SOCIETY OF ACTUARIES

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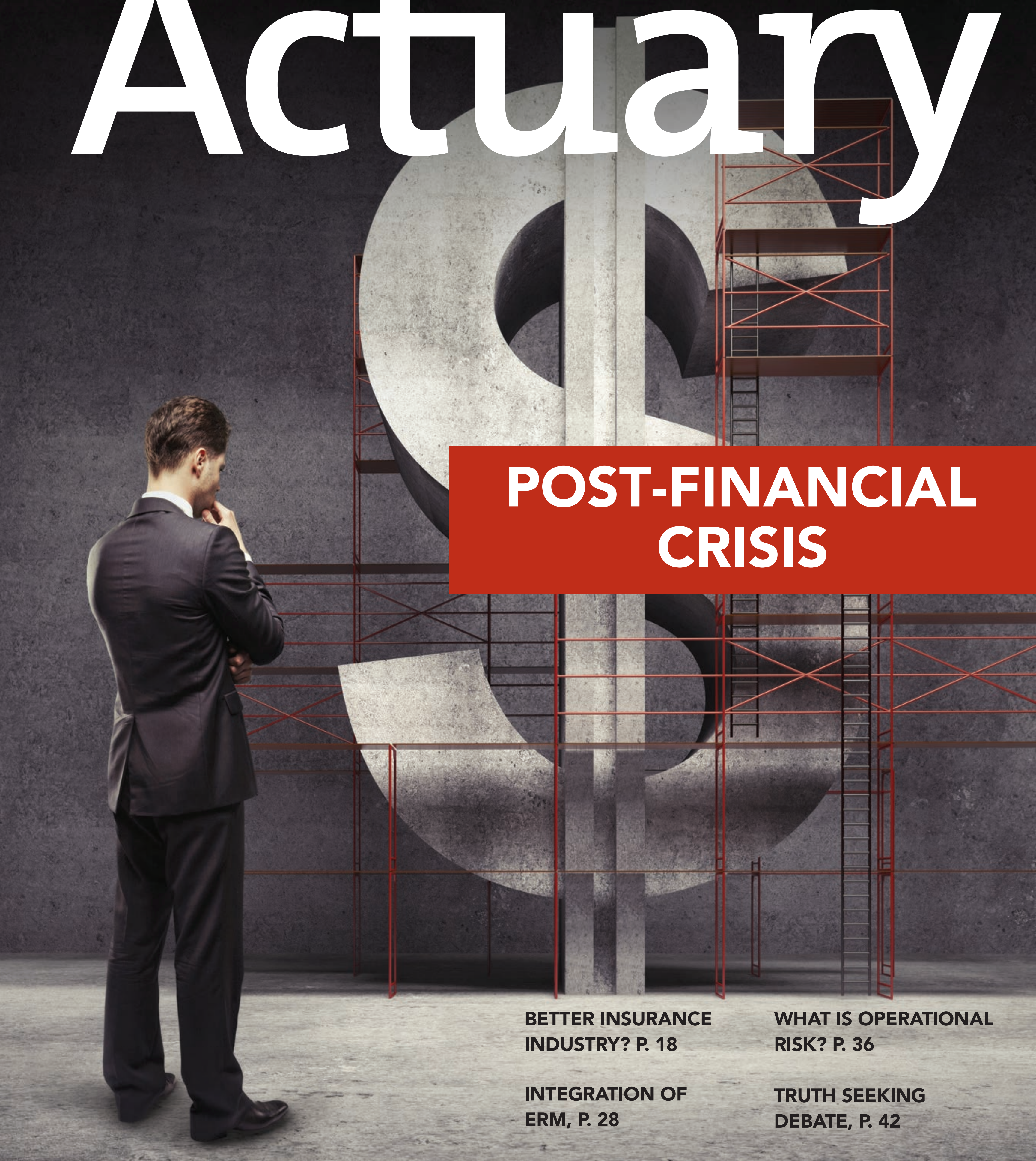
The Actuary



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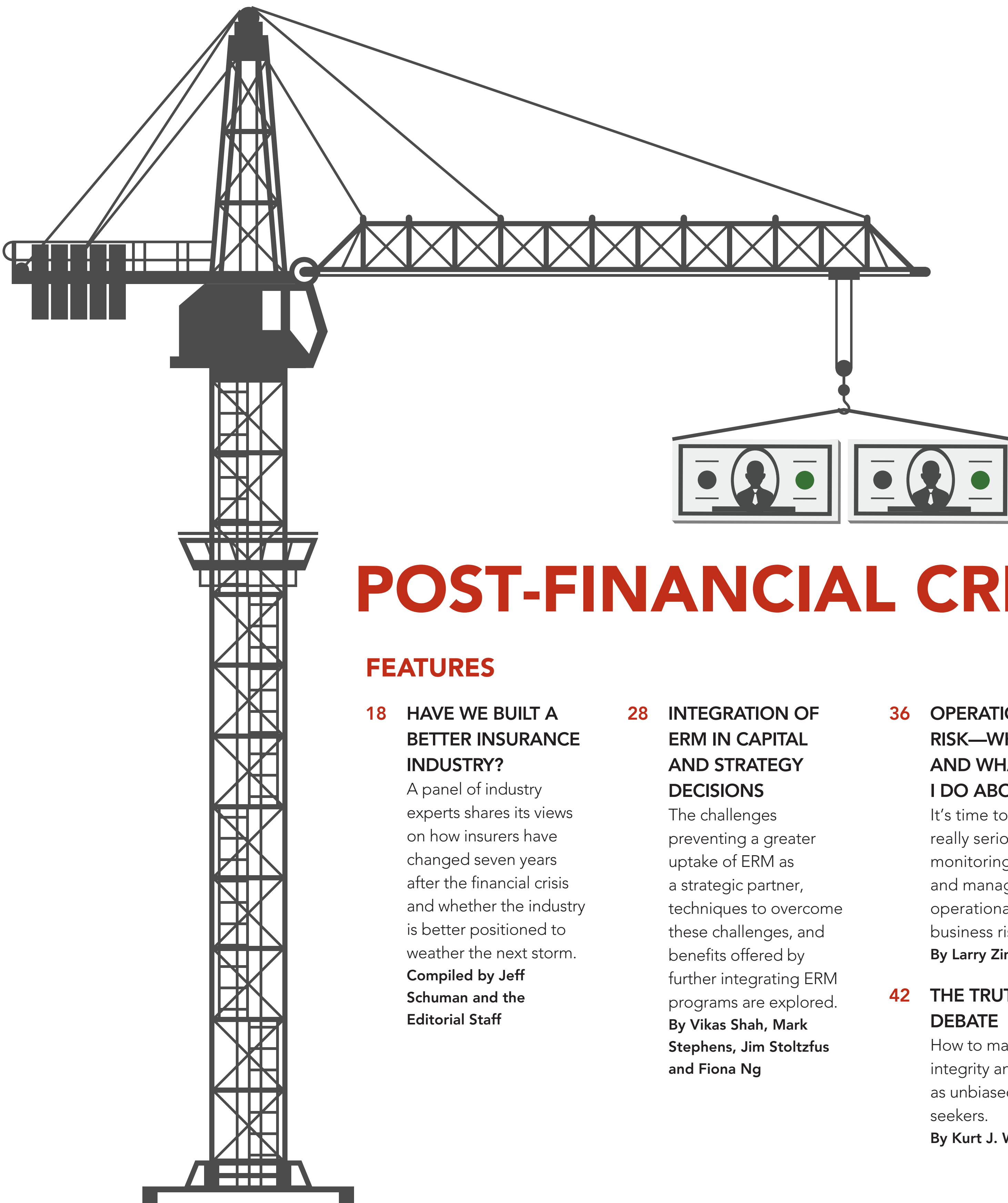

POST-FINANCIAL CRISIS

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The Actuary
SOCIETY OF ACTUARIES

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June/July 2015
issue of *The Actuary*

DEPARTMENTS

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Editorial

ACTUARIES TO THE RESCUE?

BY JEFF SCHUMAN

IN THIS ISSUE OF *THE ACTUARY*, our authors and panelists provide some perspectives on how the insurance industry has changed since the financial crisis of 2008. There are reasons to be optimistic: Higher capital levels, better liquidity management, more integration of risk management into strategic decisions, etc. But there is always more work to be done and new risks to anticipate and manage. As we look to the future, what role will we, as actuaries, play in affecting the outcome of future downturns and crises?

In the midst of the 2008 crisis, former SOA President Jim MacGinnitie published an excellent essay, "Actuaries Would Have Made a Difference." He offered 10 reasons why he believed the crisis would have been less severe if more actuaries had been involved in financial markets:

1. Actuaries understand that the distribution function for most risks is not the bell curve or normal distribution, but rather one of several distribution functions that have longer, fatter tails.
2. Actuaries understand that while choosing the right model is very important, it's even more important to calibrate it appropriately.
3. Actuaries understand "model drift."
4. Actuaries understand spirals, and seek to avoid them.
5. Actuaries are accustomed to developing values for liabilities where no deep liquid market exists.
6. Actuaries are used to taking a long-term view.
7. The Actuarial Control Cycle is a well-developed concept that would be helpful in the capital markets.
8. Actuaries are accustomed to transparency.
9. Actuaries have professional standards.
10. Actuaries accept a quasi-fiduciary obligation.

Please read MacGinnitie's essay for an explanation and an elaboration of these points: *soa.org/Library/Essays/rm-essay-2008-toc.aspx.*

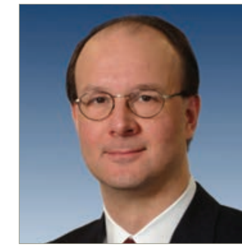
MacGinnitie's reasons can be simply summarized as follows: Actuaries have a strong fundamental understanding of risk, are skilled risk modelers, are accountable for their work, and have a deep professional commitment to the long-term well-being of the financial systems they address. This is an impressive set of characteristics, and I agree that these attributes mean that actuaries *can* play an important role in reducing the severity of future financial crises. But "can" is one thing; "will" is another. To what extent *will* we make a difference and what must be done to increase our impact? I believe there are several areas we can address.

EXPAND OUR SPHERES OF INFLUENCE

Let's face it, if actuaries are going to have a much bigger impact on future crises, we'll need to expand our presence in financial sectors outside of our traditional domains in insurance, pensions and health care. The U.S. banking industry is about double the size of the insurance industry by assets and has a proportionately larger impact on the economy and markets. Investment banks also have a significant economic and market impact. However, the number of actuaries working in these industries is still relatively small. Furthermore, many of the actuaries who work in commercial and investment banks are there to provide products and services to the insurance industry, rather than to function in financial and risk management roles.

Establishing a more significant actuarial presence in these other industries will require effort at both the organizational level and at the personal level. In my opinion, it's important that the Society of Actuaries (SOA) and other actuarial organizations look at ways to better market the capabilities of actuaries, and the exam curriculum must continue to expand and evolve to become more relevant in more situations. These must be sustained, long-term initiatives. I know there have been some important strides made in these areas. For example, the SOA's Cultivate Opportunities team has a number of initiatives in place to identify new and different career paths for actuaries including predictive modeling, business analytics, risk management, financial services, and more. In addition, the SOA Board's Learning Strategy Task Force is working to address many education-related issues. Recommendations will be finalized at the June Board meeting.

While marketing the profession is helpful, actuaries who want new opportunities in new industries will also have to work hard to market themselves individually. Doors can be broken down, jobs can be won, but it often takes a creative and determined effort. Showing up and flashing an actuarial credential doesn't cut it when approaching a nontraditional opportunity, but creatively demonstrating the relevance of your skills sometimes does. I broke into my first job in the investment banking industry partly by campaigning aggressively for an opportunity to present formally to an audience of the key decision-makers. Persistence, aggressive tactics and a good presentation got me the job.



Jeff Schuman

Let's face it, if actuaries are going to have a much bigger impact on future crises, we'll need to expand our presence in financial sectors outside of our traditional domains in insurance, pensions and health care.

Another opportunity for greater actuarial impact is on the federal regulatory front. Given the important role of the U.S. Federal Reserve in guiding monetary policy and its large and expanding role in regulating financial institutions, the complexion of future financial crises will be partly a reflection on the Fed. However, despite the Fed's significantly increasing role in the insurance industry, the actuarial directory lists just six SOA and Casualty Actuarial Society (CAS) members among the Fed's approximately 20,000 employees. Surely, there is room for actuaries to contribute more significantly.

ADD MORE VALUE IN TRADITIONAL ROLES

I believe another avenue for actuaries to impact future crises is through enhanced execution of traditional roles. Actuaries have long provided essential technical expertise to insurance and health care organizations. Over time, many traditional actuarial roles have become even more important and more technically demanding. It's natural that actuaries can develop an intense, specialized focus as they execute many of these roles.

However, we can contribute to better risk management outcomes if we can reach outside specific areas of specialization and achieve more outward perspective and engagement. One of the biggest weaknesses of risk management coming into the last crisis was its often "siloed" nature. Risks and business lines were too often analyzed and managed in isolation. I think there are things we can do to help break down silos and help our organizations manage risk more holistically and effectively:

- From wherever we sit, we have an opportunity to think more deliberately about how the risks and activities we address might interact and correlate with other exposures in our organizations.
- We can enhance our contribution by proactively engaging actuaries in other business lines and areas to compare risk perspectives, tools and techniques.
- Lastly, we can further develop our communication skills. Generating important risk insights will only have value to the extent we can effectively communicate them.

We can also add more value and change outcomes by creating more highly responsive models and operating them with great sensitivity to changing circumstances. As MacGinnitie pointed out, actuaries normally operate from a long-term view, and this is generally a great virtue when building sound financial systems and managing risk. However, things can move quickly in extreme tail events. In the 2008 crisis, companies had difficulty marking some of their risk and capital positions to market in real time. This created an enormous perception problem that became a real problem, as markets assumed the worst.

I think there are things we can do to help break down silos and help our organizations manage risk more holistically and effectively. ...

PRODUCE MORE BUSINESS LEADERS

Another opportunity to be more impactful is to have more actuaries in executive leadership positions. I've just asserted that actuaries throughout the organization have the potential to increase their impact, but, of course, the biggest decisions will always be made at the top of the house.

Among the 15 largest U.S.-based life insurers and the three largest Canadian-based, there are 44 individuals holding the title of chairman, CEO or CFO. (There are 44, rather than 54, because 10 individuals serve as both CEO and chairman.) There are eight actuaries among the 44, which suggests upside potential. There seems to be a chicken-and-egg question here—are actuaries sometimes denied leadership roles because they lack certain skills, or do they sometimes lack certain skills because they're denied leadership opportunities? I'm not wise enough to answer that, but I do believe there are opportunities for well-rounded actuaries who gain broader management experience.

I hope we continue to address many of these opportunities as a profession and as individuals. Let's realize the potential that MacGinnitie identified and make an even bigger difference in the future.

Jeff Schuman, FSA, MAAA, is a Connecticut-based consultant. He can be reached at *jrschuman@outlook.com*.

Errol Cramer

Letter From The President

MID-YEAR REPORT

BY ERROL CRAMER

AS I BEGAN my term as Society of Actuaries (SOA) president last October, I talked about three main challenges we face:

- **Staying relevant**—we can't allow ourselves to lag in best practices and we must find new opportunities for actuaries;
- **Being globally connected**—individually and as a professional society; and
- **Being responsive to societal issues**—as professionals, we have a duty to serve the public where we have the knowledge and skills to help solve financial issues that affect society.

In May, I completed a couple of round-the-globe trips that included our biannual meeting of the North American Actuarial Council (NAAC), which is a tri-national meeting of leaders from the U.S., Canadian, and Mexican actuarial societies; a meeting of the Council of U.S. Presidents (or CUSP), which I chair this year; meetings in China with our members there, as well as with the China Association of Actuaries, the SOA China Region Committee, and other industry, research and academic organizations; the U.K. Institute and Faculty of Actuaries (IFoA) first-ever Asia Conference; and the Actuaries Summit meeting of the Institute of Actuaries of Australia.

I think you can tell—from that itinerary alone—that the SOA is well-connected and we are reaching out to others in a variety of ways.

Over time, we've demonstrated to the world the rigor and quality of our credentials.

Although we are a U.S.-based professional actuarial organization, and the large majority of our membership lives in the United States, we do operate in a global world as a globally recognized credential. The SOA was started more than 125 years ago as a bi-national organization, a society rooted in the United States and Canada. Over time, we've demonstrated to the world the rigor and quality of our credentials. We offer one of the world's "high credentials" in actuarial science, I believe the equivalent of a Ph.D. Students and employers all over the world seek us out for our expertise.

As a young actuary in South Africa, I took the British exams that were commonly used in my home country, and I had a lot of pride in being a member of the IFoA. Immigrating to the United States over 30 years ago, the SOA's reputation was enough for me to take all of the exams needed to become an FSA, although I'd already nearly completed my U.K. fellowship, and I was equally proud to be a member of the SOA.

In my recent meetings with our members in China, I was struck with how they regard their SOA credential as an elite qualification, and how fiercely loyal they are to being part of our organization.

We've grown to become the largest actuarial professional society in the world, representing about 30 percent of all the fully qualified actuaries within the International Actuarial Association's (IAA) member associations.

STAYING RELEVANT

Actuarial work is intellectually challenging, respected, and, often, financially lucrative. Being an actuary has just been named, once again, one of the "best jobs" in America, and many intelligent young people are attracted to our profession.

But actuarial work is still largely concentrated in its traditional practice areas and traditional employers. Here in the United States and in Canada, we have not yet moved in any significant numbers beyond those traditional areas, although actuaries in some other countries (Australia, South Africa and Mexico, for example) have or are doing so.

So, as long as our traditional roles continue to grow fast enough to give all of us expanding opportunities and to offer job opportunities to the young people attracted to our profession, perhaps this would be fine. But we all know that's not likely to happen in the real world. Industries and practice areas grow, but sometimes they shrink. Work that was in demand a decade ago may no longer be needed. Techniques or methods we used five years ago won't keep us competitive today.

Recently, the SOA partnered with the Casualty Actuarial Society (CAS) and the Canadian Institute of Actuaries (CIA) on the actuarial talent study from the Economist Intelligence Unit. This study explores the current state of the market in the United States and Canada, the key drivers for demand and supply, and the outlook through 2020.

While we see continued steady growth in demand for our skills in traditional areas, we also see a more rapidly growing supply of new actuarial students from our universities, some shortages of mid-career actuaries, and ebbs and flows in near-term growth rates for different specialties. For instance, property/casualty (general insurance) and the health care fields are likely to grow the most rapidly.

Perhaps most importantly from the study, we continue to see employers emphasizing the critical importance of business and communication skills.

Perhaps most importantly from the study, we continue to see employers emphasizing the critical importance of business and communication skills. All actuaries must be technically competent and the real differentiator then will be business acumen.

When I began my term as president, I emphasized our need to become involved in the rapidly growing field of data analytics. At the SOA's Employer Council meeting several months ago, senior employer representatives emphasized the need to move into this area aggressively, and soon. Jobs are being created, including those in many of our traditional employers. A senior actuarial recruiter serving on the Employer Council told us that many, if not most, of the new job listings her firm gets today ask for data analytic skills and seek people to work in this area. If we don't enter this field in an organized and effective way, we will be left out, plain and simple.

As you can imagine, we're working on this area. Early next month, our Learning Strategy Task Force will present its recommendations to our Board of Directors. I hope—and expect—they'll bring us ideas for how we can help actuaries successfully move into this field. I trust their recommendations will be ambitious.

Our Opportunities for Actuaries initiative is also focused on this issue. They're currently preparing recommendations on an employer awareness campaign aimed at the predictive data analytics field. Our team is working with a successful business-to-business marketing agency to gather relevant research and plan a campaign that I hope we can begin soon. Again, the recommendations must be aggressive. Rest assured that I will keep you updated on their progress.

Penetrating the data analytics field is an equally important issue for our sister actuarial organizations. This discussion is a potential topic for the next NAAC meeting—which I will chair—exploring a joint effort to promote actuaries' skills within this field.

The Opportunities for Actuaries group is also working on some interesting pilot projects. They've been reaching out to a group of "promising candidates," those who passed multiple SOA examinations, but chose not to continue on to a credential and are not today part of the profession. We think these candidates' experiences—where they're working today and why they chose not to continue the actuarial pathway—can give us important information on professions or fields that value actuarial training.

Our team is also looking at ways we might encourage or sponsor the creation of internships for young or aspiring actuaries in the data analytics field. If we can start some pilot programs, employers can get important learnings about the value to their business of actuarial skills and we can learn how best to bring actuaries to this developing industry. We've just received from our first analytics employer an agreement to sponsor an actuarial intern this summer for this pilot project, and we're very excited about that. Again, this effort is focused on gaining new learnings about what would make actuarial skills particularly valuable for an analytics firm.

CONNECTING GLOBALLY

At the start of my presidency I also spoke about the importance for the SOA, and our profession generally, of becoming more globally connected. The SOA's membership and candidate base is international today and becoming more so.

Tying together this discussion about international efforts, I am proud to welcome Ann Henstrand to the SOA, as she is our new senior director of international. She worked in senior international and government affairs roles for the ACORD Corporation, a major U.S. insurance industry organization. She is responsible for coordinating the SOA's international activities and serves as a member of the SOA's senior staff Executive Team. In addition to leading our international

strategy, she will also manage our relationship with the IAA.

As I mentioned earlier, in May I attended meetings in China with the China Association of Actuaries, Insurance Institute of China, Insurance Association of China, and the China Beijing Insurance Research Institute. These are important conversations that build our relationships and help us do a better job of serving our members and candidates in China.

We are working to obtain an official license for the SOA in China, which will allow us to open an office, hire staff, and become a more established presence there. Many other U.S.-based professional associations have done this and the IFoA took this step a year ago. This work is an important advancement to provide services locally for our members, and current and potential future candidates. We've also begun implementing a new Latin America strategy. We want to achieve two immediate goals: 1) establish relationships with actuarial professional bodies, universities, and possibly regulators; and 2) determine if there is a helpful and effective role the SOA can play in the region for the long term.

We're exploring possibilities in Brazil, Chile, Colombia and Argentina. We're unlikely to see significant numbers of new FSAs in this region for many years, but the SOA may be able to play an important (and perhaps even indispensable) role in encouraging the growth of the actuarial profession in this region.

We are also working with the IAA on several projects that show our commitment to collaborative global action. We're beginning to plan now for the IAA meeting that the SOA will host in Chicago in the fall of 2017.

Also at the IAA's recent meeting in Zurich, I—along with Bob Miccolis, president of the CAS, and Jacques Tremblay, president of the CIA—brought forward a joint proposal for a State of the Profession Survey, to be conducted with individual actuaries around the world. If pursued, Bob, Jacques and I believe this research could deepen the global profession's

collective understanding of the issues our members face and how we can better serve them and the public in the future.

I was very pleased to see support for this project from over 20 different actuarial societies around the world and look forward to getting it underway.

I returned to Beijing in late May to participate as a guest of the IFoA at their inaugural China actuarial symposium, and then traveled to Melbourne for the biennial conference of the Institute of Actuaries of Australia and visited members and students in Hong Kong.

I cannot stress enough how important these visits are to building bridges we can use to support the global development of the profession.

RESPONDING TO SOCIETAL ISSUES

I also spoke at the onset of my presidency about the importance of making an actuarial contribution to addressing social needs. This is the primary way in which we can serve the public and, I believe, is a duty we have as actuarial professionals.

Shortly after our 2014 SOA Annual Meeting, the SOA released new retirement mortality tables for the first time since 2000. These tables (RP2014)—and the research that supports them—are an important contribution toward retirement security for millions of pension plan beneficiaries across the country.

The impact of these new tables is great, with trillions of dollars in retirement funds. Any change has a magnifying effect, and a number of major plan sponsors have announced significant increases in plan liabilities and additional funding contributions to their plans. As a result, there has been considerable industry and public interest in the new tables, and we are working with providers of pension data—industry and public agencies—to enhance our data collection and speed at producing future pension tables.

Further, we're continuing with new research initiatives related to the health and retirement practices.

We're nearing completion of a data access agreement with the Financial Services Commission of Ontario under which we will be able to access important government retirement plan data from across Ontario for research purposes.

We're also beginning to make good use of the new health claims data agreement with the state of Kansas.

Earlier this year, our managing director of research, Dale Hall, gave a presentation to the National Association of Insurance Commissioners' annual National Tornado Summit, providing initial findings on utilization of emergency medical services in the aftermath of major storms in Kansas. This research, which was just a beginning of our work in this area, demonstrates the power of actuarial analysis to bring new insights to old problems. It also demonstrates the power we can gain by combining traditional health actuarial techniques and data to issues more commonly studied by casualty actuaries in the United States.

Finally, at the spring NAAC meeting, Steve Lowe, CAS president-elect, and others, presented findings from the joint work we've been doing with the American Academy of Actuaries, the CAS and the CIA to develop a new Actuaries Climate Index. Steve led an excellent presentation and discussion of this topic that clearly demonstrated how much progress has been made through this research. This "index" will provide a variety of trend data to evaluate changes in volatility and extremes of weather. While we're not yet ready to release the work, I'm very excited by the direction it's taking and look forward to continuing collaborative work with our partners on the project.

Finally, I'd like to turn to two themes driving much of our efforts this year.

COLLEGIALITY AND COLLABORATION

As I mentioned, I returned to Beijing in late May to attend a conference sponsored by the IFoA. This is important in its own right, but it illustrates a larger principle and theme at work.

Some might say the SOA competes with the IFoA. Clearly, students in many parts of the world, particularly Asia, have a choice between obtaining their credentials from the SOA or the IFoA. Both are good choices, representing the pinnacle of actuarial education and credentialing. At the same time, we are professional colleagues and collaborators with one another in the development of our profession globally. In inviting me to attend their inaugural symposium, the IFoA noted that the SOA probably has the largest membership in Asia of any actuarial organization. It was important to them to reach out to us and to have our presence at this signature event. They also asked us to help market the event to our members and we have done so. Our profession will better develop, our employers will be better served, and the public will benefit more when we work well with our sister organizations around the world even when—perhaps especially when—we also compete with them in a collegial way.

Secondly, we are also beginning to explore opportunities to serve and work in Latin America as I mentioned. SOA President-Elect Craig Reynolds recently traveled to Mexico City to discuss our views and outlook on this region with our colleagues and counterparts at the Colegio Nacional de Actuarios (Colegio), Asociación Mexicana de Actuarios (AMA), and the Asociación Mexicana de Actuarios Consultores (AMAC).

It is important that we seek out, listen to, and respect the views of these colleagues who live in the gateway country to Latin America, who have a strong and thriving actuarial profession in their own country, and who may wish to work with us to promote the profession throughout this region.

I've already mentioned the new research we are jointly pursuing with the CAS, Academy and CIA at the IAA. As a third example—also at the IAA—the SOA leadership commonly conducts a number of "bilateral" discussions with leaders of other actuarial societies. At this meeting, we held for the first time a discussion with our colleagues from Germany. While we do not have many members or candidates in Germany, we have important issues in common with our German colleagues and it is very important that we reach out to discuss issues of common concern, to understand others' views, and learn from them.

I'd like to illustrate one final example of collaboration. Again, I've mentioned the meetings I completed with NAAC and CUSP. These are important efforts that help us build strong, collaborative relationships with our other U.S.-based and North American colleagues. We rotate the "chairmanship" of CUSP each year, and this year I'm very pleased to serve as the chair.

We use these meetings to update one another on important initiatives in our organizations, discuss possible risks our profession faces and what we can do about them, and work on improving the relationships among the professional societies.

Our profession will better develop, our employers will be better served, and the public will benefit more when we work well with our sister organizations. ...

The theme, then, that I want to point out here is that we must pursue the initiatives I've outlined—to remain relevant, to be globally minded and to address societal issues. We must do this in a way that is collaborative and collegial; that is built on dialogue, respect, and a desire to understand one another. I am pleased to report that we are doing just that, and I am equally pleased by the initial response we've received to these efforts.

LISTENING

In addition to collegiality and collaboration, it is important to listen. The SOA recently announced the start of new Listening Tours. This effort is intended to create opportunities for the SOA, our leadership and staff, to hear directly from you, our members, about the issues you face, the issues you want us to address, and the SOA strategy and directions generally.

This is important for a variety of reasons. Any professional association can only be as strong as its connection to its membership and its stakeholders. We are also beginning a new strategic planning process, intended to update the strategic plan for the years 2017–2020, and it's important that we hear your views as part of this.

We have already begun this effort.
We have a team of eight Board members, including myself, who are conducting these events. Also, we've launched a new Plain Talk communication vehicle that provides me with opportunities to write letters to you to address important issues.

We have started conducting Listening Tour events across the country and in several different formats. Some of these are larger events; some are small dinners; and some may even be one-on-one conversations. All tours are characterized by two things—open, direct discussion and listening. We want to reach all practice areas, all geographies, and all types of employment situations. We've begun the 2015 Listening Tour already, and I have high hopes for this effort. I want to see it become the way we do business. A legacy I hope to leave from my term in office is that we will make this type of direct, personal connection and communication between a wide group of your leaders and members the way we do business.

I am a passionate supporter of the 2015 Listening Tour, and I hope to see it become the "2016-and-beyond" way we do business. The issues are too important and the opportunities too great for us to do anything else. A

Errol Cramer, FSA, MAAA, is president of the Society of Actuaries. He can be reached at *errol.cramer@soa.org*.

HAVE WE BUILT A BETTER INSURANCE INDUSTRY?

A PANEL OF INDUSTRY EXPERTS REVIEWS FINANCIAL AND RISK MANAGEMENT SEVEN YEARS AFTER THE FINANCIAL CRISIS. COMPILED BY JEFF SCHUMAN AND THE EDITORIAL STAFF

Since the 2008 financial crisis, we've seen an unprecedented focus on financial and risk management. Insurers have invested significant time and money in search of better tools, processes and talent. Regulators and rating agencies have intensified their efforts and evolved their approaches. But what is the payoff? Have we built a better insurance industry?

Contributing Editor Jeff Schuman interviewed three industry experts to get their views on how insurers have changed and whether the industry is better positioned to weather the next crisis. The experts are:

- **Julie Burke, CPA, CFA,** a managing director in Fitch Ratings' North American insurance rating group
- **Fred Crawford,** executive vice president and chief financial officer of CNO Financial Group
- **Rahim Hirji, FSA, FCIA, MAAA,** executive vice president and chief risk officer of Manulife Financial

Schuman: The financial crisis had a dramatic impact on liquidity, as both funding liquidity and asset liquidity came under extreme pressure. How has industry liquidity management changed as a result?

Crawford: Insurance company core asset-liability management (ALM) practices did not change materially coming out of the crisis. In fact, sophisticated insurance company ALM was a key differentiator between banks and insurance company performance in the crisis, as there were almost no liquidity-related hits to insurance company statutory financial strength. Liabilities, even institutional, proved resilient to market volatility. Standard liquidity stress-tests proved manageable and downside scenarios did not ultimately materialize. Since the crisis, many companies have put in place emergency liquidity lines through the Federal Home Loan Bank (FHLB) system; this was not as common pre-crisis. To my knowledge, few if any of these lines were utilized to fund insurance liabilities.

> Companies are paying more attention to debt covenants, are extending and varying their debt maturities, and are moving early to refinance coming maturities.
> *—Fred Crawford*

Ironically, companies have shifted to less liquid assets … in response to low interest rates. So the industry's asset portfolio is actually less liquid today than before the crisis.
—Julie Burke

However, while insurance operating liquidity held up well in the crisis, holding company liquidity was more significantly stressed. With the capital markets frozen and debt maturities looming, even A-rated senior debt issuers learned hard lessons on the need for financial flexibility. As a result, insurers now routinely hold 18 months of holding company cash flow needs on standby. Companies are paying more attention to debt covenants, are extending and varying their debt maturities, and are moving early to refinance coming maturities.

Burke: On-balance-sheet liquidity at holding companies—which had been historically targeted at three to nine months on average—has increased to 12 to 18+ months. Assumptions around capital market access have changed—no more "just in time" financing. This shift to prefunding upcoming maturities has conveniently come at a time of record low interest rates. It will be interesting to see if this increased conservatism endures in a higher rate environment.

At the statutory entity level, managements have taken actions to bolster backup liquidity sources via FHLB arrangements and intercompany reciprocal revolving line of credit arrangements to address concerns over policyholder disintermediation and collateral posting requirements on derivative trades. Offshore captives have been re-domesticated or consolidated into domestic statutory entities to address liquidity concerns among other issues. Record levels of catastrophe bonds have been issued by the non-life reinsurance industry. This funded solution substitutes for reinsurance or post-event capital raising activities.

On the asset side, insurers accumulated cash and short-term marketable securities as a defensive measure during the crisis. Over time, this cash was put to work. Ironically, companies have shifted to less liquid assets like commercial mortgage loans, private placements and alternative investments in response to low interest rates. So the industry's asset portfolio is actually less liquid today than before the crisis.

Hirji: Lack of liquidity can bring an organization down overnight, even if the company has sufficient capital. As a result, managing liquidity requires an approach that is different from some other risks where the implications emerge over time and management has time to react. Since the financial crisis, we have stepped up our liquidity risk management frameworks by 1) raising greater awareness of liquidity risk internally, 2) developing additional risk metrics covering both the asset and liability sides of the balance sheet, 3) diversifying sources of liquidity from a funding perspective, and 4) stress testing and liquidity contingency plans.

Insurance companies tend to take a long-term view of many of the risks they face. While that is critical, today there is greater emphasis on understanding our risk throughout the market cycle. Like a roller coaster ride that has the same starting and ending point, we need to ensure we can survive the ride's highs and lows in between.

Schuman: The crisis exposed some notable inadequacies in the tracking and management of risk aggregations. Examples included companies with multiple sources of exposure to subprime mortgages. To what extent are insurers doing a better job of breaking down silos and managing risk holistically across the enterprise?

Burke: We have observed a definite heightened awareness of the benefits of identifying aggregations. This may have previously been overlooked due to inability to aggregate data in a helpful way. Companies have instituted more comprehensive governance processes, further developed the chief risk officer (CRO) function and introduced more rigorous board interaction with management and risk function personnel.

Regulatory initiatives such as requirements for Own Risk and Solvency Assessment (ORSA) have further embedded these practices into the fabric of the company. Other tools such as risk registers and risk dashboards have been developed. Third-party tools and enhanced computing capacity have helped the industry move forward in quantifying risk. Overall, companies are touting their risk management. As an outside party, it is difficult for us to fully assess these claims. The proof will come in how companies perform in the next major catastrophe event, asset blow up or market crash.

Hirji: The financial crisis of 2008 has resulted in looking at risk holistically and consistently in organizations. I know at Manulife this is definitely true.

On the investment side, we have a long history of aggregating our risk concentrations for the entire firm on a consolidated, global basis. On a consolidated portfolio basis, we have concentration and diversification limits for single-name connected entities, sectors, industries and locations. We also have restrictions on asset quality. Exposure tracking and management of exposures are done not in silos but with consideration of the enterprise-wide picture.

It's important to note that board-approved concentration limits apply across the firm. All limits are rigorously applied to all business units on an aggregated basis globally.

We continue to improve our data quality and automation. Our central data repository captures investment data from various sources with a range of identifiers related to the types of limits outlined in the company's investment guidelines and policies. The repository is connected to an aggregation system that aggregates exposure to monitor against defined limits on an ongoing basis.

This holistic view is communicated in a transparent and timely way. Aggregated exposures against limits are reported to senior management. In addition, investment and credit risk personnel have access to exposure data via a Web portal.

Crawford: Enterprise risk management (ERM) and modeling have advanced to capture correlated risks on both the asset and liability side. Most ERM practices are, just as the name suggests, enterprise in nature and have very senior and board-level attention to ensure there is no "silo risk management." Unlike banking in some cases, most insurance company board audit committees and risk management committees are combined and include the CFO and CRO at the table in a coordinated fashion.

Modeling has advanced for "looking through" structured securities in order to better understand the collateral and the correlation to other general account and company exposures. Also, companies with significant separate account platforms [variable annuity, variable life, and 401(k)/403(b) businesses] are careful to keep "higher beta" general account investments to a minimum.

Schuman: There's plenty of literature on capital frameworks, but what kinds of changes and improvements have been implemented in real-world practice?

As insurers become more complex, "standard" regulation and regulatory capital become less applicable and institution-specific assessments, such as ORSA, become more relevant.
—Rahim Hirji

Hirji: At Manulife, we are regulated globally by our Canadian regulator, the Office of the Superintendent of Financial Institutions (OSFI). In addition, our foreign operations are all regulated by their respective regulators. This provides transparency in all our operations and is something that other jurisdictions should follow. We look at our regulatory capital requirements on both a global and regional basis, as well as on a consolidated economic basis. The development of the ORSA requirement is an important step in that it helps insurers optimize their capital framework by showing the links between risks, strategies and capital all in one place.

Regulatory capital is based on the "average" insurer. As insurers become more complex, "standard" regulation and regulatory capital become less applicable and institution-specific assessments, such as ORSA, become more relevant. ORSA is a useful tool for reconciling internal models with regulatory models by clearly identifying why an internal assessment may be different from regulatory capital, and showing the underlying differences between economic capital uses and regulatory capital uses, both at a global level and within specific business activities.

Regulatory capital focuses on solvency, in the interest of policyholder protection. However, management must address all stakeholders, including customers and shareholders, and reconcile the regulatory view with the broader management view. The process of developing an ORSA report helps insurers to clearly articulate risk management practices, how the practices relate to actual risks taken and how much capital should be held given various scenarios. The fact that management is able to articulate clearly its view of its risks and its capital needs builds confidence in stakeholders of the company's ability to manage its business.

In addition to all of this, a rigorous stress-testing framework is crucial to understanding the risks we face.

Crawford: Formal risk appetite statements have matured, and they govern strategic and financial risk decisions. Stress testing has improved, with the most notable advancement being formal and sophisticated scenario testing developed out of real-world probabilities. We now have the benefit of live experience with financial and operational risk exposures as well as policyholder behavior, which has previously been actuarial guesswork. Pre-crisis there was already significant sensitivity testing; the real advancements are in scenario planning and compound event testing.

There is now much more attention to strategic risk management and how this differentiated the winners from the losers during the crisis. Are we too concentrated in any one or two businesses? Is our core franchise exposed in terms of product performance and distribution viability? Often the difference in surviving is the ability to raise strategic capital and contain ratings-driven impacts. This requires that the overall health of the franchise remain intact despite an economic crisis. Can the company eventually earn its way out of a capital deficit? Not if the core business model has been paralyzed.

Burke: There has definitely been a search for the holy grail of capital frameworks—a single capital regime that will work for all insurers in all product lines in all regions. That seems to be the aspiration of the International Association of Insurance Supervisors' (IAIS') global capital standard. Our view is that capital analysis is best assessed as a mosaic, including risk-based and nonrisk-based measures. Factor-based, stochastic, market-consistent and risk-neutral approaches all have their strengths and weaknesses.

At Fitch, we have our own proprietary insurance capital model—Prism—that is designed to work with the data available in various insurance markets. In the U.S. property and casualty sector, it is a fully stochastic model driven off the plethora of granular data in statutory filings. Our U.S. life Prism model is a hybrid factor-based and stochastic model driven off data available in statutory filings and analyst input for key items not in the filings. For the Europe, Middle East and Africa (EMEA) region, our Prism model is purely factor-based driven off consolidated International Financial Reporting Standard (IFRS) statements. In addition to our proprietary models, we also look at regulatory risk-based capital (RBC results in the United States, Minimum Continuing Capital and Surplus Requirements (MCCSR) in Canada, Solvency II in EMEA and nonrisk-based measures like premiums to capital and liabilities to capital to assess capital.

Notable changes in industry practice since the financial crisis include a better understanding of the interplay and correlation of individual risks, a heightened awareness of model risk and an emphasis on the capital impact of deterministic stress testing.

Schuman: The industry has long debated the merits of diversification vs. specialization. Some of the companies most impacted during the crisis were among the most diversified, and we've subsequently seen more specialization. Is this trend a net positive or negative for the industry's risk profile?

Burke: We have always said that all else being equal, bigger is better and more diversity is better. The challenge is that all else is never equal. Diversity can be done well and can be done poorly. This is the same with specialization. Execution is the key. The big risk is often in the transition from one to another. For instance, many life companies exited certain business lines after the crisis. Conversely, many reinsurers are trying to diversify into other businesses because of the current challenges in their sector. Over the long term, these strategies may be successful. However, in the near term there is significant risk in exiting existing business lines or entering new ones.

We also saw in the crisis that size can bring complexity and that there are challenges in righting the ship once it starts to stray off course. In addition, we saw many large companies lose market access in the crisis. Thus, in the past diversified companies used their diversity and size as a justification to take more risks. So every incremental risk was small relative to the company. But when aggregated, these risks were very large. Today, this is seen as a less viable approach.

Crawford: There are differing schools of thought, but I would argue strongly for two fundamental principles that relate to each other: diversification and effective and reliable risk transfer. For example, if a company is concentrated in a line of business, it is naturally more exposed to a narrow set of events. This necessitates holding more capital and a fluid ability to transfer risk in the capital or reinsurance markets. The industry has become more exposed to the capital markets through asset-intensive products and has assumed greater tail risk via secondary guarantees. As a result, it's become clear that some of the risk needs to be transferred back to policyholders, into the capital markets via derivatives or into reinsurance markets.

Diversity in significant product lines can be a negative to the degree you are expanding

There is now much more attention to strategic risk management and how this differentiated the winners from the losers during the crisis. … CROs and chief actuaries now have seats at the strategic table.
—Fred Crawford

into areas where you have less understanding of the risks, have less market power or lack a "right to compete." These are important considerations, but it is still dangerous to maintain a concentrated business model in the financial service industry, period. Note the poor performance of the mono-line guaranty companies in the crisis.

Hirji: When we go into a particular line of business, we need to have a core level of competence to manage it well. When we look at businesses that are a good fit from a diversification perspective, a key question we ask is whether we will be able to manage them well and provide the level of management attention that is appropriate. As we diversify more and more, it is important to ensure that we don't end up with too many peripheral businesses that are outside our area of competence.

The trend in the industry toward strengthening risk management frameworks and risk culture will help ensure that, whether firms specialize or diversify, they will have sufficient management competencies in place. In this sense, I would say the trend toward strengthening risk management is positive, as firms continue to seek a balance between diversification and specialization.

Schuman: Historically, strategy and capital allocation decisions weren't always sufficiently sensitive to risk; companies sometimes simply pursued the highest potential returns. Are strategy and capital allocations now better informed by risk? Do CROs and chief actuaries now have seats at the strategy table?

Crawford: Yes, capital models and capital allocation methodologies are better informed by risk. This is shaping behavior and influencing significant strategic moves. Capital as it relates to risk and exposure is at the heart of recent closed-block run-off transactions and related mergers and acquisitions activity. Capital allocations have been revisited in recent years to reflect experiences during the crisis, rating agency expectations and a more advanced understanding of tail risk.

And, absolutely, CROs and chief actuaries now have seats at the strategic table. They often chair senior-level risk committees that include the CEO and business presidents, and they share responsibility for informing the audit/risk committees of the board. The key risk positions are also assuming more responsibility for rating agency relationships and are slowly becoming more active with investors, although still in the background compared to CEOs and CFOs. I think however, if you were to sample interview several CROs, they would tell you more needs to be done to ensure CROs and ERM are embedded in strategic decision-making. Formal risk appetite statements, board influence, rating agencies and now regulators are also driving progress on this front (ORSA is an example).

Hirji: At Manulife, all major strategic decisions are assessed against the company's risk appetite. Both the chief actuary and the chief risk officer (myself) have a seat at the strategy table, and we are involved in all major decisions. We consider it essential that diverging views are heard, discussions are meaningful and we reach the best strategic decisions possible.

Burke: It does appear that the risk officers have a seat at the strategy table and have the ear of the board. The question we have is: Will the structures that were put in place in response to the crisis endure as memories fade? We have seen the pendulum swing between periods of

There is no question that actions ranging from additions to capital, a stronger focus on risk management and a variety of regulatory changes have better positioned the industry to withstand future crises.
—*Rahim Hirji*

excess caution and excess exuberance in this industry. Ultimately, it is a competitive industry and companies will have to take risks to remain viable.

Schuman: We've been talking about the industry response to the last crisis, which is important, but what about the next crisis? Do you see any key emerging risks that are different from what we've focused on historically?

Burke: One only needs to follow the news to see potential emerging risks such as cyber risk, pandemic risk, severe weather patterns, global conflict and local unrest. That said, it is impossible to identify the next crisis. But one should always be on the lookout for areas of excessive or above-market average growth. This would be true on the investment side of the balance sheet (what are the "hot" asset classes), as well as a "hot" product or product feature.

Crawford: Cybersecurity is top of the list these days as an emerging risk that impacts all financial services companies with sensitive customer data. Fortunately, there have been significant advancements in protection software and monitoring, and commercial insurance markets are providing affordable coverage to help with "capital at risk."

Global natural resource risk is emerging as an issue, most recently reflected in oil/energy prices and energy security exposures in the industry. Water shortages and global demographic shifts are being studied for their future impact on the markets.

We're periodically reminded of pandemic risk, a risk that entails both actuarial and operational components, given potential workforce issues.

Hirji: The industry has done a lot in terms of emphasizing risk management at all levels of the organization. The importance of the CRO role has been elevated, and risk is a key topic of discussion at major boards globally. However, there will always be "unknown unknowns," which by definition are impossible to predict. The best safeguard with regard to managing the next crisis is having this type of strong risk management culture and related processes in place.

One of the key emerging risks is the low interest rate environment globally. Capital is entering new markets and asset categories, in search of yield. This, combined with current monetary and fiscal policies globally, gives rise to concerns about asset bubbles.

Schuman: Bottom line, is the insurance industry of 2015 better positioned for future crises and why? What do you see as the biggest opportunity for future improvement?

Hirji: Yes, the insurance industry is better prepared. There is no question that actions ranging from additions to capital, a stronger focus on risk management and a variety of regulatory changes have better positioned the industry to withstand future crises.

The biggest opportunity for future improvement is to make sure that risk management activities don't just create an additional burden but add real value to the organization, our shareholders and our customers. This means that risk managers need to become business partners. While new risk management activities can create more policies, more checklists and more paperwork, the focus should always be on confronting real issues of risk and not just "ticking the boxes." The cost of risk management activities is worth it when it leads to institutions being better governed

We [at Fitch] think industry advances in risk management practices and procedures are real and should benefit the industry in the next crisis. …

We are not confident that the new layers of regulation will really help in averting another crisis. Regulators seem to have an uncanny knack for adding cumbersome complexity to address the last problem.
—Julie Burke

and having better business decision-making at all levels of the organization, which in turn improves business growth.

A second area is with regard to international regulation. I support the ComFrame initiative, in particular the qualitative aspects and the principle-based approach. In my position as CRO working with countries worldwide, I welcome ways that allow us to meet regulatory requirements in a more efficient way. However, since a level playing field has a direct impact on a company's growth, it's important that initiatives are implemented in a way that applies equally to all insurers. Achieving this will require good collaboration among national regulators and dialogue between the regulators and the industry.

Burke: We [at Fitch] think industry advances in risk management practices and procedures are real and should benefit the industry in the next crisis. We do also see a big opportunity for companies to further improve public disclosure of risk exposures and stress-testing results.

Our sense is if a crisis came today, the industry would be better prepared since the last crisis is still fresh enough where certain conservative practices are in place. But one would think the environment for the next crisis, almost by definition, would follow a period of prosperity in which the financial community, in general, starts letting its guard down. We are not as convinced the insurance industry will really be better off at that point.

We are not confident that the new layers of regulation will really help in averting another crisis. Regulators seem to have an uncanny knack for adding cumbersome complexity to address the last problem. Another question is whether or not governments will act again to contain the crisis. Bank bailouts, fiscal stimulus and expansive monetary policy dampened the severity and length of the last crisis. Future crises will likely be different so it is difficult to predict.

Crawford: The industry is better positioned than in the past, particularly around core ERM areas of asset risk, ALM, stress testing, scenario planning, modeling and risk governance. Risk appetites have become integral to corporate strategies and are part of active board dialogue and the regulatory and rating agency review processes.

I believe there is still room for advancement in modeling and related model governance. This is now a focus of companies designated for enhanced regulatory oversight as Systemically Important Financial Institutions (SIFIs). Most cyber security professionals will tell you there is a need for continuous improvement as hackers grow in number and have enhanced their techniques to penetrate corporate data.

Schuman: Thank you to our panelists for their participation and insights. A

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INTEGRATION OF ERM IN CAPITAL AND STRATEGY DE

THE CHALLENGES PREVENTING A GREATER UPTAKE OF ERM AS A STRATEGIC PARTNER, TECHNIQUES TO OVERCOME THESE CHALLENGES, AND BENEFITS OFFERED BY FURTHER INTEGRATING ERM PROGRAMS ARE EXPLORED. BY VIKAS SHAH, MARK STEPHENS, JIM STOLTZFUS AND FIONA NG

CISIONS

Trendsetter companies continue to develop enterprise risk management (ERM) programs that are strongly integrated with major strategic decision-making. However, organizations across many industries continue to struggle with how to optimize the structure and span of scope for their ERM programs. Many of these firms benefit from their annual process of assessing, aggregating and reporting top risk exposures; however, these same companies often find the results lacking with respect to top- or bottom-line impact.

> **Organizations are looking for a more realistic reflection of uncertainty in the corporate plan/budget, better collaboration between the business and finance, and greater adaptability of the plan in the face of an extremely dynamic environment.**

Though risk reports provide good qualitative information on the key risk exposures, they fail to provide enough insight into strategic opportunities for improvement.

There are a few industries where both the nature of the industry and new regulations have accelerated the development of a strategic ERM program. In insurance and banking, domestic and international financial services regulators responded to the 2008 financial crisis by putting forth new regulations that both qualitatively assess existing ERM capabilities and mandate a quantitative comparison of capital to a company's risk profile. In health care, providers have been concerned about expansive new regulations, a greater retention of population health risks, and drastic shifts in operational success drivers. Accordingly, many in these industries are upgrading their ERM frameworks, introducing additional quantitative risk assessment techniques, developing more thorough capital modeling, and pushing for greater integration of these insights into decision-making.

Learning largely from these industries, this article explores the challenges preventing from a greater uptake of ERM as a strategic partner, techniques to overcome these challenges, benefits offered by further integrating ERM programs, and some current trends illustrated by a health insurance spotlight.

BACKGROUND FROM ERM

For a number of years, senior executives have grown wary of ERM deployments that are more process-oriented and that translate into too few meaningful business insights. It's no surprise that many recently surveyed executives view their ERM process as a compliance exercise and suggest the costs of an ERM program may outweigh its benefits.[1,2] These costs range from the time and expense spent on an ERM program to the intangible cultural shock a well-intentioned process may achieve if it is perceived as a policing exercise. Today, many organizations that are maturing ERM implementations are demanding further embedded programs that produce far more institutional value. A key aspect of this value proposition is the level of insight that the ERM program provides to improve capital decisions and strategies[1].

BACKGROUND FROM FP&A

In a similar fashion, financial planning and analysis (FP&A) is in a state of flux. C-suite executives are concerned about lengthy cycle times, uncertainty regarding conservatism, lack of consideration of operational/strategic risks, insensitivity of plans to evolving business conditions, and disconnects between the finance function and the business.[3, 4] Organizations are looking for a more realistic reflection of uncertainty in the corporate plan/budget, better collaboration between the business and finance, and greater adaptability of the plan in the face of an extremely dynamic environment. One important avenue for the facilitation of this evolution is through an ERM program that collaborates with finance to integrate risk and opportunity information into annual processes. Repeatedly, organizations that implement this interaction realize greater value from their ERM efforts and have their ERM program garner favor as a strategic partner.

CHALLENGES

Initial Implementation

Many organizations struggle to move beyond the initial implementation of an ERM process. In quite a few cases, the initial ERM structure is put in place with a charter to identify, qualitatively assess, prioritize and report key risk exposures. This more tactical approach to ERM misses the critical organizational faculty underpinning the execution; that is, ERM programs should deploy best practice tactics in pursuit of the higher goal of better risk insights. Too often, ERM implementations view it the other way around, where initiatives and processes are instituted without clear vision of the finish line. Due to a lack of clarity, the program is resourced as a side job for a member from audit, actuarial, compliance, risk management or legal. The output report is channeled up through a de facto ERM director to senior management; oftentimes, the report makes its way into the hands of the board of directors. Although the process produces what is at first welcome new insight for the organization, a lack of foresight into a more robust end goal leads the program to iterate without much progress; little by little, enthusiasm for the effort begins to wane, and the process becomes much more driven by a desire to maintain vigilance and risk oversight. While a welcome goal, this objective is only but a small part of the value proposition offered by an ERM program.

ERM Leadership

One of the most influential ways to drive an ERM program deeper into an organization is through strong ERM leadership; this can be facilitated through a championing executive sponsor, but it must be owned and executed by the lead member of the ERM function. Namedropping a senior executive as a way to instill buy-in only creates an interest to satisfy requirements rather than an advocacy for the full possibilities. At the same time, senior executive support for the program is table stakes for giving a new ERM implementation a chance at integration success.[5]

Quite a few ERM efforts continue to be staffed as side jobs or through employees without direct access to the top levels of management. Without dedicated resource or authority, ERM directors struggle to build momentum, attract business-side advocates, or receive enough budget allocations to build out a more effective process. This combination of a lack of authority and excitement about the program leads to simplified implementations, long development cycles, and an internal sense that the return on investment (ROI) is not commensurate. For the same reasons, the ERM director will struggle to receive acceptance for a broader ERM scope that includes integration into corporate processes such as FP&A.

Risk Quantification

Many ERM directors struggle to evolve their programs beyond a qualitative state due to an inability to quantify risk exposures, which is a critical interim step before ERM efforts can be integrated into capital and strategy analytics. Regardless the functional background of the ERM director (actuarial, audit, finance), there is a lack of familiarity and a lack of comfort with generating quantitative risk exposure translations due to insufficient historical precedent. This is particularly applicable to operational and strategic risk exposures, for which there is usually little historical data or risk assessment templates. Furthermore, the translation of risk exposures into an FP&A model requires complex considerations of how to introduce the risk exposures, how to manage the risks of double-counting against existing information reflected in the model, and how to model the timing considerations of risks with multiple-pronged impacts.

OPPORTUNITIES FOR IMPROVEMENT

Initial Implementation

The upward reporting of key risk exposures is but one of the overall objectives for an ERM process. The key value propositions of an ERM implementation include better capital efficiency, more informed decision-making, reduced surprises, and a more active risk conversation with stakeholders. Many of these are not achieved until the ERM effort is collaborative with functional stakeholders and integrated with management processes. The best way to change initial scopes for ERM charters in order to include an expanded scope is to clearly demonstrate the missing insights that would be available through a more aligned linkage. Specifically, many organizations are able to admit that several key risk exposures are not considered as part of the FP&A process; furthermore, compliance officers will readily admit that there are some risk exposures that do not lend themselves well to a typical compliance

consideration. Understanding that these two missing opportunities can really enlighten capital considerations becomes a powerful motivator for expanding ERM charters, and many Fortune 500 companies have used a version of this approach to more deeply embed ERM programs.

Actuaries with the Chartered Enterprise Risk Analyst (CERA) designation have a role here, as many organizations struggle finding subject matter experts when launching ERM efforts. Those with the CERA training and designation are often approached to be a part of the process, and they can have a significant influence in ensuring initial plans for an ERM program include a vision for strategic integration with the business.

ERM Leadership

More and more, organizations are realizing the value in employing a wholly dedicated chief risk officer (CRO). This senior leadership position has the access to senior brass to influence the purview of the ERM program and attends CEO Direct Report meetings to foster better awareness of the ERM function across the firm. The leadership skills of the CRO would greatly increase the likelihood of a successful relationship with business segment leaders. Furthermore, this position would be filled with an officer-level candidate, who would have the resources and clout to complete a fully functioning ERM unit. Elevating ERM to a C-suite functional group greatly increases the ability for an organization to understand risk considerations when deliberating strategies or capital alternatives.

Unfortunately, there is a greater demand for qualified CROs than there is a current supply of candidates. Actuaries should continue to take the opportunity to broaden their softer skillsets, familiarize themselves with non-actuarial risk concepts, and identify opportunities to gain relevant ERM experience. Actuaries with strong leadership skills have always had a role beyond the actuarial function. The ERM program, and its ability to influence major corporate decisions, should be no exception.

Risk Quantification

Establishing initial risk quantification is a very important step toward gaining additional buy-in for the ERM process. Regularly reporting the results of a risk quantification exercise leads to a better understanding of the process and great feedback from business segment leaders. Quite often, these segment leaders can offer data sources or existing analysis that can support the ERM quantification effort. Equally important, these segment leaders become invested in the process and begin to use the ERM effort to further inform decision-making processes. As has been experienced by many insurers as they deploy initial capital models, this virtuous cycle toward ERM progress is an effective way to integrate ERM into the organization.[6]

Without question, actuaries can play a critical role here. With the most keenly refined skillset to model uncertain risk exposures, actuaries are the most capable group of professionals to develop quantitative risk assessments. However, the profession should bear in mind the additional challenges and additional rigor required when quantifying risk exposures with little historical data. It is important to consider the entire nature of the risk, including multiple possible drivers of onset, multiple manifestations of impact, and the timing of the risk impact over different reporting periods.

BENEFITS

Integrating a fuller spectrum of risk exposures into capital and strategic decision-making offers many competitive advantages. Organizations become better equipped to answer questions regarding capital adequacy, working capital strategies, capital investment alternatives, and additional mitigation or controls.

Integrating a fuller spectrum of risk exposures into capital and strategic decision-making offers many competitive advantages.

Capital planning is an integral part of board, CEO and CFO decision-making. With all organizations, a key uncertainty exists in determining the amount of capital or working capital necessary to protect against performance variation or risk. Regulatory capital assessment frameworks struggle to identify and capture the idiosyncratic operational or strategic risks that would require an additional capital buffer. Integrating ERM into capital decision-making can help resolve this critical uncertainty, and many organizations benefiting from this capability find the capital conversation much more tangible.

At the capital committee, hundreds, if not thousands, of requests for funding come in during a given year. Many times, the requests are submitted in an ad hoc fashion and lack a presentation of risk exposures. Without a standardized approach to the assessment of the opportunity and risk, normalizing the investment candidates becomes impossible. By introducing risk exposures into a capital investment analysis, organizations can be much better equipped to evaluate investment alternatives and optimize capital expenditures.

Finally, organizations struggle to compare between capital requests for maintenance, investments, research, and additional mitigation and controls. Identifying risk exposures and translating them through an economic capital model can provide a framework for these types of considerations. Introducing different types of capital expenditures into an economic capital model allows for a better understanding of the effect of each on the mean value or on variation for a key performance metric.

CONCLUSION

ERM is becoming a bigger part of decision-making in organizations covering the industry spectrum. In response to regulatory requirements, demands from the board for better risk oversight, industry volatilities, and pursuits of greater competitive advantages, companies continue to develop strong ERM frameworks that provide insights into decision-making. Every year, more companies are adopting the integration of ERM into strategy and capital decisions, with quite a few even expanding risk considerations into performance measurement.

However, many are still struggling with how to drive the effort through to completion, and quite a few ERM processes are in need of some substantial improvement to deliver a more appealing ERM value proposition. Two underdeveloped steps necessary to bridge this gap are the appropriate appointment for ownership of the ERM process and the creation of quantitative risk assessments for all key risk exposures. Organizations that fulfill these requirements are able to promote the alignment of ERM initiatives into business processes and deliver meaningful insights in consideration of alternative strategies or capital plans.

Health Insurance Spotlight

Like many insurance entities, risk management has been a cornerstone of health insurers' success. Although these insurers traditionally focused on risks related to pricing, operations, business strategies and financial reporting, they often failed to analyze all of these risks quantitatively or as a combination. While there are certainly health insurers who have developed more mature processes and techniques in gauging risks on an enterprise level, many are still establishing a company-wide ERM program.

There are some trends emerging with respect to health insurer ERM practices. More insurers are appointing risk management frameworks by creating ERM committees, designating a dedicated CRO, or assigning risks to individual risk owners. In the absence of a dedicated CRO, some smaller health insurance companies are adding the CRO title to the responsibilities of current executives. Several ERM committees are being formed without the inclusion from a member of the actuarial team. This is particularly surprising given the strong skillset the actuarial profession would offer, particularly with respect to risk quantification and risk-based capital considerations.

Many firms are also identifying challenges around developing a risk-aware culture across the organization and maintaining a fluid risk conversation through all levels. One tactic that some organizations are deploying to tackle the cultural transformation is to merge risk-adjusted performance into incentive compensation structures. Although this level of sophistication is not common practice in the industry, it will change as health insurers gain additional comfort with the ERM value proposition.

Motivated by the financial crisis and new regulatory requirements, health insurers are increasingly migrating from a standard annual budgeting process to a multiyear projection where various components of the budget are stressed vs. a mean estimate. This enhanced process allows stakeholders to understand the current and future impact of risks under various economic, regulatory, or competitive environments.

Insurers are also adopting more sophisticated data analysis tools and techniques to help them monitor Key Risk Indicators (KRIs). While traditional metrics such as claim costs and medical trends are still critical, some health insurers (mostly larger ones) have started to explore the possibilities of using additional data sources to monitor risk exposure levels. This allows insurers to both reduce operational setbacks and discover new opportunities for growth or innovation.

One common area of weakness among health insurers is in analyzing how risks correlate and interact with one another. Quantifying the correlations between risks and measuring the impact across departments remain a challenge when integrating ERM into decision-making. As data analytics capabilities mature, correlations and cross-effects between risk exposures are becoming more quantifiable, resulting in the ability to understand aggregate impact of risk combinations on a company's profit, surplus and capital.

Health insurers are beginning to utilize results from ERM programs to help them make better decisions. The advent of the Own Risk and Solvency Assessment (ORSA) regulatory requirements prompted many insurers to develop or enhance ERM programs. As these organizations continue to seek ways to implement an evolving ERM process into relevant aspects of the firm, they will begin to benefit from more thorough and complete insights to support business planning and decision-making. A

MARKET INSIGHTS

Milliman's Risk Advisory Services practice is wholly devoted to ERM advisory services and engages in ERM conversations with over a hundred organizations annually. Its "Market Insights" offers the composite stories from past experiences, conversations and research; commentary provided in this article should not be taken as reflective of the ERM efforts for any individual organization or industry.

BIBLIOGRAPHY

1 **Milliman Risk Institute.** Risk Advisory Services. Milliman. [Online] August 2014. *http://us.milliman.com/insight/2014/Creating-value-through-enterprise-risk-management/*.

2 **Amercian Institute of CPAs.** AICPA: Enterprise Risk Management. American Institute of CPAs. [Online] February 2015. *http://www.aicpa.org/interestareas/businessindustryandgovernment/resources/erm/downloadabledocuments/aicpa_erm_research_study_2015.pdf.*

3 **PwC.** PwC: Increasing Finance Function Effectiveness. PwC. [Online] 03 2010. *http://www.pwc.com/en_US/us/increasing-finance-function-effectiveness/assets/financial-planning-realizing-the-value-of-budgeting-and-forecasting.pdf.*

4 **Harvard Business Review.** Analytics. Harvard Business Review. [Online] 10 2014. *https://hbr.org/resources/pdfs/analytics/18936_HBR_Report_Tidemark_Oct2014_webview.pdf.*

5 **Milliman Risk Institute.** Risk Advisory Services. Milliman. [Online] 10 2014. *http://us.milliman.com/insight/Periodicals/risk-institute/The-role-of-top-management-and-the-board-in-ERM/*.

6 **Milliman Risk Institute.** Risk Advisory Services. Milliman. [Online] 11 2014. *http://us.milliman.com/*

insight/Periodicals/risk-institute/Creating-a-virtuous-circle-with-leading-edge-risk-processes-and-tools/.

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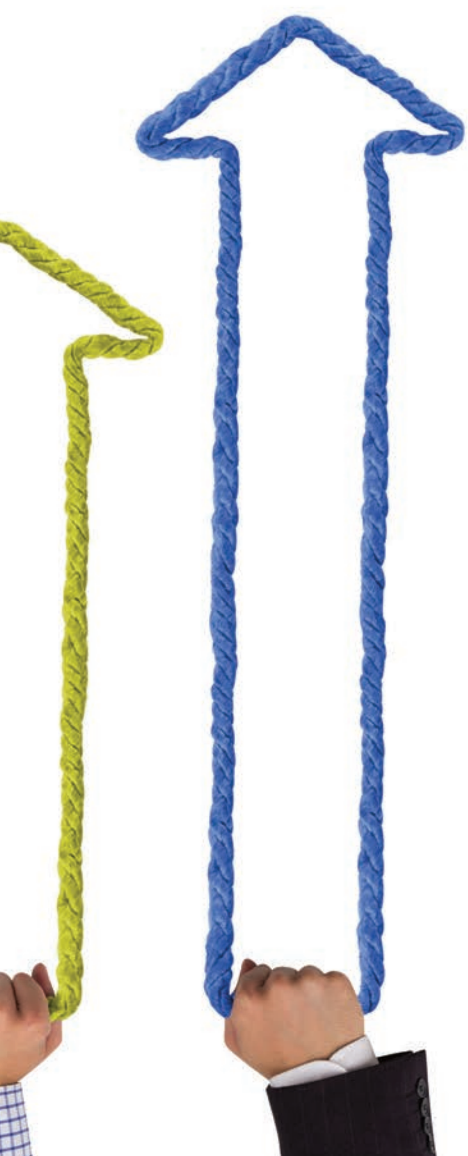


OPERATIONAL R

AND WHAT DO

ISK—WHAT IS IT?

I DO ABOUT IT?

It's time to get really serious about monitoring, measuring and managing the increasingly important operational and business risks that have been with us for many years as economic risks. By Larry Zimpleman

A robust enterprise risk management (ERM) program is at the heart of managing any financial services company—bank, insurance company, etc. Over the years, we have developed increasingly sophisticated ways of measuring and managing economic risks —equity market risk, interest rate risk, foreign currency risk, credit risk, etc. We now have an annual process whereby the Federal Reserve releases the results of its "stress tests" to see if our largest banks have a sufficient level of capital to withstand the next financial crisis.

But when you look at actual events that have gotten financial services companies in trouble, the risks mentioned above are not necessarily the drivers. It might be a rogue trader, it might be a DDOS attack by cybercriminals or a nation-state like North Korea, or it might be a compliance issue with a fine measured in billions. There is increasing recognition by many parties—regulators, boards of directors and even customers—that in the post-financial-crisis world there needs to be an increased emphasis on risks that go well beyond just economic risks.

So, how should we think about *those* risks and, more importantly, how can we measure, monitor and manage those risks?

OPERATIONAL	BUSINESS
Fraud (internal or external)	Conduct and ethics
Damage to physical assets	Reputation
Supplier and vendor management	Legislative and regulatory change
Employment practice and workforce safety	Accounting change
Business disruption and system failures	Branding/marketing
	Distribution/sales

All of these newer risks fall into a broad category of risks that we might label as "operational risks," or, perhaps even better, "operational and business risks." To be clear, these operational and business risks are *not* unique to financial services companies. Operational and business risks impact all businesses. But, since financial services companies' success is tied to their reputation and trustworthiness, operational and business risks are *just as important*—or maybe more so—than economic risks.

So, how should we think about those risks and, more importantly, how can we measure, monitor and manage those risks?

Even though operational and business risks have been with us for as many years as economic risks, it's only in the past few years—and especially since the financial crisis—that we've really started to focus on these risks and have begun to get serious about how we can monitor, measure and manage these increasingly important risks.

Fortunately, many of the same methodologies that we have used for the last 20 to 30 years to handle economic risks can be adopted to work for operational and business risks. This is why actuaries involved in risk management must expand their thinking and their horizons to include operational risk if their aim is to provide a comprehensive view of ERM.

1. First, we need to have a clear definition of our operational and business risks.
2. We need to have an understanding or profile of these risks to know the potential importance of each and how that risk is trending.
3. We need to have a "risk dashboard" to monitor on an ongoing basis how each operational risk is evolving. This is done by having key risk indicators for each risk as well as a "risk appetite" that helps to define the overall level of risk we choose to take. After all, risk is a necessary part of doing business and we can't eliminate all risk.
4. Finally, we need a risk improvement plan if some of the operational and business risks are outside of our risk appetite.

RISK CATEGORY	UNDERLYING RISK	RISK TREND
Fraud	High	↑
Damage to physical assets	Moderate	↔
Supplier/vendor management	High	↔
Business disruption	High	↑
Reputation	High	↑
Legislative/regulatory change	Moderate	↑
Branding/marketing	Moderate	↔

Before I go into more detail on the steps, I'd like to offer a few general comments on operational and business risks:

1. The nature of these risks says they are more difficult to measure or quantify—but that should not stop us from trying.
2. Many of these operational and business risks arise from your interactions with your customers and suppliers. One critical component in mitigating operational risk is to have a clear statement of core values of your company—how you want to do business. And you need to communicate again and again those core values to new and existing employees so your expectations are clear.
3. These risks are getting increasing attention by both boards and senior management. Does each position description for employees have a clear statement on adherence to core values? Is it part of the evaluation of senior management compensation?

Let's start with a listing of some of the major operational and business risks (see page 34):

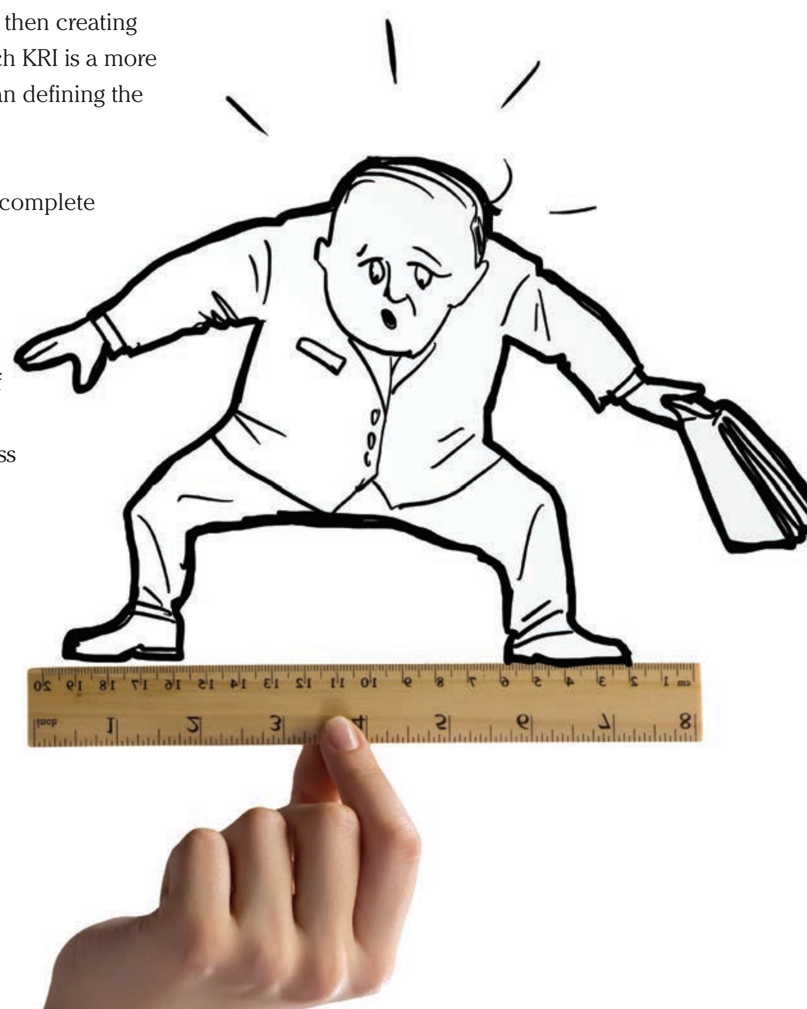
Each company may have some different risks under each category and the priorities may differ. But, overall, the list should clearly include all of the major functions of the company.

While defining the operational and business risks of your company is not easy, I find that the task of developing key risk indicators (KRIs) for each risk and then creating proper measures for each KRI is a more time-consuming task than defining the risks.

I won't try to provide a complete testing of KRIs for each operational or business risk, but Appendix A at the end of the article gives some examples of KRIs for several of the operational and business risks mentioned earlier.

A few points on KRIs:

1. You will want to evaluate each KRI regularly to be sure it is appropriate.
2. Though difficult, you should try to create as many quantifiable KRIs as you can.
3. A single KRI could measure more than one operational or business risk.
4. For the quantitative KRIs, don't set the bar so low that it becomes automatic that you will pass the KRI. You should expect that, in any single year, you



would see 15 to 20 percent of the KRIs that are outside of the tolerance you expect. This is how you can prioritize and improve your company performance.

Now that we have defined each operational and business risk and we have one to five KRIs for each of the risk categories, we are ready to begin to bring all of this information together in a consistent and organized way so it can be used to inform both senior management and the board of your operational and business risks.

First, we create a "risk profile assessment" for each operational and business risk. This assessment is admittedly subjective. The purpose of the assessment is to help the reader understand:

1. The underlying risk of each risk category, and
2. The trend in that risk category (increasing, stable, decreasing).

Let me provide a simplified model of the risk profile assessment (see page 35):

While this is a fair bit of subjectivity in the risk classification, it still provides a relative picture for the board and senior management of which are the most important operational and business risks and how are they trending. That relatively simple dashboard can then shape more discussion into the areas of greatest interest. This sort of tool is also excellent to use with regulators and rating agencies so they can more effectively see the internal processes you have in place around these important risks.

While each company will be different with respect to its exposure to operational risk, some of the more significant operational risks today are:

1. Supplier and vendor management: What standards are in place for who you do business with? Does a local supplier offer a "back door" entry point for a cyber thief who wants to get to you?
2. Business disruption: While most companies today have business continuity exercises, are they complete enough? We saw this firsthand at Principal in 1993 when a flood wiped out our local water works, leaving us without water for eight days. That impacts computers, servers and even your ability to occupy higher floors as your sprinkler systems will not function.
3. Legislative and regulatory change: Does your management team spend enough time on this important topic? Could tax reform and a changed set of tax incentives cause a significant disruption to your businesses?

The final piece of the risk management puzzle is to have an overall plan for improving the oversight and management of these business and operational risks. Elements of the program should include:

1. Discussion and agreement on which risks need to be the priorities for improvement—i.e., which risks are outside the company's risk appetite? What is the plan for bringing those risks back inside the desired tolerance?
2. Continued work to further define and change, when necessary, the risk definitions. One tool that can help with this is to have a "risk library" that is used across the company. This can be especially important in global organizations where language and cultural differences can be an impediment to clear and consistent understanding.
3. The nature of a maturing risk management system is that it will begin with mostly qualitative measures. The goal should be to improve to more quantitative measures over time. These are areas like fraud and damage to physical assets where quantitative measures are easier, although most companies do not aggregate this information regularly.
4. Transparency of results is key—both up to senior management and the board as well as sharing results with each of the business units for discussion and refinement.
5. Finally, think about how your operational and business risks are impacted over time by real-world events both inside and outside your company. Clearly, cyber risk is increasing for all companies. Have you started new businesses? Have you opened new offices or started business in new countries? Have you done recent acquisitions? If you have, did you do a comprehensive due diligence on operational risk? History shows that a more acquisitive strategy increases operational risk. Are there new teams running your businesses? All of these can have a real impact on the aggregate operational and business risks of your company.

While I hope this discussion has been helpful in thinking about how to approach the measurement and monitoring of operational and business risks, the most important thing to remember is that this is a journey—you can always improve your understanding of these risks and your measure of these risks. New risks will get added. It's doubtful that any will go away. But just as "hope is not a strategy," operational and business risks will not go away by not thinking about them or not trying to monitor them. Once boards, executives and risk management professionals begin to monitor and measure risk, you can take greater control of your future and reduce the odds that your company will be in tomorrow's headlines.

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APPENDIX A

OPERATIONAL RISK	POSSIBLE KRI
Fraud	Code of ethics completion Unauthorized transactions Whistleblower calls/reports
Vendor management	% compliance with standards
Employment practices	Succession plans in place High-performing retention rate
Business disruption	System availability % Business continuity testing results

BUSINESS RISK	POSSIBLE KRI
Conduct and ethics	% verifying reading of code of ethics Number of customer complaints Regulatory inquiries
Reputation	Media monitoring results
Regulatory and business practices	Complaint tracking Suspicious activity reports
Branding/marketing	Brand power measures Loyalty measures

THE TRUTH SEEKING DEBATE

HOW TO MAINTAIN OUR INTEGRITY AND REPUTATION AS UNBIASED TRUTH SEEKERS.

BY KURT J. WROBEL

As a profession that uses quantitative techniques to project future financial events, I have always considered the economics profession a close cousin to the actuarial profession. This connection between the professions has become even closer as economists have put more emphasis on actuarial fields that have taken on greater policy importance, including health insurance and pension policy. In many cases, economists are now publicly commenting on the future projections made by actuaries, and actuaries are taking a more important role in helping shape policy decisions.

In keeping with these similarities, I think the economics profession and its internal debates have much to teach us about our own profession and the challenges that we will likely face in the future—particularly as our profession's financial projections are brought into political discussions regarding health insurance and pension reform. As we have seen in both fields, our opinions and projections have been either questioned or selectively highlighted by individuals across the political spectrum who have a particular point of view that they want emphasized.

This article will focus on the internal debate among economists regarding the difference between unbiased truth seeking and an analysis that merely supports a previously held policy position. Using this as background, the article concludes by highlighting the specific lessons that actuaries can learn from this debate in the economics profession.

THE TRUTH-SEEKING DEBATE

In his weekly podcast "Econtalk," Russ Roberts—an economist from Stanford's Hoover Institute—has made the argument that a large percentage of economic research is driven by biased analysis and not by a dispassionate attempt to seek the truth to an economics question. As he suggests, because most economic research attempts to predict future results or explain the historical results from a complex system—the entire output for an economy, for example—it is nearly impossible to isolate the causal variables within a complex system. This effort to develop a clear and credible connection between an action and an outcome is made even more difficult when the total number of observations associated with an outcome is very small.

Considering the challenge associated with explaining a complex system with a lack of sufficient data, the causal relationship between a particular policy change and an expected outcome cannot be easily proved to be right or wrong. This ambiguity then opens the door for researchers to knowingly or unknowingly introduce a level of bias when developing a causal relationship in their modeling. As suggested in the research, this bias often results in seemingly reasonable conclusions that merely reinforce the author's previously held views and are not based on an unbiased interpretation of all relevant data.

The classic debate on the efficacy of increasing government spending during a recession provides a clear illustration of the problem. In a highly complex system where millions of people are making independent decisions to work, invest and spend money, it is very difficult to estimate the economic impact of a single factor on the overall result. This estimation is made even more difficult by the lack of observations associated with this question. For example, while a supporter of increased government spending could point to the expansion of government spending in the lead-up to World War II as an important causal factor in ending the Depression, a critic of increased spending could easily highlight the expansion in the U.S. economy after the *reduction* in government spending following World War II. As the economics profession has seen, the advocates and critics then debate other explanatory factors that led to the economic expansion either before or after the war without any conclusive evidence brought forward to prove their position or disprove their opponent's position. This same kind of debate and lack of clear evidence could also be applied to the stimulus bill passed after the financial crisis in 2008, where both advocates and critics have created stories on why the hoped-for growth did not occur.

As Roberts suggests, the economics profession has too many researchers arguing about questions that cannot be clearly and credibly answered and, in many cases, using only the analytic approaches that confirm their previously held political viewpoint. This biased approach to answering economic questions can be exemplified by blogging website names from researchers that merely reaffirm their political views. In this case, when the economic question cannot be definitively explained and several competing explanations can be developed with different interpretations of the data, the final conclusion among these economists is all too often predetermined—they will inevitably find data and a scientific approach to justify their position.

While some economists have pursued a biased portrayal of data, the profession has many who actively seek the truth without regard to political considerations. It's these truth-seeking economists who we can learn from as we become more involved in the public policy debate.

IMPLICATIONS FOR ACTUARIES

With the increased political focus on health insurance and pension reform, I think the lessons drawn from the economics profession are instructive as we become more involved in important policy questions. While many economists have taken definitive positions that are clearly associated with a particular viewpoint, our actuarial reputation has been—but not always—recognized as an unbiased truth seeker.

Although we haven't had the same public visibility as many notable economists, we have had a recent example where Richard Foster—while chief actuary at the Centers for Medicare & Medicaid Services (CMS)—publicly stood by his original cost including estimates on the Medicare Part D program and the Affordable Care Act (ACA), even when faced with pressure from both political parties. In the 2010 Medicare trustees report, he showed notable forthrightness and principle when he said that the official estimates under current law "do not represent a reasonable expectation for actual program operations in either the short range or long range" and then went on to provide other scenarios based on more reasonable assumptions.

It's principled actions like these that have earned our profession its reputation as an unbiased truth seeker.

With this as background, I think there are several points that we can learn from the economics profession as well as from other actuaries:

Work hard to ensure that the potential variability of a single point estimate is presented in its broader context. As many of us have learned, people like to have a single number when considering a future projection. A single number is comforting, easy to understand, and it helps provide a basis for comparison and for decision-making. The problem, of course, is that a single number does not convey the complete story when considering the range of possible outcomes that could occur from a particular decision. For example, in a relatively simple system with a significant amount of historical experience, an estimate could have a limited range of outcomes and a single point estimate can provide a prudent estimate without the need for a more in-depth consideration of other factors. On the other hand, a single point estimate of a complex system with the likelihood of a highly variable result is much less useful in developing a decision without consideration of the broader context of the potential variability of the estimate. Although this broader context approach is often not popular with decision-makers, by making this variability clear, we are much more likely to make a better decision and ensure that we will preserve our reputation if an unexpected result does occur. This prudent clarification of risk among different point estimates is one of the most important attributes of our profession, but receives far too little attention.

The "Value at Risk" metric used in the financial crisis by Wall Street firms to measure the extent of their risk exposure provides a classic example of how relying on a single point estimate can be harmful to decision-makers. By relying solely on this metric and not taking a broader and more holistic view of their risk, many Wall Street firms unknowingly continued to take much more risk than they realized.

Guard against your own bias by actively looking for evidence that disproves your position. After doing a cursory analysis, it can be easy to "fall in love" with a story that confirms your previously held opinion. Although difficult, every effort should be made to look for quantitative evidence that disproves or draws into question your original position. It's far better to find the competing evidence yourself and reconcile it with your position—or even change your position—than to have someone else find it and call into question your impartiality.

Understand the incentives of those presenting a prediction. Although not often discussed, predictions can often come with embedded biases that need to be considered. As has been seen in

MORE ON THE ACA

Learn more about the many facets of the Affordable Care Act (ACA). Read "The Individual ACA Market: What's Next?" in the February/March 2015 issue of *The Actuary.* FSA Kurt Wrobel discusses next steps in the ACA transition phase. Visit ***http://bit.ly/1EoFLQy*** for the story.

In the October/November 2014 issue of *The Actuary*, Wrobel explores the question: Will the exchange populations have sufficient cost predictability to allow insurance organizations to participate in the ACA Exchange Program? Read his article, "The ACA Cost Predictability Question." Access the article at ***http://bit.ly/1dsCdnB***.

Health Watch, the newsletter of the SOA's Health Section, has a number of articles on this important topic. Check out "A Comparison Between the ACA Exchange and Medicare Risk Adjustment Programs" by Wrobel, January 2015 issue (***http://bit.ly/1JTkBv0***); "Health Insurer Financial Reporting Post-ACA: What Is the Current Thinking?" by ASA Nancy Hubler, October 2014 issue (***http://bit.ly/1EDy4XV***); and "Implications of Individual Subsidies in the Affordable Care Act—What Stakeholders Need to Understand" by FSA Greg Fann, May 2014 issue ***http://bit.ly/1bf3GqX***.

the economics profession, one needs to understand if someone has an incentive to cherry-pick the data in order to support a particular position. In my career, I've found this problem of cherry-picked data to be particularly pronounced among those people who do not have the same broad financial responsibility as most actuaries.

Clearly differentiate between truth seeking and political opinion. When reporting an analysis, we need to clearly differentiate among facts, an impartial analysis based on facts, and an opinion. In some cases, I think it is perfectly acceptable to offer a political opinion; but I do think it needs to be clearly labeled as an opinion.

Think about what you are adding to the public policy discussion and debate. As we all know, there is no shortage of political opinions offered by policymakers and pundits. As we think about offering actuarial opinions and analysis, I think that we need to consider the additional insight that we can offer to the discussion.

At the risk of being somewhat partial (which qualifies the following as an opinion), I believe that we are in a very unique position to offer the kind of advice that can be valuable to the policy discussion. In addition to our technical skills, we have direct and current experience in working with the pricing and regulatory processes that have very important policy implications. In contrast, our political opinions are likely to be much less valuable in adding to the broader political discussion. As we've seen in the political discussion on the ACA, there is no shortage of non-technical opinions and cherry-picked data to support one political viewpoint or another.

Show a sense of civility and respect for the public interest. Words and tone are important. When we address an issue of public interest, we need to show respect for the process and ensure that our statements are civil and in keeping with the seriousness of the policy implications. As the economics profession has witnessed, an offhand disrespectful political statement can not only damage an individual's reputation, but also be detrimental to the entire profession.

WE ARE IN A POSITION TO INFLUENCE POLICY DECISIONS AFFECTING SOME OF THE MOST IMPORTANT ASPECTS OF PEOPLE'S LIVES …

Ensure a transparent process to discuss key assumptions, exogenous model factors, and the potential variability in predicted results. Because key assumptions are important to develop an accurate prediction, we should ensure complete transparency and help facilitate a wide discussion of these assumptions throughout the organization. This transparency and discussion will help ensure that a diverse range of viewpoints is considered in the process and that no insight is lost in developing the key assumptions. In addition, we should not just consider the known model factors, but will also make allowances and ensure a broader discussion among other factors that are not explicitly included in the model, but could materialize in the future. For example, as we have seen with the extension of the transitional health insurance plans and the subsequent removal of these healthier members from the ACA risk pool, these unknown factors could have a profound impact on the ultimate results.

CONCLUSION

As a profession, we are in a position to influence policy decisions affecting some of the most important aspects of people's lives, including health insurance and retirement security. Consistent with this position of influence, we need to be mindful of the importance of our projections and recommendations for both policymakers and our organizations. In keeping with this level of importance, we need to be vigilant about ensuring that we provide impartial advice that provides both a projection of results and a full and complete qualitative analysis regarding the risk associated with a policy. We also need to appreciate that maintaining our reputation for impartial truth seeking is essential in order to positively contribute to the public policy debate in the areas where we have the most expertise. Considering our country's recent challenges with the presentation of sound, objective technical work in the public policy debate, I think the actuarial profession is in a particularly important position to help achieve this goal. A

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ADVANCED BUSINESS ANALYTICS THE SOA TODAY

BY STUART KLUGMAN AND KEVIN PLEDGE

ON FEB. 13, 2012, a Society of Actuaries (SOA) board task force issued a white paper titled "Actuaries in Advanced Business Analytics." There were several recommendations made at that time. In this article we discuss some of the SOA endeavors that have occurred since then and ask where we should go from here.

To have a common framework, the task force settled on the following definition:

> Advanced Business Analytics for Actuaries is a set of tools and techniques used to describe, predict, and recommend business courses of action that take into account consumer, provider, and distributor behavior. It draws from many disciplines. It relies heavily on vast amounts of data and computing power. Practitioners use statistics, modeling, optimization, clustering, and market research. Combined with actuarial judgment, using Advanced Business Analytics provides employers with insight for decisions related to managing complex risks and optimizing product design as well as improving outcomes and value for consumers.

The white paper had several key recommendations. Discussed in this article are:

1. In 2012 and 2013 large meetings should include an overview (new) session on advanced business analytics (ABA).
2. The SOA should develop online and e-learning courses that involve case studies.
3. Development of an in-depth seminar in advanced business analytics, available once or twice a year.
4. Additions to prequalifying education.

MEETINGS

The first-listed recommendation regarding meeting sessions has moved well beyond offering a few overview sessions. The growth in sessions devoted to ABA has been phenomenal. By year for the health, life, and annual meetings the numbers have been eight in 2012, 10 in 2013, and 17 in 2014. As the number of sessions has increased, they have also become more structured, for example:

- The 2014 Annual Meeting included eight related sessions covering a range of topics from "Business Side of Predictive Modeling" to "Predictive Modeling Techniques in Insurance." In addition there was a session on using analytics to detect fraudulent claims and a presentation on the Applications of Statistical Techniques module (more on that later).
- The 2014 Life and Annuity Symposium featured a series of three sessions sponsored by the Product Development and Forecasting and Futurism sections.
- The 2014 Health Meeting featured two related sessions on advanced analytics ("Getting a Foothold" and "Building Your Toolbox").

The trend will continue in 2015. The Life and Annuity Symposium has four ABA-related sessions while the Health Meeting will feature five.

SEMINAR

A major follow-up activity for some of the task force members was the creation of the in-depth seminar in ABA. An RFP was prepared and the contract awarded to Deloitte. A 2.5-day seminar was developed to provide a blend of theory and practice. Among the methods and techniques taught in the seminar are:

- Regression and generalized linear modeling
- Survival models
- Time series analysis
- Tree based models
- Cluster analysis.

Each topic is presented with theoretical discussion that emphasizes the concepts and then those concepts are developed with practical case studies. Prior to the seminar, participants receive a self-contained introduction to R so they can follow along and get hands-on practice. Attendance at the seminars is kept small (35 maximum) to ensure active participation.

The hands-on experience has proved very popular. The seminar has received extremely high ratings and comments such as:

- The instructor "was able to make the material come to life. He provided many examples both in and outside of actuarial science. He included first principles to motivate the material and showed how to use R to run without reinventing the wheel."
- "Please continue this class as it is very useful to the actuarial community."
- "This seminar was jam-packed with valuable information."
- "This could easily be a five-day seminar given the breadth and complexity of material."
- "Every health actuary should know this material."

Due to high demand, seven seminars will have been conducted by the end of 2015. Locations are Chicago (3), Boston, Hong Kong, Toronto and Philadelphia. If you plan to attend, sign up early as these seminars are typically sold out.

E-LEARNING COURSE

In late 2013 the first e-learning course with a business analytics theme was released. The Applications of Statistical Techniques module was designed (and required) for candidates pursing the SOA's fellowship track in General Insurance. This self-paced course provides instruction regarding use of the R statistics package (a free open-source statistics package) and covers the following topics:

- Review of ordinary least squares
- The generalized linear model, with an application to classification ratemaking
- Cluster analysis
- Credibility using the generalized linear mixed model
- Measuring variability in claim reserve estimates.

While the examples focus on general (property/casualty) insurance, the methods covered have broad application. In particular, the generalized linear model has become the staple for deducing complex relationships between a dependent variable and several independent variables. Health actuaries will recognize the claim triangles studied in the sections on measuring variability in claim reserve estimates.

While designed for the SOA's education pathway, the module is available for professional development, providing an easy introduction to some of the most commonly used ABA methods.

LEARNING STRATEGY

The next step is to broaden ABA education across the spectrum of actuarial practice. The SOA board-appointed Learning Strategy Task Force was expected to complete its work at the June 2015 board meeting. Due to publication deadlines we cannot know which of its recommendations the board will adopt. However, there is likely to be strong support for a key ABA-related initiative: To ensure that all future SOA members learn key ABA techniques as part of ASA education.

An important aspect of this will be determining the best means for educating and evaluating candidates. It is clear that a multiple-choice test will not be sufficient. When analyzing data, there is no single important number to be calculated. Rather, there will be a set of numbers, graphs and tables that help the analyst select a model, estimate its parameters, and then use the model to respond to the business question being asked. Therefore, ABA education may involve an in-person seminar, a combination of self-study and online interaction, or something we haven't even thought of yet. But it is clear that an innovative approach will be needed to ensure candidates become effective users of these techniques.

Stuart Klugman

Kevin Pledge

WHAT'S NEXT?

It is clear that the SOA has made a good start with business analytics. Both authors are deeply involved with the SOA's efforts in pre-qualification and continuing education. We would like to hear your ideas as we help move this initiative forward. We have some specific questions, but comments are welcome on all aspects of actuaries and ABA.

- Would sessions at meetings be better presented as an add-on seminar?
- Should future ABA seminars continue to concentrate on discussing techniques or shift to being geared to specific practice areas?

We hope you are as excited as we are about the future of the actuaries and ABA, and the ways in which the SOA can provide support. A

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Education

THE HICKMAN SCHOLARSHIP
TRAINING ACTUARIAL EDUCATORS

BY BRIAN M. HARTMAN AND CHRIS GROENDYKE

THE JAMES C. HICKMAN SCHOLAR PROGRAM was established by the Society of Actuaries (SOA) in 2008 to increase the number of academic actuaries who hold both a Ph.D. and an actuarial credential. This will strengthen the relationships between academic actuaries and those working in industry. The scholarship provides doctoral candidates an annual stipend of $20,000 to allow them more time to focus on research and actuarial exams. The award also provides for travel and registration at two SOA annual meetings to give them additional insight into the problems currently facing the industry and to connect with practicing actuaries. Through their Ph.D. program, they learn and practice cutting-edge science and methodology, enabling them to provide another perspective and help solve industry problems. Though it is still relatively new, the Hickman scholarship program has already proven to be a great success.

The scholarship is awarded annually to five top Ph.D. students committed to pursuing a faculty position in actuarial science in the United States or Canada. This scholarship encourages students in actuarial science or related fields (e.g., statistics, finance) to pursue actuarial science topics in both their dissertations and their future careers. It also helps top undergraduate students interested in actuarial education decide to pursue their Ph.D. over a career in industry, or at least see it as a viable option. Finally, the Hickman scholarship is designed to encourage actuaries working in industry to consider the pursuit of an academic career by helping to ease some of the financial burden associated with this transition.

Hickman scholars are chosen based on how likely they are to become credentialed actuarial faculty at universities in North America. The specific selection criteria include past academic achievements, commitment to the actuarial profession (including holding or pursuing an actuarial designation), the type of doctoral program being considered, research accomplishments and goals, and future career plans.

In the six cycles since the first scholars were selected in 2009, there have been 135 applicants and 31 award recipients. The research done by award recipients spans many areas of actuarial practice, including financial modeling, hedging, guarantees, ruin theory, behavioral economics applied to retirement decisions, and health insurance risk management and pricing.

Nine scholarship recipients have completed their Ph.D. programs, of which six secured academic positions. The Hickman scholars currently in academic positions are:

- Rob Erhardt—Wake Forest University
- Mario Ghossoub—Imperial College Business School
- Tianxiang Shi—University of Nebraska-Lincoln
- Zhongyi Yuan—Penn State University
- Maciej Augustyniak—Université de Montréal
- Anne MacKay—ETH Zurich.

Thus far, two scholars have earned their FSA and another earned his ASA since being named Hickman scholars.

The scholarship's namesake, James C. Hickman, was an incredible scholar and beloved teacher. He is a co-author of the famous book *Actuarial Mathematics*. He began his academic career at the University of Iowa and joined the Wisconsin School of Business in 1971. He ended his career as the dean of that school. He was also active in the profession, as a member of the SOA board of governors and a trustee of The Actuarial Foundation. Dr. Hickman's widow, Mrs. Margaret Hickman,

HOW HAS THE HICKMAN SCHOLARSHIP HELPED YOU?

Hickman scholars share how the scholarship has helped them achieve their goals.

“[The doctoral stipend] allowed me to focus more time and energy on my research and on pursuing my SOA credentials. Being invited to the SOA annual meetings also allowed me to meet other Hickman scholars and to be exposed to the practical needs of the profession, which in turn gave impetus to parts of my research.” —Mario Ghossoub, assistant professor, Imperial College Business School

“Thanks to the Hickman scholarship, I am able to devote my full focus to my research. This year I published two papers in Insurance: Mathematics and Economics *and the support from SOA is gratefully acknowledged at the end of each paper. I also made progress on the FAP module and will finish it in the near future.”* —Shu Li, Ph.D. student, University of Waterloo

“Being recognized and selected as a Hickman scholar increased my confidence and trust in my ability to achieve my goals in actuarial science research. I am extremely honored and privileged to be a Hickman scholar, and it has definitely helped to boost my lifetime commitment toward actuarial science research.” —Shujuan Huang, Ph.D. student, University of Connecticut

“The Hickman scholarship had a significant impact on my Ph.D. studies and academic job search. Receiving this scholarship motivated me to complete all examination requirements required for the FSA designation and to focus my research on practical problems that are relevant to the actuarial industry. Being a former Hickman scholar, I feel it is now a responsibility for me to advance actuarial education and research and I hope to be an active contributor to the Mission and Vision Statement of the SOA.” —Maciej Augustyniak, assistant professor, Université de Montréal

“The invited participation in the SOA annual meeting exposed me to real-world industry issues. Conversations with industry professionals helped me to identify meaningful research topics.” —Wenyuan Zheng, assistant professor, University of St. Thomas (starting in fall 2015)

“The Hickman scholarship has given me more freedom in choosing where I wanted to study, because funding became much less of a problem. Being a Hickman scholar also gives you some recognition, and shows potential academic employers that the actuarial community values your research.” —Anne MacKay, post-doctoral fellow, ETH Zurich

spoke to the inaugural class of Hickman scholars. She said that Jim was often asked to speak at graduation and he always included this point:

> “As bright and talented graduates in a difficult field, you will be more affluent than many other citizens. You have been helped along your path by your families, your teachers, perhaps a mentor and your university. Your personal sense of happiness will depend on generous giving, not only money, but time and talent for educational, social and political causes.”

The Hickman scholarship helps to preserve that legacy.

Brian M. Hartman

Chris Groendyke

If you or someone you know has interest in moving to academia and contributing to the actuarial profession through research and education, the SOA, through the Hickman scholarship program, can provide valuable support and assistance in making this goal a reality. The SOA encourages applications with research ideas from all areas of actuarial science theory and practice. Applications for the 2016-2017 award cycle are due Feb. 15, 2016; you can find more information about the Hickman scholarship program, including eligibility requirements, past winners and an application form, at *www.soa.org/doctoral-stipend/*.

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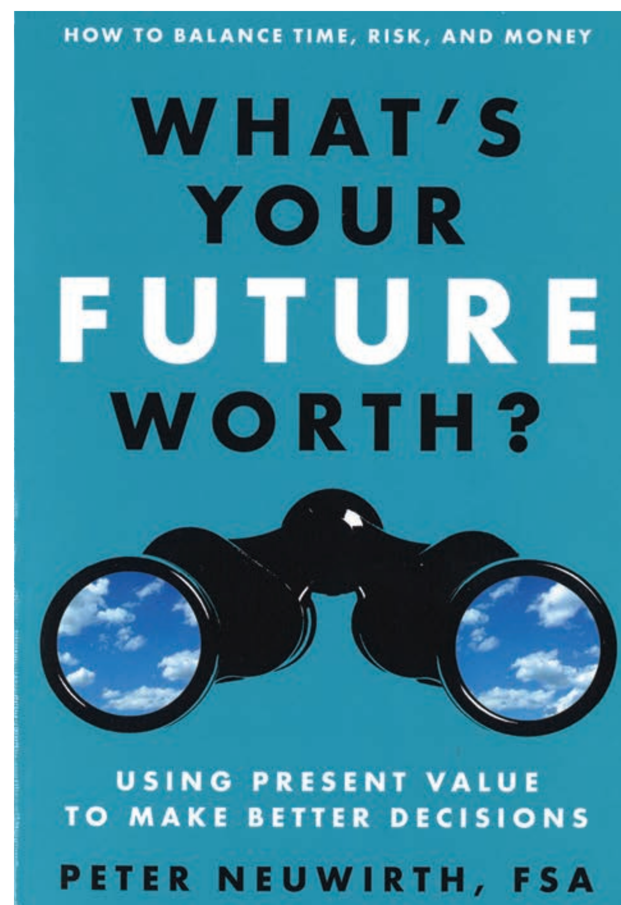
Book Review

WHAT'S YOUR FUTURE WORTH? BY PETER NEUWIRTH

REVIEW BY JAMES A. KENNEY

PETE NEUWIRTH has written a powerful book about the concept of "present value," a book useful for laymen and thought-provoking for actuaries.[1] Superficially, the book is about how to make better decisions, but, ultimately, the book is a meditation on what matters in life. The central theme of the book, a phrase used over and over, is *present value*. Though Neuwirth doesn't say so, that mantra can be thought of as two separate things: the present; and value. The book assumes that only in the present can we make decisions that will affect our future, but otherwise it doesn't have much else to say about the present. (It does have a great deal to say about time, however.)

The book's most intriguing aspect is its meditation on *value*. It readily concedes that the easiest metric of value is monetary—how much is something worth? But even then the book hints at an extension of *worth* to the qualitative experience of the individual making a decision. The book gives a number of entertaining "kitchen table" examples of how to use present value to make better decisions. It concludes "this decision has a greater present value than this other decision, so I should choose the first," but the discussion of the process by which present value is determined allows a great leeway for subjective considerations. The same procedure could easily be employed using "happiness" instead of "money." In fact, the book refers to this obliquely.



Neuwirth richly illustrates his contention that the five-step present value method actually results in good decisions, although it is not without its difficulties. His five-step method includes:

1. Define the choices to be made.
2. Imagine as many of the possible futures that might arise from each choice as you can, focusing not just on *what* could happen, but on *when* it could happen as well.
3. Evaluate, to the extent possible, the relative likelihood of each possible future.
4. Introspect deeply to consider how much more value should be placed on things that will happen in the near future versus things that will happen in the distant future (i.e., develop a "personal rate of discount").

5. Sum up the values of the consequences of each choice (i.e., determine the present value of each alternative).

The most difficult steps are envisioning a sufficient number of possible outcomes of your decision, and deciding what discount rate to use. His discussion of discount rates is thought-provoking, as it is solidly based on the idea that it has to be *your own* discount rate, not some objectively determinable rate: a personal, subjective rate. The process Neuwirth describes in his book is illustrated with a number of examples from his personal life, and this gives the book its dynamism and its vividness: Rather than an impersonal, abstract discussion on present value as explained by *Life Contingencies*, the author shows us the advantages of this method of making actual decisions in real life. The style used throughout is very engaging. Neuwirth never talks down to the reader, nor is he didactic.

How many half-priced running shoes should he buy when his favorite shoe company discontinues the line he prefers? The idea of performing a sophisticated present value analysis of such a question is absurd, as nearly every actuary would agree: The amount to be saved just isn't worth the trouble.

Nevertheless, this example exemplifies what gives the book its charm, its appeal, and ultimately, challenges us to think about the nature of what we do as actuaries, and why our approach to decision-making is so successful. The very absurdity of using an elephant gun to hunt a flea, implicit in the example, charms us into paying attention as the author decides not to stock up with 20 pairs for $1,000, although he is a dedicated runner. It is not the *decision*, it is not even the *problem*, it's the *method* we are seduced into focusing on. While apparently naïve, this is actually a very effective pedagogical technique. The pedagogy is seductive as it illustrates the technique, and the absurdity of the example impels us to move beyond it and ask, "What is the author really trying to say here?" The very triviality of the decision being contemplated is almost subversive to the notion that present value analysis is the only rational way to make decisions.

So we are left with the unspoken core of the book: What does it mean to make a decision? Can decisions ever be rational? Can we really envision a multivariate future, with contrary outcomes coexisting in varying degrees of probability? Only by doing so can we successfully apply the virtues of present value analysis. Even more important, as the book often slyly hints at, are the non-quantifiable elements of the decision, such as how other people's feelings (as well as one's own) enter into "the equation."

The author discusses whether to buy a new refrigerator (as his wife wishes), and lays out his present value analysis: The additional expense of keeping their still-working but more energy-expensive model versus the potential effect of inflation on the future cost of a new refrigerator. He concludes that buying a new refrigerator results in the best present value. He mentions, but wisely does not attempt to monetize, his wife's desire for a new refrigerator and what his refusal could mean for their personal day-to-day happiness, and yet I imagine that well over half of appliance purchases are driven by a desire to please a spouse or partner and have little to do with present value. One question he did not discuss was how he would have decided had his present value analysis gone one way and his wife's desire another. I suspect present value would have taken a back seat to marital bliss.

Not everything in life can be monetized or measured. In fact, few truly important things in life can be. How much does relocating to a new city "cost"? What is a spouse's satisfaction "worth"? What is the "value" of a beloved hobby? Of family, of friends, of fun, of spiritual growth, of politics, of reading, of music?

Not everything in life can be monetized or measured. In fact, few truly important things in life can be.

The most profound question Neuwirth's book evokes is: *Are we happy with who we are?* If only there were a formula to answer that!

ENDNOTE

[1] Neuwirth, Peter. 2015. *What's Your Future Worth?* Using Present Value to Make Better Decisions. Berrett-Koehler Publishers, 216 pages.

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Sophia Dao

Section Highlights

BY SOPHIA DAO

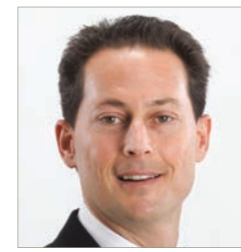
THE MANAGEMENT AND PERSONAL DEVELOPMENT (MPD) SECTION is having our first-ever leadership essay contest. The contest will run this summer, and the winners will be announced during the MPD breakfast book review session at the 2015 Society of Actuaries (SOA) Annual Meeting. If you are a member of the MPD Section, I encourage you to get inspired and start putting your thoughts into writing. Your work may be featured in *The Stepping Stone*, the MPD Section newsletter.

Looking for ideas to write your leadership essay or just wanting to read a good book? Introducing getAbstract!

Looking for ideas to write your leadership essay or just wanting to read a good book? Introducing getAbstract! MPD members enjoy a free subscription to getAbstract. Every week, subscribers get a five-page summary of a business book, which includes a summary, key take-aways and rating. Some people find the five-page summaries satisfy their reading requirements, while others use the summaries to help them decide whether they should read the whole book or not. In either case, this is a good way for busy professionals to keep up with business reading.

The MPD Section conducted a membership survey recently, and the results indicate that 90 percent of our members are either satisfied or very satisfied with their MPD membership. We are pleased with the results, but we are always striving to do more to better serve our members. We revamped our section Web page recently (*www.soa.org/mpd/*) to make it easier for you to navigate the page. On this page, you'll find the latest issues of *The Stepping Stone*, new podcasts, and upcoming events. You may have noticed that we've been offering more podcasts and webcasts on management and leadership topics. If you have feedback on the podcasts and webcasts, or anything that we do, feel free to reach out to me or to any of the section council members. We'd love to hear from you.

Sophia Dao, FSA, MAAA, is AVP & actuary at Genworth Financial in Richmond, Virginia. She is also the chairperson of the Management and Personal Development Section Council. She can be reached at *Sophia.dao@genworth.com.*



Jim Filmore

BY JIM FILMORE

THE PRODUCT DEVELOPMENT (PD) SECTION of the Society of Actuaries (SOA) continues to be a very active section with over 3,000 members. Historically, the majority of those members have been located in the United States and Canada. However, our section membership in Asia (Hong Kong in particular) has been growing in recent years.

To serve its members, the section council focuses on topics of interest to its members. Those topics are developed through a variety of sources. Some ideas are raised during our monthly council calls, some ideas are the result of brainstorming activities by a subset of our council, and other ideas are the result of submissions to our council by section members.

Once a topic of interest has been generated, the next step is determining the best way to deliver relevant research and content to our members on the topic of interest. Historically, the primary medium to deliver content has been developing sessions at the various industry meetings (emphasis on the SOA Annual Meeting held in October and the SOA Life & Annuity Symposium held in May). We have found that medium to be an excellent way to deliver content and to allow face-to-face interactions among our members. However, delivering content at industry meetings may not fulfill the needs of all our section members as it may not be feasible for everyone to attend an industry meeting in person. Thus, we have other methods of communicating with our section members.

A second medium through which we deliver content is in our section newsletter, which is published three times per year in both a paper and electronic format. This is where our team of newsletter co-editors works throughout the year to source and deliver content that we believe our members will find relevant. Today, the majority of that content focuses on the United States and Canada as individuals from those countries comprise the majority of our section membership. However, we are seeking more global content and welcome any submissions that are made by our members outside of North America.

Another medium through which we deliver content is via webcast. The webcasts are typically 90 minutes long and feature both audio and video of presenters delving into a topic of interest. Recent webcasts covered topics such as predictive modeling. The webcasts can be viewed globally either live when offered by the SOA (where questions can be posed in real time to the presenters) or one can replay the webcast from the SOA website (located under Professional Development). The replay option allows for flexibility to those in different time zones in situations when the live broadcast was not offered during their normal business hours or when there was a scheduling conflict. There is a fee (currently US$149) to access a webcast.

Podcasts are yet another medium for delivering content. Podcasts are much shorter than webcasts (typically between 10 and 20 minutes) and contain only audio. The PD Section Council typically picks a few sessions from recent industry meetings and asks those presenters to record highlights of their presentations as a podcast. The podcasts are not offered live, but are available on the SOA website (located under Professional Development) to be accessed as needed. There is no fee to access a podcast.

Last, but certainly not least, are the research projects that are sponsored by our section. Those projects cover important emerging topics where current industry information may be scattered or incomplete. Our council scopes out a request for proposal (RFP) and evaluates the potential researchers. Often the research team needs to be compensated for completing the project as it may involve many months of work. The council ensures that the project is covering a topic of value to our members and that the research team is expected to produce quality work for a reasonable cost. The section council also assigns individuals to review the work of the researcher before it is released for publication by the

SOA. Essentially, the section council handles the role of being a good steward of the funds of the council (which are generated by the moderate US$25 annual dues for each PD Section member).

To effectively deliver on the items above, each process is coordinated by a council member. However, the council cannot accomplish these tasks alone. Rather, we rely upon other members of our section to help generate ideas and to help us follow through on those ideas. We are all volunteering our time to give back to the actuarial profession, and we are most successful when we work together.

As our membership expands globally, we encourage everyone to take advantage of this digital age to both access the content that has been created for our section members and to generate new content for our section. If you have a product concept that works in another part of the world, then we welcome working with you to determine an effective way to communicate that information to our section members. Lessons learned the hard way in one market are often just as important as they can help others to avoid those same mistakes. Collectively, we can help each other to develop best practices for our profession across the world.

To get more information or to join our section, simply look under the Community menu on the SOA website (*www.soa.org*). Thank you to all of those who currently are members of the Product Development Section, and I welcome others who would like to join our section! A

Jim Filmore, FSA, MAAA, is vice president and actuary responsible for Munich Re's individual life pricing teams in the United States. He is the current chairperson of the SOA Product Development Section Council. He can be reached at *JFilmore@MunichRe.com*.

SOA AT WORK

SOA BOARD APPROVES GOVERNANCE TASK FORCE RECOMMENDATIONS

On April 20, 2015 the SOA Board of Directors approved:

- Two Board resolutions designed to make the time required to carry out the role of President more reasonable and make it more attractive to potential President-Elect candidates in a world where pressures on volunteer time continue to grow. These resolutions 1) commit the SOA to develop ways to distribute Presidential commitments more evenly among the Presidential officers, and 2) seek to eliminate the position of Penultimate Past President (4th year in office), thereby reducing by one year the time commitment required to be President.
- Two Board resolutions designed to make the SOA Board of Directors more effective by reducing its size, while preserving a broadly representative roster of Directors. These resolutions 1) change the number of Board members to be elected each year beginning in 2015 from 6 to 5, thereby reducing the number of elected Board members from 18 to 15, and 2) will ask SOA Fellows to approve a bylaw amendment eliminating the Vice-President position on future Boards, further reducing the size of the Board by six positions.

On May 13, 2015 the Board approved bylaw changes required to implement these resolutions. The membership will be required to approve one of these bylaw changes by proxy vote during the annual election process (see Position of Board Vice-President). Whether approved by the Board itself or by the membership where required, a three-year transition process is expected.

BACKGROUND

In February, 2014, the Society of Actuaries' Board of Directors approved a strategic governance review initiative, and formed a task force to research and develop recommendations to respond to governance issues observed by SOA Board members. The issues discussed focused on identifying ways that the SOA might best structure its various Board positions and responsibilities.

The Governance Task Force was charged with 1) developing an understanding of basic association governance principles and reviewing the current SOA governance structure; 2) examining relevant governance information and practices used by other associations and non-profit groups; and 3) recommending changes that would make the SOA's governance structure stronger and more efficient to better serve SOA members, candidates, stakeholders, other organizations, and the public.

Members of the Governance Task Force include Anne Button, FSA, EA, MAAA, chair, former Board member and previous Nominating Committee chair; Errol Cramer, FSA, MAAA, SOA President; Bob Beuerlein, FSA, CERA, MAAA, FCA, past SOA President; Andy Ferris, FSA, MAAA, Board member and Leadership Development Committee member; Rowen Bell, FSA, MAAA, Board member; and Alan Cooke, FSA, FCIA, MAAA, member-at-large and previous International Section chair.

The Task Force conducted its research and deliberations and provided its recommendations to the Board at the end of 2014. The Board reviewed the recommendations and resolved to approve recommendations listed below.

BOARD RESOLUTIONS AND RATIONALE

Presidential Commitments

Board Resolution

Presidential commitments—with regard to meetings and engagements—will be evenly distributed among the presidential officers starting in 2015. This process will be phased in over a three-year period.

Rationale

The SOA wishes to ensure the continual development of an ongoing stream of qualified candidates for leadership roles, including candidates for President-Elect. The time commitment required for the position of President is demanding and is preventing some potential candidates from running for President-Elect. The SOA's time requirements for President are described by past Presidents and Board members, leaders of other actuarial organizations, and outside experts in association governance as an "extraordinarily rigorous time demand for a volunteer association president." SOA Presidents report that the expectations of the role have become very demanding, making it difficult for members with full-time employment responsibilities to consider serving in the role. The redistribution of meeting and engagement responsibilities among the Presidential officers and other Board members will reduce the time commitments for the President, making it more reasonable and valuable for volunteers to serve in this presidential office. The SOA will continue to provide the leadership presence valued by stakeholders and required of an organization like the SOA, but in a more feasible way for those who serve.

Office of Penultimate Past President

Board Resolution

The office of Penultimate Past President will be eliminated and the presidential office service commitment will be reduced from four years to three years beginning with the 2015 election.

See Amendments to the SOA Bylaws at ***http://bit.ly/1B3CasP.***

Rationale

The unique SOA role of Penultimate Past President requires a four-year time commitment of officers moving through the roles of President-Elect, President, Past President and finally Penultimate Past President. A more common practice among associations is to have presidential officers retire from Board service after one year as Past President. The elimination of the fourth year of the presidential officer commitment will make it more reasonable and valuable for volunteers to run for and serve in the presidential office. Should the Board believe it needs additional historical context and information about a specific issue, the special perspective and experience of past presidents may still be sought without requiring Board service. Elimination of this office will also reduce the size of the Board of Directors, which supports the intent of the next resolution. This change will require a bylaw amendment, but the SOA's counsel has concluded that the amendment can be made by the Board itself.

Board Size

Board Resolution

The number of Board members (not Vice-Presidents) to be elected in each year will be reduced to five beginning with the 2015 election.

Rationale

The relationship between Board size and Board effectiveness has been the subject of significant research in recent years. The average size of an association Board of Directors in the U.S. is 16 to 18 members (BoardSource 2010 Governance Index Survey, Gazley and Bowers, 2013). Associations with larger budgets tend to have larger Boards; for example, those with budgets of $10 million or greater have an average size of 18 members, while those that have budgets of less than $1 million have an average size of 14 members (BoardSource 2010 Governance Index Survey). There is research to support the belief that Boards smaller in number are more effective at governing and making strategic decisions. In particular, a Board's ability to conduct discussion and consideration of issues is enhanced by creating an environment in which in-depth conversations and mutual consideration (e.g., a back and forth debate on an issue) is possible. The SOA's Board is large (28 members) currently. The Board concluded that a reduction in the number of Board members will improve the Board's effectiveness, allowing members to more easily engage in meaningful strategic dialogue. The Board believes this change can be implemented while preserving appropriate diversity and balance on the Board and by shifting some responsibilities (e.g., serving on some committees) from Board members to other member volunteers. This change will not affect any member currently elected to the Board; it will be implemented by electing one fewer new Board member each year, reducing over three years the number of elected Board members from 18 to 15.

Position of Board Vice-President

Board Resolution

The position of Vice President will be eliminated and a second three-year term as an Elected Board Member will be encouraged.

See Amendments to the SOA Bylaws at ***http://bit.ly/1cIZbG1.*** Board approval of these amendments subsequently require a vote of the Fellows of the SOA which will occur by proxy voting in the next (Summer 2015) elections.

Rationale

Except for the one Vice-President who serves as Secretary-Treasurer, SOA Vice-Presidents do not have special duties, responsibilities or powers that distinguish this position from those of other elected Board members. Essentially, it is a second, elected two-year term on the Board. The elimination of the office of Vice-President will accomplish several ends. Most important, it helps the SOA achieve the overall goal of reducing the size of the board. It also helps bring SOA Board member titles in line with reality and practice.

It is important for the Board to benefit from the experience and knowledge of elected Board members who have served well and may wish to serve a second term on the Board. To that end, this resolution also encourages Board members to consider putting their name forward for election to a second, three-year term on the Board. If elected they continue to provide important service from which the SOA will benefit for an additional year of service (three-year term versus two-year VP term). This resolution does not remove the current bylaw limitation that no member may serve more than two terms on the Board. In addition, the Board has discussed adding policy language to require that some proportion of the five board members elected each year be first-time members, in order to preserve the benefits of refreshing the Board with new members who bring new views and perspectives.

Questions and comments about this material is encouraged. Please write to ***membercomms@soa.org.*** A

AN INDIVIDUAL HEALTH EXCHANGE AND PENT-UP DEMAND

BY R. DALE HALL

We're now more than a full year into the launch of health exchanges created to increase access to health care in the United States. Actuaries are examining the available experience data to understand the types and timing of services used by the newly insured. An important area of study is the "pent-up demand" for health care services. The theory is that after a period of lack of access to health insurance, individuals immediately seek care at a rate that exceeds the use of care by people who have continuous access to health insurance.

The SOA developed a preliminary examination of the extent and nature of pent-up demand within an individual health exchange to help actuaries and others discuss this pent-up demand. Co-authored by SOA health research actuary, Rebecca Owen, FSA, MAAA, the SOA study analyzes the different ways individual insureds used health services in the first quarter of 2014 in Kansas. This SOA research project harnesses data from the Kansas All Payer Claims Database, through a partnership with the Kansas Department of Insurance and the SOA.

This initial study focuses on two core populations: the existing insured and the newly insured under the Affordable Care Act (ACA). This research identifies health services that are likely to be deferred or even avoided due to financial constraints.

In the first quarter of 2014, the newly enrolled in Kansas used "preference sensitive" treatments, a list of certain surgeries or scans, at a level that exceeded the expectation of differences due to demographics alone. The newly insured in 2014 had overall higher costs than people with continuous coverage. The study also compared the relative use between existing and new insured populations in 2013. The ACA new enrollees appear to have a higher proportion of individuals with chronic conditions, such as diabetes or asthma.

The SOA plans to examine overall costs and adjustments for known differences in a future paper, once a full year of data is available. This future paper will use more mature data and examine the behavior across the entire first year for patterns of wear-off.

Visit *SOA.org*'s research page for the latest on the possibility for pent-up demand with health exchanges. A

R. Dale Hall, FSA, CERA, MAAA, is managing director of Research at the Society of Actuaries. He can be reached at *dhall@soa.org*.

E-COURSES: GROWING YOUR KNOWLEDGE

THE SOA IS PROUD to offer more than 20 e-courses worth more than a combined 80.00 CPD. E-course topics range from professionalism and communication to social insurance and enterprise risk management and can be completed in as little as two hours. Whether you're changing fields, in need of some refreshers or looking to improve your communication skills, get the knowledge you desire by registering for an e-course today. See our full listing at *www.soa.org/ecourses*.

ADVANCED TOPICS IN CORPORATE FINANCE AND ERM

Three applications of Extreme Value Theory (EVT) are covered to put the theory to work in a business context in this e-course. The candidate will learn about the factors that affect strategic thinking (external forces, environmental analysis), the organizational characteristics that influence strategic decision-making (strategy, structure, controls, leadership) and how senior management uses these to evaluate and benchmark progress toward strategic goals.

HEALTH FOUNDATIONS

The Health Foundations e-course discusses the health care system at a micro level. It begins with an exploration of health care terminology and coding. The module moves on to discuss sources of data with regard to medical treatments and claims experience. The next step is to learn about the administrative systems that bring the data sources together. The module ends with examples illustrating how these elements combine to help provide solutions to actuarial problems. A

GOOD RESEARCH READS

COMPLETED EXPERIENCE STUDIES

SOA RELEASES GROUP ANNUITY MORTALITY EXPERIENCE STUDY

The SOA and its Group Annuity Experience Committee developed a new mortality experience study of insurance company annuity experience for group pension contracts in the United States. The study looks at 2007-2010 data, focusing on mortality improvement, gender, attained age groups, retirement class and income group.

To view a complete listing, visit *SOA.org/Research* and click on Completed Experience Studies.

COMPLETED RESEARCH STUDIES

NORTH AMERICAN REGULATORY RISK STUDY PUBLISHED

The SOA, Casualty Actuarial Society and the Canadian Institute of Actuaries jointly released a new report on regulatory risk in the North American insurance company environment. The research identified key risks, risk scenarios and mitigation tactics, and risk disclosure practices, through a survey of 20 insurance companies. The report examined the companies' most prevalent and highly ranked regulatory-related insurance risks in the United States and Canada.

SURVEY REPORT ADDRESSES LIVING BENEFITS

The SOA Product Development Section, Reinsurance Section and the Committee on Life Insurance Research sponsored a new study investigating life and annuity living benefit riders and the implications from both direct writer and reinsurer perspectives. Authored by a Milliman team led by Carl Friedrich, the report defines various living benefit riders, provides historical sales data and general filing requirements. The study explores how underwriting and administration is handled, examines direct and reinsurance pricing implications of the riders to the extent they impact policyholder optionality and base plan financial characteristics, and summarizes the results of a survey of company practices related to the riders. The study does not include guaranteed lifetime withdrawal benefits nor guaranteed minimum income benefits.

To view a complete listing, visit *SOA.org/Research* and click on Completed Research Studies.

PROFESSIONAL DEVELOPMENT: Your Opportunity to Grow

When is the last time you attended a meeting or seminar, or tuned into a webcast? As an SOA member, there are a number of events you can attend, in person or from your computer. Here are just a few of the upcoming meetings and webcasts coming your way that can help you:

- Stay up to date with current trends in your area of practice,
- Continue to make meaningful contributions to your company, your team and the profession, and
- Develop or fine tune new knowledge and skill areas.

Visit ***SOA.org/calendar*** for the full complement of meetings, seminars, virtual sessions, webcasts and more. We look forward to hearing from you!

MEETINGS AND SEMINARS

UNDERWRITING ISSUES & INNOVATION SEMINAR

August 2

Rosemont, Illinois

Sponsored by the SOA's Product Development Section, this seminar will cover topics impacting the underwriting profession. If you are curious, attend this event to find out how future technologies might change life insurance underwriting.

50TH ACTUARIAL RESEARCH CONFERENCE (ARC)

August 5-8

Toronto

This annual conference provides academics and practitioners with an opportunity to meet and discuss actuarial problems and their solutions. ARC is open to those in all areas of actuarial practice and promotes education, research and interaction within the industry.

SOA GENERAL INSURANCE SEMINAR

September 4

Seoul, South Korea

Mark your calendars for this seminar. A comprehensive program is being developing with topics covering product design, reinsurance, ratemaking and reserving, catastrophe modeling, professionalism and much more. Additional details will be available soon at *SOA.org/calendar.*

WEBCAST

CHINA AND TAIWAN PROFESSIONALISM PRACTICE WEBCAST

August 4 (in Mandarin)

August 12 (in English)

This webcast will look at the type of professionalism required by actuaries practicing in the China and Taiwan regions. Professional actuarial practices, codes of conduct and other ethical issues will be discussed.