entity's control.

The change in 'wages' considered for gratuity/ pension benefits due to SSC 2020 is clearly a permanent one (also strengthened by paragraph 129, Ind AS 19) that is mandated by legislation and not set out in the original terms of the plan. It is also a one-time event that will never even or cancel itself out over future reporting periods. Hence, this situation does not adhere to the spirit of OCI and in turn should not be recognised as an actuarial loss or re-measurement of the DBO.

Other considerations

One could argue that companies who increase the 'basic + DA' to meet the '50% of fixed salary' criterion do not change the original terms of the defined benefit plan and so the liability increase should be recognised as an actuarial loss or re-measurement. For companies which will add components other than basic + DA to comply with SSC 2020, the definition of wages will change from the original terms set out in the PoGA, hence the impact of increase in liability should be shown as past service cost and not actuarial gain or loss. But should there be two different treatments of a universal regulatory change?

Another argument would be that some part of the basic salary would have increased anyway, i.e., notwithstanding SSC 2020, and hence the effect on DBO attributable to such “non-obstante” change should be recognised as an actuarial gain or loss. On the other hand, the salary rise driven by SSC 2020 does not fall within the merit- and inflation-linked rise that gets subsumed in the assumption-setting of an actuarial valuation.

The onus should hence be on employers to split the salary rise into two components:

a) General salary hike granted i.e., merit- and inflation-linked, and
b) Salary increase to comply with the SSC 2020.

The effect of (a) above would be recognised as an actuarial gain or loss/ re-measurements and the effect of (b) as Past Service Cost. The pace of recognition will depend on the applicable accounting standard.

Impact on the FY 2020-21 financial statements

If SSC 2020 gets notified before the company's adoption of the financial accounts, then it would qualify as an "adjusting event" leading to the measurement and recognition of the higher liability or past service cost as on the balance sheet date viz. March 31, 2021. But, if the regulation is notified after the date of adopting the financial accounts, then entities would not have to incorporate the impact in the FY 2021-21 financial statements. A greater interaction between the stakeholders, especially the management and its auditors, would be required to build a consensus.

Conclusion

The SSC 2020 is a revolutionary change in the Indian labour laws aimed at easing compliance and expanding the benefit coverages to previously excluded groups. Employers will need to understand the changes and accordingly take actions for compliance. The main change to the definition of wages would lead to increased employee benefit liabilities toward statutory benefits such as gratuity and increased contributions to the Employees' Provident Fund.

The increase in liabilities due to change in definition of wages is likely to be recognised as a Past Service Cost that is, a charge to the earnings and which cannot be recognised in the statement of other comprehensive income. While further information on detailed rules and the effective date of the new SSC 2020 is awaited, the likely impact of the measurement and recognition on an employer's financial statements could still be directionally comprehended.

Disclaimer

The opinions stated in this paper are of the authors and do not represent those of their employer. Further, the opinions are based on the information available till the date of this writing. More rules notified in the future need to be considered before reproducing any part of this article for alternative uses.

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An application of the Merton - KMV Credit Risk Model for India

Projects related to Risk Management
With an objective and focus to enhance the skill sets of actuarial students and members of the Institute of Actuaries of India (IAI) in the area of risk management, the Advisory Group on Risk Management (AGRM) had invited expression of interest for below set of projects in the last year.

1. Credit Risk
2. Application of risk management in Retirement Benefits
3. Catastrophic risk modelling
4. Application of risk management techniques in Management of Annuities

Under the leadership of President and Chairperson AGRM, all the four projects were initiated successfully, with support from Mentors (volunteers) coaching and working with the teams.

As a part of this initiative - the first project is completed, and the findings are shared with you. The credit risk project was mentored by Mr. Amruth Krishnan and the team members are Kumar Sudheer Raj, Vardhan Chheda and Siddhi Kharkia.

Here is the article which shows that this project will help further develop the actuarial profession's understanding of credit risks, various measurement models available and suggest a direction and approach for effective risk management in this area.

Abstract
Credit Risk measurement is an area of great and renewed interest for both academicians and practitioners. Credit Risk modeling for Indian companies is quite topical given the heightened focus including recent guidelines issued by the Central Bank of India (RBI) to tighten the norms of NBFCs and the default by Infrastructure Leasing and Financial Services Ltd (ILFS) in 2018. In this article, we model the default probabilities of seven Indian companies under the Merton – KMV framework. From our sample study, we found out firms that have defaulted had worse financial metrics. Our empirical analysis captures these findings & reasonably confirms that financial metrics affect the credit risk of the firm. We also compared these results with the Altman Z-Score model to incorporate an alternative approach.

Keywords: Merton KMV, Altman Z Score, Credit Risk Modeling, Default Probability, Asset, Volatility

1. Introduction

The role of actuaries is continuously growing & evolving in newer sectors apart from Insurance & Pensions. One area which has seen a significant focus in recent times is – Credit Risk Modeling. Credit Risk is the uncertainty that a default payment arises when the borrower fails to pay for its debt and meet contractual obligations. Principally it can be seen as a risk to a lender, typically a bank, who may not receive a timely principal and/or interest amount, which can result in a loss. It is for this reason that under the Basel capital norms, banks are required to set aside capital against the loans issued based on the borrower's risk weight and loss given default.

Credit Risk Modeling is done via two approaches, i.e., Structural & Reduced-Form Model. In Structural Models, default is captured based on the capital structure of the firm, while the Reduced-Form model – primarily focuses on creditworthiness & how firms move from one state to another (a continuous-time jump process) as time passes.

The content of this paper is categorized as follows.

Section 2 documents the model.
Section 3 reports an analysis of PD concerning firm balance sheet parameters.
Section 4 summarizes/ concludes our findings, and provides a discussion of their implications. The model development was done using a combination of Excel and R software.

2. The Model

Merton Model
After the work done by the economist Black & Scholes (1973) on the valuation of stocks & corporate bonds,

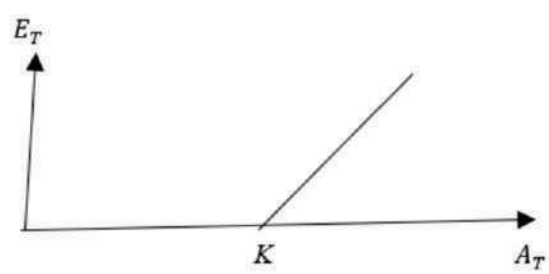
Merton (1974) proposes a simple model of the firm, which provides a way to capture credit risk using the capital structure of the firm. Merton (1974) is a structural model used for default prediction modelling keeping a firm's equity as a call option on its assets. We can now consider the following scenario.

Suppose at time t a company has the following capital structure. i.e., Asset is financed by equity and zero-coupon Debt of face amount K maturing at time T is written as:

$$A_t = E_t + D_t$$

At time $T > t$, there are two possibilities for Shareholder & Bondholder if the value of Asset $A_T > K$: The bondholder receives the full amount K, whereas the balance amount is $A_T - K$ is received by the shareholder. The second possibility is if $A_T < K$: At this time, the firm may default as the value of the assets is below the firm debt value at time T. So, the bondholder receives the value of the Asset A_T whereas the shareholder gets nothing (Hull, Nelken, White, 2004). The pay-off for the European call option maturing in T years' time with strike price K can be expressed as:

$$E_T = \text{Max}\,[A_T - K, 0]$$



1. Pay-off from the equity at debt maturity period T

Principal assumptions of the model -

1. The firm has issued two classes of securities, namely, Equity, and Debt.

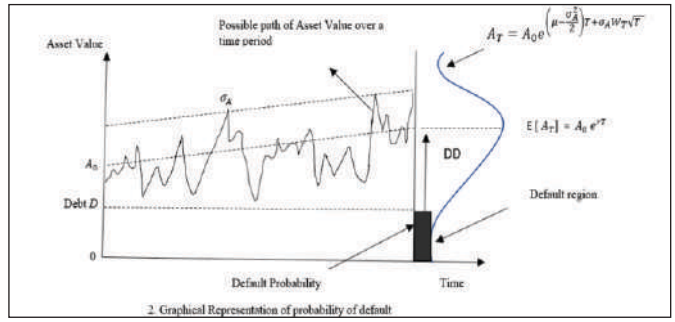
2. The debt is a zero-coupon bond, where the payment is promised at time T.

3. The model assumes that the value of assets follows a geometric Brownian Motion:

$$dA = A(\mu_A\, dt + \sigma_A\, dw) \qquad \ldots (1)$$

Symbol μ_A stands for constant drift and σ_A for constant asset volatility.

dw denotes the standard Brownian motion as shown in the figure below.



2. Graphical Representation of probability of default

Applying the Black- Scholes formula for a European Call option, the value at time t is:

$$E_t = A_t N(d_1) - e^{-rT} K N(d_2) \qquad \ldots (2)$$

N (•) denotes the N (0,1) cumulative standard normal distribution function with the following values of d_1 & d_2.

$$d_1 = \frac{\ln \frac{A}{K} + \left(r + \frac{\sigma_A^2}{2}\right)T}{\sigma_A \sqrt{T}} \qquad \ldots (3)$$

$$d_2 = \frac{\ln \frac{A}{K} + \left(r - \frac{\sigma_A^2}{2}\right)T}{\sigma_A \sqrt{T}} \qquad \ldots (4)$$

E_t = Market value of the firm's equity
A_t = Value of the firm's assets
K = Book liability of the firm due at time T
T = Future time
r = Risk-free interest rate
σ_A = Volatility of the firm's asset value
σ_E = Volatility of the firm's equity

One of the significant problems while trying to implement the Merton Model for debt valuation is the unobservability of the two unknown parameters i.e., Value of the firm's assets & the Volatility of the firm's asset value. The Value of the firm's assets & Volatility of the firm's asset value can be measured from the value of the stock prices of the traded securities issued by the firm. For this purpose, we have taken a publicly listed firm whose equity value can be directly observable.

$$\textit{Value of equity} = \textit{stock price x number of shares}$$

Let E_t denote the present value of the firm's equity & σ_E explains the volatility of the equity (can be calculated using the data on equity prices). Both E_t & σ_E can be used to calculate the estimate of the firm asset value A_t & the volatility of the asset σ_A.

To solve the above quantities, Jones, Mason, and

Rosenfeld (1984) use Ito's formula that establishes the link between asset volatility σ_A & equity volatility σ_E.

Equity is interpreted as a call on the Asset Value:

$$E_t = \text{Call}(t, A_t) \quad \ldots (5)$$

By differentiating on both sides:

$$\partial E_t = \partial Call(t, A_t) \quad \ldots (6)$$

$$\partial E_t = \mu_E E_t \partial t + \sigma_E E_t \partial W_t \quad \ldots (7)$$

- μ_E: Expected continuously compounded return on equity.
- σ_E: Volatility of the equity value
- ∂W_t: Standard Brownian Motion

From Ito's Lemma:

$$\partial \text{ Call } (t, A_t) = (\ldots\ldots)\partial t + \frac{\partial\, call}{\partial A} \sigma_A A_t \partial W_t \quad \ldots (8)$$

From equation (7) & (8) we have

$$\sigma_E E_t = \Delta_{call} \sigma_A A_t \quad \ldots (9)$$

Where $\Delta_{call} = N(d_1)$: the Delta Greek of the call

Now from equations (2) & (9), we can determine the value of A_t, the firm's Asset & its volatility σ_A.

Practical implementation of both Black- Scholes option pricing and the Merton model has received good commercial attention. KMV is one such model that looks like an improved version of the Merton model & differs from it in relatively few aspects. "KMV Corporation has observed from a sample of several hundred companies that firms are generally more likely to default when their asset values reach a certain critical level somewhere between the value of total debt and the value of short-term debt. Therefore, in practice, using D alone as the tail distribution threshold might not be an accurate measure of the actual probability of default. Default Point in the KMV model can be approximately estimated by the sum of Short-Term Debt (STD) and one-half of the Long-Term Debt (LTD).

$$\text{DPT} = \text{STD} + \tfrac{1}{2}\text{ LTD}$$

Distance to Default (DD) is calculated as the distance between the firm's expected asset's value at time T and the Default Point D, (see Figure 2) normalized by the sigma of the future asset returns. DD can be represented as:

$$DD = \frac{\ln \frac{A}{D} + \left(r - \frac{\sigma_A^2}{2}\right) T}{\sigma_A \sqrt{T}} \quad \ldots (10)$$

It should be noted that the above equation represents d_2 of the Black - Scholes option pricing formula. Now the Probability of Default can be calculated as:

$$PD = 1 - N(d_2) = N(-d_2) = N(-DD) \quad \ldots (11)$$

From the above formula, we see that the greater the DD, the smaller the PD, which means less chance that the company will default. On the contrary, the smaller the default distance, the smaller is the probability of debt paid by the companies & hence, the default. This illustrates that the creditworthiness/ financial health of the company is worse.

Altman Z Score

Altman's Z score is a numerical measurement model developed by American finance professor Edward Altman in 1968 It measures companies' financial stability using five financial ratios to predict the probability of a company becoming insolvent. The model parameters listed below have been used in the past for the manufacturing companies in the US market.

Z score = 1.2(A) + 1.4(B) + 3.3(C) + 0.6(D) + 0.99(E), where,

A = Working Capital / Total Assets (Measures liquidity of firms)
B = Retained Earnings / Total Assets (Measures accumulated profits compared to assets)
C = Earnings before Interest & Taxes / Total Assets (Measures how much profit the firm's assets are producing)
D = Market value of Equity / Total Liabilities (Compares the company's value versus its liabilities)
E = Sales / Total Assets (Measures how much the company's assets are producing in sales)

Interpretation of Z score results:

Z-score < 1.81 represents a company in distress (Higher chance of defaults)

1.81 <= Z-score <= 3 represents the caution zone (Danger Zone)

Z-Score > 3 represents a company with a safe balance sheet (Away from the dangers)

3. Findings

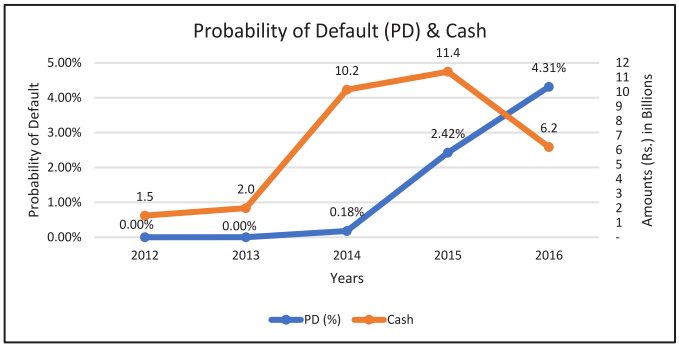
The Merton-KMV model and the Altman Z-Score model mentioned above were applied to the following Indian companies that had defaulted in the past. The information on financial data of these companies is handpicked from their annual report.

Company	Default period	Industry / Sector
Ansal Housing	December 2019	Residential / Commercial Project
Bombay Rayon Fashions Limited	September 2013	Fabrics and Garments
DHFL	June 2019	Housing Finance
Jaypee Infratech	September 2015	Construction
Jindal Steel & Power	September 2016	Steel
Reliance Communications	November 2017	Telecom
Suzlon Energy	October 2012	Power Equipment

3. List of Defaulted Companies in different sectors

The Probability of Default and the Altman Z-Score is calculated for these companies for five years before their default as of 31st March (end of the financial year). For ex: For DHFL defaulting in June 2019, the numbers for the years 2015-2019 as of 31st March were calculated. While analyzing these results, we came across some interesting insights, which we can see below using Jindal Steel & Power as an example. (Multiple Sectors)

Jindal Steel & Power (JSPL) is an Indian steel and energy company based in Hisar Haryana. JSPL is a leading player in steel, power, mining, oil and gas, and infrastructure and is a part of the Jindal Group conglomerate. JSPL defaulted on interest repayments to its bondholders due on September 30, 2016. In the year, CRISIL had also cut JSPL's corporate debt rating to D. JSPL had endured a two-year slump in steel prices. Its power plants had been running below capacity and had struggled to obtain long-term purchase contracts. All these factors combined led to deteriorating finances for the company and led to its default. The below graphs show the probability of default (PD) with its cash position (one of the financial metrics) over the years.

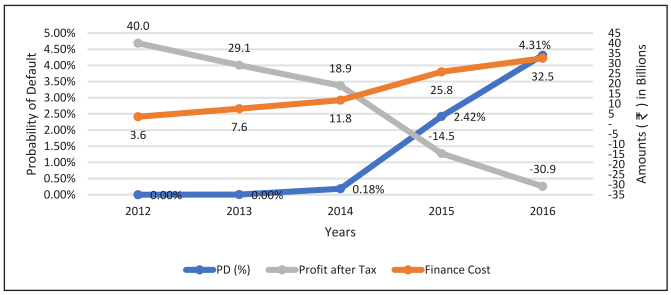


4. Probability of default Vs Cash positions (Jindal Steel & Power)

It can be seen from the graph that the Probability of Default (PD) has been on an increasing trend highlighting the increase in the riskiness of the company. This increase in riskiness for Jindal Steel & Power was due to multiple factors that the Merton-KMV model takes into account while calculating the respective PDs. Over the years the debt on the books and the volatility of its equity prices had increased combined with a continuous slump in the equity prices as well.

Looking at the company's cash balances independently, it can be seen that in the financial year before its default, the cash balance took a massive fall which may have contributed to liquidity issues and thus contributed to default. A similar trend was also seen in most of the other companies analyzed, looking at cash independently, it showed a negative correlation with the PDs over the years.

The graph below shows a similar independent relationship between the PD and a few items from the Profit & Loss account.



5. Probability of Default Vs PAT & Finance Cost (Jindal Steel & Power)

Again, in the five years of analysis, the profitability for the company had taken a massive hit and the Profit after Tax (PAT) had been falling at a rapid pace. Along with this, the company's Finance Costs (incurs in connection with the borrowing of funds) had been increasing showing the increased borrowing costs of the company. When looking at these two factors in comparison to the PDs, one can see that there exists a kind of correlation between them. A negative correlation exists between the PAT and the PD, whereas a positive correlation exists between the Finance Costs and the PD. In hindsight, these relationships make intuitive sense as well.

A look at the Altman Z Score below further shows the increasing riskiness of the company and complementing the results seen from the Merton-KMV model.

Years	2012	2013	2014	2015	2016
Altman Z Score	2.60	1.72	1.18	1.09	0.82

6. Z- scores before Default (Jindal Steel & Power)

A score of less than 1.8 puts the company at risk of defaulting in 2016. Even before its year of default, the company was in a distressed situation except for the year 2012. From the Z-Score, the company was at risk financially and the default was in line with the results of the model.

4. Conclusion

In this paper, we have examined the Probability of Default (PD) calculation before the default and compare them with the financial metrics of a sample of seven Indian firms. We find that Cash and PAT negatively correlate with the PD whereas Finance Cost has a positive correlation with that of PD which confirms the intuition from fundamental credit analysis.

To highlight some of the challenges, the Merton-KMV model is dependent on the asset value and asset volatility and since these are unknown quantities, there are multiple ways to arrive at these values. It is difficult to estimate when a company becomes risky using the Merton-KMV model as there is no well-defined PD threshold below which a company would be considered safer and above which the company becomes risky. Thus, the PD benchmark should be derived according to one's experience and based on historical analysis. The Altman Z Score model presents an alternative approach to modeling credit risk using fundamental data. For these reasons, we recommend that the PD calculations using Structural Models be used along with underlying fundamental credit analysis to assess a company's riskiness.

Though our dataset is limited a further detailed study is required to understand the effectiveness of the model for the Indian market. Further, it needs to be seen whether these correlations exist consistently between the financial metrics seen above and the PDs.

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The Actuary India wishes many more years of healthy life to the Associate & Fellow members above 60 whose Birthday falls in March 2021

G CHIDAMBAR
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HITESH MOTICHAND SHAH
K K DHARNI
S KRISHNAN

New Zealand

Pandemic

As at 27 April 2021, New Zealand had 520 Covid-19 cases and 5 deaths per million population (vs. 12,667 and 142 for India; 19,029 and 402 for the world; 98,722 and 1,763 for USA).

The death rates for active cases has been 0.0% up to age 49, 0.9% for 50 to 69, 7.2% for 70-79 and 12.8% for 80-89[1]. This is not too dissimilar with studies in Wuhan and Northern Italy. Thus, keeping the death rate low was stopping community spread by lockdowns and severe travel restrictions.

Since the first lockdown in from late March to mid-/May last year, the number of new cases has been generally very low[2] as any uncontained community outbreak was flowed by a stringent lockdown.

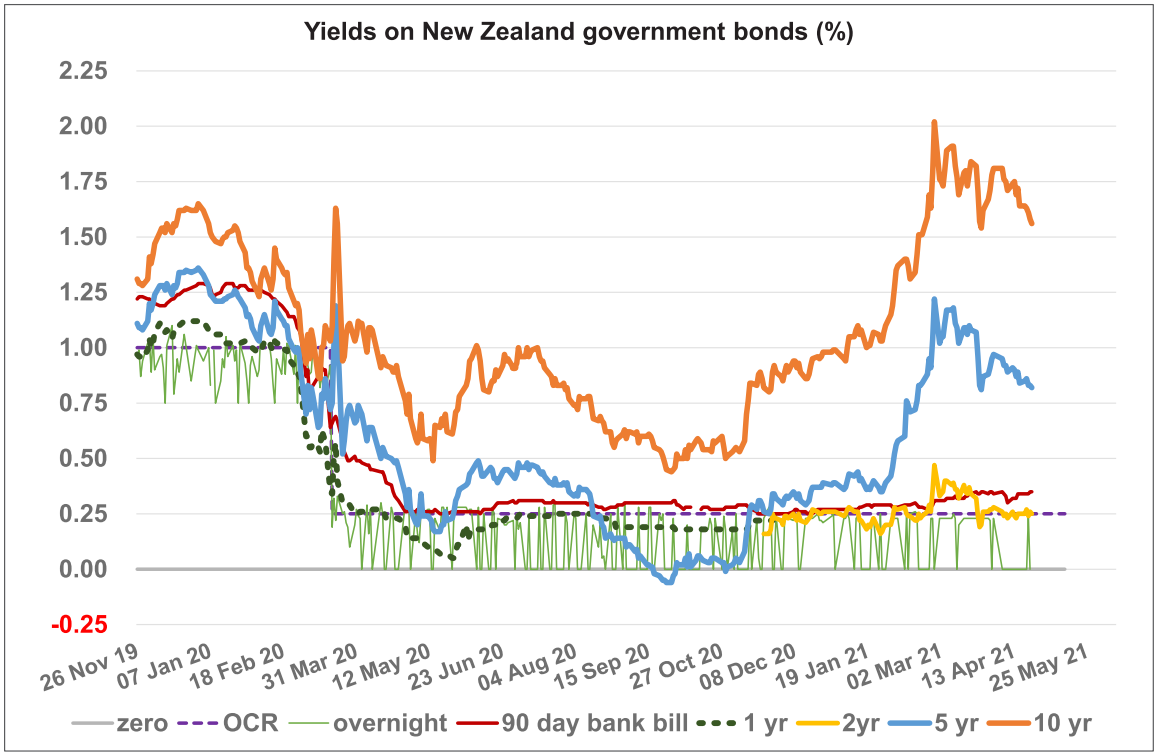
New Zealand also closed its border to almost all non-residents for about a year, with 14-day managed isolation for inbound travellers, with testing on days 3 and 12. Recently, the border has been reopened to Australia and closed to high risk countries where more than 5% of returning residents have tested positive after arrival. Vaccinations have started slowly, so international travel may only resume in 2022.

Economy

Despite large fiscal and monetary stimulus, there was a sharp decline in economic activity during the second quarter of 2020, a strong rebound in the third quarter of 2020 and softening in the fourth quarter of 2020. Unemployment stands at 4.9% vs. 4.2% pre-Covid. Activity varies by sector with tourism and hospitality down, whilst primary industry and transport are up. GDP was 2.9% lower in 2020 than 2019[3].

Interest rates

In response to good economic data, interest rates are now above pre-Covid levels:



Housing market

On the back of fiscal and monetary stimulus, house prices have risen significantly with the danger that new home buyers get priced out of the market. Steps have been taken to cool the housing market. Reserve Bank of New Zealand will set maximum loan-to-value ratios that banks can provide to investors at a higher level than first home buyers[4]. Meanwhile, government has reduced tax deductibility of interest for landlords and made sales of homes that are not primary residences subject to tax on capital gains if sold within ten years.

Conduct Regulation

Financial Advisers, including insurance agents, are regulated under a new regime where one takes reasonable steps to ensure clients understand the nature and scope of advice, give priority to client's interests, exercise due care, diligence and skill, comply with a professional code, recommend compliant products and provide clear and transparent disclosure[5].

Prudential regulation

A report on the appointed actuary thematic review was released in June 2020(6) confirmed that the role is independent of management, scope of the Financial Condition Report should cover conduct risk, policyholder interest, premium adequacy and risk[6].

In March 2021, feedback on consultation on solvency standard principles was published, with Reserve Bank of New Zealand working through submissions on the structure of the solvency standards and approach to IFRS17[7]. An interim standard to replace the 2014 standards is expected in late 2021.

A ladder of intervention and internal capital adequacy assessment process is envisaged. The regulator will become more interventionist as capital buffers reduce. Target capital may be linked to value at risk (VaR) rather than solvency ratio. More granularity required by IFRS17 may be offset by a partial rather than full write-off of deferred acquisition costs.

Submissions on the review of the first part of the Insurance (Prudential Supervision) Act 2010 review was extended one month[8]. Subsequent stages of the review will be conducted over the next two years.

The regulator will be given power to rule out or rule in activities that are “insurance” (vs. warranties). The definition of carry out insurance in New Zealand will be modified to prevent offshore entities using New Zealand as an unregulated base tor selling insurance into other countries. Regulation of branches of overseas insurers is a balance between attracting capacity and ensuring local policyholders are protected. Restrictions on reinsurers are unlikely because 60% of losses from the Christchurch earthquake were recovered from reinsurers who provide spreading of geographical risk. However, eligibility of reinsurance and reinsurance recovery capital charges may be amended.

NZSA conference

The biennial conference will be held in Rotorua from 16 to 19 May 2021[9].

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Timetable – September 2021 Examination

Wednesday 1st September – Friday 17th September 2021

	FORENOON		AFTERNOON	
Date and Day	**Subject**	**From To**	**Subject**	**From To**
01/09/2021 Wednesday			SA1 Health and Care SA2 Life Insurance SA3 General Insurance SA4 Pensions and Other Benefits SA7 Investment and Finance	14.30 - 18.00 Hrs.
02/09/2021 Thursday	CB1 Business Finance	09.30 – 13.00 Hrs.	SP1 Health and Care	14.30 - 18.00 Hrs.
03/09/2021 Friday	CB2 Business Economics	09.30 – 13.00 Hrs.	SP2 Life Insurance	14.30 - 18.00 Hrs.
04/09/2021 Saturday	CP3 Communication Practice	09.30 – 13.00 Hrs.	SP4 Pensions and Other Benefits	14.30 - 18.00 Hrs.
07/09/2021 Tuesday	CS1A Actuarial Statistics	09.30 – 13.00 Hrs.	SP5 Investment and Finance	14.30 - 18.00 Hrs.
08/09/2021 Wednesday	CS2A Risk Modelling and Survival Analysis	09.30 – 13.00 Hrs.	SP6 Financial Derivatives	14.30 - 18.00 Hrs.
09/09/2021 Thursday	CM1A Actuarial Mathematics	09.30 – 13.00 Hrs.	SP7 General Insurance: Reserving and Capital Modelling	14.30 - 18.00 Hrs.
11/09/2021 Saturday	CM2A Financial Engineering and Loss Reserving	09.30 – 13.00 Hrs.	SP8 General Insurance: Pricing	14.30 - 18.00 Hrs.
14/09/2021 Tuesday	CP1A Actuarial Practice	09.30 – 13.00 Hrs.	CS1B Actuarial Statistics	14.30 - 16.30 Hrs.
15/09/2021 Wednesday	CP1B Actuarial Practice	09.30 – 13.00 Hrs.	CS2B Risk Modelling and Survival Analysis	14.30 - 16.30 Hrs.
16/09/2021 Thursday	CP2A Actuarial Modelling	09.30 – 13.00 Hrs.	CM1B Actuarial Mathematics	14.30 - 16.30 Hrs.
17/09/2021 Friday	CP2B Actuarial Modelling	09.30 – 13.00 Hrs.	CM2B Financial Engineering and Loss Reserving	14.30 - 16.30 Hrs.

AM:

9.00 Login Time
9.15 Authorization Start Time

PM:

14.00 Login Time
14.15 Authorization Start Time

***Exam Timer will start immediately once you are authorized and will end accordingly.**

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RNI No. MAHENG/2009/28427
Published on 1st of Every Month

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