



**SOCIETY OF
ACTUARIES**

**INTERNATIONAL
SECTION**

ISSUE 70 • JANUARY 2017

International News

3 Editor's Note

By Arpita Das

4 Chairperson's Corner

By Graydon Bennett

**5 2016 SOA Annual Meeting &
Exhibit**

By Milanthy Sarukkali

**8 Newly Elected
International Section
Council Members**

**11 How Are Insurance
Companies Dealing with
the Low Yield Environment?
No Silver Bullet but Plenty
of Gold Dust!**

By Will Rainey

**14 An Actuarial Summer: The 29th
International Summer School in
Lausanne, Switzerland**

By Carlos Arocha

**16 Purchase Accounting for Insurance
Business Combinations under China-
GAAP from an Actuarial Perspective**

By Vincent Tsang and Bonny Fu

**22 The Opportunities at the Bottom of the
Pyramid**

By Pritesh Modi

Purchase Accounting for Insurance Business Combinations Under China-GAAP

Page 16

**By Vincent Tsang and
Bonny Fu**

International News

Issue Number 70 • January 2017

Published by
the International Section Council of the
Society
of Actuaries.

This newsletter is free to section
members. Current issues are available on
the SOA website (www.soa.org).

To join the section, SOA
members and non-members can locate
a membership form on the International
Section Web page at [http://www.soa.org/
International/](http://www.soa.org/International/)

This publication is provided for informa-
tional and educational purposes only.
Neither the Society of Actuaries nor the
respective authors' employers make
any endorsement, representation or
guarantee with regard to any content,
and disclaim any liability in connection
with the use or misuse of any informa-
tion provided herein. This publication
should not be construed as professional
or financial advice. Statements of fact
and opinions expressed herein are those
of the individual authors and are not nec-
essarily those of the Society of Actuaries
or the respective authors' employers.

Copyright © 2017 Society of Actuaries.

All rights reserved.

2017 SECTION LEADERSHIP

Officers

Graydon Bennett, Chairperson
Vincent Xuan, Vice Chairperson
Milanthi Sarukkali, Secretary
Heather Ingram, Treasurer

Council Members

Wendy Kwan, Council Member
Quintin Li, Council Member
Ken Seng Tan, Council Member
Athena Tsouderou, Council Member
James Xu, Council Member

Editorial Board

Arpita Das, Co-Editor-in-Chief
e: arpita.das@allianz.com

Qi Sun, Co-Editor-in-Chief
e: qi.q.sun@prudential.com.hk

Milanthi Sarukkali, Asia Outside Greater China
e: milanthi@gmail.com

Wan-Yi Huang, Canada
e: wan-yi.huang@cra-arc.gc.ca

Timothy Paris, Caribbean
e: timothyparis@ruark.co

Carl Hansen, Europe
e: chansen@bwcigroup.com

Carlos Arocha, Europe
e: ca@arochaandassociates.ch

Gordon Garfield, Japan and Korea
e: ggarfield@rgare.com

Jessica Chen, Latin America and USA
e: jessica.chen.2@aonhewitt.com

Boaz Yam, Middle East and Africa
e: boaz@ogen.co.il

Jing Fritz, USA
e: jfritz@aflac.com

SOA Staff

Kathryn Baker
Staff Editor
e: kbaker@soa.org

Breanna Rodriguez
Staff Partner
e: brodriguez@soa.org

Jane Lesch
Section Specialist
e: jlesch@soa.org

Erin Pierce
Graphic Designer
e: epierce@soa.org

Editor's Note

By Arpita Das

Wishing all of our readers a very Happy New Year!

January 2017 has indeed brought with it many changes, some faraway and some right here, close to home within the International Section. Qi Sun and I are both humbled and excited by the opportunity to serve as the new co-lead editors with this issue. We are deeply grateful for Vincent Xuan's leadership as chief editor over the last two years in developing this excellent publication and hope to follow in his footsteps. The 2016 SOA Annual Meeting & Exhibit in Las Vegas in October also marked the beginning of our new council members' terms as well as elections to new positions. Congratulations to Graydon Bennett and to Vincent Xuan, our new chair and vice-chair. We wish them and our new council members continued success. A special thank you to our outgoing chair Wendy Liang for her leadership and invaluable contributions to the section.

Here at the newsletter, I am thrilled to introduce our new editorial board to you. We are a dynamic group of actuaries covering a range of experiences, geographical areas and interests. Carl Hansen, previous chief editor of the newsletter, graciously offered to continue being on the board as a lead editor for Europe. Milanthe Sarukkali, with her deep involvement with the section as well as the Sri Lankan actuarial community, continues to be our lead editor for Asia outside Greater China. Timothy Paris, brings his years of both actuarial and editorial experience in continuing as our lead for the Caribbean region. I am grateful to our continuing members for their past contributions and look forward to our work together. I am also excited to announce the new members of our board. Carlos Arocha, previous chair of the International Section Council and current Friend of the Council, will be leading publications on Europe, along with Carl Hansen. Wan-Yi Huang, with her breadth of professional experience in the Canadian market will be our lead for Canada. Gordon Garfield, will be our lead for Japan and Korea—well positioned to do so from his Chief Pricing Actuary role in Tokyo. Jing Fritz joins us as our U.S. lead with experience spanning international products, risk and capital modelling. Boaz Yam, owner and CEO of his consulting firm in Israel and an involved member of the SOA community, will be our Middle East and Africa lead. Jessica Chen brings her wide-ranging international experience and interest in emerging markets to being our Latin America lead, as well a lead for the U.S. with Jing Fritz. And finally, a warm thank you to our SOA Staff Editor, Kathryn Baker for her continued



work with us, without whom this publication would not be possible. Qi and I plan to alternate as lead editors for each issue and you will be hearing more from both of us in the coming months.

I hope you enjoy reading this issue as much as we did. As we come upon political changes in the U.S. and Europe, unrest in the Middle East and of course the ever-increasing complexity of regulatory regimes, the roles of actuaries will continue to evolve. We look forward to creating a platform where our readers are engaged and informed of the changing global landscape around us. To our readers around the world—keep coming in with your ideas and feedback. Qi and I look forward to being in touch. ■



Arpita Das, FSA, is the life & disability senior actuary at Allianz Worldwide Partners. She is based in Dublin, Ireland, and can be reached at arpita.das@allianz.com.

Chairperson's Corner

By Graydon Bennett

On behalf of the International Section Council, I would like to wish all members of the International Section a very Happy New Year. I hope 2017 brings you good health, much joy, and prosperity. I also hope you were able to take some time out during the holiday season to relax and reconnect with family and friends.

This edition of *International News*, while being the first of 2017, is also the first for our new editorial team. I would like to thank Vincent Xuan for his efforts over the last four years as editor and also extend my very best wishes to our new co-lead editors, Arpita Das and Qi Sun. Vincent has now taken on an editorial role with *The Actuary* (where I'm sure he will champion the interests of international actuaries) and has also been elected vice-chairperson of your council.

The International Section Council is keen to continue our collaboration with the SOA International Committee, a sub-committee of the SOA Board of Directors, to promote and progress the SOA's international objectives.

In 2017 we are looking forward to launching an expanded mentorship program, having seen a successful pilot run in Taiwan and the Caribbean last year. We will also be launching a refresh of the Ambassador Program: a valuable network of engaged and committed actuaries around the world who assist in carrying out the SOA's international programs, identifying special needs of SOA members around the world, helping the actuarial profession to grow in economically underdeveloped areas, and functioning as a link between the SOA and national actuarial organizations and actuarial clubs.

A recent initiative of the SOA was the launch of the web-based regulatory resource which aims to offer actuaries a way to search recent regulatory updates. At the moment this resource is limited to the United States, but we are keen to add an international dimension to this resource by starting with IFRS 4 Phase 2 and Solvency II.

We are also looking to recruit volunteers for all these projects, as well as the webcasts and meetings we have planned throughout the upcoming year. Our immediate past chairperson, Wendy Liang, is coordinating a list of micro-volunteering opportunities which are designed to be "bite-sized" for members who would like to be involved but whose circumstances do not permit intense and sustained commitment to a particular project. If you would



like to be more involved, please do get in touch with me (gbennett@bwcigroup.com) or Wendy (wendy.liang@swissre.com).

At this point I should introduce the rest of your council. The "Old Hands" are:

- Graydon Bennett (Chairperson)
- Vincent Xuan (Vice-Chairperson)
- Athena Tsouderou
- Milanthi Sarukkali (Secretary)
- Wendy Kwan

We also welcome four "New Faces" to the council:

- Heather Ingram (Treasurer)
- James Xu
- Ken Seng Tan
- Quintin Li

You can read more about your new council members later in this newsletter.

Lastly, I would like to thank the council members whose term of office finished in October 2016: Wendy Liang, Kelvin Lam, Anna Edwards, and Lindsey Neu. ■



Graydon Bennett, FSA, is a senior manager with BWC Group in Guernsey in the Channel Islands. He can be contacted at gbennett@bwcigroup.com.

2016 SOA Annual Meeting & Exhibit

By Milanthi Sarukkali

The 2016 SOA Annual Meeting & Exhibit was held from October 23–26 in Las Vegas, Nevada with a record number of attendees. The meeting brought together over 2,400 participants and was an excellent opportunity for members to accumulate continuing education credits as well as network. The International Section played an active role in the meeting by organizing several sessions with internationally relevant topics of discussion as well as networking events.

GENERAL SESSION AND PRESIDENTIAL LUNCHEON

The 2015–2016 SOA President, Craig Reynolds addressed the gathering at the general session on Monday, October 24 and welcomed all participants. In his address, he highlighted the progress the SOA has made in the initiatives he identified as top priorities at his induction at the 2015 annual meeting, including supporting international markets and encouraging diversity within the profession. He noted that 15 percent of SOA members and 22 percent of candidates are based outside North America, and discussed the formation of the China Committee and Greater-Asia Committee as well as the development of strategies to provide continuing education and improving awareness of the profession in Latin America.

A key focus of the president's address was on diversity and inclusion initiatives. Among other successful outcomes of this initiative, he highlighted the diversity statement developed by the SOA:

“The SOA best fulfills its mission when it is diverse and inclusive of all individuals. Openness to diverse perspectives, cultures, and backgrounds helps to attract the best talent and ensures the overall inclusivity of the actuarial profession. The SOA welcomes the membership and participation of all individuals, regardless of race, ethnicity, religion, age, gender, sexual orientation, gender identity or expression, disability, or national origin.”

Read or watch Craig Reynolds' address at the general session <https://www.soa.org/about/governance/board-and-leadership/reynolds-craig/>



The keynote speaker at the general session, Sal Khan.



Passing of the badge of office to the new SOA President Jeremy Brown.

The keynote speaker at the general session Sal Khan, founder of Khan Academy delivered an inspiring speech on how the non-profit organization was founded and their mission to deliver free world-class education for all. He noted how Khan Academy has now grown to deliver education material in several languages and is engaging students from all over the world.

The highlight of the Presidential Luncheon on Tuesday, October 25 was the passing of the badge of office to the new SOA President Jeremy Brown. In his presidential address, he reiterated his commitment to moving the strategic initiatives on inclusion and diversity forward, as well as fostering good relationships with other actuarial organizations and finding new ways to deliver education to members and candidates. He also discussed the new Certified Actuarial Analyst (CAA) global qualification that was launched in collaboration with the Institute and Faculty of Actuaries, U.K.

Read or watch Jeremy Brown's presidential address <https://www.soa.org/about/governance/board-and-leadership/brown-jeremy/>

INTERNATIONAL SECTION SPONSORED SESSIONS

The International Section sponsored several sessions on internationally relevant topics. All sessions proved to be engaging and informational to both international and North American participants.

IAIS Capital Standards

Elizabeth Dietrich and David Sherwood presented at this session, which was co-sponsored with the Joint Risk Management Section, and provided an overview of the risk-based global insurance capital standards framework developed by the International Association of Insurance Supervisors. The session also discussed implications for U.S. and international life insurance organizations.

The Swiss Standard Model for Captive Reinsurers: Insights and Features

This session was organized jointly with the SOA General Insurance Section. Carlos Arocha and Rene Dahms discussed the features, scope and limitations of the Swiss Standard Model applicable to captive reinsurers and contrasted it with other options available to captives that wish to incorporate in Europe.

The Emergence of Accountable Care in the U.S. and U.K. Health Markets: An Examination of Converging Health Systems

Chris Pallot, Director of Strategy at a major hospital in U.K. presented a brief history of the NHS of U.K. as well as challenges facing the NHS. Jeremiah Reuter discussed parallels between the U.K. and U.S. systems. This session was jointly sponsored by the Health Section.

Kaleidoscope: Life Products Across Asia-Pacific

The primary focus of this session was to introduce Asia Pacific markets and discuss interesting trends in life insurance products as well as opportunities and challenges. The first speaker, Lin Pan focused on the life insurance market in Taiwan and Korea while the second speaker, Selina Hu discussed the Chinese life insurance market. Milanthy Sarukkali discussed the South Asian life insurance market—including challenges in product development—with a focus on Sri Lanka.

INTERNATIONAL SECTION NETWORKING EVENTS

The International Section co-sponsored a wine and cheese reception with the Investment Section on Sunday, October 23 to welcome participants. This event provided a great networking opportunity for many international participants at the meeting as well as actuaries working in North America.

The International Section also hosted a breakfast on Wednesday, October 26. The outgoing chairperson of the International Section, Wendy Liang, outgoing secretary, Kelvin Lam and incoming vice-chair, Vincent Xuan discussed activities of the section over the past year and called for feedback from members. ■



Milanthy Sarukkali, FSA, is a consultant at Spark Actuarial and Risk Consultants in Sri Lanka. She can be reached at milanthy@sparkactuarial.com.



**REACH MORE THAN
27,000 ACTUARIES FROM
DIFFERENT DISCIPLINES**

**Be a 2017
SOA Sponsor**

New options available

CONTACT

Brenda Sawyer at bsawyer@soa.org or 1-847-273-8822.

www.SOA.org/Sponsorships



**SOCIETY OF
ACTUARIES**

Newly Elected International Section Council Members

HEATHER INGRAM, FSA

Swiss Reinsurance Company
Zurich, Switzerland

Treasurer



Professional Background

Heather started her actuarial career while attending the University of Waterloo in Canada completing five separate work terms in various roles including P&C pricing, pension consulting, and risk analytics. After graduation, she started fulltime with Swiss Re in Toronto, Canada, where she spent three years working as a valuation actuary responsible for the U.S. health business. In the fall of 2014, she moved with Swiss Re to Zurich, Switzerland and now splits her time between Swiss Statutory reporting and an internal Finance Transformation project.

Society of Actuaries Experience

(Section and committee memberships and participation)
International Section Member, 2016

Other Relevant Volunteer Experience

Member of IMPACT Network at Swiss Re aimed at fostering an inclusive culture within the organization, 2013–2014

Why are you interested in leading the International Section?

As an SOA member based outside of North America, I have come to realize the challenge it is to stay connected with the society. There are time zone differences, few of my colleagues are fellow SOA members, and conferences are more expensive to attend. At the same time, living internationally provides an excellent opportunity to gain new perspective while learning about different markets, actuaries and actuarial societies. I am interested in becoming an International Section Council Member so I can share my firsthand experience with fellow SOA members and continue to build the society's international network.

QUINTIN ZHENG LI, FSA

Director
PricewaterhouseCoopers LLP
New York, NY

To fill a one-year term



Professional Background

Quintin is a Director in the PwC's Life Actuarial Services practice in New York. He has extensive experience as a life actuary, which spans consulting and life insurance companies. At PwC, Quintin's main focus includes insurance capital market related initiatives, risk management as well as financial reporting. He has worked with many life, annuity, retirement and health insurance products. Quintin's clients include insurance companies, reinsurance companies, private equity funds, hedge funds, investment banks and financial guarantors operating in the US, Bermuda and internationally.

Prior to joining PwC, Quintin worked at AXA Equitable Life Insurance Company as a new product risk manager. While there he was responsible for coordinating product development and approval processes.

Quintin holds a Bachelor of Mathematics from the University of Waterloo in Actuarial Science and Statistics and a Master of Business Administration from New York University. He is a fellow of the Society of Actuaries and a member of the American Academy of Actuaries.

Society of Actuaries Experience

(Section and committee memberships and participation)

Quintin is an active member of the SOA Financial Reporting Section, Product Development Section, Joint Risk Management Section, Reinsurance Section and the International Section.

Other Relevant Volunteer Experience

Quintin is an active member of Bermuda International Long Term Insurers and Reinsurers Association (BILTIR) Capital Committee and Financial Reporting Committee.

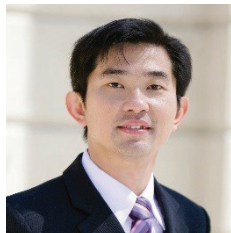
Why are you interested in leading the International Section?

Quintin was born in China, educated in Canada and is currently working in the U.S. He has a strong interest in encouraging and facilitating professional development of SOA members who are interested in international areas of practice. In a world where insurance market, financial reporting and regulatory frameworks are becoming more globalized, it is important for insurance professionals around the world to collaborate. If I were elected, I would continue supporting SOA's broader international initiatives through effective use of our global network and strengthen our liaison with actuarial organizations in other countries.



KEN SENG TAN, ASA, CERA

University Research Chair Professor
University of Waterloo
Waterloo, ON



Professional Background

Ken Seng Tan is the University Research Chair Professor in the Department of Statistics and Actuarial Science, University of Waterloo and the Associate Director of the Waterloo Research institute in Insurance, Securities and Quantitative finance. Previously, he held the Canada Research Chair Professor in Quantitative Risk Management. In 2007 he was among the few actuaries to be granted the first Chartered Enterprise Risk Analyst (CERA) credential by the SOA, based on his years of leadership in the field of enterprise risk management. He has strong ties with many universities in China, including his role as the Cheung Kong Scholar and the Hon. Director of the China Institute for Actuarial Science, Centre University of Finance and Economics, Beijing.

Society of Actuaries Experience (Section and committee memberships and participation)

- Member, 2017-2019 Strategic Planning Task Force
- Member, SOA Center of Actuarial Excellence Committee, 2014-2017
- Co-editor, *North American Actuarial Journal* since April 2010
- Council member, Education and Research Section, 2007-2010

- Treasurer, Education and Research Section, 2007-2009
- Editor, translation of the SOA/CAS/CIA Joint Risk Management Section Newsletter to Chinese, 2007-2012
- Editor, SOA/CAS/CIA Joint Risk Management Section Newsletter, 2004-2007
- Council member, SOA/CAS/CIA Joint Risk Management Section, 2004-2007
- Founding Council Member, SOA Risk Management Section, 2003-2004

Other Relevant Volunteer Experience

- Founder of the International Agricultural Risk, Finance, and Insurance Conference (www.iarfic.org) since 2011
- Associate Editor, *Agricultural Finance Review* since June 2014
- Associate Editor, *Annals of Actuarial Science* since January 2012
- Committee member, CIA Investment Section, 2000-2003
- Committee member, CIA Task Force on Liaison with Banks and Trusts, 2000-2002

Why are you interested in leading the International Section?

Over the past decade I have been very active in South-East Asia promoting actuarial education and the actuarial profession.

With my experience, I could strengthen the SOA presence and enable many of the SOA South-East Asia's activities effectively via the International Section.



JAMES XU, FSA, FCIA, FNZSA

Associate Director – Investment
Risk Management
Royal Bank of Canada
Mississauga, ON



Professional Background

James is a great father, a loving husband and oh yeah, he is an actuary, an actuary who practiced in many different jurisdictions and has a genuine care of the international development of the Society of Actuaries.

Society of Actuaries Experience

(Section and committee memberships and participation)

- Volunteer of Item Writing for QFI Advanced, QFI Core
- Volunteer of Exam Grading for QFI Advanced, QFI Core, Individual Life and Annuities Pricing and Valuation exams

Other Relevant Volunteer Experience

Board of Directors, Volunteer Action Centre

Why are you interested in leading the International Section?

I have had the privilege of travelling and working in various parts of the world, and from what I have observed in places outside North America, I strongly feel that there is a gap in terms of company and student awareness as well as general acceptance of the Society of Actuaries body. Therefore, I believe I have the first-hand experience which prepares me well to serve the SOA to expand its international base.

In addition, I demonstrated great enthusiasm to volunteer through my experience with Volunteer Action Centre, where I serve on the board for this non-for-profit organization, providing financial and strategic guidance to the future development of the organization.

Finally, what do they say? Third time is a charm, well this is my third time running for the International Section Council Leadership and I hope this persistency will finally get me there this time. ■

How Are Insurance Companies Dealing with the Low Yield Environment? No Silver Bullet but Plenty of Gold Dust!

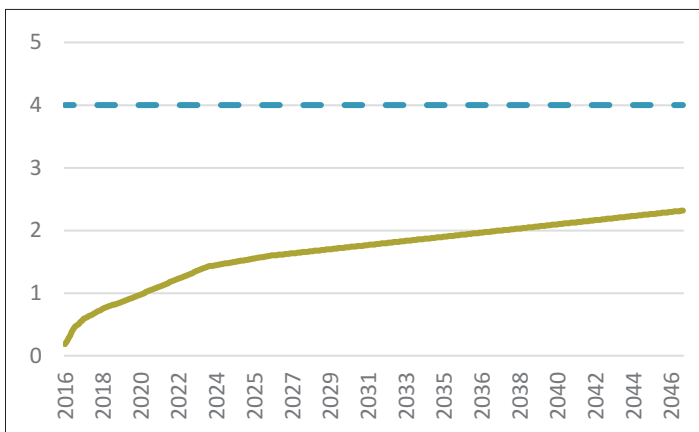
By Will Rainey

Many conferences and articles have discussed what insurance companies should do in the current low yield environment from an investment perspective. Unfortunately it seems there is no silver bullet which can overcome this challenge. As a result, insurance companies are taking a variety of actions to try and improve their outcomes. In this article we provide an overview of the different areas where insurance companies have been making changes.

BACKGROUND: THE LOW YIELD ENVIRONMENT

The low yield environment looks like it is here to stay. Figure 1 shows that the market expects U.S. cash rates to remain well below historical averages for over the next 20 years. Other developed markets have a similar or even bleaker outlook.

Figure 1: Market expectations of U.S. cash rates over 20 years, % pa



(as of September 30, 2016)



With yields expected to remain so low, it becomes more challenging for investors to generate returns from their assets. Not just returns from cash and bonds, where they are directly linked to the low yield, but also more challenging to generate returns from other asset classes. As the demand for asset classes with a higher expected return (and higher risk) has been increasing to compensate for the low return on the cash and bonds, the additional returns expected from these assets diminishes. This leads to many investors materially increasing the amount of risk they are taking and not expecting to get the corresponding reward compared to historical levels.

SO WHAT ARE INSURANCE COMPANIES DOING?

We are seeing insurance companies reviewing each step of their investment process and trying to see if they can add a bit of value or reduce costs at every stage. In Figure 2, we consider examples of how insurance companies are making changes at each stage of the investment process cycle in order to improve future outcomes.



Figure 2: Example investment process cycle

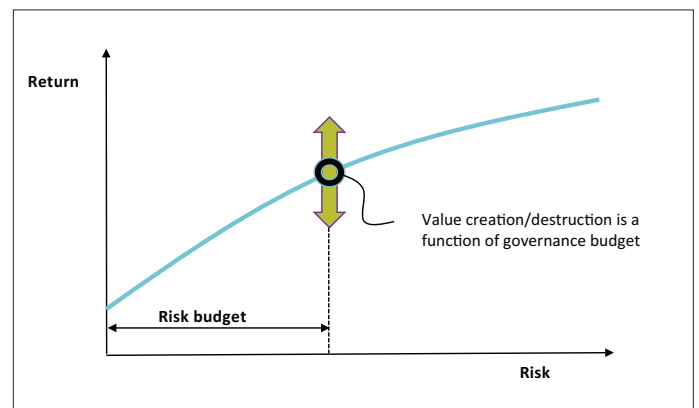


1. MISSION AND GOVERNANCE

Adding value by splitting decision makers and implementers: With greater accountability comes greater focus. Insurance companies are segregating functions with clearly defined roles to improve the decision making processes and ensure there is greater accountability for the decisions. For example, specialist risk teams (implementers) who are responsible for ensuring the level and type of risk taken does not exceed those set by the senior management (decision makers).

Research by Clarke and Urwin¹ has shown that the best asset owners in the world are increasingly looking at ways to improve their decision making processes and maximise the efficiency of their governance budget to add value within the investment process. The amount of value that can be created, for a given risk budget, will depend on size of the governance budget and how the governance budget is allocated (Figure 3).

Figure 3: Schematic of Governance Budget and Risk Budget



2. RISK MANAGEMENT

Adding value by reducing asset and liabilities mismatches:

Insurance companies are revisiting their investments to ensure their assets match the liabilities to reduce risk based capital charges. Whilst matching assets to the liabilities has been something insurance companies have been doing for a long time, over recent years there has been increased number of insurance companies carrying out reviews of their Strategy Asset Allocation (SAA) given changes in regulations (increased capital charges for mismatches between assets and liabilities), increased number of asset classes and instruments that can be used to match liabilities and better ALM software to help identify and manage mismatches.

3. PORTFOLIO CONSTRUCTION

Adding value by increased globalization of asset classes:

Insurance companies are increasing the amount of global assets in their portfolios to improve risk-adjusted returns. Overseas (global) assets provide much greater diversification in terms of companies, sectors and industries compared to the domestic markets and as a result reduces the amount of investment risk within an asset class. The currency risk that comes with investing overseas needs to be managed to ensure that the diversification benefit is not overshadowed by higher capital charges.

Adding value through illiquid assets: Whilst spreads on illiquid assets, such as infrastructure debt, have reduced over recent years, insurance companies are still seeing the benefits of holding illiquid assets to meet their liabilities and increase yields relative to the current assets held. This is especially true with some regulatory bodies allowing for an illiquidity premium to be added to the discount rate in respect of some of these assets held (which reduces the capital requirements and reduces mark-to-market risk).

Adding value via diversification: By increasing the range of asset classes being used in their portfolio, insurance companies are benefiting from diversification. Whilst investing in some alternative asset classes may not reduce the initial risk based capital requirements (i.e., provide limited protection in short term extreme risk scenarios), the improvements to the risk-adjusted returns can add material value over the long term. For example, replacing part of the equity allocation with a portfolio of alternatives assets can generate a similar expected return but with a 30 percent pa reduction in the year-on-year volatility.

4. IMPLEMENTATION

Adding value by reducing fees: In a number of cases, insurance companies have not used their increasingly material size to negotiate favourable terms with their external investment managers. As a result, insurance companies that are using external investment managers are now re-negotiating the fees they are paying to ensure they are aligned with market norms and are appropriate given the size of the mandates. A full fee review of investment managers can help save a lot of money. For example,

we have seen fees being reduced from 150bps to 70bps for a US\$100 million credit mandate.

Adding value by altering the investment management structure:

There have been many articles on the limited benefits of using investment managers which try to outperform the market (active management)—with more than half of them underperforming after allowing for costs and/or fees. As a result investors are moving to a passive implementation approach (i.e., investing in line with the market) to save money on fees and therefore adding value to the bottom line.

Alternatively, where a company has a strong belief in active management they are now moving to an approach which uses a pool of managers (five to eight best-in-class managers) which take larger positions away from a benchmark. This approach to active management has been shown to increase the chances of adding value after fees as the managers only hold their best ideas in their portfolio rather than a wide range of mediocre positions just to ensure their risk position is close to the benchmark.

5. MONITORING

Adding value by using dashboards: There is a saying that “what gets monitored, gets managed.” Our experience is that this is not always the case, with many investors monitoring every aspect of their investments with no direct evidence that this monitoring has led to action or better outcomes. As a result we are seeing a change in the monitoring frameworks to use “dashboards.” These dashboards not only track key factors but provide an indicator when they breach pre-agreed levels which call for action. Knowing in advance what actions will be taken, and under what scenarios, can add material value and improve operational efficiency, i.e., ensure that time is spent monitoring the areas which will add the most value.

CONCLUSION

Insurance companies, like most other investors, are re-assessing how they can improve their outcomes given the low yield environment. This means revisiting many areas of the investment process which have been unchanged for many years.

So whilst there might not be a silver bullet to deal with the low yield environment, making a series of improvements in different area means there is plenty of gold dust within the investment process to improve outcomes going forward. ■



Will Rainey, FIA, is the head of investment strategy, Asia at Willis Towers Watson in Hong Kong. He can be reached at Will.rainey@willistowerswatson.com.

ENDNOTE

- 1 Best-Practice Investment Management: Lessons for Asset Owners from the Oxford-Watson Wyatt Project on Governance.

An Actuarial Summer: The 29th International Summer School in Lausanne, Switzerland

By Carlos Arocha

The Swiss Association of Actuaries has been conducting a “summer school” since the early 1980s. On occasion of the 1980 Congress of the International Actuarial Association, the Swiss organizing committee established a fund. After the event, the fund had a positive balance and the Swiss Association of Actuaries decided to establish a summer school with the proceeds. Nowadays, participants are charged a subsidized course fee. Here is my report on this year’s summer school.

From August 15–19, 2016, the Department of Actuarial Science of the University of Lausanne hosted the 29th edition of the renowned Summer School of the Swiss Association of Actuaries. One-hundred sixteen participants (58 from Switzerland) coming from 28 countries attended this year’s program: Quantitative Risk Management: Concepts, Techniques and Tools. The scientific directors were Paul Embrechts (Swiss Federal Institute of Technology, Zurich), Alexander McNeil (Heriot-Watt University, Scotland) and Rüdiger Frey (University of Economics and Business, Vienna). They were ably assisted by Marius Hofert (University of Waterloo, Canada). The faculty was just as international as the audience!

The course syllabus drew heavily from the second edition of the authoritative Quantitative Risk Management (QRM) textbook, coauthored by Embrechts, Frey and McNeil. The first edition came out in 2005, before both the 2007–09 global financial crisis and the Euro crisis that followed. The original 10 chapters were expanded to 17, and a bit more emphasis was given to insurance. Also, chapters were grouped into (a) Introduction to QRM; (b) Methodology; (c) Applications; and (d) Special topics, making it worthwhile to acquire the second edition even if one already owned the first.

The course covered 13 chapters out of 17, and the chapters that were not considered were either too specialized or not too critical for the understanding of QRM. It was already an ambitious goal to cover 13 chapters—532 pages of theory—but nonetheless time was well-managed and coverage was adequate.

It is worth noting that a similar course—with the same faculty—was held 10 years ago, when the first edition was published. It was evident that many years of teamwork and presumably a good deal of discussions among the professors, resulted in a well-coordinated, didactical flow. The lecture quality was just outstanding.

The five-day seminar schedule was launched with Embrechts’ lecture on risk management concepts, where he made a persuasive case for managing financial risk. He then covered the topics of modelling value and value change, and risk measurement and analysis. McNeil and Hofert went on to present the empirical properties of financial data, and introduced financial time series. These lectures were complemented by a general overview of the R programming environment by Hofert, and a few R scripts to illustrate the material.

Day 2 included Extreme Value Theory (EVT) by Embrechts, who has taught similar courses at the Swiss Federal Institute of Technology. Embrechts is also the author of a textbook on EVT, and his experience in teaching that subject was evident at the summer school. The next topic was multivariate model



time-series models for multiple series of financial risk-factor change data, such as differenced logarithmic price series.

On Wednesday we looked at methods for measuring market risk in portfolios of traded instruments. The focus was on the statistical models and techniques previously introduced on Tuesday.

To honor a long-standing tradition, we enjoyed a nice excursion on Wednesday afternoon. The first stop was a visit to Charlie Chaplin's World, a museum and exhibit in the Vevey area. Then we visited a vineyard in Lavaux (Domaine Wannaz) where we tasted the excellent regional wines while having a magnificent view of Lake Geneva. It was a wonderful afternoon. The excursion was rounded up with a savory steak dinner at Hotel du Lemman in the surroundings of Vevey.

On Thursday, the day after the excursion and dinner, and in a more relaxed environment following the social activity, Embrechts and Hofert expanded upon the material on dependence structures that was previously introduced. They also devoted time to theoretical concepts in QRM that fall under the broad heading of aggregate risk and integrated risk management. Convex and law-invariant risk measures were discussed. The afternoon session was devoted to credit risk, an omnipresent feature in the portfolio of a typical financial institution.

On Friday, we looked at one-period models for credit portfolios with a view towards credit risk management issues for portfolios of largely

non-traded credit products, such as the retail and commercial loans in the banking book of a typical bank. The last lecture of the week covered counterparty risk management, a key issue for all financial institutions and the focus of many new regulatory developments.

One of the salient features of the course were the practical illustrations prepared by Hofert. He is the author of an R package that serves as companion to the QRM book. Having faculty who was part of a book project was ideal for the perfect summer school.

The last act, the closing ceremony of Friday, included the legendary keynote speech of Prof. Hans Bühlmann, the honorary president of the Swiss Association of Actuaries, pioneer of credibility theory, and an enthusiastic supporter of the International Summer School. It took a while to present certificates of attendance to more than 120 people, many of whom wanted to have their picture taken with the faculty. In these last moments of an intense week there was a general feeling of satisfaction about the learning experience. François Dufresne and his team of assistants deserve a hearty "thank you" for having once again organized a successful summer school. ■



Carlos Arocha, FSA, managing director of Arocha & Associates, an actuarial consulting firm based in Zurich, Switzerland. Carlos can be reached at ca@arochaandassociates.ch.

A large graphic advertisement for SOA Podcasts. On the left, a black and white profile of a man's face is shown wearing large white headphones. The background is a light gray grid pattern. Three horizontal arrows (red, yellow, and teal) point to the right across the top, middle, and bottom of the graphic. The text 'Knowledge on the go' is written in a large, blue, sans-serif font. Below it, 'SOA Podcasts' is written in a smaller, bold, black font. A paragraph of text describes the podcasts, and the URL 'SOA.org/Podcast' is at the bottom right.

Knowledge on the go

SOA Podcasts

The SOA releases free podcasts each month aimed at helping busy professionals like you find the time to gain insights and perspectives from fellow members. Recent podcasts explored topics ranging from how nonqualified annuities are taxed to how to be an ethical leader.

SOA.org/Podcast

Purchase Accounting for Insurance Business Combinations under China-GAAP from an Actuarial Perspective

By Vincent Tsang and Bonny Fu

BACKGROUND

Purchase GAAP accounting (PGAAP) is a common accounting requirement for both the acquiring and the acquired companies after acquisitions. The preparation of the PGAAP financial statements for the acquired company is a necessary accounting exercise for a publicly traded acquirer. However, a privately-owned acquirer may also want to prepare PGAAP financial statements to aid the monitoring process of the performance of the acquired business.

Before the PGAAP exercise begins, both the acquirer and the acquired would need to co-develop an accounting policy fitting for this PGAAP exercise. For insurers, the common practice is to follow the acquirer's existing accounting policy. On the other hand, if the acquirer is not an insurance entity, the PGAAP accounting policy may begin with the existing accounting policy of the acquired company.

Regardless, the draft PGAAP accounting policy must be designed with input from both the acquirer and the acquired company, with discussions made alongside their respective auditing firms in the early stages. The key decisions made in the PGAAP exercise should be well-supported and the expected outcome should be well-communicated and agreed with by the management of the companies to avoid unfavorable outcome near the end of the exercise.

PGAAP GUIDANCE

Preparing PGAAP financial statements is a crucial step for business combinations. As actuarial reserves and other related items occupy the majority of the balance sheet, actuaries are heavily involved in the PGAAP process. There are numerous

publications¹ available in the market which provide adequate guidance for practitioners. However, businesses in China should only consider these guidance papers as reference material on market practice since the China Insurance Regulatory Commissioner (CIRC) has adopted China-GAAP which is close to the 2010 Exposure Draft of IFRS4 Phase II for Insurance Contracts ("2010 ED"). The reference materials outside of China may not be directly applicable.

In this article we will address several key actuarial issues, namely unit of account, book value of China-GAAP actuarial reserve at acquisition date, fair value of liability, goodwill impairment and reinsurance. Besides accounting and actuarial, the PGAAP exercise also involves other disciplines including tax and asset valuation. These items are beyond the scope of our discussion.

This article is primarily written for long-term life insurance businesses, yet the underlying issues are also applicable to other non-life insurance or short term businesses.

OVERVIEW OF CHINA-GAAP FOR BUSINESS COMBINATIONS

The general practice is that the acquirer and the acquired company must first identify the intangible assets as well as other assets and liabilities of the acquired entity. The acquired company is then able to develop an initial fair value balance sheet at the date of acquisition. Assets are marked to market value while liabilities are measured at fair value, and the acquired company's selected intangible assets such as deferred acquisition cost (DAC), unearned profit liability (UPL) and goodwill are written-off.

Under current China-GAAP accounting standards, actuarial reserves are not reported using fair value. Instead, they are reported as the sum of best estimate liability (BEL), risk adjustment (RA) and residual margin² (RM). Although BEL is based on the company's projected cash flows with best estimate assumptions, the discount rate is not the market rate at the valuation date plus liquidity premium. Instead, for traditional non-par business with fixed guaranteed benefits, the discount rate is the sum of the 750-day average of government bond yield curve and liquidity premium. For other business with benefits depending on investment return, the discount rate is the future best estimate investment return. The RA can be considered as a provision for adverse deviation (PAD) based on BEL. It is common that the RM is locked-in at issue³ and is not updated after the issuance date.⁴

For short duration contracts,⁵ the actuarial reserves are the pre-claims liability and the claims liability. The pre-claims liability is the unearned premium reserve less the unamortized acquisition costs, which is believed to be a reasonable approximation of the present value of fulfillment cash flows (PVFCF, i.e., BEL + RA)



and the RM. The claims liability is the sum of the claims reserve and the incurred but not reported reserve (IBNR) and these two quantities are measured as the PVFCF⁶ (i.e., BEL + RA).

Please note that the acquired company only needs to prepare a fair value balance sheet at the date of acquisition. Going forward, the acquired company may follow the local GAAP accounting guidance for preparing GAAP reserves for in-force and future new businesses. Thus, the acquirer would need to use the value of business acquired (VOBA) asset as an intangible asset to reconcile the difference between fair value of liability (FVL) and book value of liability (BVL) of the in-force business at the acquisition date.

BVL would then be calculated using existing accounting guidance with updated assumptions at the acquisition date. All previous assumptions are replaced. VOBA may then be amortized using projected revenue streams, for example, future gross premiums or estimated gross margins, after the acquisition date. All previously reported revenue streams and locked-in assumptions are ignored going forward.

UNIT OF ACCOUNT

The first consideration for PGAAP accounting policy under China-GAAP is the determination of unit of account. This definition may affect the number of VOBA balances for future amortization.

BEL, RA and RM are normally calculated on a cohort basis (or unit of account basis). Before the acquisition, the acquired company may set up units of account on direct business based on combinations of group of contracts and issuance year. Each unit has its own RM for amortization. This categorization is necessary as different products may have different best estimate assumptions (e.g., lapse rates). Additionally, different issuance years may have different discount rates and liquidity assumptions, thus affecting the respective BEL and RA. As RM is the residual determined at the policy inception date, differences in best estimate assumptions and discount rates for determining BEL and RA would also indirectly affect RM.

The acquiring company acquires the entire block of in-force business at the same time. Issuance year of the in-force business may not be a consideration for determining the unit of account. Some companies may use a broad stroke and consider all traditional business as one unit of account and the unit-linked business as another unit of account for determining VOBA amortization.

DEFINITION OF BOOK VALUE OF LIABILITY AT ACQUISITION DATE

The second issue is the definition of BVL for the acquired business and its effect on RM and VOBA.

Under China-GAAP, $BVL = BEL + RA + RM$



While it is a widely accepted practice to revise the BEL and RA of the acquired business in accordance with the acquirer's assumptions and parameters at the acquisition date, there is limited guidance on whether the RM at the acquisition date should be re-determined.

One possibility is to use the acquired company's outstanding RM balance before acquisition as the initial RM balance in the initial PGAAP balance sheet. Future amortization of the RM would then follow the original schedule.

The advantage of this approach is to avoid changes in the current financial reporting structure for RM. The disadvantage of holding a RM on the liability side is that it would also inflate the VOBA on the asset side. Given that the amortization schedules of RM and VOBA could be different, the difference may lead to unnecessary noise.

An alternative is to set RM to zero for the in-force business such that the BVL is only the sum of BEL and RA. The advantages of this approach are (a) simplicity as there would not be any amortization of RM and (b) VOBA is not inflated and has a reduced risk of not being recoverable. The disadvantage is that VOBA may be negative depending on the relationship between FVL and BVL (i.e., the sum of BEL and RA in this case).

According to 2010 ED paragraph 42:

“An insurer shall measure a portfolio of insurance contracts acquired in a business combination at the higher of the following:

- (a) the fair value of the portfolio. The excess of that fair value over the present value of the fulfilment cash flows establishes the residual margin at initial recognition.
- (b) the present value of the fulfilment cash flows. If that amount exceeds the fair value of the portfolio, that excess increases the initial carrying amount of goodwill recognized in the business combination.”⁷

Accordingly, the acquired company should establish RM for the in-force business only if the FVL exceeds the PVFCF (i.e., the sum of BEL and RA). The initial RM is defined as the difference between FVL and PVFCF.

If the sum of BEL and RA is greater than FVL, the acquired company may need to set up an intangible asset, VOBA, on the asset side of the PGAAP balance sheet.

FAIR VALUE OF LIABILITY AT ACQUISITION DATE

The third issue is the appropriate method for determining FVL for in-force business.

There are numerous ways to determine the fair value of insurance liabilities at the date of acquisition. Besides the replicating portfolio approach, insurers may use the stochastic simulation method where cash flows are projected under thousands of interest rate and equity scenarios. The sum of risk adjustment and the average of the present values of net cash flows (discounted using risk-free rates plus liquidity premium) is then defined as FVL. As the parameters (such as discount rate) for determining China-GAAP actuarial reserve are not market data oriented, the China-GAAP actuarial reserve is unlikely to be equal to the FVL.

The third method is the price allocation method where the final purchase price is allocated between the net assets, the value of in-force and the value of future new business capacity. Given that the value of the net assets is determined using available market value of backing assets, the allocation of the remaining purchase price is more of an art than science between the value of in-force and the value of new business capacity. This method is appropriate only if the transaction is an orderly normal transaction. It may not be appropriate if the transaction is a distressed or an overly optimistic transaction.

Regardless of the approach, if the FVL is greater than the sum of BEL and RA, the company may initiate a RM in accordance with paragraph 42 of 2010 ED rather than having a counter-intuitive negative VOBA.

GOODWILL IMPAIRMENT

The fourth issue is the reasonableness of the purchase price allocation if it is used to determine FVL.

There was a trendy thought to recognize negative goodwill for a “bargain purchase.” Although a negative goodwill may be legitimate, the reporting company must prepare strong arguments and data to justify negative goodwill and be ready for close scrutiny. In light of the recent high profile acquisitions of insurance companies in Asia, the likelihood of recognizing negative goodwill is rare. Instead, goodwill impairment testing is an important item on the audit agenda.

If the acquired company has the means to determine the FVL, goodwill in the initial PGAAP balance sheet should be a balancing item. In essence, the initial goodwill is related to the price allocated to the value of future new business. As goodwill is an intangible asset, the goodwill must be tested for impairment at the transaction date and at least annually thereafter. An overly optimistic allocated price for the value of future new business may endanger the goodwill’s recoverability.

The 2010 ED primarily covers the liability valuation for insurance contracts and related disclosures. It does not provide specific guidance on goodwill impairment. Companies may need to rely on the generally accepted practice for testing goodwill impairment. Other guidance on market practice can be found in literature such as FAS 142 and FAS 143 under US GAAP.

As allocating prices between value of in-force and value of new business is more of an art than science, practitioners may perform a trial-and-error process to strike an adequate balance between the goodwill impairment limit and the return on equity of the in-force business.

REINSURANCE

The fifth issue is the proper treatment for existing reinsurance contracts.

When there is a change in ownership of the acquired company, the reinsurers of the acquired company usually maintain the current status with respect to the existing reinsurance contracts. There are rare occasions that the contractual parties may terminate the existing reinsurance contracts. However, for the moment, let us assume both parties maintain the existing reinsurance contracts.

The China-GAAP reserve for the existing assumed business should be treated the same as the direct issues such that the China-GAAP reserve after acquisition is the greater of PVFCF and FVL. The residual margin of the assumed business for the initial PGAAP balance sheet would be refreshed as either zero or FVL minus PVFCF depending on whether PVFCF is greater or less than FVL.

With respect to the ceded business, the acquired company may need to re-evaluate the reserve credit of the ceded business after the acquisition. The residual margin of the previous reserve credit may need to be written off and be refreshed by parameters such as PVFCF after non-performance risk and the FVL for the ceded business.

Some practitioners may not take into account the non-performance risk when comparing PVFCF with FVL. It may be a practical approach if the degree of reinsurance is immaterial. However, it may lead to a potential understatement of the China-GAAP reserve if the volume of reinsurance is material.

CONCLUSION

By now we have highlighted a few key issues for practitioners to consider when preparing PGAAP financial statements under China-GAAP. There are other issues, such as reasonableness of the liquidity premium, potential idiosyncrasies between the financial reporting of the acquired block of business versus new issues, and practical means of allocating VOBA, if any, among major blocks of acquired business. We will address these issues in a future article.

Disclaimer: The views reflected in this article are the views of the author and do not necessarily reflect the views of the global EY organization or its member firms. ■



Vincent Y. Tsang, FSA, MAAA, is an executive director at Ernst & Young Advisory Services Limited in Hong Kong. He can be reached at Vincent.Tsang@hk.ey.com.



Zhenping (Bonny) Fu, FSA, is a partner at Ernst & Young (China) Advisory Limited in Beijing. He can be reached at bonny.fu@cn.ey.com.

ENDNOTE

- 1 In the United States, most of the guidance is provided by Financial Accounting Standard Board (FASB) and the American Academy of Actuaries (AAA) for insurance company business combinations.
- 2 Residual margin (RM) is also known as contractual service margin (CSM).
- 3 Please see 2010 ED paragraph BC132 for more details.
- 4 Some companies may use RM to absorb the change in BEL and RA due to a change in estimated cash flows.
- 5 Definition of short duration contract can be found in paragraph 54 of the 2010 ED.
- 6 Please see paragraph 55 of 2010 ED for more details.
- 7 http://www.ifrs.org/Current-Projects/IASB-Projects/Insurance-Contracts/Exposure-draft-2010/Documents/ED_Insurance_Contracts_Standard_WEB.pdf



INVITATION

Come join your colleagues and peers from around the world for the Pension Benefits and Social Security (PBSS) Colloquium, to be held on June 4-7 in Cancun.

The PBSS 2017 Scientific Committee is assembling a preliminary agenda with key issues facing today's public and private concerns on the sustainability of pensions and social security.

Actuaries and non-actuaries from all disciplines involved with technical and social aspects of pensions and social security are encouraged to participate. This Call is not limited to formal papers. The PBSS 2017 Scientific Committee is also interested in less formal presentations, with particular emphasis in experiences implementing pensions systems using behavioral economics and recent legislation concerning hybrid and "Defined Ambition" systems.

In fact, the Scientific Committee will award two prizes: one for the best scientific paper and one for the best essay or presentation of applied work.

Whether you are an author or prospective presenter or anticipate being a member of the audience, we invite you to be in Cancun 2017 to renew old friendships, and make some new ones, while you continue to learn and expand your relevant knowledge to become more effective.

Act. Abraham Hernández
President of the Organizing Committee

Act. Alejandro Bonilla García, M.Sc., Ph.D.
President of the Scientific Committee

TIMELINE

January 31, 2017	Deadline for authors to submit proposals for potential papers/presentations, including a brief abstract of the proposed paper(s)/ presentation(s). See proposal requirements above.
February 28, 2017	Authors informed of results of committee review of proposals.
March 31, 2017	First draft papers/presentations due for committee review.
April 30, 2017	Determination of draft scientific program, successful authors notified, accepted abstracts published on website.
May 15, 2017	Presentation file must be submitted.

June 4-7, 2017
PBSS Colloquium
Cancun, Mexico

Accepted Topics

Defining Ambition
Pension Plans
Social Security
Behavioral Economics
Migration
Demographics
Regulation
Information Security

Act. Abraham Hernández
President of the Organizing Committee

Submission deadline

January 31, 2017

Submission to
Alejandro Bonilla García
bonilla@actuarial-i.com
or to
Jonathan González Salgado
jgonzalez@vitalis.com.mx

Notification of accepted papers

April 30, 2017



ABOUT CANCUN

Cancun is located in the Yucatan Peninsula, in the Mexican State of Quintana Roo and it is well known for its tropical climate.



You can enjoy lots of different activities such as mountain biking, motorcycling in the jungle and swimming in the cenotes. Furthermore, you can enjoy the longest zip riders in Latin America. For watersports enthusiasts, Cancun offers diving, snorkeling, and fishing.



For night lovers, Cancun has some of the best nightclubs in the world where you can hear all kind of Latin and other rhythms, like salsa, disco and R&B.

It also is one of the culturally richest cities in Mexico. An aura of mystery and majesty still lingers in the Mayan archaeological sites such as Chichen Itzá, Tulum and Cobá, to mention a few.



June 4-7, 2017
PBSS Colloquium
Cancun, Mexico

NATURE

ADVENTURE

SPORTS

GASTRONOMY

SHOPPING

CULTURE

AND MORE!

Come and join us!

PBSS Colloquium
Cancun, Mexico
2017

<http://www.actuaries.org/cancun2017/>

Opportunities at the Bottom of the Pyramid

By Pritesh Modi

The much feted book *The Fortune at the Bottom of the Pyramid* by C K Prahalad and Stuart Hart shed new light on what quickly came to be recognized as the vastly underserved and yet fastest growing market that lay at the bottom of the wealth pyramid.

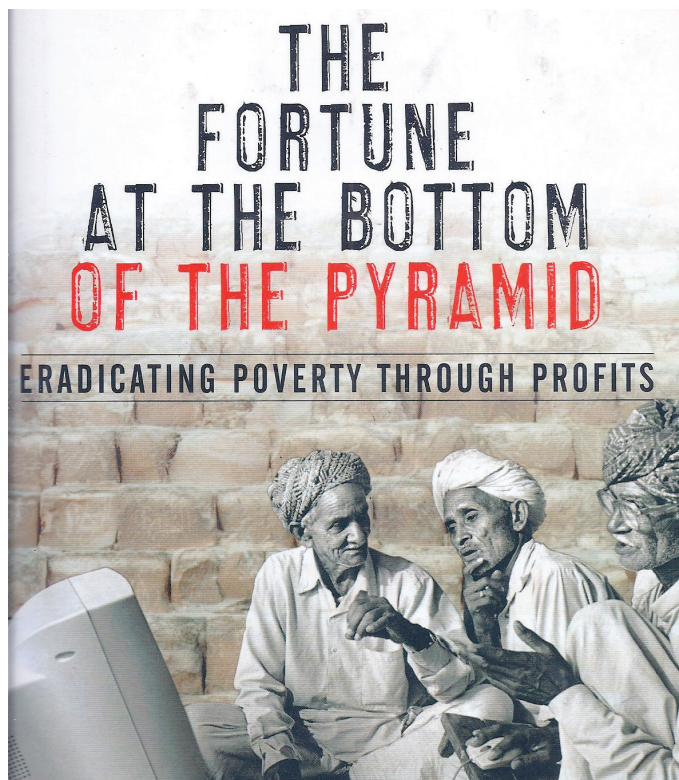
In some ways, this article piggybacks off that and talks about the career opportunities for actuaries stemming from tapping into the insurance potential of that underserved segment.

THE JOURNEY THUS FAR—HOW I ENDED UP WORKING IN THIS SPACE

For the first fifteen years of my actuarial career, I honed my skills largely working in developed insurance markets and for companies that were focused on serving customers at the top of the wealth pyramid. I have some good memories of spending those years designing bells and whistles for variable annuity products, conducting mergers and acquisitions from Alabama to Zurich, providing confirmation that embedded values or economic capital calculations were consistent with rule books written from various headquarters in Munich, or Paris. All pretty much conventional stuff for a developed market actuary.

The last few years have been very different. I have been fortunate to have the opportunity to employ my actuarial skills on a very different platform, and for a very different purpose—in nascent insurance markets, and working with companies catering to customers at the bottom of the wealth pyramid who have typically been left out of the banking and insurance systems because their profiles have been deemed too risky, too poor or too remote.

To provide some context for my recent experiences, let me first describe my employer, and what we do. I work for a profit with purpose private equity fund specializing in taking equity positions in financial services companies in emerging markets across Africa and Asia. What sets this company apart from most other private equity firms is that we make our investments with a dual bottom line in mind—making profitable investments as well as furthering financial inclusion. Effectively this means our investments are focused in markets where insurance penetration is nascent (typically lower than 2 percent) and in companies that



focus on emerging consumers—those earning between \$2 and \$10 a day. This has provided for an experience that has radically differed from my previous experiences working at the other end of the wealth pyramid.

It has meant being involved in M&A deals from Cambodia to Sri Lanka; working with companies that offer annual health insurance coverage for under \$5, providing wealth management services to families with less than \$1000 in net worth, working with a life insurance company providing coverage to a very specific demographic, deemed too risky and excluded by the rest of the industry—individuals who are HIV positive. This experience has been both richly satisfying and eye opening in terms of how actuaries can push the boundaries of our profession.

WHAT CAN ACTUARIES DO IN THIS SPACE—THE CORE ACTUARIAL FUNCTIONS

Let's start with some bread and butter actuarial functions—product development and pricing, reserving and risk management. These very basic actuarial functions take on a very different spin in geographies where the insurance industry and the actuarial profession are just emerging.

Take for instance product development and pricing. Developing products profitably for customers who can only afford premiums of \$1–2 a month requires a degree of simplification (of the product design, of the policy administration and claims settlement

process) that involves stripping the insurance proposition to its bare essentials. Moreover, it requires a heavy dose of creative thinking in order to allow the final product to be of benefit to the policyholder, to the distributor, as well as to the insurance underwriter. In many ways, the whole exercise becomes more an art and less a science—and perhaps that is why I believe there is more satisfaction in general when designing products with such constraints at play.

For instance, one of the companies I worked with was trying to provide earthquake, cyclone and flood insurance coverage to millions of low income consumers who were vulnerable to these natural catastrophe risks. The key challenges were that no loss distribution curves existed for these particular risks in this geography and the premium affordability was less than \$20 a year. Hence, while a perfect solution, as often is the case, did not exist, we had to piece together a proposition which employed a parametric risk solution (this level of premiums would not support an indemnity solution), as well as overlay the insurance cover on a distribution platform (for example, by partnering with a microfinance institution) that provided a large scale and efficient premium collection and claim payments system at marginal costs.

In terms of reserving and risk management in emerging insurance markets, the issues typically involve working in environments where data is sparse, and the uncertainty of outcomes is significant. Again, this scarcity of information challenges the actuary to work in an efficient and creative manner—one that leads to a balance between accommodating the lack of information sources actuaries would traditionally have relied on, but providing the requisite fidelity of the reserves. It also fosters a spirit of nimbleness whereby we are forced to adopt a mind-set that quickly captures new information as it emerges, and incorporates it into the reserving and risk management processes before an unacceptable divergence from expected results occurs.

PUSHING THE BOUNDARIES PAST THE CORE FUNCTIONS

Beyond the core actuarial functions, there are a number of ways that I think actuaries can also get involved at the bottom of the pyramid.

For instance, the field of microinsurance provides a fertile ground for the profession in terms of expanding its boundaries. Microinsurance of course has been a growing field for some time now, and actuaries are playing an increasing role in this space. To my knowledge though, most actuaries who have been involved thus far in microinsurance, have typically been engaged in the technical aspects of insurance. I do believe that with their knowledge of the core workings of how insurance functions coupled with an entrepreneurial drive, actuaries would make ideal candidates to start and/or lead these microinsurance ventures. In the recent past, I have spoken with actuaries in markets

as diverse as Cambodia, Nepal and Zimbabwe who are in the middle of, or interested in starting their own microinsurance companies.

I believe actuaries can also play a role in developing alternative channels for the distribution of insurance products. The low affordability levels for premiums for this demographic often means the cost structure has to be particularly lean for the math to work. One way to achieve this is via exploring new distribution channels that have an existing relationship with lower income people, and that provide a low cost delivery system both for the collection of premiums, and for the payment of claims. Microfinance institutions, telecom and even utility companies are some of the organizations that fit this category—and actuaries can play a lead role in tapping into the insurance potential of their customer base.

Between Lemonade, telematics and various Uber-of-Insurance-models, the insurtech wave is well and truly in flow. While many of these developments are designed for the conventional insurance markets, insurtech has the potential of being highly relevant to the insurance world at the bottom of the pyramid.

Due to the modest economics at the bottom of the pyramid, the value of technological innovations often get amplified for applications at this demographic. Besides making cost structures leaner, technological advancements in managing and measuring risks, such as devices to gauge damage to livestock and crops or assessing property damage via drones, have led to making once-inaccessible markets commercially viable. Actuaries with a certain amount of tech-aptitude are in a strong position to be part of this insurtech wave.

IN CONCLUSION

I do hope that this write-up has whet your appetite in exploring ways of applying your actuarial skill sets beyond our profession's conventional boundaries. I do not intend for this article to be about taking a moral position on which part of the wealth pyramid one should focus their energies on. Rather, it is about providing a glimpse of my personal experience working in an unconventional environment for actuaries, and perhaps providing an encouragement for actuaries seeking to push the boundaries of our profession.

The views expressed in this article are the authors, and do not reflect the views of his employer. ■



Pritesh Modi is the chief actuary (Asia) / director of Investments at LeapFrog Investments, based out of Singapore. He can be reached at modimail@gmail.com.

CERA

Chartered Enterprise Risk Analyst
C R E D E N T I A L

Meeting the Global Needs of Risk Management—the CERA

The way they think, the skills they bring, the roles they play. The Chartered Enterprise Risk Analyst® (CERA) is a unique blend of the quantitative and the qualitative, combining actuarial discipline with the ability to think critically and creatively about risk, enterprise wide.

It's a level of expertise that can only come from the CERA credential from the Society of Actuaries—the most comprehensive and rigorous available. With a deep understanding of enterprise risk management and ethical standards that are beyond compare, the CERA is the risk professional that organizations trust to take them into the future—turning data into decisions to the benefit of their business.

With roots dating back to 1889, the Society of Actuaries (SOA) is the world's largest actuarial organization with more than 26,000 actuaries as members.

the ERM Experts—the CERA

SOA.org
CERAnalyst.org





SOCIETY OF ACTUARIES

475 N. Martingale Road, Suite 600
Schaumburg, Illinois 60173
p: 847.706.3500 f: 847.706.3599
w: www.soa.org

NONPROFIT
ORGANIZATION
U.S. POSTAGE
PAID
SAINT JOSEPH, MI
PERMIT NO. 263

