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International News

Introduction & Section News

3 **Editor's Note**
By Milanthi Sarukkali

4 **Chairperson's Corner**
By Arpita Das

Asia Pacific

6 **Risk-Based Capital Development in India**
By Steven Chen and David Fishbaum

11 **A Note From an Enthusiastic Mentee**
By Devindi Samaranayake

North America

12 **Gen X Women: The Time is Now to Embrace Health Savings Accounts**
By Megan Gorman

Middle East & Africa

15 **Life Progress in the Middle East**
By Mazen Abou Chakra and Elie Daaboul

23 **Training on "Data Science for Life & Health Insurance," CREAD, December 23–25, 2018, in Collaboration With AWB®**
By Farid Flici

Europe

24 **Reducing Vulnerability Through Insurance**
By Carlos Arocha

Risk-Based Capital Development in India

By Steven Chen and David Fishbaum

Page 6

International News

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Editor's Note

By Milanthi Sarukkali

Welcome to the May issue of *International News*. We are excited to present to our readers several high-quality articles with diverse perspectives. This issue brings together articles from some of our regular contributors as well as a few new authors.

The International Section successfully concluded the Country Feature Article competition for 2019. We received several outstanding entries discussing a wide array of topics across different regions. Congratulations to Steven Chen and David Fishbaum, who authored the winning article, "Risk-based Capital Development in India," featured in this issue of the newsletter. I would like to thank all the authors who sent in their articles for the competition. We hope to publish more of these articles in subsequent issues of the newsletter.

The lineup of this issue includes a timely article on health savings accounts (HSA) with a focus on Gen X women. Another interesting article included here is a discussion on how the life insurance market has progressed in the MENA region. An enthusiastic mentee of the Actuaries Without Borders® Global Mentorship Program has sent in a note describing her experience with the program and how her mentor has helped her progress in her career. We also have a view of the role of an actuary in microinsurance and a recap of a workshop in data science held in Algeria.

Now I would like to take a moment to reflect on my experience on the editorial board of the *International News* newsletter. I joined the editorial board in 2015 as a volunteer editor covering the Asia Outside Greater China region. I moved to the role of deputy editor in chief in 2018 and to the lead editor role this year. Being on the editorial board has given me the pleasure of working with several actuaries across different regions, sourcing and editing articles on various topics of relevance. It has been a great networking opportunity and has also exposed me to topics that I would otherwise not have come across or researched. Currently, we are looking to expand our editorial board to cover even more regions. I encourage any members who are interested in joining the *International News* editorial board to reach out to me or Carlos Arocha to learn more. It has been a truly rewarding experience for me personally, and I am confident it will be so for you as well.

Additionally, I encourage our readers to contact me and Carlos with any ideas and comments, as well as to consider contributing content to the newsletter. ■

Milanthi Sarukkali, FSA, Ph.D., is the founder and principal consultant at SPARK Actuarial & Risk Consultants. She is based in Colombo, Sri Lanka, and can be reached at *milanthi@sparkactuarial.com*.

Chairperson's Corner

By Arpita Das

Welcome to *International News*. This issue marks the half-way point of the year and perhaps the right point at which to reflect on what we've accomplished here at the International Section so far.

First and foremost, I am proud to say that this year has kicked off with a laser-focused mission: connection and outreach. This two-pillared mission puts our members, their needs and their interests at the center of our activities. This mission was articulated as a result of our first strategy call and has been the guiding light for our activities since then. The year has also been characterized by the active engagement and enthusiasm of our council members and friends. I am grateful for the team we have in place and excited for the initiatives that are underway.

Connection. Our first pillar has triggered a number of initiatives both digitally and in the real world. Digitally, we are looking to facilitate member connections through multiple interactive platforms. Plans are underway for an e-bulletin, a LinkedIn page and a revamp of our website. In the real world, we are reviewing opportunities at actuarial events around the globe that attract section members and we hope to leverage them to build connections. In 2019, events include the Global Conference of Actuaries Mumbai, which was held in March, the Society of Actuaries (SOA) Asia-Pacific Annual Symposium in Bangkok and the SOA Annual Meeting & Exhibition in Toronto, which are scheduled for June and October, respectively.

Outreach. Our second pillar refers to conducting research and supporting actuarial education around the world. Research topics under consideration include a collaboration on health care funding around the world and a global retirement research project. In terms of supporting actuarial education, we plan to collaborate with Actuaries Without Borders® on its volunteer projects and Global Mentorship Program this year. We also plan to liaise with the Actuary of the Future Section of the SOA.

This mission is ultimately meant to focus our efforts and serve you, our section members. If you have any ideas, feedback or thoughts, please reach out to me or any of our council members. We want to hear from you. ■

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

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Participating Organizations

The following organizations have agreed to participate in this research endeavor with the Society of Actuaries as of August 2018. To view the current list, visit *Livingto100.SOA.org.*

- Actuarial Society of South Africa
- Actuaries Institute Australia
- American Academy of Actuaries
- Canadian Institute of Actuaries
- Conference of Consulting Actuaries
- Employee Benefit Research Institute
- International Longevity Centre–UK
- Office of the Chief Actuary, Canada (within the Office of the Superintendent of Financial Institutions)
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- LOMA
- LIMRA
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- The Institute of Actuaries of Japan
- Women's Institute for a Secure Retirement (WISER)
- Institute and Faculty of Actuaries

Visit ***LivingTo100.SOA.org*** for more information

Risk-Based Capital Development in India

By Steven Chen and David Fishbaum

India has one of the largest markets in the world, with significant demographic advantages. The insurance sector has continued to grow in scale over the years. Total premium income has grown at a compound annual rate of 11 percent, with remarkable growth and development in the private sector (Figure 1). Life insurance accounts for about 75 percent of the total premium, reflecting the role played by life insurance in savings and investment markets. Growth rates in nonlife insurance have been consistently higher than those in life insurance. However, the insurance penetration rates remain low, especially in the nonlife market.

One unique characteristic of the Indian insurance market is that although private insurers are large in number, more than 65 percent of the market share, by premium income, comes from public sector insurers. Specifically, one of the state-owned insurers, Life Insurance Corporation of India (LIC), accounts for 55 percent of the total insurance premium of the entire Indian insurance market. Most private sector companies entered the market after 2001, when the market was reformed and opened. In recent years, most of the new entrants have been nonlife insurance companies. The limit on foreign investment in primary insurers has been raised from 26 percent to 49 percent.

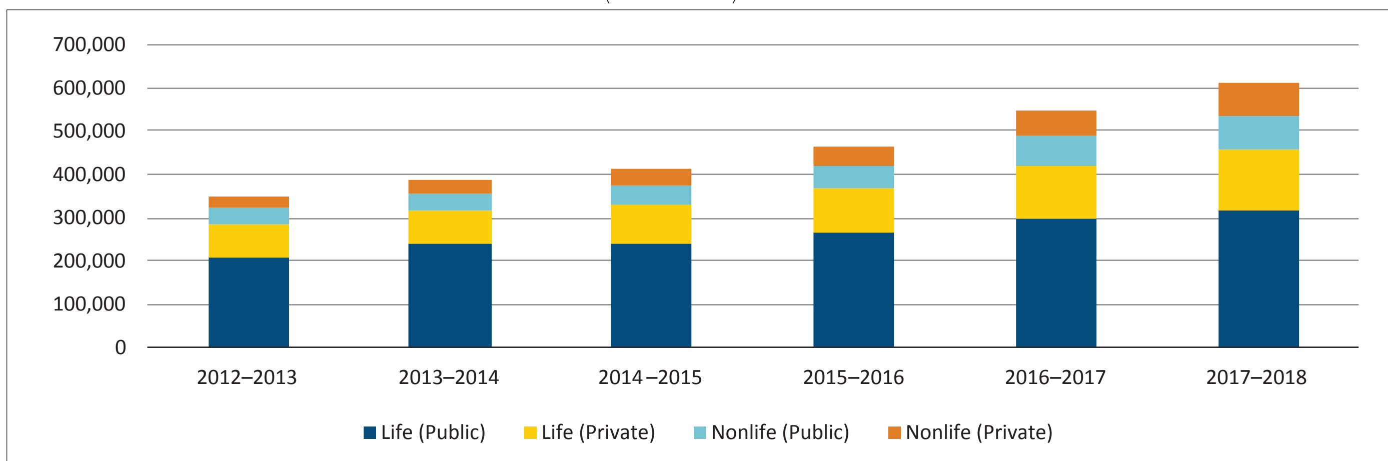
OVERVIEW OF RISK-BASED CAPITAL DEVELOPMENT IN INDIA

The current capital regime in India is essentially a "Solvency I" approach (Figure 2). Liabilities are also called mathematical reserves using a gross premium valuation approach. Actuarial assumptions are based on the expected experience and include a margin for adverse deviations. Valuation interest rates are based on prudent assessment of the yields from existing assets and future investments.

Required capital is a factor-based set of solvency requirements that move in line with business volume that is insensitive to risk. The required solvency margin equals a first factor times the mathematical reserves plus a second factor times the sum at risk. The two factors vary by business segments, products and guarantees, ranging between 0.8 percent and 3 percent for the reserve factor and between 0.1 percent and 0.3 percent for the sum at risk factor. There is also some allowance for reinsurance credits. The control level of solvency is set at 150 percent of the required solvency margin.

The current approach to capital requirement makes India an outlier in Asia and internationally. Most countries in Asia have adopted a more risk-based approach to capital requirement. For example, countries such as China and Singapore have recently updated to a risk-based solvency regime. Hong Kong is currently developing a risk-based capital (RBC) framework with the second Quantitative Impact Study (QIS) completed recently.

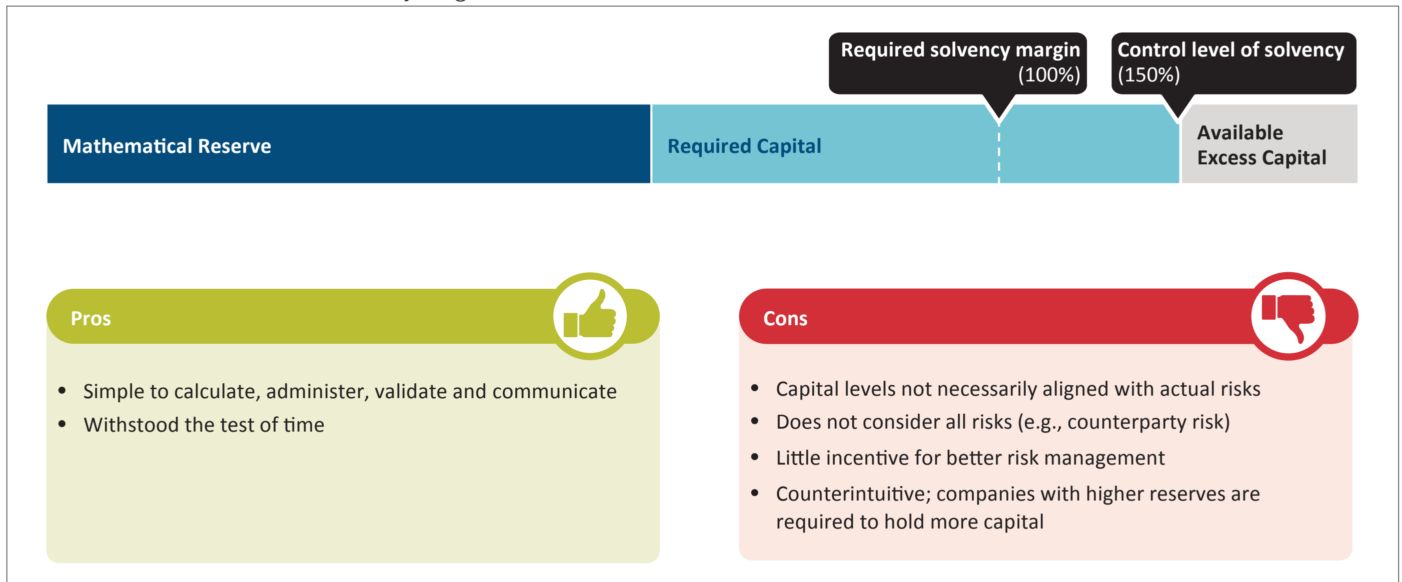
Figure 1
Total Written Premium in Indian Insurance Market (INR crore*)



Source: Insurance Regulatory and Development Authority of India (IRDAI) annual reports.

* A crore or koti denotes 10 million in the Indian numbering system.

Figure 2
Illustration of the Current Solvency Regime in India



Source: Report of IRDAI Committee on Risk-based Capital (RBC) Approach and Market Consistent Valuation of Liability (MCVL) of Indian Insurance Industry, Part II, July 2017; Oliver Wyman analysis.

In the recent assessment of Indian insurance sector regulation and supervision by the International Monetary Fund Financial Sector Assessment Program, one of the key recommendations is for the Indian insurance regulator to "formulate a strategy, plan, and timetable for modernization of the solvency framework as soon as possible."

While more countries are moving to a more risk-based capital framework, the Indian insurance industry is not all aligned with the future direction. Based on an industry survey,[1] some companies prefer the current factor-based approach because it is easy to calculate and administer. Further, it has been time tested and is working efficiently for all insurers.

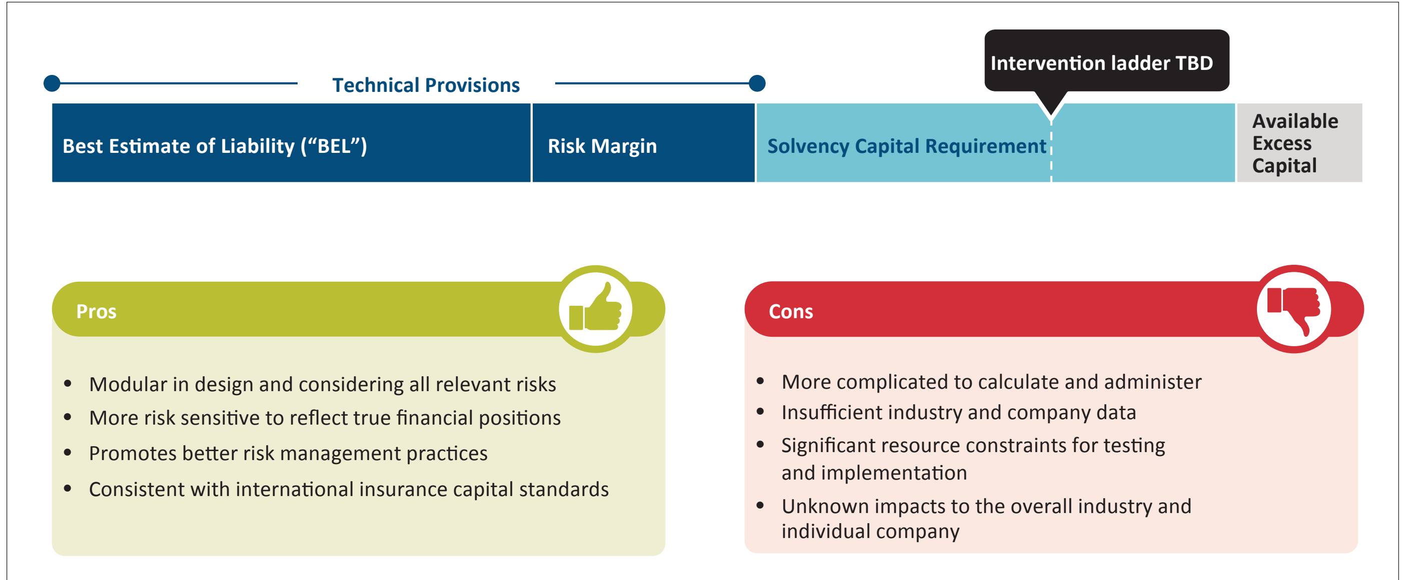
However, this current approach has some significant disadvantages. First, capital levels are not necessarily aligned with actual risk. Second, it does not consider all the risks. For example, counterparty default risk is not included. Third, there are few incentives for insurance companies to promote better risk management, as limited credits are available for risk mitigation actions. And last, the result can be counterintuitive because companies with higher reserves would be required to hold more capital.

In 2017, as part of the initiative to comprehensively update the solvency regime, the Indian regulator issued a report on RBC approach and market consistent valuation of liabilities (MCVL) of Indian insurance business. This report made some recommendations, at a macro level, about the potential framework for the new risk-based capital (Figure 3). Specifically, the report recommended that insurance liabilities would be valued on a consistent, economic value basis. The best estimate of liability corresponds to the probability-weighted average of future cash flows. An explicit risk margin is to capture the uncertainty of liability cash flows related to non-hedgeable risks using a cost-of-capital approach. The liability valuation would be consistent with IFRS 17, the new insurance accounting standard, in principle.

The solvency capital requirement would be based on a standardized approach, instead of an internal model approach. All risks, including credit risk, insurance risk, market risk and operational risk, would be covered at a high confidence level, likely a value-at-risk approach at 99.5 percent. Aggregation would also reflect the dependencies within risks and between risks. And the minimum capital target would be determined based on the results of the QIS. The basic solvency capital requirement, aggregating all risk components, would likely use a combination of factor-based and shock-based approaches. The parameters would be calibrated in the Indian context and should be refined during the QIS process.

There are several advantages for moving to a risk-based capital regime. To start, it is more risk sensitive and more consistent with international insurance capital standards.

Figure 3
Illustration of the Proposed Solvency Regime in India



Source: Report of IRDAI Committee on Risk-based Capital (RBC) Approach and Market Consistent Valuation of Liability (MCVL) of Indian Insurance Industry, Part II, July 2017; Oliver Wyman analysis.

Nevertheless, the Indian industry raised several concerns about the new regime. In particular, insufficient industry and company data will make required capital calibration difficult. In addition, implementing the new capital framework requires significant resources and most companies have only enough actuaries for business-as-usual activities. And last, there is the unknown risk about how the new regulation will shape the industry.

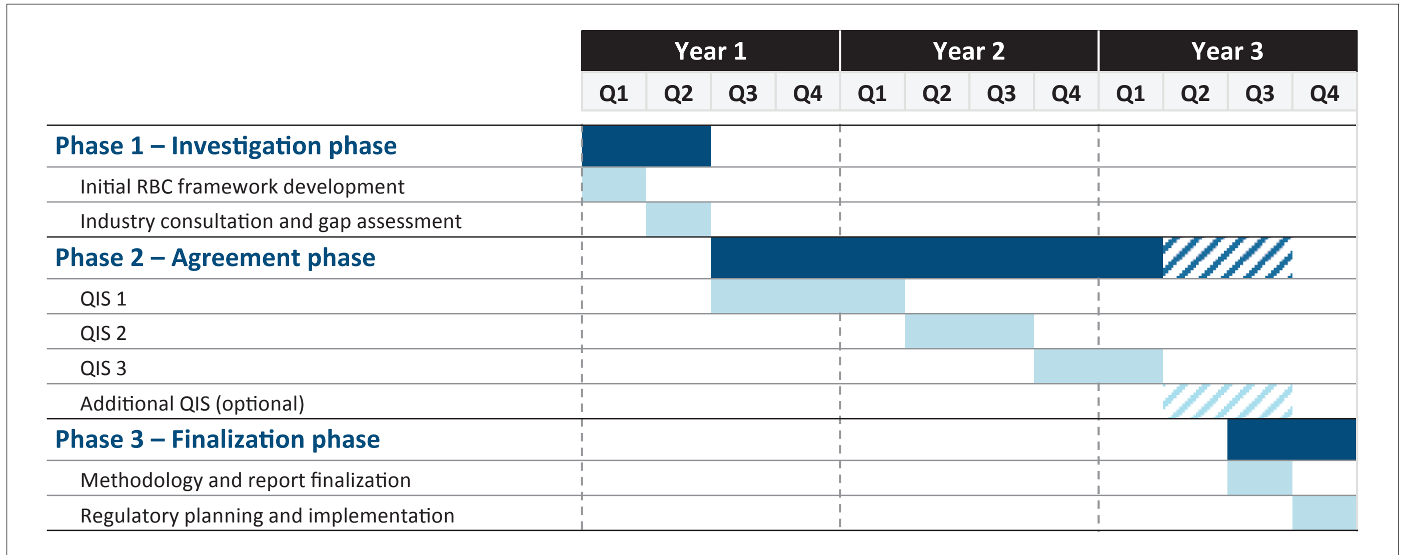
The regulator also proposed a three-year time frame for implementing the new RBC regime. It should be completed in three phases (Figure 4).

The first phase is called the investigation phase. This phase involves an initial RBC framework development, which would require a review of recommendations from several key committee reports. A benchmarking exercise to global and regional risk-based capital is also needed. The second task is to launch an industry consultation to get feedback and to assess gaps between the current regime and the future RBC regime.

The second phase is called the agreement phase. The agreement phase would have three QIS. Technical specifications and templates would be provided to all participants. The first QIS would likely take more time given it is the first attempt at sizing the industry. Subsequent QIS would allow the regulator to update and refine the design and parameters based on the QIS results and feedback from the industry.

The last phase is called the finalization phase. In this phase, the RBC methodology and calibration would be concluded. The regulator also needs to prepare the industry for transition. Certain regulation changes would be required. In addition, ongoing stakeholder management and communication with regulated entities would be required to ensure a smooth implementation process.

Figure 4
Tentative Implementation Timeline for the Risk-based Capital Regime



Source: Report of the Committee on Road Map for Risk Based Solvency Approach in Insurance Sector; Oliver Wyman analysis.

KEY DESIGN AND IMPLEMENTATION CONSIDERATIONS

Based on the proposed approach and timeline of the Indian RBC development, some key design and implementation issues should be considered.

- **Balance between conservatism and growth.** The Indian insurance industry is still in a growth phase. One of the missions of the regulator is to bring growth of the insurance industry and to provide long-term funds for the economy. For this reason, the risk-based capital should strike the appropriate balance between policyholder protection and growth. Given the unique characteristics of the Indian market, lifting risk-based capital standards entirely from peer jurisdictions and applying them directly to India will not be in the best interest of the industry in the long term.

- **Basis of calibration.** A value-at-risk approach based on a prescribed level of stress may be suitable, but the confidence level should be consistent with the levels reflected in peer jurisdictions and international capital standards. In addition, proper calibrations require historical data in sufficient volume and detail. However, such level of data may not be available in the Indian market. For certain risks, such as interest rate risk and credit risk, the calibration basis also needs to consider how the Reserve Bank of India sets capital requirements for banks and finance companies.

- **Public sector companies vs. private sector companies.** In general, it should be a level playing field where both public and private insurers are subject to the same regulatory requirements. However, public sector insurers are currently in an advantaged position. For example, LIC is under a special legislation, with an explicit government guarantee for all of its policies. In addition, financial weakness in some of the public sector nonlife insurers needs to be addressed. Two state-owned nonlife insurers have reported solvency ratios below the regulatory minimum. They could have difficulties meeting the minimum capital requirement under any new capital regime.

- **"Pillar 2" requirement.** Insurers should be required to develop their own risk and solvency assessment, in parallel with the risk-based capital. Setting a higher risk-sensitive capital requirement is not the goal; the goal is to ensure that risk-based capital would support enterprise risk so that companies become more proactive in managing the risk. From the regulator's perspective, the supervision approach and tools need to be upgraded from the current compliance-focused approach. Recently, the regulator sent a memo to all insurers about its intention to move to a risk-based supervision approach. A pilot program will be conducted on a few select insurers.

- **Timing and resources.** From a practical implementation perspective, the transition to an RBC regime is a multi-year journey. It is a significant undertaking that requires

investment and resources from all stakeholders. Meanwhile, India is also in the process of implementing IFRS 17. Insurance companies are facing resource constraints and timeline pressure on the IFRS 17 implementation. Adding the RBC implementation could overwhelm most companies. Therefore, how to best leverage the two workstreams and create synergies is an important consideration as well.

CONCLUDING REMARKS

Designing and implementing a new risk-based capital regime is a significant undertaking. India has come a long way to develop an RBC framework. It was the first agenda item from the past two chairmen of the regulator when they took office, and it has continued to be active after they have left. Given the important nature and the potential sensitivity and ramifications around the initiative, careful considerations are warranted. As Gandhi once said, "You may never know what result comes from your action. But if you do nothing, there will be no result." With the right approach and support from all stakeholders, a robust risk-based capital regime will take the Indian insurance industry to the next level. ■

The views in this article represent only the authors' personal opinions. This article does not represent any statements from the organization where the authors are employed.

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ENDNOTE

1 Report of IRDAI Committee on Risk-based Capital (RBC) Approach and Market Consistent Valuation of Liability (MCVL) of Indian Insurance Industry, Part II, July 2017.

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A Note From an Enthusiastic Mentee

By Devindi Samaranayake

In 2016, I learned about the pilot program of the Actuaries Without Borders® (AWB®) Global Mentorship Program (GMP) through the Actuarial Association of Sri Lanka. Sri Lanka is an Asian country where actuarial resources are scarce. AWB® focused on actuarially developing countries for the inaugural GMP. I applied to be a mentee by filling out an application specifying my interests and my expectations of a mentor. My intention was to gain knowledge about different markets. AWB® sent me the profiles of a few mentors who matched my interests and gave me the opportunity to select one. I was impressed with the choices provided. Today, as an enthusiastic mentee of the Global Mentorship Program, I strongly agree that AWB® is promoting the actuarial profession in areas of the world in which it is not present or is not fully developed.

I am thankful to my mentor, John Robinson, FSA, FCA, MAAA, for allocating his valuable time to me. This relationship, which has lasted almost three years, has been beneficial for me in many ways. If I were to describe my mentor, I would say he is:

- an *exam motivator*, who frequently follows up on my upcoming exam plans and provides exam tips;
- an *actuarial directory*, who is always directing me to the right contact if I need more information about a specific topic; and
- a *search engine*, who provides links to different research papers, articles, websites and books after every discussion of an interesting topic.

The time difference between our two regions is one of the major challenges for our discussions. However, we have agreed upon a convenient time to meet every week and we have meetings when both parties can make it. Some of the topics that we have discussed are valuation regimes, valuation manual, new trends in actuarial practices, nontraditional practice areas, risk management and data science. Through these discussions I have been able to gain an understanding of procedures and concepts of other markets and how they differ from our market. Moreover, I believe that my communication skills improved as I learned how an experienced actuary communicates, and I must answer his questions as well. My mentor participates in a lot of seminars, workshops and conferences each year, and it is very interesting to listen to his experiences and learnings after each event. This is not limited to actuarial knowledge but expands to landscapes and cultures of different areas of the world.

Prior to 2016, I knew in my mind that I'm in a global profession, but with the Global Mentorship Program I have felt it too. I highly recommend the mentorship program for any student actuary who is passionate about the actuarial profession, but feels isolated in a market with scarce actuarial resources, to enroll and to become a part of this highly prestigious profession. ■

Devindi Samaranayake, ASA, is an associate actuary at Spark Actuarial and Risk Consultants and a council member of the Actuarial Association of Sri Lanka. She can be reached at *devindi@sparkactuarial.com*.

Gen X Women: The Time is Now to Embrace Health Savings Accounts

By Megan Gorman

Editor's Note: This article was originally published on Forbes.com *and is reprinted here with permission.*

It's a good time to be a Gen X woman. Now in their 40s and early 50s, these women are hitting their stride. No longer dealing with the challenges and struggles of their 20s and 30s, many of them are successfully growing careers and raising children. It's not surprising that most women at 40 feel they are finally getting comfortable in their own skin.

Life experience is also encouraging them to feel more confident about their finances. As retirement becomes a closer reality, many of them are looking to increase their savings in order to achieve that goal.

Statistics show that women in their 40s and 50s should be aggressive with their finances in order to catch up to their male peers. In their 2018 survey on retirement in America, Stash, an investing app, found that women in their mid-30s and early 40s stall their retirement savings efforts by 15 percent. In comparison, men are saving at their highest rates in their mid-30s and early 40s.

"When families have major challenges, it is often the women who end up devoting themselves to helping others while at the same time trying to keep up with their own jobs," says Anna Rappaport, chair of the Society of Actuaries' Aging and Retirement Strategic Research Program. "Today's challenges make it very hard to prepare much for the future."

In their 40s and 50s, Gen X women need to jump start their retirement planning to catch up and the health savings account (HSA) might be the best tool.

HSAs are a great way to propel retirement planning, as they offer a unique triple tax benefit: the contribution to the HSA gives you a tax deduction, the money grows tax deferred and funds taken out for health care costs are tax free. Further, after age 65, if you take it out for non–health care costs, it is treated just like an IRA where the distribution is taxable but no penalty applies. To some degree, it is a specialized IRA plan.

But the key to the HSA is not to fund it for current medical costs but to earmark these funds for future expenses.

"HSAs are disproportionately benefitting the young, healthy employee," says David J. Campanella, CFP, SVP, US Bank Private Wealth Management. "The further away you are from retirement, the more dollars you can sock away into your HSA account."

Gen X women are midcareer and have 15 to 25 years to work and fund these accounts. But to really leverage HSAs, Gen X women need to do more than just fund the accounts; they need to invest the funds into the equity market.

> The average couple retiring today at age 65 will need $280,000 to cover health care and medical costs in retirement.

Laura Davis, CFP at Cuthbert Financial Guidance in Decatur, Georgia, agrees. “Many of our clients use them as an additional retirement vehicle, and as long as they are committed to that concept, we have them invest in the equity allocation they are comfortable with for their other retirement accounts,” she says.

HELPING WITH FUTURE COSTS OF LIVING

But HSAs might be able to further alleviate concerns of Gen X women. The Society of Actuaries’ research found that 64 percent of Gen Xers are concerned that they won’t be able to save enough to maintain their current standard of living into retirement. The average couple retiring today at age 65 will need $280,000 to cover health care and medical costs in retirement per the Fidelity Retiree Health Care Cost Estimate.

But Gen X women shouldn’t worry that funding an HSA would overshadow their other retirement planning. Rather, it is a way to earmark specific funds for the needs of health care in retirement. Other retirement accounts must still be funded to handle day-to-day living costs and other expenditures.

“I recommend thinking about these costs in tandem: health care is one of many costs that should be planned for in retirement,” advises Rappaport. “Saving for future retirement expenses in all categories will help mitigate financial risks and decrease the likelihood of retirement security being derailed by an unexpected medical (or other) cost later in life.”

LONGEVITY RISKS ARE REAL

Gen X women also need to be concerned about longevity risk. Currently the average life expectancy for a woman in the U.S. is 81 years versus 76 years for U.S. men.

“A key issue for women is that they are likely to be alone during at least part of retirement,” says Rappaport. “Gen X women who are part of a couple should have a plan that works for the couple, but that also works for them if they are no longer part of that couple. Many women are divorced or widowed, and women need to consider that there are a variety of things that can happen to them.”

Saving in an HSA in your 40s and 50s helps you prepare for that risk. Since you can’t fund an HSA after age 65, early funding is key.

“Because of the wide variety of expenses HSAs can be used for, no matter how young you start it is extremely unlikely that you could ‘over save’ in an HSA, even if you max it out every year,” says Davis.

NOW IS THE TIME

For most Gen X women, there will never be a perfect time to fund an HSA along with other retirement planning accounts. But time is running out as retirement is in sight. Further, given potential longevity, the HSA is advantageous in saving funds for a time when Gen X women are alone.

Rappaport sums it up best for Gen X women. “I would encourage members of this generation to focus on saving for future expenses now. Believe it or not, your retirement years will be here sooner than you think.” ■

Megan Gorman is a regular *Forbes* contributor and managing partner of Chequers Financial Management Inc. in the U.S. She can be reached at *megan@thewealthintersection.com*.

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Life Progress in the Middle East

By Mazen Abou Chakra and Elie Daaboul

When discussing the Middle East (ME) region, a debatable polemic is delimitation of its geographical boundaries, a definition of what exactly makes up this expansive region. Where does the Middle East start and where does it end? While the Cambridge Dictionary[1] limits it to "the area from the eastern Mediterranean to Iran, including Syria, Jordan, Israel, Lebanon, Saudi Arabia, Iran, and Iraq, and sometimes also Egypt," the Oxford Dictionary[2] stretches it from the Mediterranean to Pakistan. Are Turkey and nations west of India part of the ME? On the western border, does it include Egypt? The U.S. Department of State[3] combines the Middle East and North Africa by listing the following countries: Morocco, Algeria, Tunisia, Libya, Egypt, Israel, Palestinian Territories, Syria, Lebanon, Jordan, Iraq, Kuwait, Bahrain, Qatar, United Arab Emirates (UAE), Saudi Arabia, Yemen, Oman and Iran.

From a business perspective, most regional and multinational insurers and reinsurers position their ME operations to cover the area from Egypt to Oman, with some operations also including Turkey and/or Iran. Adding Morocco, Algeria, Tunisia, Libya and Sudan, we are then considering the Middle East and North Africa (MENA) region (Figure 1).

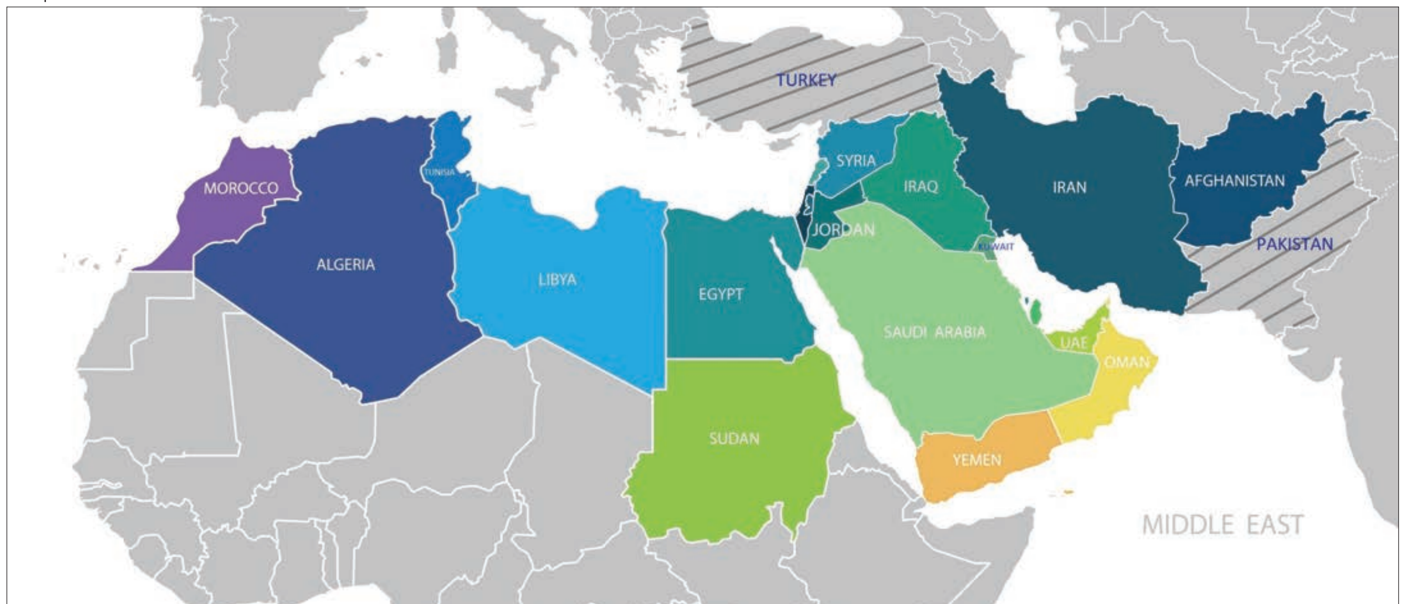
This article begins with a glimpse at the ME history and its diversity to provide a preliminary taste of how biometric protection developed to date. We then explore the Middle East environment from a socioeconomic standpoint and provide a preview of life insurance development in the region as well as the opportunities in the wake of the digital transformation.

A GLIMPSE OF MIDDLE EAST HISTORY AND CULTURAL DIVERSITY

The Middle East, according to a 2016 Digital McKinsey report, can and should build on its eminent history of discovering fundamental mathematical concepts that make up the groundwork for digital.[4] The region's ancestors invented the concepts of algorithms, key aspects of number theory and "zero." In fact, the latter gives the Middle East claim to having invented "half of digital," given its dependence on 1s and 0s.[5] Arabic numerals established the global standard to represent numbers.

Outsiders to the region consider the perspective of MENA and its residents as more or less homogeneous in terms of culture and historical heritage. On closer inspection, however, it becomes apparent the MENA perspective is heterogeneous, with a mosaic of inter- and intradependent cultures and environments melting together to create more entanglement and an ambiguous

Figure 1
Map of the Middle East and North Africa



Source: Getty Images.

definition of their actual boundaries. The region is diverse in dialects, ethnicity, religions, currencies, history, environment, time zones, costumes, governance, regulations, landscape, attitude, behavior and most importantly, food. Was it not Confucius who described food as one of the three basic conditions, along with an army and trust, for founding a state? A familiar saying that epitomizes the idea of food and identity is, "You are what you eat." The food ingredients and mix are heterogeneous across the 8,000 kilometers stretching from West Africa to mid-Asia, making the region rich in diversity and opportunities.

Nonetheless, one of the strongest common denominators across the region could be the attitude toward consolidation and solidarity within local communities with solid family ties. This facet may have contributed to slowing the penetration of life insurance, which started to be formalized in the 18th century in the West but took more than 200 years to reach the Middle East. This may be because it had to cross social and cultural barriers, with strong family and community ties traditionally supporting the distressed members, rather than insurance. Religious considerations may play a similar role, as life insurance is interpreted by some scholars as being prohibited in Islam, the predominate religion in MENA. Others consider solidarity to be a major component to protect financial strain following loss of life.

THE MENA ENVIRONMENT

The main driver of the Middle East economy is the production of petroleum products, with 35 percent of global production originating in the region.[6] This history began with the industry's first developments in the region in the early 20th century and led to the region's economic development. Yet not all countries are equally enriched by this natural resource, as shown in Table 1, and this has shaped the demography and economy of each country accordingly.

Table 1
Petroleum and Other Liquid Production per 1,000 Barrels per Day

Country	2017 Production	Percentage of International Production
Saudi Arabia	12,090	12%
Iran	4,669	5%
Iraq	4,462	5%
United Arab Emirates	3,721	4%
Kuwait	2,928	3%
Qatar	2,068	2%
Algeria	1,641	2%
Oman	980	1%
Libya	852	1%
Egypt	653	1%
Bahrain	59	0%
Tunisia	42	0%
Syria	18	0%
Yemen	13	0%
Jordan	0	0%
Morocco	-	0%
Lebanon	-	0%
Palestine	-	0%
Total	**34,194**	**35%**
Worldwide	**97,739**	**100%**

Source: EIA Beta. 2017. *International Energy Statistics*. Washington, DC: US Energy Information Administration. *https://www.eia.gov/beta/international/*.

Political instability is another dominating image of the region. Yet, despite this, a recent report from the World Bank expected the growth rate to increase to 3.1 percent in 2018 and 2019, up from 2.0 percent in 2017, as a result of an increase in oil prices (from USD 43 per barrel in 2016 to USD 53 in 2017 and USD 67 in the first half of 2018) and expected reconstruction of war areas.[7]

Political Tensions

While reading through the preceding list of countries, one can barely exclude one country that did not witness, or was not involved in, a war, armed conflict or—to say the least—political instability in the past five years. It is within this instable environment that the insurance industry is navigating and trying to grow.

The industry is also trying to adapt its terms and conditions to this instability, where, for instance, war events are a standard exclusion in most contracts and can be added as a separate rider while differentiating between active and passive war cover and between war and terrorism. From an actuarial and underwriting point of view, many challenges arise from here, such as:

- How do you differentiate between "war" and "terrorism" events, especially when war is not declared or it is declared against a "terrorist" group, or if even the fighting parties are not defined and are considered from different angles as "terrorist," "militant" or "resistance"?
- How do you price for passive war risk (PWR) when the risk is geopolitical rather than biometrical? And how do you prove at claim stage that the member is not an active participant in war?
- For the long-term business, do you guarantee PWR rates?
- How do you respond to a recent emerging cover for active war participation for militaries?

Despite the negative geopolitical outlook, none of the major international (re)insurer players has retreated from the market on this ground, but to the contrary, the region is continuously attracting a number of new insurance and reinsurance entrants and capacities—for example, the Lloyd's of London recent addition operating from Dubai International Financial Center (DIFC)—showing that the potential growth outperforms the challenges. Moreover, would cyber risk take another form and scope in the Middle East? This remains to be seen and it is recommended for the participants to be eminently prepared for any advent to provide proper guidance and protection.

Economy

With a total GDP of USD 2.8 trillion, the MENA region constitutes 3.5 percent of the global economy, driven by oil production.[8] The period between 2011 and 2014 witnessed a peak increase in oil price that boosted the economy, but was followed by a 50 percent price drop starting in 2014. The life insurance sector survived; however, this period continues to grow at a slower rate. The recent trend as illustrated in Figure 2 and the forecast of an oil price increase would also have a positive impact and raise hopes.

On the other side, the high debt-to-GDP ratio of many countries in MENA is highlighted by the World Bank report to be the major medium-term challenge to the economic stability.[9]

Demographic Mix

An important factor describing the diversity within MENA is the demographic mix and age distribution among its constituents. It is known that in advanced economies, the age pyramid is narrowing due to longevity and low birth rate. In countries like Egypt, the age distribution still looks like a pyramid. This shows that the youngsters' share continues to form the majority of the population mix. Therefore, the traditional protection products remain in fashion, and gradually the living benefits are also finding their way. Iraq, Jordan, Syria and Yemen follow similar shapes as Egypt, whereas countries like Lebanon and Turkey have more weight in the middle ages up to 50 years old.

A different picture is seen in the countries of the Gulf Cooperation Council, or GCC, that employ many male expatriate young workers. You can see in Figure 3 how the population for male is skewed and bulky for ages below 45 years old. This aspect is very apparent in Qatar and UAE and to a lesser degree in Kuwait and Bahrain. This shows an additional characteristic of the population mix in these oil-rich countries that attract manual workers as well as experts to be employed, as the nationals are smaller in number. This effect is less prominent in Saudi Arabia and Oman because the local population still dominates.

Figure 3 presents the demographic pyramid of the world and Europe contrasted with those of Egypt, Saudi Arabia and UAE in order to illustrate the different shapes that translate into product differentiation.

Life Expectancy

The weighted average life expectancy at birth for the population in MENA was 72.7 years in 2015 according to WHO numbers, 6.5 years behind the U.S., which stands at 79.3 years.[10] Life expectancy, however, has increased since 2000 by 2.7 years, this time crossing the equivalent 2.5-year increase in the U.S.

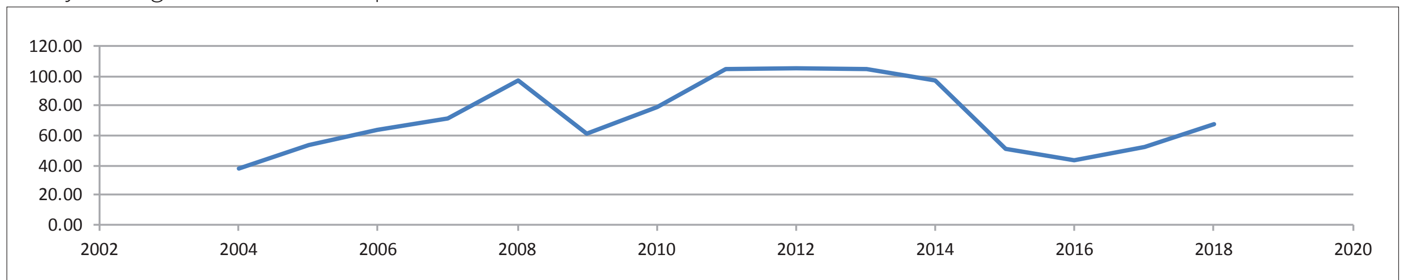
Table 2 presents the life expectancy development in selected countries in MENA compared to the United States.

Table 2
Life Expectancy at Birth for Selected Countries, 2000 vs. 2015

Country	2000 (years)	2015 (years)
United States	76.8	79.3
Lebanon	72.7	74.9
Morocco	68.6	74.3
United Arab Emirates	74.2	77.1
MENA (average)	**70.0**	**72.7**

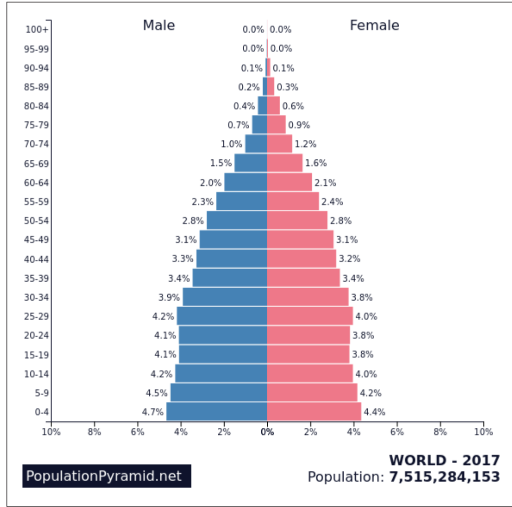
Source: Global Health Observatory Data Repository. *World Health Organization*, *http://apps.who.int/gho/data/node.home*.

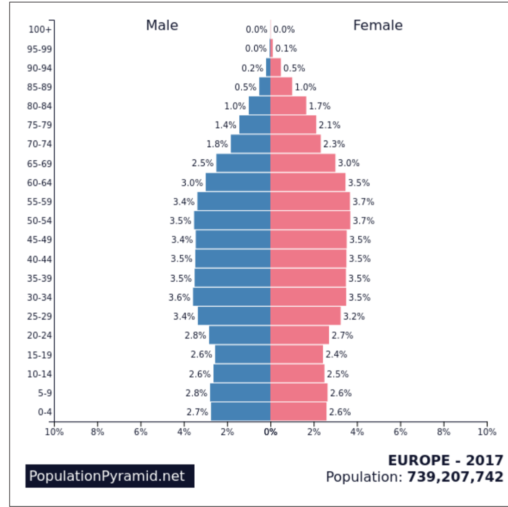
Figure 2
Yearly Average Oil Price in USD per Barrel

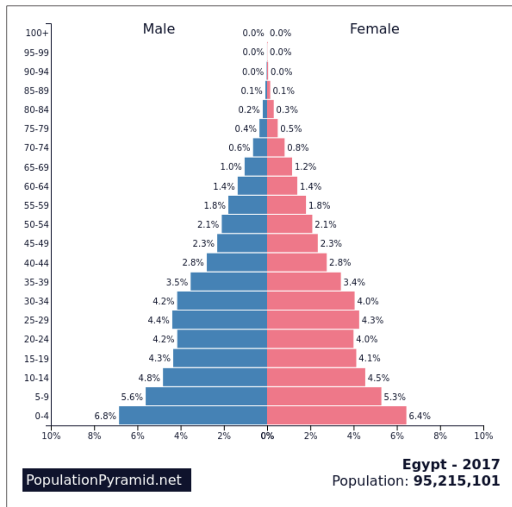


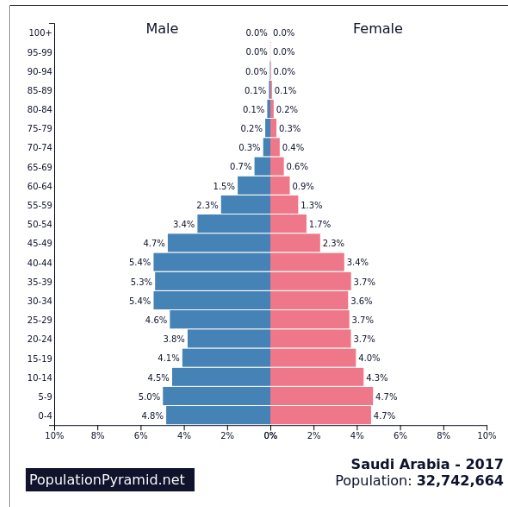
Source: Crude Oil (Petroleum) Monthly Price. *Index Mundi*, February 2019, *www.indexmundi.com/commodities/?commodity=crude-oil&months=120*.

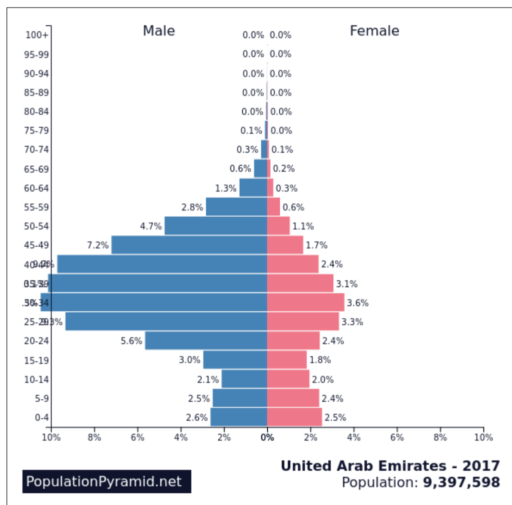
Figure 3
Demographic Pyramids of Selected Countries











Source: *PopulationPyramid.net*, *https://populationpyramid.net*.

LIFE IN MENA

The insurance market in the Middle East is mostly dominated by medical and motor business. Life insurance formed 17.5 percent of the total USD 48 billion written insurance premium in 2017 according to 2018 Sigma report numbers. In many countries the life business is much lower than its nonlife counterpart. Saudi Arabia, for instance, writes 20 percent of the total MENA insurance premium but only 3.4 percent of the life premium, mainly due to the compulsory nature of the medical and motor businesses. The mandatory health insurance law has created a USD 5 billion market in Saudi Arabia alone since 2005, while UAE implemented similar laws, and eyes are now on Oman, Qatar and Kuwait where new laws that may incite similar growth are in the pipeline.

Penetration Ratio

The GCC life insurance penetration ratio stood as low as 0.27 percent in 2017 based on 2018 Sigma report numbers. By far, UAE has the higher penetration ratio—as well as higher density—yet it is below the 2.82 percent penetration in the U.S. and 3.95 percent in Western Europe, where the fiscal advantages are appealing to policyholders, something that is missing in the ME (see Table 3).[11]

Outside GCC, the numbers are not much different, as illustrated in Table 4. The exceptions are Morocco (1.4 percent)

Table 3
Penetration Ratio and Density in GCC—Life Insurance

Country	GDP* in Billion USD	Life Premiums in Million USD	Insurance Penetration (Life)	Population*	GDP per Capita in USD	Density in USD
Bahrain	35.3	139	0.39%	1,492,584	23,655	93
Kuwait	120.1	183	0.15%	4,136,528	29,040	44
Oman	72.6	161	0.22%	4,636,262	15,668	35
Qatar**	167.6	47	0.03%	2,639,211	63,506	18
Saudi Arabia	683.8	283	0.04%	32,938,213	20,761	9
United Arab Emirates	382.6	3,133	0.82%	9,400,145	40,699	333
Total GCC	**1,462.1**	**3,946**	**0.27%**	**55,242,943**	**26,466**	**71**

Abbreviations: GCC, Gulf Cooperation Council; GDP, gross domestic product.

Source: Staib, Daniel, and Mahesh H. Puttaiah. 2018. *Sigma 3/2018: World Insurance in 2017: Solid, but Mature Life Markets Weigh on Growth.* New York: Swiss Re Institute. *https://www.swissre.com/institute/research/sigma-research/sigma-2018-03.html*.

* GDP and population data derived from Indicators: GDP (Current US$). *World Bank*, *https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*.
** 2016 data.

Table 4
Penetration Ratio and Density Outside GCC—Life Insurance

Country	GDP* in Billion USD	Life Premiums in Million USD	Insurance Penetration (Life)	Population*	GDP per Capita in USD	Density in USD
Algeria	170.4	117	0.07%	41,318,142	4,123	3
Egypt	235.4	761	0.32%	97,553,151	2,413	8
Jordan	40.1	108	0.27%	9,702,353	4,130	11
Lebanon	51.8	505	0.97%	6,082,357	8,524	83
Morocco	109.1	1,523	1.40%	35,739,580	3,054	43
Tunisia	40.3	166	0.41%	11,532,127	3,491	14

Abbreviations: GCC, Gulf Cooperation Council; GDP, gross domestic product.

Source: Staib, Daniel, and Mahesh H. Puttaiah. 2018. *Sigma 3/2018: World Insurance in 2017: Solid, but Mature Life Markets Weigh on Growth.* New York: Swiss Re Institute. *https://www.swissre.com/institute/research/sigma-research/sigma-2018-03.html*.

* GDP and population data derived from Indicators: GDP (Current US$). *World Bank*, *https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*.

and Lebanon (0.97 percent), the two countries with well-implemented bancassurance models and the closest to the UAE in penetration ratio, yet with much lower density, in line with the lower GDP per capita.

"The low levels of penetration ratios are both a challenge and opportunity" was a comment made in the 2017 EY report *Insurance Opportunities in the ME*, reflecting a view that the growth door remains open for competent and innovative players in a region facing a shortage in local human capital resources, qualified actuaries and underwriters.[12]

Barriers to Entry

The lack of awareness and the absence of fiscal incentives in the form of tax advantages for life insurance saving plans in MENA countries contribute to the low life penetration ratio. However, two other factors that are worth exploring in detail are cultural and religious considerations and the lack of confidence in customer protection, which regulators are trying to address.

Takaful Business

As mentioned earlier, some views in Islam, the predominate religion of the region, prohibit contracting an insurance policy. Family takaful products, however, are a Sharia'a-compliant form of life protection. (*Takaful* is an Arabic word that translates to "solidarity.") The life products offered by takaful organizations are similar to participating policy life insurance products in which the policyholder participates in the profits of the company. A licensed takaful company, called an operator, operates by managing a pool of consolidated participants (the insureds) and earning related fees. The profits of the pool are redistributed to the participants and any deficit is taken in the form of an interest-free loan from the operator. This model is similar to the mutual company model in other parts of the world and creates a means of Sharia'a compliance by avoiding accumulations of interest by the operator.

With high hopes initially put on the introduction of takaful models, many operators in MENA have been established, yet only a handful have been successful in terms of increasing business volume and meeting targets. Products in general are priced with increased margins associated with high expense ratios for most of the operators.[13] Yet with more than 400 million Muslims in the region, the potential for growth remains considerable.

Regulations

With the exception of very few countries in the region, regulations range from being outdated to having only recently been introduced. They are relatively less mature and less able to create a stable environment for sector growth. Regulators, however, are putting a lot of effort into reviewing and improving the underlying regulations to increase consumer trust in the industry and strengthen the financial positions of the companies while emphasizing customer protection and rights regulatory schemes, as described in the 2017 EY report mentioned earlier. Regulators are focusing on refining market conduct and solvency-based capital controls to ensure that insurers develop sustainable business models. The same report cites the recent UAE draft law that places more restrictions on insurance companies and, more importantly, on distributors. Once implemented, these new life regulations are expected to change the way the industry operates, something that has already been observed in developed countries in the past decade, according to the same report.[14]

Products and Distribution

The eastern part of MENA, mainly the countries of GCC, is an oil-rich land, while the western part is composed of service-driven economies. With this fundamental difference, many variations in the aspects of insurance products are visible.

The GCC, with its high GDP per capita and rich oil reserves, has attracted many expatriate employees, increasing the demand for group business. In this broker-dominated market, group employee benefits are a major contributor to the life business. Although not mandatory, many (or most) employers offer salary-related life protection to their employees. Major benefits include death, total and partial disability, and repatriation of mortal remains for expat employees. A more generous cover may include weekly indemnity in case of temporary disablement.

Banks also require life and disability protection for their borrowers, contracting on behalf of the borrowers a group credit life policy on the entire outstanding balance in the bank portfolio on a yearly renewable basis.

Group and group credit life coverages generate the large majority of the life written premium in the GCC, leaving the individual business sector to face major challenges. Expats, forming half of the entire GCC population (see Table 5), have the alternative to buy their personal insurance protection from their home country. This allows them to choose products that cater to their needs, as opposed to the products within the local market, which lack a tailor-made solution per nationality, as seen by Philip Cernik of Friends Provident International.[15] Portability option (i.e., the option to transfer your insurance policy to your home country) could be an important aspect, and many insurance companies are trying to implement it to have a more appealing product for expats. Conversely, locals who are tremendously benefiting from generous government-sponsored programs alongside some cultural restrictions would have low demand for personal coverage.

Table 5
Expatriate Distribution in GCC Countries, 2015

Country	Population (in Million)	Percentage of Expats	Percentage of Locals
Bahrain	1.4	51%	49%
Kuwait	3.9	74%	26%
Oman	4.5	41%	59%
Qatar	2.2	76%	25%
Saudi Arabia	31.5	32%	68%
United Arab Emirates	9.2	88%	12%
Total GCC	**52.7**	**48%**	**52%**

Abbreviation: GCC, Gulf Cooperation Council.

Source: Russigna, L., Z. Kachwalla, and N. Kumar. 2017. *Insurance Opportunities in the Middle East.* EY.

The situation, however, is not static, and demand and awareness are expected to increase, with individual universal life saving plans being provided by all international players and increasingly by some local companies as well.

On the other side of the region, outside the GCC, the retail and individual long-term life insurance business is more promising, even as group business remains an important source of business. The well-implemented bancassurance model in countries such as Morocco, Lebanon and Egypt has increased the individual business sector, presenting a wide range of products, from small-ticket accidental cover to level term and universal life saving plans.

MENA WITHIN DIGITAL EVOLUTIONARY CROSSROADS

Digital is not a transient trend; it is a revolution that is happening right now and continuously picking up speed. In the Middle East and around the world, digital technologies are disrupting every aspect of business, government and individuals' lives.[16] Industries across sectors are redefining and revising globally their digital responsiveness and ongoing real-time digital adaptation to shield their business interest and ensure survivorship. From an insurance global perspective, the prognosis for endurance within an insulated silo appears to be low, according to the 2018 World Insurance Report. Strategically leveraged channels and astutely chosen partnerships are crucial to building a persistent value-creation model. Digital agility and an integrated ecosystem are requisite twin levers to enhance customer experience, drive operational efficiencies and foster durable viability.[17]

When it comes to digital, whether through growing artificial intelligence or via blockchain technology, it appears neither geographical scope nor industrial sectors are insulated from the expected viral-like disruption. Increasingly more customers are exposed in real time, and the technology is eradicating longtime trading fences. The stakes are high within the "Mecosystem" concept in which personalized lifestyle and behavior determine a product's appeal. Where is the Middle East in regards to the digital strategy and commitment in general and within the insurance sector in particular amidst growing customer expectations?

Middle East insurance markets are growing toward increased maturity supported by enhanced regulations. Nevertheless, most regional insurers have been slow to adopt technology,[18] whilst the ones with strong multinational roots or financially sound business models are investing steadily in technology-driven innovation. With traditional operating models missing the agility to meet changing market needs, insurers in the region will need to make digital a central module of their business strategy. The significance that digital can deliver includes reducing costs to sell and service, increasing customer engagement levels, improving persistency and enhancing process efficiency.[19] The Middle East, according to the 2016 Digital McKinsey report referenced at the start of this article, is on the verge of a substantial digital disruption. In the past decade, the cross-border data flow connecting the Middle East to the world has increased by more than 150-fold.[20] The report highlighted the importance of citizens in leading the Middle East's digital charge.

While consumers in MENA are primed and ready to lead digitally enhanced lives, businesses and governments have not fully embraced the digital opportunity, according to Digital McKinsey. Despite ambitious government aspirations to go digital, only 6 percent of the Middle Eastern public lives under a digitalized smart government. The MENA region is ranked second in the world by number of daily YouTube video views at more than 310 million.[21] The region is also the fastest-growing consumer of videos on Facebook: consumption per head of Facebook embedded videos is twice the global average.[22] Given the demographics in the region, with a high concentration of young people, the tech-native and savvy youth in the Middle East are expected to boost the digital adoption rate in the years to come. By 2019, projections estimate that the Middle East and Africa will have the world's highest cloud traffic growth rate, at 41 percent.[23] By 2020, projections suggest that there will be around 2 zettabytes of data in the Middle East—greater than the estimated number of grains of sand covering the entire Arabian Desert.[24]

The Middle East has only scratched the surface of its digital potential. Digital McKinsey estimates the Middle East region's economy is hovering around only 8 percent of its digital potential as compared to Western Europe and the U.S., which have achieved an estimated 15 percent and 18 percent, respectively.[25] Several inherent policies found in the digital space protect local incumbents, and these are paramount in the Middle East. The digital space is borderless; thus, it is a question of time as to when

these policies will no longer be sustainable. The Digital McKinsey report offers three high-potential opportunities that are particularly relevant for the Middle East: mobile payments, digital health and e-commerce. From the biometric inherent risks, health is gaining rapidly from the digital agility and predictive analytics alongside behavioral real-time monitoring in the MENA region. Several third-party administrators are providing digital solutions for service improvement and data collection. Digital transformation attempts in the life insurance sector remain limited compared to the efforts spent on the health business. Nevertheless, whilst digital is transforming health care, the life progress is underway and is expected to eventually catch up in the realms of automated underwriting processes and behavioral assessment in real time. Insurers and distributors who are able to differentiate their customer experience through a carefully designed, thoughtfully executed and agile digital strategy will win in the market.

The gap between consumer adoption and digitalization among businesses and governments, as well as information and communication technology supply and innovation, implies strong growth potential in the near future, as consumers are clearly ready to embrace new digital offerings.[26]

MENA is a diverse geographical landscape with a rich past in search of its new identity. There are numerous opportunities in the individual and employee benefits sectors. The young population may foretell growth in the near term, in the new digital world at a faster pace, where it is believed the disruption will be smoother and more effective in welding all disparities into their proper place. Perhaps with the advent of digital transformation, the historical parenthood claim of algorithm can be completed? ■

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Training on "Data Science for Life & Health Insurance," CREAD, December 23–25, 2018, in Collaboration With AWB®

By Farid Flici

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On behalf of the Actuarial Demography Team (ADT) of the Centre for Research in Applied Economics for Development (CREAD), Algiers, Algeria, Farid Flici hosted Arpita Das from the Actuaries Without Borders® (AWB®) section of the International Association of Actuaries (IAA, *www.actuaries.org*) to facilitate a three-day training on data science for health and life insurance for actuaries in Algiers. The training was held in CREAD from December 23 to 25, 2018, and was attended by actuaries and statisticians from insurance companies (TALA, AXA, AMANA), public insurance regulators (Insurance Department at Finance Ministry), social security organizations (CNAS, CASNOS, CNR) and academia (CREAD, ENSSEA, UBMA).

The training covered different topics related to life and health insurance pricing and general overviews on big data, data science and machine learning in the insurance industry. In addition to recalling the actuarial bases of pricing insurance products, mini-workshops were included in the training, which allowed participants to directly work with models and data sets.

AWB® is a section of IAA that has the objective of promoting actuarial education all over the world by facilitating training and assistance for national associations.

Algeria does not yet have a national association, but many efforts have been made in order to strengthen the actuarial profession in both industry and academia. Many universities nowadays are providing graduate and postgraduate programs in actuarial sciences. The Actuarial Demography Team was created in January 2018 in CREAD in order to promote research activities related to life insurance, social security and retirement.

The ADT was founded by Farid Flici, a local actuary who graduated from the High National School of Statistics and Applied Economics (ENSSEA, Algiers). Farid has a Ph.D. in statistics, is a member of the Mortality Working Group of the IAA and is an expert on actuarial demography modeling at the National Committee for Population. He launched a series of workshops starting in January 2016 known as "Journées d'Actuariat Vie Algérie (JAVA)." Seven editions have been organized since then.

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Reducing Vulnerability Through Insurance

By Carlos Arocha

2017 was an outlier year in terms of number and severity of natural catastrophes. According to Swiss Re,[1] a global reinsurer, the havoc caused by natural and man-made catastrophes was $337 billion,[2] of which $144 billion were losses paid by the insurance industry worldwide. Over the past 10 years, catastrophic losses adjusted for inflation have reached about 0.3 percent of global GDP.[3] However, there is an enormous gulf between the advanced and the emerging insurance markets. Whereas insurance density (i.e., annual premiums per capita) is $3,517 in advanced markets,[4] the emerging markets[5] reach a mere $166 (Figure 1).[6]

Figure 1
Annual Premiums per Person

MICROINSURANCE

One step to correct this imbalance that has been successfully taken in many regions is "microinsurance." In a microinsurance arrangement, low-income people are typically protected against specific perils in return for a premium commensurate with the likelihood and risk cost.

Microinsurance is not a new concept; the term itself dates to the late 1990s. Support by nonprofit organizations, including the World Bank, the International Labor Office, the International Fund for Agricultural Development, the German Corporation for International Cooperation and a host of private sector foundations have helped spur the growth of microinsurance in many regions of the world.

INCLUSIVE INSURANCE

Insurance companies compete vigorously to provide coverage to high- and middle-income individuals as well as medium and large companies. But not everyone enjoys ready access to insurance. A second corrective step is to make insurance available to all, and this is what inclusive insurance is all about.

The International Association of Insurance Supervisors (IAIS) defines inclusive insurance as "all insurance products aimed at the excluded or underserved market, rather than just those aimed at the poor or a narrow conception of the low-income market."[7] In less economically developed countries, most of the population is either uninsured or underinsured; thus, inclusive insurance is a mainstream topic in the development of the retail insurance markets.

HOW CAN INSURERS OFFER INCLUSIVE PRODUCTS?

The IAIS and other nonprofit organizations have developed tools and guidelines mainly aimed at insurance supervisors who are tasked with the promotion of insurance inclusiveness in their markets. The common features that inclusive insurance products should have are as follows:

- **Offer products with relatively low premiums.** This may be achieved through the reduction of administrative and distribution expenses, which are often onerous in traditional forms of insurance. New technologies may motivate ways in which premium charges can be significantly minimized.

- **Design products with a defined and limited cover.** The idea is to keep insurance products simple in order to encourage sales. A limited cover helps maintain the risk portion of the premium at a relatively low level.

- **Limit policy terms.** Shorter duration translates into reduced exposure, thus lower risk.

- **Limit or remove policy exclusions.** Having little or no exclusions may make products more appealing to potential policyholders.

- **Adopt group underwriting whenever possible.** This may contribute to simplified products and lower premium charges.

- **Pay claims promptly.** Inclusive insurance is also about building trust with policyholders. Rapid claims processing may help companies to be perceived as fair, appealing to players in the insurance marketplace.

The global insurance community is responding to the challenges of financial insecurity that the uninsured or underinsured face. Global awareness of climate risk, new technologies and a better skill set to model risk have spurred innovation in insurance.

Microinsurance has proven to be a viable tool to bring insurance to low-income individuals. Inclusive insurance goes beyond that.

HOW TO NARROW THE GAP

The large insurance protection gap that exists between advanced and emerging insurance markets will probably never be closed. However, certain measures may help in narrowing the gap and bring coverage to a greater part of the population (Figure 2).

These measures are as follows:

- **Promote insurance culture and financial inclusion.** The fact that products are seemingly complex can be addressed by government action such as funding programs that promote financial knowledge and allowing access to financial services to millions who do not currently have the possibility to buy insurance covers.

- **Work on regulatory change.** Copying and pasting regulatory solvency regimes from developed insurance markets is a recipe for failure. Risk-based regulation is taking hold in Latin America, where many countries are in the process of overhauling solvency regimes. However, it is important to balance the need of solvency regulation with the incentives for insurance companies to introduce new and innovative products without becoming ensnared in an overly complex process. Solvency regimes must be adapted to the features of the market in question.

- **Strengthen product innovation.** Insurers need to focus on the development of products that cater to the needs of policyholders, and not merely spend their full energy in designing “antifraud” products. Insurers can tap into the

Figure 2
Five Ways to Narrow the Gap Between Advanced and Emerging Insurance Markets

experience available from global reinsurance players, who offer not only capacity but also knowledge transfer. A win-win situation may be achieved.

- **Improve the ability to assess risk.** Actuarial skills are urgently needed in most emerging insurance markets. Also, it is important to build robust modeling skills, where other insurance professionals may also play a crucial role.

- **Create partnerships between government and the private sector.** This is probably a "catch-all" category. The preceding measures would greatly benefit from fruitful relationships between government and players in the insurance sector. This is not only about regulation; it is about creating more fertile ground to sow the seeds of strong insurance market growth.

Building partnerships between governments and the private sector may be the most effective way to narrow the insurance protection gap.

ACTUARIAL CONTRIBUTION

Actuaries can play a critical role in designing products that meet real needs, particularly in those countries where insurance density and penetration are relatively low. Innovation and the use of technology may help ease the burden, but building partnerships between governments and the private sector may be the most effective way to narrow the insurance protection gap. ■

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ENDNOTES

1 Staib, Daniel, and Mahesh H. Puttaiah. 2018. *Sigma 3/2018: World Insurance in 2017: Solid, but Mature Life Markets Weigh on Growth.* New York: Swiss Re Institute. *https://www.swissre.com/institute/research/sigma-research/sigma-2018-03.html* (accessed March 25, 2019).

2 In fact, $330 billion were attributed to natural catastrophes, and $7 billion to human-made catastrophes.

3 Staib and Puttaiah, supra note 1.

4 Advanced insurance markets are hereby defined as the U.S., Canada, Western Europe (excluding Turkey), Japan, Hong Kong, Singapore, South Korea, Taiwan, Oceania and Israel.

5 Emerging insurance markets are hereby defined as Latin America, Central and Eastern Europe, South and East Asia, the Middle East (excluding Israel) and Central Asia, Turkey and Africa.

6 Staib and Puttaiah, supra note 1.

7 International Association of Insurance Supervisors. *Application Paper on Regulation and Supervision Supporting Inclusive Insurance Markets.* Oct. 9, 2012. *http://cenfri123.wpengine.com/wp-content/uploads/2014/09/Application-paper-on-regulation-and-supervision-supporting-inclusive-insurance-markets_IAIS_October-2012.pdf* (accessed March 25, 2019).

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