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Editor's Note

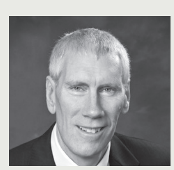
By Carl Hansen

I would like to take this opportunity to promote another Society of Actuaries publication that should be of particular interest to International Section members—the April/May issue of *The Actuary*. It includes a collection of articles with an international theme. Two articles in particular discuss living and working internationally from the perspective of a broad cross section of actuaries. Hopefully, we will see much more international content in all SOA publications in the future.

As you may know, the SOA membership is growing rapidly outside its historical roots in the United States and Canada. The SOA is now a truly global organization with members in more than 60 countries and territories. Members outside the United States may have very different needs. Unfortunately, the leadership of the organization may not fully appreciate this unless members outside the United States express their views on how they can get more value for their membership dues. Also, the SOA needs more leaders from outside the United States, or leaders with international experience. I encourage members with this background to consider standing for election to a section council or to other leadership positions within the organization. A more geographically diverse membership will bring a fresh perspective to the issues facing actuaries, as well as a new set of issues to challenge our traditional thinking.

This issue of *International News* includes a variety of interesting articles on index linked securities, excess mortality for grieving widows, and pensions in Islamic countries. Graydon Bennett gives an overview of the SOA's Ambassador Program on page 13, and we highlight several recent and upcoming international actuarial events.

Since I cannot remember when I started working on *International News*, I think it is time for others to have a chance to influence the publication. Vincent Xuan will be taking over as lead editor for the September issue. Thank you to all of you that have contributed to *International News* during my time as lead editor, especially to Vincent and Jill Hoffman for their efforts over the last few years. Also, thank you to Kathryn Baker at the SOA for her patience as we miss deadlines and make last minute changes. We are always looking for enthusiastic people to help find authors or content for *International News*. Please contact one of the editorial staff or the International Section council if you would like to be more involved. ☐



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Chairperson's Corner
Global Matters

By Carlos Arocha

On April 7–12, 2015 the council and committee meetings of the International Actuarial Association (IAA) take place in Zurich. Actuaries from around the world will be discussing global standards of practice, regulation, education and practice, insurance accounting and other topics of relevance to the actuarial community. The Society of Actuaries will be represented along with representatives from the IAA's over 60 member associations.

In this global scene, international standards for insurance regulation have been evolving for the past couple of decades and have now been adopted by more than a hundred countries. The International Association of Insurance Supervisors is pushing to make its regulatory framework a global reality. In addition, global capital standards are expected to become effective this year for globally systemically important insurers (aka, G-SIIs) and in 2019 for Internationally Active Insurance Groups (IAIGs).

With these issues in mind, the International Section has devised a concept for the 2015 SOA Annual Meeting & Exhibit (Oct. 11–14, 2015 in Austin, Texas). We call it "Follow the International Section around the world." Sessions will highlight an actuarial challenge with one geographical area as its focus. For example, convergence of U.S. and international regulatory principles will feature the regulatory scene in Europe. A session on micro insurance will highlight the less economically developed markets of Africa & Latin America. China will be the subject of a session called "Closing the Financial Gap for Cardiovascular Disease." And the traffic of data processing and enterprise data system issues will tackle cross border consequences for data privacy. If you would like to submit ideas around these themes, please contact Wendy Liang, our section vice chairperson, at *wendy_liang@swissre.com*.

As more and more members become aware of global issues, we are strengthening our network of ambassadors. The aim of the Ambassador Program is to assist in carrying out the Society of Actuaries' international programs. In this issue, Graydon Bennett our section secretary, writes about current developments. If you want to volunteer, please contact Graydon at *graydon-bennett@generali-guernsey.com*.

We also continue with our efforts of reaching out to the SOA's growing membership, not only the newly credentialed actuaries, but also the established members of the profession who reside outside the United States and Canada. Our mission is to encourage and to facilitate the professional development of our members and affiliates who are involved in international insurance, pensions, Social Security programs, and general insurance, or who are interested in international areas of practice, through activities such as meetings, seminars, research studies, and the exchange of information.

I welcome your ideas and feedback over the coming year and look forward to making 2015 a success together.

Enjoy this edition of *International News!* □

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2014 Global Insurance-Linked Securities (ILS): Two Steps Forward, One Step Back?

By Charles Tsai

In June 2014, Warren Buffet said that "Berkshire Hathaway Inc. is avoiding writing hurricane insurance in Florida because premiums have been pushed too low."[1] Grey swan events are no longer within some insurers' risk appetites. However, capital markets seemed to have more tolerance than Warren Buffet as they invested in these certain mysterious creatures called insurance-linked securities (ILS). Such behavior and trend emerged against the backdrop of quantitative easing (QE) followed by tapering. Speculations of the ILS market's performance in a post-QE era require some historical review. The subsequent discussion is a hand-waving overview of global ILS-related events in 2014.

Insurance-linked securities are insurers' instruments for transferring non-market risks to the capital markets. In essence, it is a form of securitization that (ideally) transfers risks from insurers to the capital markets. Investors put their chips in 1) the prediction that non-market risks are not as 'bearish' as sponsors'/cedents' expectations, and 2) the hypothesis that non-market risks are not closely related to market risks. In the life insurance industry, the prominent transactions are longevity swaps, where investors bet that people do not live as long as the sponsors projected. In the property & casualty (non-life) industry, investors bet that environmental black swan events will not evolve into grey swan events as cedents modeled. Furthermore, investors assume that events such as aviation tragedies and terrorism are not correlated with oil prices and other economic indicators.

The low number of players in the insurance securitization market has even kept its reporting standards in an early stage. In November 2014,[2] the IFRS Interpretations Committee (IFRIC) discussed the measurement of longevity swaps for defined benefit pension plans. The two major measurements approaches regard a longevity swap as either 1) a single instrument to be measured at its fair value, or 2) a combination of two components (variable and fixed legs) subject to another basis of measurement. Different paragraphs of IAS 19, Employee Benefits, cover these two approaches. IFRIC made two conclusions. First, entities can tentatively measure longevity swaps "at fair value as part of plan assets, applying IAS 19 and IFRS 13."[3] Second, IFRIC will not add such issue to its agenda because "it is not currently widespread and material diversity in practice is not observed."[2] Therefore, it is unclear whether standard will adapt in the near future should ILS become more prevalent. The option of the investment method (as for life settlements under FASB Staff Position 85-4-1[4]) may be unlikely, but at least there will be clarifications.

The following brief case studies will explore those minority pioneers that have been involved in ILS

> "Insurance-linked securities are insurers' instruments for transferring non-market risks to the capital markets."

transactions in 2014. The *raison d'être* for these transactions can be sourced from the parties' strategic initiatives. Swiss Re's 2006 Sigma report[5] and past SOA exams[6] have been inspirational introductions to the opportunities and challenges in such transactions.

BT PENSION SCHEME, PRUDENTIAL FINANCIAL (US), AND BRITISH LONGEVITY RISKS

According to United Kingdom's Office for National Statistics,[7] a newborn baby girl in 1998 had a life expectancy of 80 years and a newborn baby boy 75 years. A decade later in 2008, the respective life expectancies are 82 years and 78 years. In Queen Elizabeth II's 2013 speech, she noted "the legislation will increase the state retirement age to 67 between 2026 and 2028."[8]

Given such evident longevity risks, British multinational BT Group's BT Pension Scheme entered into a GBP 16 billion longevity swap (advised by Aon Hewitt) with the American insurer Prudential Financial in July 2014.[9] It "matched the total volume of longevity risk activity in 2013, and was double that of the UK over the same period."[10] It covers more than a quarter[9] of the pension scheme's longevity exposures. Unlike some transactions that involved investment banks (such as JP Morgan in 2011[11]), it involves "a wholly owned (by BT) captive insurance vehicle in Guernsey that traded with the scheme on one side and Prudential as reinsurer on the other."[10] Such structures decreased fees and counterparty risks.

DELTA LLOYD GROUP, RGA INC., AND DUTCH LONGEVITY RISKS

According to a 2010 report by Leyden Academy, "Japan has the highest life expectancy at birth...at approximately 79 years for men and 86 years for women."[12] The same report notes that the corresponding figures for the Netherlands are 77 and 81 years. Using data from 1850 to 2010, the report also highlights that Dutch "life expectancy has increased by almost 2.5 years per decade and that there is no indication yet that the increase in life expectancy is levelling off."

Delta Lloyd Group is a Dutch insurer with significant exposure to such longevity risk. In both of its ORSA report and its 2013 annual report, it identified longevity risk as one of its five major risks.[13] It had EUR 1.8 billion set aside as additional longevity provisions by the end of 2013, and it "does not yet use reinsurance for longevity risk."[13] However, the 2013 report also noted that the Group is "expecting decrease in mortality rates for the next 50 years," and was "considering various forms of longevity hedges and transfers."

In August 2014, Delta Lloyd Group signed a EUR 12 billion longevity swap directly with the Reinsurance Group of America (RGA Inc.).[14] The transaction spans six years,[14] an advantage over short-term coverages of reinsurance contracts. According to a RGA Managing Director, it is a "first-of-a-kind index based transaction in the EMEA region."[14] Delta Lloyd Group's CEO highlighted the transaction's benefits in maintaining the Group's ratings and compliance with regulatory requirements (such as its IGD ratio).[14]

AVIVA, SWISS RE, SCOR, AND BRITISH LONGEVITY RISKS

Aviva is one of the leading British insurance companies in the world. In Aviva's 2013 annual report,[15] there is a summary stressing the sensitivity of Aviva's global Market Consistent Embedded Value (MCEV) and Value of New Business (VNB) to a 5 percent decrease in mortality/morbidity rates in its annuity business. MCEV plummeted from the 2013 reported value of GBP 14,990 MM to a projection of GBP -405 MM. VNB fell from the 2013 reported value of GBP 593 MM to a projection of GBP -16 MM. The same report noted that Aviva was already utilizing reinsurance to mitigate and transfer such longevity risks.

In March 2014, Aviva completed a GBP 5 billion longevity swap with Swiss Re and SCOR.[16] It covers 19,000 members under the Aviva Staff Pension Scheme.[16] Swiss Re's Global Head of Longevity Solutions shared that the transaction will bring diversification benefits to its mortality business, and transfer relevant assets and liabilities from Aviva's to Swiss Re's balance sheets.[16]

ZENKYOREN, NAKAMA RE LTD., AND JAPANESE EARTHQUAKES

In March 2011, a 9.0-magnitude earthquake ("Great East Japan Earthquake") shattered Japan.[17]. Zenkyoren (National Mutual Insurance Federation of Agricultural Cooperatives) was one of Japan's non-life insurers impacted by the catastrophe. According to its 2013 annual report,[18] Zenkyoren paid JPY 904 billion in building endowment insurance claims as of March 2013. In the same report, Zenkyoren noted that it has "secured sufficient collateral for payments...through reinsurance coverage and reserve provisions."

In May 2014, Nakama Re Ltd. issued a catastrophe bond that allows Zenkyoren to cede USD 300 MM of fully-collateralized Japanese earthquake reinsurance provision.[19] Aon Benfield Securities is the structuring agent, and the bond matures four years later in March 2018.[19] The bond covers homeowners and buildings in Zenkyoren's personal lines.[19]

ASSICURAZIONI GENERALI S.P.A., LION I RE LTD., AND EUROPEAN WINDSTORMS

Assicurazioni Generali S.p.A. is a major Italian insurer with significant operations in Europe and Asia. In April 2014, it sponsored a EUR 190 MM catastrophe bond as protection against European windstorms.[20] A special purpose vehicle in Ireland named Lion I Re Ltd. issued the bond and will cover the risks for three years.[20] Fitch highlighted that "over 80 percent of the catastrophe bond's exposure is located in three countries: Germany, France, and Austria."[20] According to GC Securities' Global Head of ILS Structuring, "Lion I Re pioneers a new methodology to allow cedents to access the capital markets at any point the during calendar year but only pay an annual premium rate that adjusts to reflect the commensurate amount of risk contributed for such portion of a partial calendar year period."[20]

CCRIF, WORLD BANK, AND CARIBBEAN HURRICANES AND EARTHQUAKES

The Caribbean Catastrophe Risk Insurance Facility (CCRIF)[21] is a segregated portfolio company that funds Caribbean governments should they be hit by hurricanes and earthquakes. In June 2014, the World Bank issued its first catastrophe bond that protects CCRIF's 16 member islands over three years.[22] Such unconventional deal was not issued via special purpose insurers. According to disclosures, "the notes will pay investors a coupon of LIBOR plus 6.3% to 6.5%."[22]

NEW YEAR, NEW STRUCTURES?

The ILS market seems to still be in its baby steps. As more mortality figures and catastrophe statistics emerge, it appears that the more we learn, the more uncertain we are about what we are going to experience. It is always easier to have the benefit of hindsight five years later when these ILS transactions have matured. A more practical goal (than speculating the market to dry up) is to monitor whether such risks will give birth to new ILS structures by the end of 2015. If so, perhaps IFRS and other reporting standards will evolve and adapt with Mother Nature. □

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[3] http://www.ifrs.org/Current-Projects/IASB-Projects/Employee-Benefits-Longevity-swaps/project-news/Pages/Project-update-November-2014.aspx

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[21] http://www.ccrif.org/content/about-us

[22] http://www.artemis.bm/deal_directory/world-bank-ccrif-2014-1/

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Grieving Widows:
Exploring excess mortality following bereavement

By Steven Baxter, Conor O'Reilly and Andrew Muddle

OUR ANALYSIS

Our analysis is based upon data collected by Club Vita in respect of annuitants within occupational pension schemes. Club Vita currently tracks around 1 in 10 of the UK retired population, reflecting the members of over 150 different occupational pension schemes. The full research report and more information on Club Vita can be found at http://www.hymans.co.uk/knowledge-centre/surveys-reports/longevity-awareness/longevity-awareness-grieving-widows.aspx.

The 'grieving widows effect', or the 'broken heart syndrome' as it is often referred to, is the phenomenon whereby the chances of dying are elevated immediate following the loss of a partner.

In many ways the existence of such an effect is no surprise. Companionship can convey a positive benefit on health and well-being through mutual care; and in later life a watchful eye to summon medical care quickly when needed. For example Friedman & Martin (2011) discusses the positive health benefits that companionship can bring.

Companionship also has a positive effect on an individual's desire to stave off a visit from the Grim Reaper. A striking example is a story we heard from Professor Tom Kirkwood. When interviewed, a couple participating in the University of Newcastle's 85+ study both independently responded that the driver keeping them alive is that they did not want to leave the other alone after their death.

In contrast the stress of losing a loved one removes this purpose for living. From a medical perspective this can manifest in a variety of ways including stress cardiomyopathy—a sudden weakening of the heart muscles induced by stress which can lead to acute heart failure—and through more gradual deterioration of function.

To date insurance companies and pension schemes assessing the financial costs of annuities have paid little attention to this effect. Yet in times of low interest rates annuity valuations are acutely sensitive to the longer dated cashflows, including those potentially payable via survivor benefits (i.e., the attaching annuity payable for life to a spouse who outlives the original annuity policy holder).

In this paper we show how allowing for this effect can help reduce annuity prices by circa 50 basis points. This benefit should be of interest to insurers both in terms of the opportunity to gain a competitive edge in pricing, but also in the potential release of capital reserves.

In analysing the 'grieving widows' effect we contrast mortality rates experienced amongst widows with women who are the 'first life' annuitant ('pensioner') and so more likely (but not guaranteed) to be married. To avoid distortions from retirees with mortality elevated by serious ill health we have restricted our attention to pensioners who retired in 'normal health' i.e., those who were not eligible for an enhanced benefit from their pension scheme owing to a known health condition at retirement.

QUANTIFYING THE GRIEVING WIDOWS EFFECT

Chart 1 (on page 9) compares the ratio of deaths observed in the Club Vita data for different age bands with the number of deaths which would have been expected had they been in line with a commonly used actuarial mortality table (known as an 'A/E ratio'). The table used is PNFL00 as published by the CMI

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on behalf of the UK Actuarial Profession and relates to pensioners who retired from occupational pension schemes where the benefits have been insured with a life office—specifically female pensioners who retired at or after their normal retirement age for that scheme.

The chart includes three lines representing widows, normal health (NH) pensioners and the combined data from both these groups. The dotted lines reflect the 95% confidence interval for the A/E ratio, calculated using approximate formulae.

We see that:

- There is a sharply higher death rate amongst young widows than female pensioners.
- There is convergence of relative mortality from age 70 upwards, suggesting that the mortality of widows is similar to that of female pensioners at older ages, but that the loss of a partner can lead to an increased chance of death at younger ages.

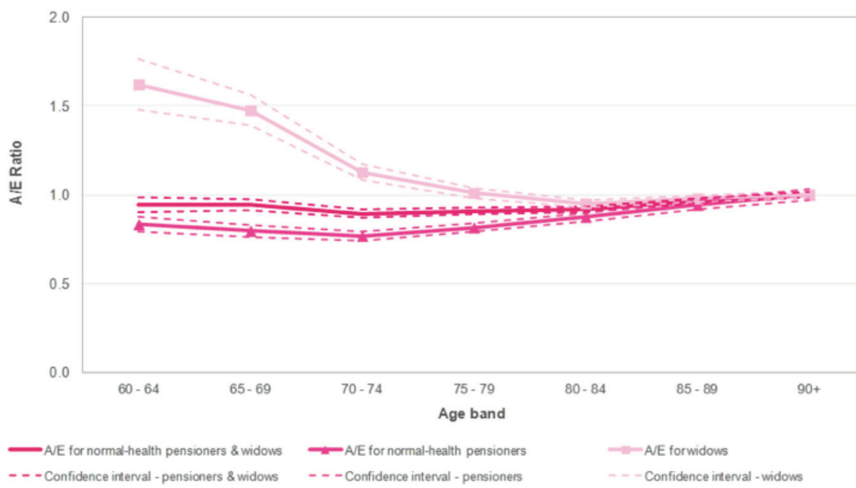
This suggests a strong grieving widows effect, i.e., the mortality of widows being noticeably elevated as compared to female pensioners, and is consistent with other studies e.g., Spreeuw & Wang (2008). Hart et al (2007) suggests that this excess mortality manifests across most of the major causes including cardiovascular disease, coronary heart disease, stroke, cancer, and accidents (including violence); a conclusion which has been supported in a US study by Elwert & Christakis (2008).

AGE, DURATION AND SELECTION

Whilst our analysis indicates a clear pattern with age, it is natural to ask whether this is the full story. For example:

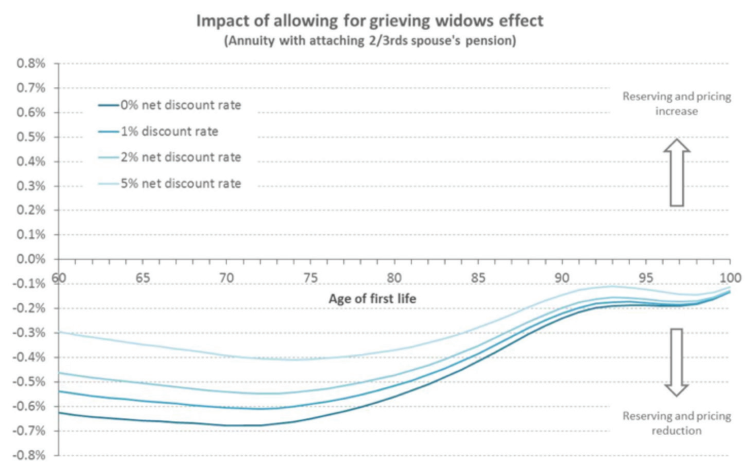
CHART 1
Comparison of A/E Ratios for Normal Health Pensioner Women and Widows

(2006-2010 data. Expected numbers based on PNFL00 series)



1. The youngest widows will tend to have been recently widowed. At older ages the widows will be a mix of long-term widowed and the recently bereaved. As such the average duration since bereavement will increase with age and so the features seen above may be a duration rather than an age effect.
2. The younger widows will tend to have been married to a man who died at a relatively young age. This is likely to mean the first-life husbands were from the lower socio-economic groups who have higher mortality. In turn we would expect the widows to be from a similar background. As such the age pattern seen above could really be a selection effect whereby the younger widows have above average mortality owing to a bias towards less healthy socio-demographics.

CHART 2.
Impact of Allowing for Grieving Widows Effect
(Annuity with attaching 2/3rds spouse's pension)



We explore these possible issues further in the full report, where we identify a modest duration effect during the first year of bereavement, which interacts with the age effect illustrated above.

FINANCIAL MATERIALITY

Having illustrated the existence of the grieving widows effect, a natural next step is to consider the potential financial significance of allowing for this in reserving and pricing of annuities.

To do this we have calculated the value of an annuity with an attaching spouse's pension under two different approaches. In each case the annuity is assumed to be payable at outset to a man. The approaches differ though in the mortality assumption used for the contingent spouse. Firstly, we have assumed that the mortality of the spouse is in line with the 'average' female (normal health) pensioner within Club Vita's dataset. Secondly, we have assumed that the mortality of the spouse is in line with the 'average' female pensioner within Club Vita's dataset until she is bereaved, after which mortality is in line with the mortality of an 'average' widow within the Club Vita data.

Further, we have assumed that 90% of men are married at ages up to 65. For older annuitants we have assumed a lower proportion married are currently married consistent with an allowance for the wife having already pre-deceased the member. (No allowance has been made for the possibility of remarriage throughout our calculations.)

Chart 2 (left) illustrates the results of our calculations for a range of different net discount rates, and using an attaching spouse's annuity of 2/3rds of the pension in payment. In each case the line represents the change in value of the annuity once the grieving effect is allowed for.

We can see that:

- For all ages allowing for the grieving widows effect reduces the price of an annuity, by up to 70b.p. at inception where there is a low net discount and a substantial (2/3rds) attaching widows pension.
- There is a clear shape with age – the grieving effect makes a material difference for annuitants aged under 75 (who will be the vast majority of the liabilities in a typical portfolio).

Over the age of 75 the rapidly declining chance of still being married at the outset of the annuity results in a sharp decline in the price/reserving reduction from the grieving widows effect.

Thus, allowing for the grieving widows effect can be financially material, especially for index-linked annuities in the current financial times of close to zero, or indeed negative, net discount rates in the UK.

> "There is a clear 'grieving widows' effect whereby mortality of widows is higher than that of female (normal health) pensioners"

CONFOUNDING WITH SOCIO-ECONOMICS?

The astute reader might be concerned that by using female pensioner mortality for the spouse prior to the death of the original annuitant man we risk confounding a grieving effect with a socio-economic effect. This would happen for example if the socio-economic status of the typical female pensioner is different to that of the typical widow in the Club Vita data. The socio-demographic profiles of female pensioners and widows for different age bands gives us considerable comfort that this is unlikely to be the case. Further, we have replicated our analysis of the financial impact using the mortality experienced for specific socio-demographic groups.

In each case we found that allowing for the grieving widows effect is financially material, albeit the precise quantum of the effect differs a little between the different lifestyle groupings.

WHAT ABOUT WIDOWERS?

In this paper we have focused on widows. This is deliberate as Club Vita has far richer data on widows than widowers. This is a consequence of both the lower mortality of women leading to a greater proportion of women outliving their husbands (and so greater data volumes for widows;) and of UK pensions legislation where the requirement to provide a widowers pension was introduced after the requirement to provide a widows pension.

However, preliminary analysis of the Club Vita data suggests similar conclusions to those presented above will apply to widowers. This would be consistent with Friedman & Martin (2011) who suggest that not only is a similar grieving effect seen amongst widowers, but that it is much more pronounced than for widows.

CONCLUSIONS

Thus we can conclude:

- There is a clear 'grieving widows' effect whereby mortality of widows is higher than that of female (normal health) pensioners.
- In our full report we see how this effect has both:
  - An age component, with mortality some 50% higher at younger ages, declining to close to parity at 90+; and
  - A duration effect where widows mortality rates are some 10-15% higher during the first year following bereavement compared to later durations.
- The effect has the potential to reduce annuity prices. Using a second life mortality assumption for the widows benefit during payment which captures the grieving effect (rather than a generic female pensioner assumption) has the potential to reduce typical annuity prices by circa 50 basis points.
- For UK life companies with circa £200bn exposure to annuities (net of reinsurance) we estimate that allowing for this effect could release reserves of up to £200m. ☐

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International Section Ambassador Program

By Graydon Bennett

As many of our readers will know, the International Section of the SOA runs an initiative to promote both the actuarial profession in general, and the SOA and its members in particular, outside North America: the SOA Ambassador Program. The program currently boasts 32 ambassadors across as many countries. Indeed, with the exception of Antarctica, there is an SOA ambassador on every continent. A listing of current ambassadors is available on the International Section webpage.

The mission of the Ambassador Program is "to assist in carrying out the Society of Actuaries' international programs, identifying and developing subjects of international interest for communication to SOA members, identifying special needs of SOA members in different areas of the world, helping the actuarial profession to grow in underdeveloped areas, and functioning as a valuable resource and link between the SOA and national actuarial organizations and actuarial clubs."

The duties of an ambassador will be dependent on their location: in developed markets with a concentration of SOA members (or similarly qualified actuaries) and actuarial employers, the ambassador may look to organise networking events to allow actuaries to connect in a new location, in addition to promoting the SOA's international strategy in a local context. By contrast, in regions with a small or developing actuarial population, the ambassador may focus on marketing the SOA's credentials to both employers and potential candidates, as well providing a local point of contact for SOA members who wish to keep up to date with international initiatives of the SOA.

For example, an ambassador could:

- promote the SOA examination system to local students by presenting at secondary and tertiary educational institutions
- assist the SOA in contacting local SOA members and potential candidates
- liaise with a local actuarial organisation, if one exists

The International Section Council would like to hear from the section's membership, particularly members who reside outside the United States and Canada, to understand what else they seek from the Ambassador Program. What additional activities would be of greatest benefit to SOA members and potential candidates around the world? We would be grateful for your feedback. Please contact any member of the International Section Council or Martha Sikaras at *msikaras@soa.org* with your ideas or any questions about the Ambassador Program. □

Akshay Pandit, is partner at M/s. K.A. Pandit Consultants & Actuaries in Mumbai, India. He can be reached at *akshay@ka-pandit.com.*

17th Global Conference Of Actuaries

By Akshay Pandit

The 17th annual Global Conference of Actuaries (17th GCA), was again a two-day affair. The conference was held at the Hotel Renaissance in Mumbai on the February 2–3, 2015. The theme of the 2015 conference was "Changing Risks, Expecting the Unexpected." This major global event attracts stakeholders of the insurance and financial sectors, including actuaries and non-actuaries, with more than 750 professionals across the globe participating. Delegates from a wide variety of countries like the United Kingdom, United States, Singapore, Australia, China, Sri Lanka and many others registered and participated in different capacities as chairpersons, speakers and delegates. There were ample networking opportunities and sharing of knowledge over the two days. Students also gained knowledge from the papers presented and had an opportunity to meet professionals and interact with them.

The GCA Committee chaired by Mr. Dilip Chakraborty along with the entire staff of the Institute of Actuaries of India had worked for more than six months towards the grand success of this event.

The committee arranged a pre-conference dinner on February 1, which was sponsored by the Institute and Faculty of Actuaries (IFoA), U.K. President-Elect, Fiona Morris gave awards to newly qualified fellows from the IFoA. This date incidentally coincides with the establishment date of the oldest actuarial firm in India, M/S. K.A. Pandit, which was established on February 1, 1943. Past presidents of the Institute of Actuaries of India who had contributed to the development of the actuarial profession and were aged more than 75 years were honoured. Mr. N.M. Govardhan was awarded a memento by Mr. DK. Pandit. He gave a brief speech on the actuarial profession. This function was attended by around 100 top officials including the Insurance Regulatory and Development Authority (IRDA) Chairman, the Chairman and Managing Directors of LIC and other senior staff from various private and public sector Companies. This program also included dance performances and some beautiful songs.

The main conference started on the February 2, with delegates registering, meeting old colleagues, and visiting stalls of sponsors. Sponsors had their stalls in the corridor, and they helped make the conference lively by sharing knowledge of their firms, culture, and current activities of their organizations. They also attracted people with lucky draw prizes and some mind-tickling quiz games.

At 9 a.m. the GCA was inaugurated by Mr. T S Vijayan, chairperson, IRDA. The conference was full of various interactive sessions, plenary and concurrent sessions on general insurance, life insurance, pensions and employee benefits, health care insurance, ERM, etc.

During the inaugural session, Mr. Dilip Chakraborty, Chairperson of the 17th GCA Organizing Group, welcomed the elite gathering of around 750 delegates, including around 150 fellow members, 50 associate members and more than 30 delegates from across the globe. While setting the stage for the upcoming thought-provoking ideas and discussions around the very theme of the conference, "Changing Risks, Expecting the Unexpected," he also linked the topic to the current situation prevailing in India relating to economic uncertainty and political developments. He noted that there has been a transformation of the economic scenario which has produced spectacular results for the insurance industry and has resulted in huge optimism in the industry. In his keynote address, Students received valuable career advice with professionals sharing countless stories and experiences.

Mr. T S Vijayan said that the annual GCA event provides an excellent platform to discuss topical issues where actuaries play an active and decisive role and also serves the purpose of improving the image of the profession in the country. He gave vital statistics on the Indian insurance penetration and explained the role of IRDA in addressing the information asymmetries, ensuring transparency and providing value to customers. He spoke about improving the business environment to provide immense growth opportunities for the insurance and reinsurance industries. He also explained the importance of improving the technology penetration, enhancing affordability of products, meeting the needs of low income groups, improving the premium collection modes and frequency, improving internal and external communication, profitability of insurance companies, the importance of expense control, and the need for having self-sustaining products.

The plenary sessions on the first day concentrated on issues related to the international profession and industry, as well as current issues in life insurance, general insurance and retirement benefits in India. The sessions had speakers like Mr. D.K. Pandit, partner, M/S. K.A. Pandit, Nishit Majmudar, CEO, Aviva, Singapore; G. Srinivasan, CMD of New India Assurance Co. Ms. Fiona Morrison, president-elect of the IFoA, U.K. focused on the promotion of the actuarial skill set and values that actuaries could bring in the changing world. She also stated that to be successful in a world full of change, it is important to be adaptable and embrace the diversity of the industry in which we work. She also emphasized that the future of investments and impact of ageing population are huge challenges for the industry. The actuarial skill set is vital in finding and implementing solutions to these challenges which can help in supporting and in the development of the insurance industry.

After the plenary sessions, post lunch sessions were divided into several concurrent topics such as the appointed actuary's role in the Indian insurance market, asset liability modelling, critical illness, and general insurance reserving, etc. Speakers with expertise in the relevant fields gave their views, leaving enough time for participants to clarify their doubts and make sessions very interactive. Sessions were followed by the IAI student event. The event was chaired by Derek Cribb, chief executive of the IFoA, U.K. This plenary session looked at the soft skills that are required alongside the technical actuarial skillset to be effective in day to day work. To be a successful communicator, it is vital for one to be accomplished in getting key messages across to non-actuarial audiences so that the impact of the advice is understood. In this interactive session, Derek explained the importance of softer skills and provided pointers to help improve verbal communication abilities and to recognise good communication when one sees it.

This was followed by a most awaited event—AGFA—which was sponsored jointly by M/S. K. A. Pandit, Consultants and Actuaries and Canara HSBC Insurance Company. This two and a half hour cultural-cum-award ceremony programme started with a welcome dance, followed by a short speech by Mr. Akshay Pandit. He spoke about the importance of teamwork which helped the firm keep growing for the last 72 years. Three generations of the founding members sitting in the audience were celebrated with a big applause. Canara HSBC Appointed Actuary Mr. Chirag Rathod announced the name of the lucky draw contest winner. This was followed by a hilarious standup comedy and magic show and more dances. Awards were given to the students who qualified as fellows, associates and also who obtained the highest marks in relevant actuarial papers of the examinations held by the Institute of Actuaries of India. It also included the awards for the best paper submitted during the year. Another attraction was the 10 minute performance by math stars, where 26 students younger than 16 from Municipal School of Mumbai were selected as under-privileged children and given a math quiz and a written test followed by a buzzer round. Children were asked to select a song which has a math element—a number or any math term—in the lyrics. The program on that day ended with a tasty dinner for all the participants.

The second day started with plenary sessions on regulatory changes in the pension industry and the U.S. defined benefit (DB) environment. Speakers were Hemant G. Contractor, chairman, PFRDA, India; Emily Gingrich, vice president, AIG Life & Retirement, FSA, American International Group, USA; Dilip Chakraborty, chairperson, 17th GCA Organizing Group. This was followed by updates on actuarial issues, chaired by Ms. Pournima Gupte, member actuary, IRDA and by concurrent sessions covering various subjects like life insurance, the role of ERM, the problem of ageing populations by Frank Ashe, pensions and many more. The student event by IFoA also continued on day two with overwhelming response from students.

In summary, the conference provided an excellent, comprehensive and international overview of the insurance and finance sectors. It provided opportunity for new business, business expansion, getting clarity on studies and clearing doubts, meeting old friends and a lot more which made participants more enlightened and fresh. Ever increasing participation and global presence prove the accruing benefits. □

Pacific Rim Actuarial Club of Toronto (PRACT) Holds Annual Chinese New Year Dinner

On February 24, 2015, the Pacific Rim Actuarial Club of Toronto (PRACT) held its annual Chinese New Year dinner. This is a very popular annual event, with about 100 people attending this year, and involves a traditional Chinese menu, numerous door prizes, and a guest speaker. The guest speaker for this year was Mr. August Chow, who currently sits on the Board of Directors of the SOA and is also involved in the SOA International Committee. Mr. Chow spoke about recent developments in the Life Insurance Market in China including the current makeup of the market, the new solvency regime (C-ROSS) and other regulatory changes, and he also shared his thoughts on future challenges and opportunities in the life insurance market in China. Mr. Chow's presentation was very well received, as evidenced by a flurry of questions during the Q&A period. Mr. Chow's presentation can be found at the PRACT website.

The Pacific Rim Actuarial Club of Toronto is an active, well established actuarial club that was founded in 1993 to provide a platform for actuaries in Toronto to meet and discuss topics that were current and relevant to the Pacific Rim. The club sponsors several events each year including dinners, workshops, and an annual summer barbecue.

Itt Apiraktivong is chairman, 19th Asian Actuarial Conference.

19th Asian Actuarial Conference

By Itt Apiraktivong

The AAC, formerly known as East Asian Actuarial Conference (EAAC) is the largest annual actuarial conference in the region attracting more than 700 delegates from various countries within and outside Asia. The member associations include Australia, China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Chinese Taipei and Thailand. In 2015, EAAC (East Asian Actuarial Conference) was changed to "AAC (Asian Actuarial Conference)" to welcome new countries outside of East Asia to the 19th AAC in Bangkok.

The Society of Actuaries of Thailand has the privilege of hosting the 19th AAC, November 3–6, 2015. This conference will be held in a Shangri-La hotel located in the heart of Bangkok on the banks of the historic Chao Phraya River.

The conference will span three and a half days with interesting topics on life insurance, general insurance, health insurance and risk management under the theme of "Innovation: Creating Sustainable Value," designed to appeal to actuaries from different practice areas.

The conference participants and speakers are prominent industry executives and experts providing not only benefits in terms of knowledge sharing and updates but also great opportunities in networking with international actuarial societies.

Moreover, the 19th AAC will enchant memorable programs through a half-day tour, welcome reception and gala dinner which allow all honored guests to impressively enjoy Bangkok together.

IMPORTANT DATES	EVENT
May 1 – July 31	Early Bird Registration
August 1 – October 31	Normal Registration
After October 31	Walk-in Registration
November 3 – 6	19th AAC

ABOUT THAILAND

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CONTACT US

At the upcoming 19th AAC, delegates will hear about the most interesting actuarial subjects together with the great experience Thailand can provide. For any updates and information, please go to our website and like our Facebook page.

Official Website: www.actuariesasia.org

Official Facebook page: 19th AAC

Our Early Bird registration will begin May 1, 2015. If you wish to register, please visit our website at www.actuariesasia.org. If you have any questions about the event, please feel free to contact our Marketing and Communication Team via e-mail at *marketing@aac19th.org*.

The 19th Asian Actuarial Conference promises to be a very exciting and informative event and we hope you can join us! □

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Challenges and First Steps in Shariah-Compliant Pension Frameworks

By Safder Jaffer and Simon Heborn

There is an increasing need for pension provision in many Islamic countries. There are special challenges in developing Shariah-compliant pension frameworks. In this article, we identify these challenges and take the first steps in proposing how they may be overcome.

FIGURE 1
Goverment Pension Benefit Payments ($billions)

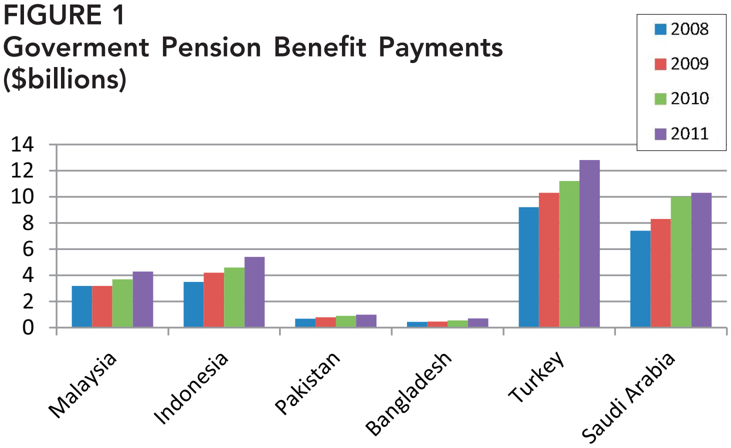


FIGURE 2
Key Data on Selected Muslim Majority Countries

Selected Muslim majority countries	2012 per capita income (USD)	Savings rate as % of GDP	Mid-2012 population (millions)	Population growth rate	Median age of population (years)	Old age support ratio - 2012	Old age support ratio - 2050	Labour force participation rate	65+ population (millions)	Life expectancy males	Life expectancy females	Retirement age
Malaysia	10,000	35%	29	1.60%	27.1	13	4	65%	1.5	72.0	77.0	60
Indonesia	3,200	32%	248	1.04%	28.5	12	3	68%	15.1	70.0	74.0	55
Pakistan	1,155	20%	179	2.10%	21.9	14	7	54%	7.2	64.5	68.3	60
Bangladesh	838	26%	153	1.37%	23.6	14	4	71%	8.0	68.2	72.0	59
Turkey	10,500	13%	76	1.20%	30.1	11	3	51%	5.3	72.0	77.2	60
Saudi Arabia	24,911	47%	29	2.90%	25.7	22	5	50%	0.9	72.4	76.4	60

- At present, the population demographics in the Muslim World are young with a median age in the twenties.
- The old age support ratio (the number of people between ages 15 to 64 to those older than 64) is expected to drop sharply from 11 or higher in 2012 to around 5 in 2050.

Source : Government Department of Statistics, World Bank, CIA World Fact Book and Indexmundi websites

DRIVERS TOWARD GREATER PRIVATE PROVISION

According to the historian Baladhuri, the model of a state-funded pension in an Islamic territory can be traced to the time of the second Caliph Omar, where the state treasury stipulated a stipend for certain groups of people.[1] Fast-forward to the current day and this legacy remains intact, with many Islamic states heavily engaged in various guises in providing retirement benefits to their civil servants and broader citizenry. These are now sizable commitments and, as shown in Figure 1, they are rising.

As with elsewhere in the world, many Islamic nations are experiencing the twin forces of rising life expectancy and a decline in fertility rates, as outlined in Figure 2. By 2030, it is anticipated that the old age support ratio (i.e., the number of persons age 15 to 64 per person age 65 or over) will begin to drop in many Islamic countries. This will make it increasingly difficult for governments to shoulder the financial burden for retirement provision. It is inevitable that a greater share of the responsibility will transfer to the private sector, either via occupational or personal savings.

There is also a religious dimension that may drive greater private pension provision. Historically there has been considerable reliance on various financial institutions and social arrangements in Islamic societies. For instance, a large family; community care; the *bait al-māl* system (Islamic treasury whereby the government provides welfare support for the poor and elderly); and *awqāf* (endowments, based on philanthropy). But some scholars deem such pillars of provision to be at odds with the higher objectives of Shariah (*maqāsid al-Sharia*), which include an obligation on the individual to avoid being a burden on others. In line with the guiding principles of protection of life, family, and wealth, individuals should save for their old age. Acceptance of this view may add further impetus to the move to a formalized private pension provision.

Taking these influences together, it is easy to envisage an increasing appetite for pension vehicles, whether through personal, occupational, or state-managed frameworks.

We can look at existing pension fund operating models for inspiration on how new pension vehicles should be structured. However, they may not be fit for purpose. In Islam, a juristic principle states that everything is allowed as long as there is no proof that prohibits it. But various elements of the conventional fund models are considered to be *haram* (forbidden). This demands that we think about a special Islamic fund model, taking account of all relevant *fiqh* (jurisprudential) sensitivities.

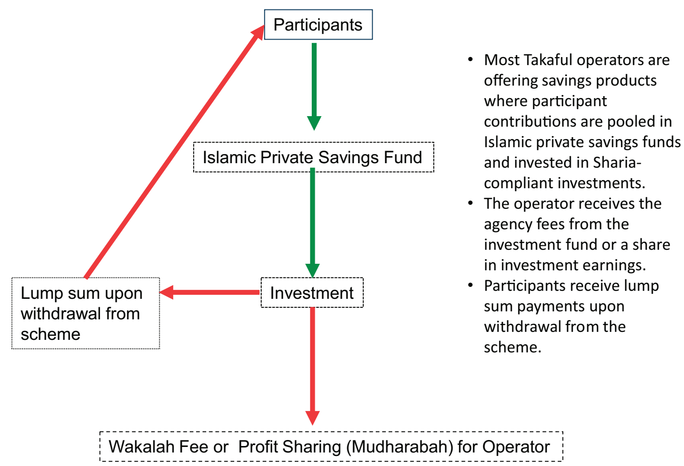
INTEREST DURING ACCUMULATION AND ANNUITIES IN DECUMULATION: THE DUAL PROBLEMS IN STRUCTURING AN ISLAMIC PLAN

The first phase in personal pension provision is the accumulation of contributions. These are pooled in investment funds until the time of retirement.

The investment must be compliant with Shariah principles. By collaboration between the financial services industry and Shariah authorities, there are now many *Takaful* (Islamic insurance) operators to help construct products that meet those principles. The pension company may take the role of a *wakeel* (agent) to manage the fund, or instead act as a *mudharib* (somebody who applies skills in partnership with a contributor of capital in a profit-sharing venture). There may be a requirement for *zakah* (a form of levy discussed further below), but broadly speaking the implementation would be fairly straightforward.

Once a fund has grown, we must then consider the decumulation phase. This is where participants begin to draw their benefit. The situation is relatively straightforward if at the time of retirement the participant wishes to receive their benefit as a lump sum This type of arrangement is illustrated in Figure 3 and is offered by many *Takaful* operators.

FIGURE 3
Structure of Private Occupational/Individual Savings Products Being Offered by Takaful Operators



However, it is generally accepted that an annuity is a better mechanism for providing a secure retirement income than annuity lump sum. It is the provision, via an *'aqd almu'awadhah* (contract of exchange), that introduces additional challenges to the Shariah-compliant pension framework. We encounter the following:

- ***Riba* (interest):** The income received under the annuity may be more than what one pays to purchase the annuity.

- ***Gharar* (uncertainty):** One does not know for how long he will live, and hence the amount he will receive is unpredictable.

- ***Maysir* (gambling):** Looked at another way, people who buy annuities cannot know how long they will live and are arguably betting against the annuity provider that they will outlive the life expectancy determined by the annuity provider

OTHER *FIQH* CONSIDERATIONS IN PENSION GOVERNANCE

Besides the issues of annuities, there are other *haram* elements within the conventional model that should be addressed to provide a Shariah-compliant platform. Primary considerations are as follows:

- **Asset ownership levy:** Depending on the plan structure and mode of funding, there may be a need for the payment of *zakah* (a form of levy usually at the rate of 2.5% per annum based on the ownership of certain types and net quantities of asset, due after possession for one lunar year). There is difference of opinion among Islamic scholars on this issue.

- **Exploitation:** There is scope for *ghaban* (the exploitation of a client based on his ignorance of what is prevailing in the market). This is considered a particular risk in defined contribution plans on account of both the layman not understanding the underlying investments and the charging of an administration fee by the fund manager.

- **Terms of contract:** A pension fund model may be construed as a guarantee or as a promise, or as elements of both. This distinction is important in Shariah terms because it can have legal consequences; adding to this, there is ambiguity over some of the case laws.

- **Availability of long-term Islamic investment instruments:** In a mature pension market, an insurance company selling an annuity product will seek to manage the interest risk from writing the annuity by investing in conventional long-term bonds. However, a *Takaful* operator does not have access to conventional bonds. Islamic bonds are available, constructed through *sukuk* (financial certificates)—but they are likely to be for significantly shorter terms than required to provide a good match for a stream of annuity payments for a relatively young individual.

- **Inheritance:** In a conventional pension fund model, if the contributor dies before retirement the funds pass to that person's estate for distribution among heirs. However, in a form of pension model where the benefit rights only accrue at the point of retirement, then at the time of preretirement death there will be no ownership. This may lead to problems in distributing the accumulated benefit to dependents.

- **Divorce**: In Islam, a contract of *nikah* (marriage) is not an economic venture or partnership between spouses as it might be in some legal systems. The actuarially determined fair value of a pension entitlement can often form a significant part of a divorce settlement in other markets. Special considerations may be required to protect all parties.

WORKABLE FRAMEWORK

We must now think about how we can customize the core model for a pension scheme for compliance with these Shariah principles. We are still at the drawing board on this.

A key component of any viable framework will be the availability of long-term financial instruments. There is a need for deeper availability of *sukuk*, especially for longer terms. A solution here may be a long-term sovereign *sukuk*. This could be based on long-term infrastructure *istithna'* (projects), e.g., toll roads or airports, where the rental income from leases would service the payments due. A possible model for this is outlined in Figure 4.

These *sukuk* could be structured in such a fashion to provide a stream of payments similar to an annuity, and play a role in the operating model outlined in

Figure 5. Participants would place money (family *tabarru'*) via an *uqūd al-Tabarru'āt* (contract of donation) to a pension pot, implemented via a legally binding *wa'ad iltizāmi* (self-imposed promise). The family *tabarru'* is meant to cover the family in case of premature death of the participant and may help alleviate some of the Shariah-compliance considerations related to inheritance. As a unilateral contract it would not attract *riba, gharar, or maysir*.

To clarify, these are simply theoretical models that have been discussed in the *Takaful* community and have not yet been implemented. Further engagement is required from industry and government stakeholders to provide the framework for such models to flourish.

CONCLUSIONS

In summary, there should be a role for greater pension provision in Islamic countries. There are special sensitivities that will need to be taken into account in structuring such provision. The non-applicability of annuities and conventional bonds along with the other special governance considerations make this a complex landscape. There is an opportunity for actuaries to help sculpt this landscape. □

ENDNOTES

1 Zaman H. [1991], Economic Functions of an Islamic State [The Early Experience], Leicester: Islamic Foundation

FIGURE 4
Proposed tranched longevity sukuk based on istithna'-cum-ijarah model

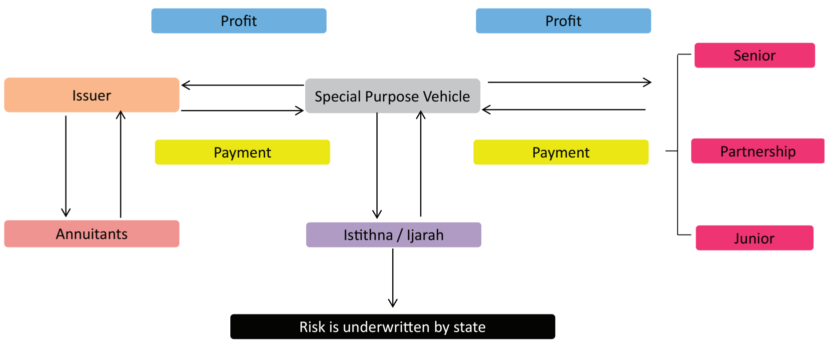
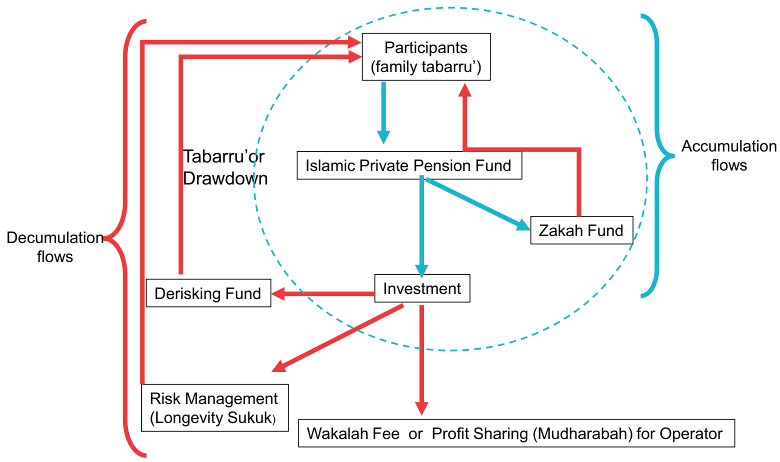


FIGURE 5
Suggested model for private occupational Islamic Pension fund



LIVING to 100

SOCIETY OF ACTUARIES
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Call for Papers—2017 Living to 100 Symposium

The Committee on Living to 100 Research Symposia requests professionals, knowledgeable in the important area of longevity and its consequences, prepare a high quality paper for presentation for the 2017 Living to 100 Symposium. The topics of interest include, but are not limited to:

- theories on how and why we age,
- methodologies for estimating future rates of survival and
- potential benefits and risks associated with the increasing numbers of retirees and potential answers to other difficult issues that arise.

Please submit an abstract or outline of your proposed paper by Sept. 30, 2015. The abstract should include a brief description of the subject of the paper, data sources and methods to be used, key items to be covered, and how your paper will contribute to current knowledge, theory and/or methodology.

A brief curriculum vitae or resume is also required.
Submit the information by email to:

Jan Schuh
Sr. Research Administrator
Email: *jschuh@soa.org*

Learn more about the call for papers, including the complete topic list, by going to Livingto100.soa.org

Questions may be directed to Ronora Stryker, research actuary, at *rstryker@soa.org*.

Caribbean Actuarial Association 25th Annual Conference

December 2-4, 2015
Hilton Trinidad & Conference Centre
Port of Spain, Trinidad & Tobago


The CAA's annual conference is the main event on the region's actuarial calendar and it brings together leading professionals in the financial services industry.

We are planning a special program to mark our 25th annual conference. The program will feature leading regional and international specialists in the fields of pensions, life insurance, investment and property and casualty insurance.

The Society of Actuaries' Associateship Professionalism Course will be held in conjunction with the conference.

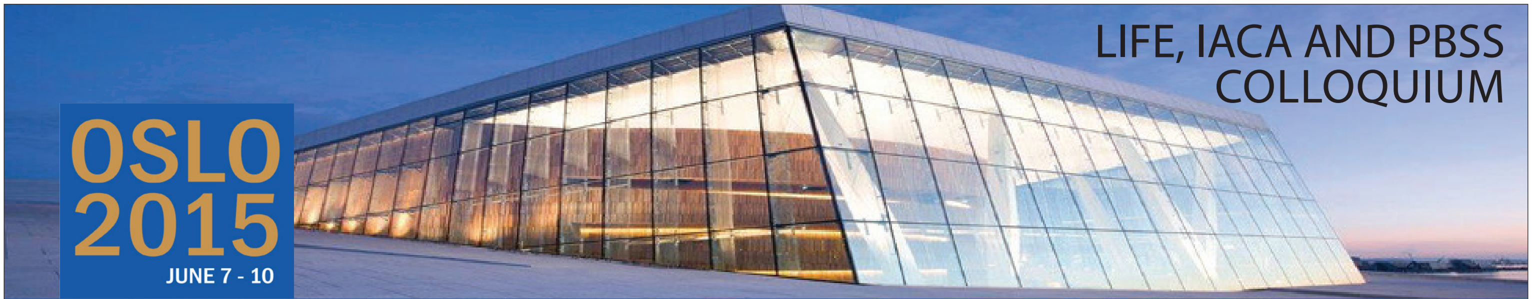
The newly renovated Hilton Trinidad is set amid lush tropical foliage where the hills meet the Gulf of Paria and is only 45 minutes from Piarco International Airport.

Trinidad and Tobago is an environmental treasure with botanical gardens, bird sanctuaries the hemisphere's oldest protected rainforest and the La Brea Pitch Lake. You can also visit the twin island republic's sister island Tobago which has some of the best beaches in the Caribbean.

We look forward to welcoming you to Trinidad and Tobago, our Island Paradise.

Details will be available soon on our website at www.caa.com.bb.

CARIBBEAN ACTUARIAL ASSOCIATION



Den Norske Aktuarforening invites you to attend the Colloquium of the International Actuarial Association to be held in Oslo, Norway, from the 7th to the 10th of June 2015. The colloquium is a joint collaboration of three IAA sections: Pension Benefits and Social Security (PBSS), Life Insurance (LIFE) and Consulting Actuaries (IACA). The venue is the Grand Hotel, situated in the centre of Oslo.

We hope you will be inspired to attend and participate in the discussions in Oslo. Enjoy the bright summer nights in the little city with the big heart!

You can read more about the event as well as the hotel on the website.

Keynote Speakers

- Professor An Chen, University of Ulm, Germany
- Managing director Idar Kreutzer, Finance Norway, Norway
- Professor Antoon Pelsser, University of Maastricht, The Netherlands
- Professor Mogens Steffensen, University of Copenhagen, Denmark

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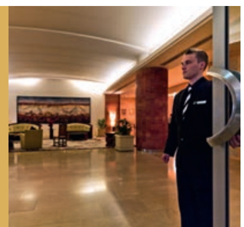

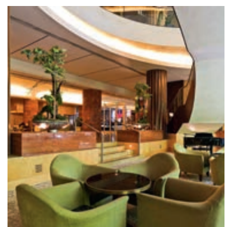

Register Now • **www.actuaries.org/sydney2015/**

The Actuaries Institute invites you to attend the Colloquia of the International Actuarial Association to be held in Sydney, Australia, from 23 to 27 August 2015. This is a joint collaboration of three IAA sections, the Actuarial Approach for Financial Risks/Enterprise Risk Management (AFIR/ERM), Actuarial Studies in Non-Life (ASTIN) and the International Association of Consulting Actuaries (IACA).

- **Engage in four plenary sessions and enjoy a choice of 43 concurrent sessions which will include AFIR/ERM, ASTIN and IACA topics**
- **Gain in-depth insights and analysis**
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- **Opportunity to visit the beautiful city of Sydney, Australia**

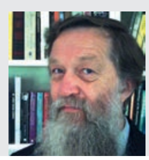
Register by **Friday 3 July 2015** and take advantage of the **Early Bird discount** – **www.actuaries.org/sydney2015/**

Plenary Speakers and Topics

Michel Dacorogna
SCOR Scienific Advisor, SCOR SE

Richard Madden
Professor of Health Statistics and Director, National Centre for Classification in Health (NCCH), University of Sydney

Pauline Blight-Johnston
Group Executive, Insurance and Superannuation, AMP



Frank Ashe
Honorary Fellow, Applied Finance Centre, Macquarie University and Independent Consultant

Facilitator

Dave Finnis
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Please visit –
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