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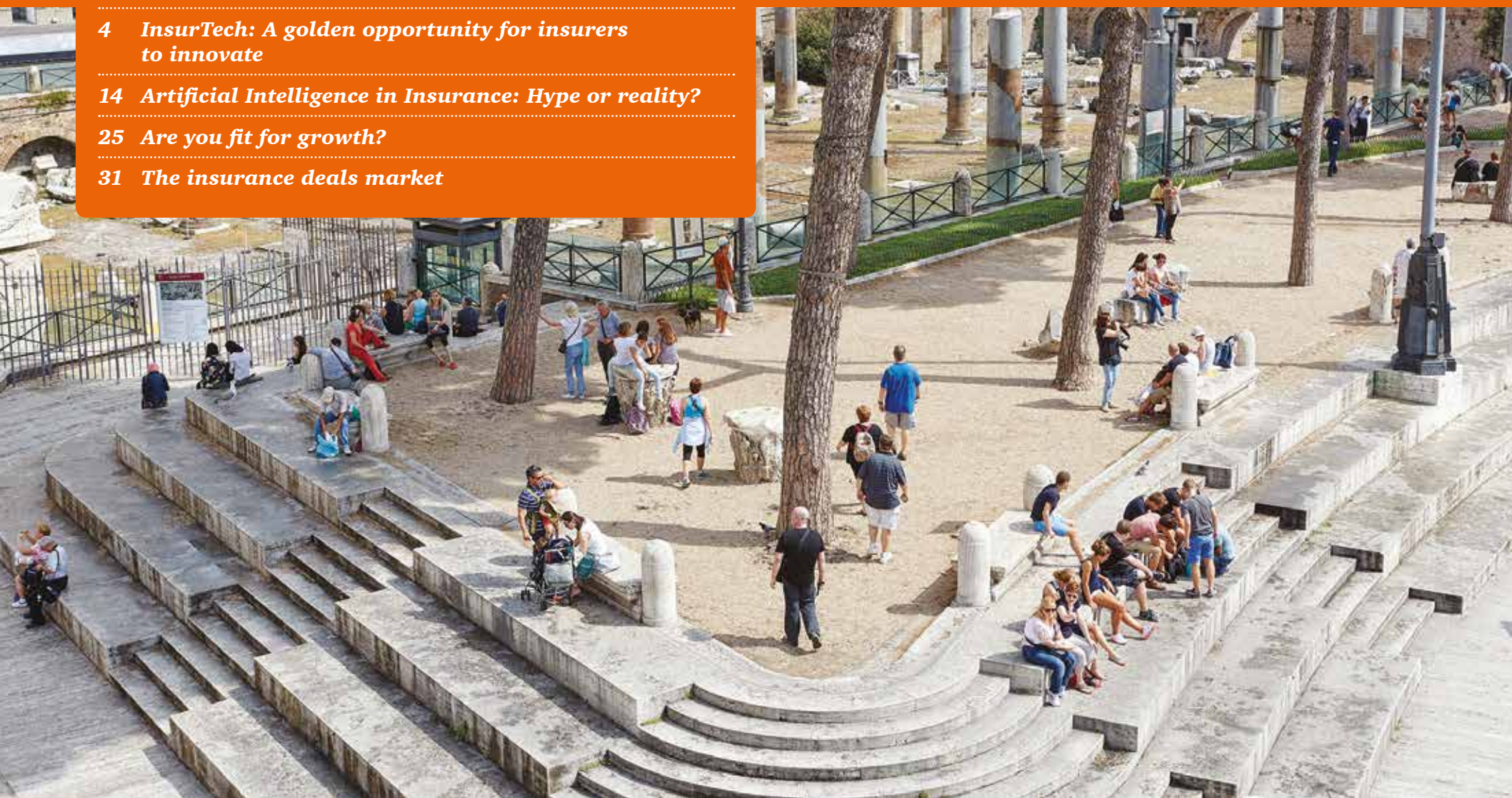
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InsurTech: A golden opportunity for insurers to innovate



The insurance industry has remained much the same for more than 100 years, but over the past decade it has seen a number of exciting new innovations and new business models.

Three of the biggest drivers of disruption include:

- **Customer expectations** – The widespread adoption of new consumer technologies in all industries has created new needs for and expectations of insurance solution and interaction channels.
- **Pace of innovation** – So far, incremental innovation has helped insurers meet most new customer expectations. But, with the demands of the shared economy, usage-based models, internet-of-things (IoT), autonomous cars, and wearables, they have an opportunity to do more radical innovations and experiment with new business models. In this context, customers have a need for new insurance solutions, and established carriers (i.e., incumbents) have an opportunity to provide tailored products and services for different segments.

- **Startups** – With easy access to open source frameworks, scaled cloud computing and development On-Demand, technology barriers to entry have been lowered. New players that have the ability to innovate quickly are taking advantage of the opportunity to fill the gaps that incumbents have not.

As part of PwC's Future of Insurance initiative¹, we've interviewed numerous industry executives and have identified six key business opportunities (illustrated below) that incumbents need to take advantage of as they try to meet customer needs while improving core insurance functions.

¹ <http://www.pwc.com/gx/en/industries/financial-services/insurance/future-of-insurance.html>

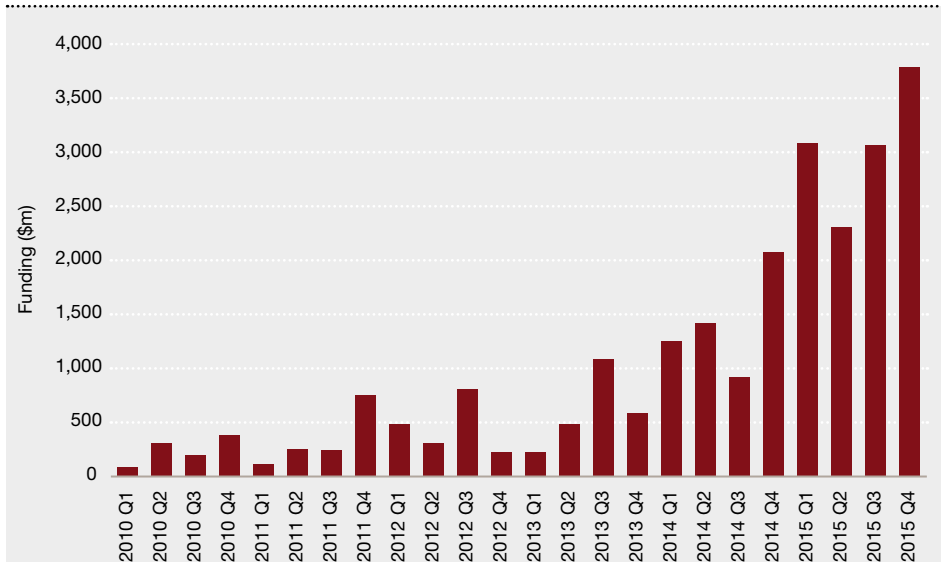
The promise of InsurTech



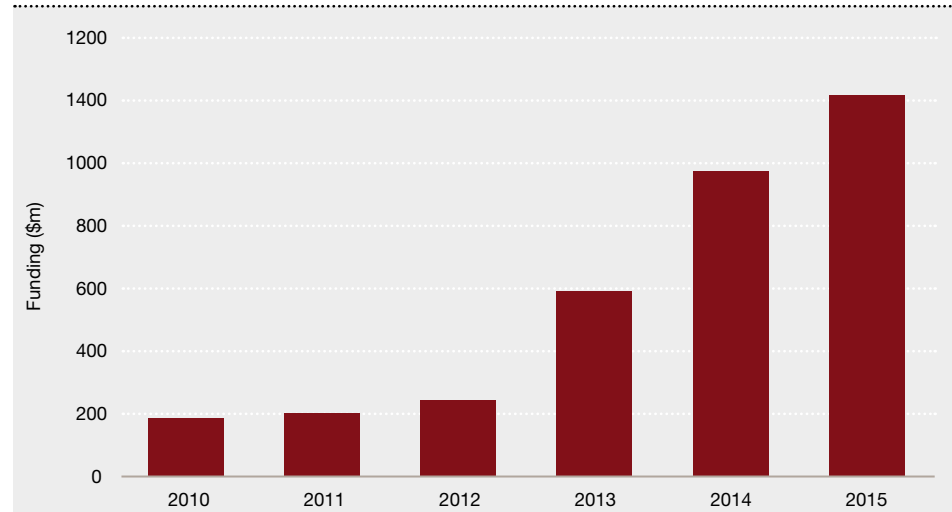
Because FinTech offers substantial promise to take advantage of emerging opportunities, funding for startups is surging. Increased funding activity not only demonstrates venture capitalist investors' interest, but also indicates how incumbents may leverage FinTech to address their specific business challenges.

The insurance-specific branch of FinTech, InsurTech, is emerging as a game-changing opportunity for insurers to innovate, improve the relevance of their offerings, and grow. InsurTech, has seen funding in line with FinTech investment overall, and we expect investments to increase as new players and investors enter the space.²

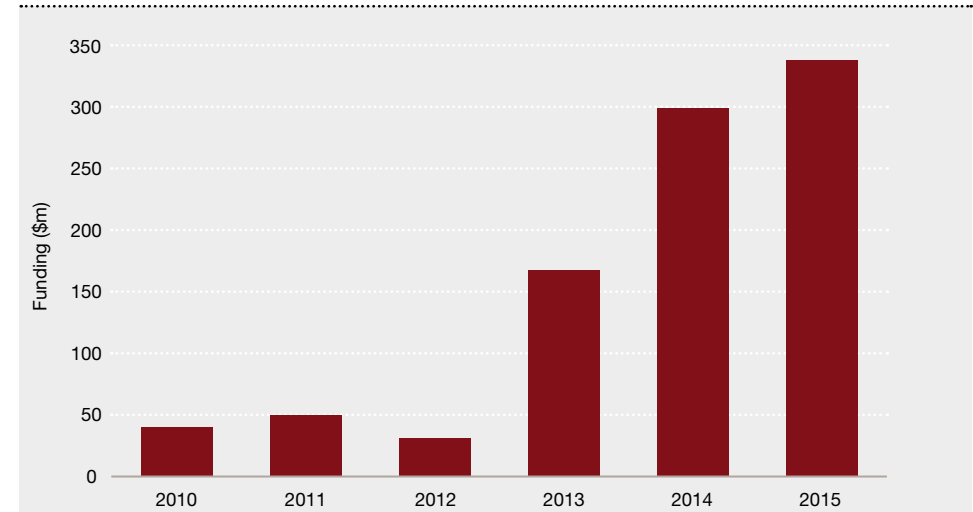
Figure 1: DeNovo FinTech companies* - Total Funding



Source: PwC DeNovo *Selection of relevant companies for Banking Services, Capital Markets, Investment Services, Insurance, and Transactions and payments Services

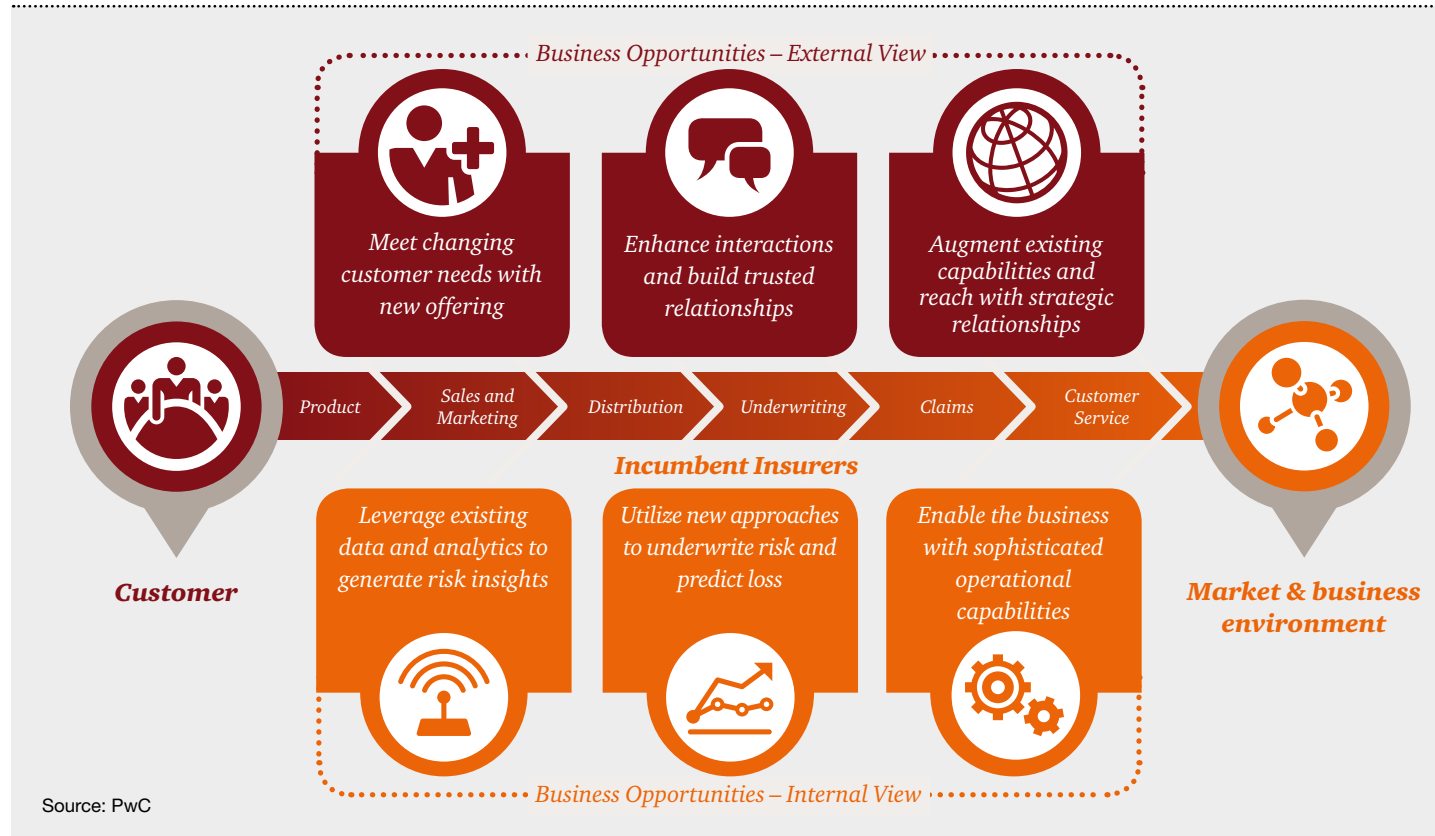
Figure 2: DeNovo InsurTech Companies* Funding

Source: PwC Denovo *Selection of relevant companies for Insurance Intermediaries, P&C, Life Insurance and Reinsurance

Figure 3: DeNovo Early Stage InsurTech Companies* activity

Source: PwC Denovo *Selection of relevant companies for Insurance Intermediaries, P&C, Life Insurance and Reinsurance

Figure 4: Business imperatives



Incumbent insurers have been able to slide by with incremental improvements. New entrants are demonstrating that approach isn't enough anymore.



As Figures 2 and 3 show, activity around early-stage InsurTech companies also has generated considerable buzz. Moreover, experienced insurance executives have joined startups, including Insureon and Lemonade, to help them develop new types of products and services, like small business aggregators and peer-to-peer insurance models. All of this indicates that investors and the industry are eager to get on board with early stage startups in order to meet the six areas of opportunity we illustrate above and describe in detail as follows.

1) Meet changing customer needs with new offerings

Customer now expect personalized insurance solutions. One size simply does not fit all anymore. Usage-based models are partially addressing these expectations, but the sharing economy also is challenging existing, more traditional insurance products. New players are able work from a clean slate and leverage a variety of available resources to fill market gaps. For example:

- Metromile, a startup, has developed a customer- (rather than risk-) centric value proposition for occasional drivers. It offers a low base rate and then charges a few cents per mile driven. Metromile also offers an app that provides personalized driving, navigation and diagnostic tips, and can even remind drivers where they parked. Furthermore, the company has entered into a partnership with Uber that allows drivers to switch from personal to Uber insurance.

- USAA has invested \$24M in Automatic Labs, a telematics platform that claims it will “connect your car to your life” and provides a full suite of integrated apps (including wearables).
- In the life sector, Sureify has developed a platform that allows insurers to underwrite life insurance based on lifestyle data inputs they obtain from wearables.
- In the peer-to-peer space, Lemonade claims to be the world’s first peer-to-peer carrier, but other companies like Guevara and InsPeer have been exploring variations of the same model. Bought by Many, a startup that uses social platforms in its go-to-market strategy, helps individuals join or even create affinity groups, as well as find insurance solutions for their specific needs across different product lines. Of note, leading Chinese insurer Ping An has partnered with Bought by Many to create personalized travel

insurance by leveraging social media data.

Some large insurers have decided to develop startups in-house. For example:

- MassMutual is using internal resources to build Haven, a new, stand-alone, direct-to-consumer business.

2) Enhance interaction and build trusted relationships

Established carriers have to manage increasing customer expectations and provide seamless service despite their large and complex organizations. In contrast, new market entrants are not burdened with large, entrenched bureaucracies and typically can more easily provide a seamless customer experience – often using not just new technology but new service concepts.

For example, self-directed robo-advisors are convenient, 24/7 advisors that provide ready access to information that can empower consumer decisions

about financial planning and investment management. And, investors have taken notice:

- Northwestern Mutual's acquired Learnvest, a leading robo-advisor with an estimated value of \$250+M.
- Other robo-advisors, such as FutureAdvisor, have been part of important deals, while others (including Betterment, Personal Capital and Wealthfront) have raised funds above \$100M.

Moreover, disintermediation and the emergence of new online channels is occurring in all lines of business:

- The Chicago-based startup Insureon has created an aggregator that specializes in micro and small businesses. It taps into existing profit pools that personal and commercial carriers are trying to reach.

- In order to become a B2C player in the digital small business market, ACE Group has recently taken a 24 percent (\$57.5M) stake in Coverhound, which enables customers to directly compare coverage options and pricing from various carriers.

3) Augment existing capabilities and reach with strategic relationships

The insurance industry historically has included intermediaries, service providers and reinsurers. In most cases, the carrier has led the business relationship because of its retail market position and scale. However, companies increasingly are peers. Accordingly, joint ventures and partnerships are a good way to augment existing capabilities and establish symbiotic relationships. For example:

- BIMA Mobile has partnered with mobile telecoms companies to provide life insurance solutions to uninsured segments in less developed countries.

It offers simple life, personal accident, and hospitalization insurance products on a pay as you go (PAYG) basis for a set time period (usually just a few months). Policyholders can obtain a pre-paid card and activate and manage their policy from a mobile phone.

- AXA has acquired an eight percent stake in Africa Internet Group for EUR75M, opening new opportunities for the company in unpenetrated markets.

New B2B2C entrants also are helping forge mutually beneficial relationships:

- Zenefits was one of the first to create new channels to connect insurers, brokers, employers and employees.
- Flock, which features broker managed benefits where plans can be designed to cover a range of options from enrollment to life events, offers what it says are "absolutely free" HR and benefits solutions.

4) Leverage existing data and analytics to generate risk insights

Established insurers traditionally have had the advantage over prospective newcomers of being able to leverage many years of detailed risk data. However, data – and new types of it – now can be captured in real-time and is available from external sources. As a result, there are new market entrants who have the ability to generate meaningful risk insights in very specific areas.

- Several internet of things (IoT) companies, including Mnubo, provide analytics that generate insights from sensor-based data and additional external data sources like telematics and real-time weather observation. The promise of the better risk assessment and management resulting from this model is likely to appeal to personal and commercial carriers.



- Facilitating this real-time data collection are drone startups, including Airphrame and Airware. Drones provide the ability to analyze risk with embedded sensors and image analytics. They also can operate in remote areas where it has traditionally been difficult for humans to tread, thereby saving time and increasing efficiency. In fact, American Family's venture capital arm is investing in drone technology in order to explore new approaches to access and capture risk data.
- In the life space, P4 Medicine (Predictive Preventive, Personalized and Participatory) offers insurers better insights that they can apply to life and disability underwriting. Lumiata is offering the potential for better predictive health capabilities, while Neurosky is developing next generation wearable sensors that can detect ECGs, stress levels, and even brain waves.

5) Utilize new approaches to underwriting risk and predicting loss

Protection-based models are shifting to more sophisticated preventive models that facilitate loss mitigation in all insurance segments. Sensors and related data analytics can identify unsafe driving, industrial equipment failure, impending health problems, and more. More deterministic models like the ones that now exist for crop insurance, are starting to emerge and new entrants are offering both risk prevention (not just loss protection) and a more service-oriented delivery model. For example:

- The South Africa-based company Discovery has a partnership with Human Longevity Inc. They are teaming to offer whole Exome, whole genome and cancer genome sequencing, to its clients in South Africa and the UK. Gene sequencing can identify risks before they manifest themselves as problems, but also raises

ethical questions. It has the potential to completely disrupt life underwriting, and places certain responsibility on the company to help customers manage genetic risks (while being careful about actually mandating lifestyle choices). But, on the whole, managing genetic risks in advance can benefit both the end-consumer and the insurer because, if they work together, they can better manage or even avoid long-term health problems and associated expenses.

- On the automotive side, Nauto, a San Francisco-based company, offers a system that provides visual context and telematics with actionable information about driving behavior, including distracted driving. The company claims that its system can help insurers design new pricing strategies and pinpoint areas of premium leakage that they otherwise may not notice.

6) Enable the business with sophisticated operational capabilities

Effective core systems enable insurers to operate at a large scale. Because of cost, establishing these systems has traditionally been a barrier to market entry. However, access to cloud-based core solutions has facilitated scalability and flexibility. Developments like this, combined with new developments like robotics and automation, have provided new market entrants compelling market differentiators.

As just one example, underwriting automation is now available in life and commercial lines (notably for small and medium businesses). Some carriers have adopted simplified processes and “Jet” underwriting, in which they leverage external data sources to expedite approval. This has resulted from the availability of risk insights that support new underwriting approaches.

Several companies are offering to optimize and augment processes via improved collaboration, artificial intelligence, and more. For instance:

- OutsideIQ offers artificial intelligence solutions via an as-a-service underwriting and claims workbench that uses big data to address complex risk-based problems.
- In addition, automating claims can improve efficiency and also effectively assess losses. Tyche offers a solution that uses analytics to help clients estimate the value of legal claims.



Implications: Think like a disruptor, act like a startup

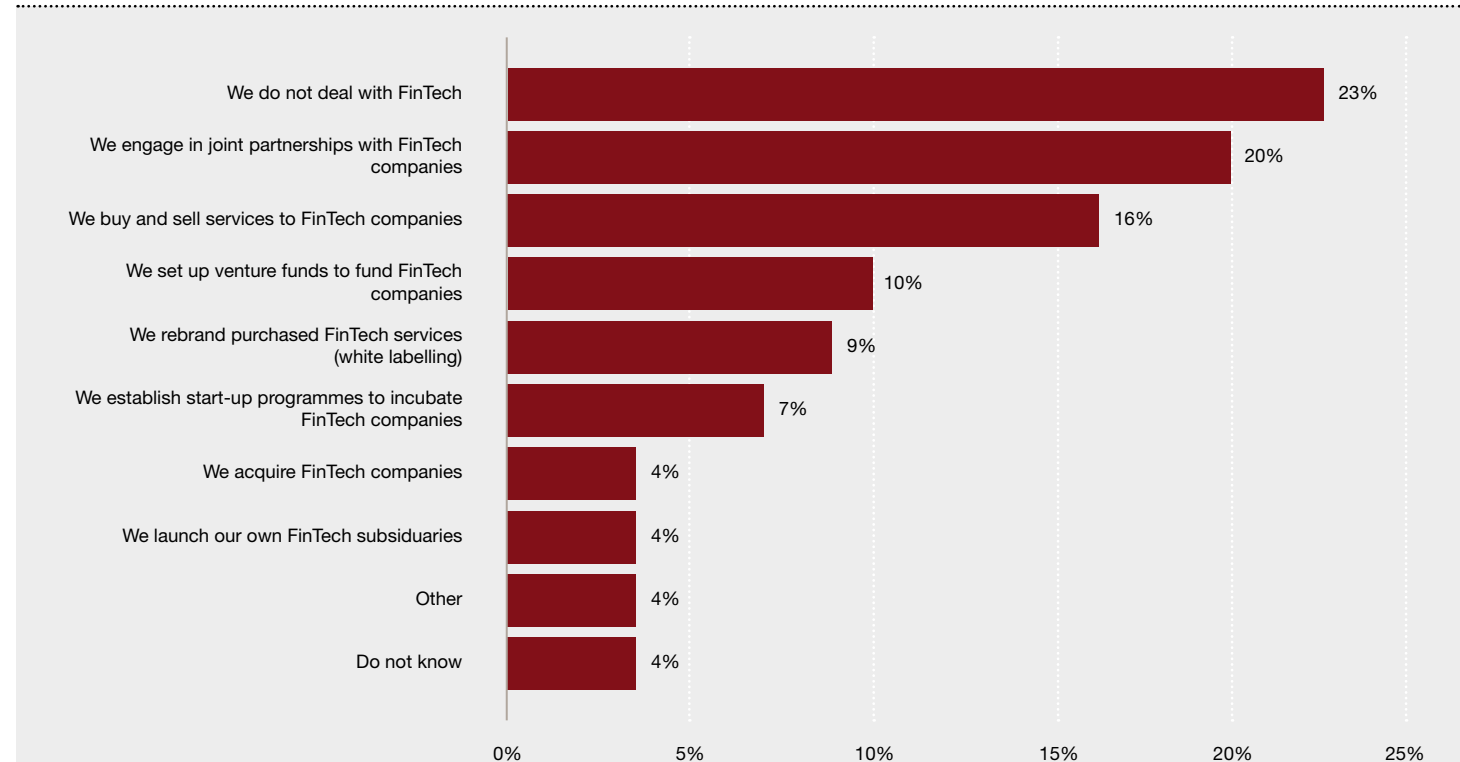
In a time when societal changes, technological developments, and empowered customers are changing the nature of the insurance business, established insurers need to determine how InsurTech fits in their strategies. The table to the right shows the various approaches insurers are taking.

More specifically, insurers are:

- **Exploring and discovering** – Savvy incumbents are actively monitoring new trends and innovations. Some of them are even establishing a presence in innovation hotspots (e.g., Silicon Valley) where they can learn about the latest developments directly and in real time.

Action Item: Plan an InsurTech immersion session for senior management. This should be an effective eye opener and facilitate

Figure 5: How do insurers deal with FinTech?



Source: 2016 PwC Global FinTech Survey



sharing of relevant insights on desired InsurTech solutions. Subsequently, FinTech analyst platforms can keep management up-to-date on the latest developments and market entrants.

- **Partnering to develop solutions** – Exploration should lead to the development of potential use cases that address specific business challenges. Incumbents can partner with startups to build pilots to test in the market.

Action Item: Select a few key business challenges, identify possible solutions, and find potential partners. A design environment (“sandbox”) will help boost creativity and also provide tools and resources for designing and fast prototyping potential solutions. This approach also can help establish the baseline and approach to building future InsurTech solutions.

- **Contributing to InsurTech’s growth and development** – Venture capital and incubator programs play an important role strategically directing key innovation efforts. Established insurers can play an active role by clearly identifying areas of need and opportunity and encouraging/working with startups to develop appropriate solutions.

Action Item: Define a strategy to direct startups’ focus on specific problems, especially those that otherwise might not be addressed in the short term. Incumbents should consider startup programs such as incubators, mechanisms to fund companies, and strategic acquisitions. (N.B.: It is vitally important to protect intellectual capital when imparting industry knowledge to startups.)

- **Developing new products and services** – Being active in InsurTech can help incumbents discover emerging coverage needs and risks that require new insurance products and services. Accordingly, they can refine – and even redefine – product portfolio strategy. This will result in the design of new risk models tailored to underserved and emerging markets.

Action Item: Take a close look at emerging technologies and social trends that could be business opportunities in order to define product strategy, determine required capabilities, and develop a plan to build a portfolio and seize market opportunities.

FinTech has become a buzzword, but whichever way the FinTech/ InsurTech market itself goes, the reality underpinning it is not a passing fad. Insurers that are actively involved with InsurTech in any of the ways we describe above stand to gain whichever way the market moves. They can use their capital and understanding of customers and the market to both inspire and exploit innovative technologies and correspondingly grow their business.

Artificial Intelligence in Insurance: Hype or reality?



The first machine age, the Industrial Revolution, saw the automation of physical work. We live in the second machine age¹, in which there is increasing augmentation and automation of manual and cognitive work.

This second machine age has seen the rise of artificial intelligence (AI), or “intelligence” that is not the result of human cogitation. It is now ubiquitous in many commercial products, from search engines to virtual assistants. AI is the result of exponential growth in computing power, memory capacity, cloud computing, distributed and parallel processing, open-source solutions, and global connectivity of both people and machines. The massive amounts and the speed at which structured and unstructured (e.g., text, audio, video, sensor) data is being generated has made a necessity of speedily processing and generating meaningful, actionable insights from it.

¹ A very short history of Data Science by Gil Press in Forbes, March 28, 2013.

Demystifying Artificial Intelligence



However, the term “artificial intelligence” is often misused. To avoid any confusion over what AI means, it’s worth clarifying its scope and definition.

- **AI and Machine Learning** – Machine learning is just one topic area or sub-field of AI. It is the science and engineering of making machines “learn.” That said, intelligent machines need to do more than just learn – they need to plan, act, understand, and reason.
- **Machine Learning & Deep Learning** – Machine learning and deep learning are often used interchangeably. Deep learning is actually a type of machine learning that uses multi-layered neural networks to learn. There

are other approaches to machine learning, including Bayesian learning, evolutionary learning, and symbolic learning.

- **AI and Cognitive Computing** – Cognitive computing does not have a clear definition. At best, it can be viewed as a subset of AI that focuses on simulating human thought process based on how the brain works. It is also viewed as a “category of technologies that uses natural language processing and machine learning to enable people and machines to interact more naturally to extend and magnify human expertise and cognition.”² Under either definition, it is a subset of AI and not an independent area of study.

- **AI and Data Science** – Data science³ refers to the interdisciplinary field that incorporates, statistics, mathematics, computer science, and business analysis to collect, organize, analyze large amounts of data to generate actionable insights. The types of data (e.g., text, audio, video) and the analytic techniques (e.g., decision trees, neural networks) that both data science and AI use are very similar. Differences, if any, may be in their purpose. Data science aims to generate actionable insights to business, irrespective of any claims about simulating human intelligence, while the pursuit of AI may be to simulate human intelligence.

² Why cognitive systems? <http://www.research.ibm.com/cognitive-computing/why-cognitive-systems.shtml#fbid=Bz-oGUjPkNe>

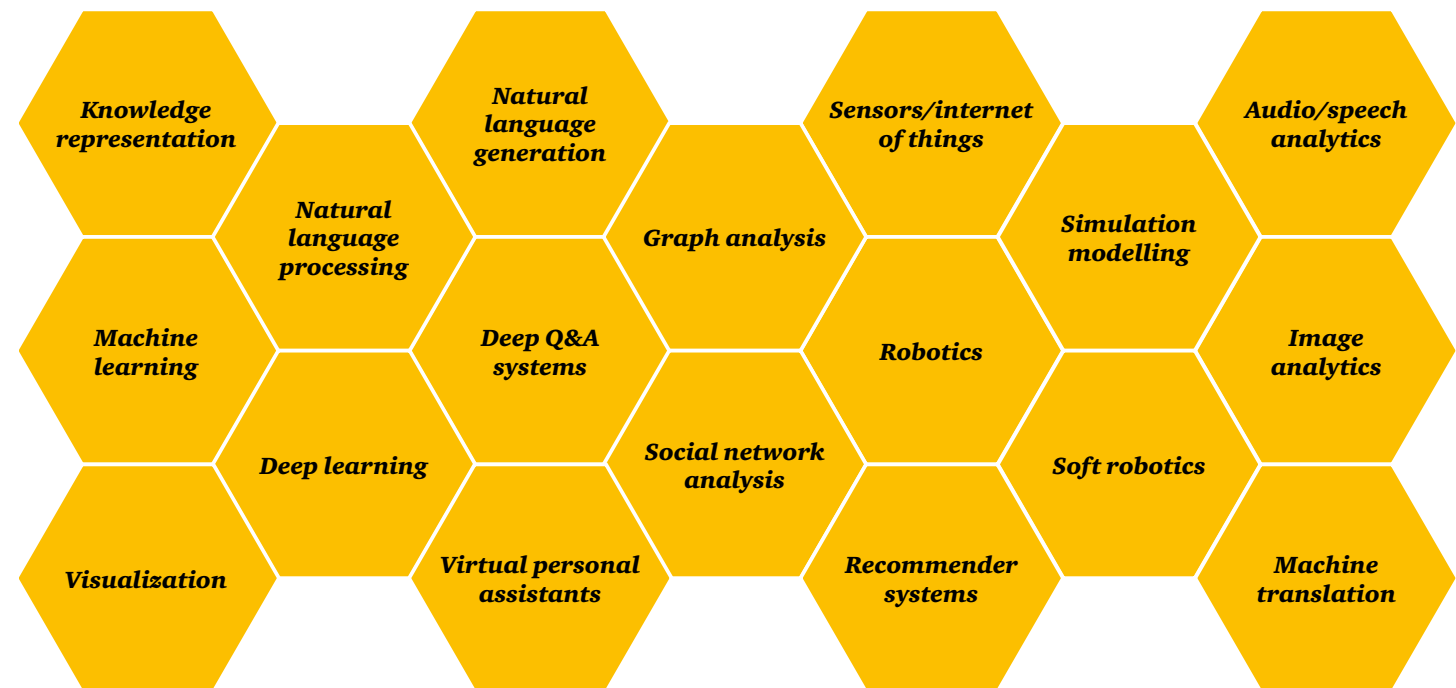
³ A very short history of Data Science <http://www.forbes.com/sites/gilpress/2013/05/28/a-very-short-history-of-data-science/#e91201269fd2>

Self-Driving Cars

When the US Defense Advanced Research Projects Agency (DARPA) ran its 2004 Grand Challenge for automated vehicles, no car was able to complete the 150-mile challenge. In fact, the most successful entrant covered only 7.32 miles. The very next year, five vehicles completed the course. Now, every major car manufacturer is planning to have a self-driving car on the road within the next five to ten years and the Google Car has clocked more than 1.3 million autonomous miles.

AI techniques – especially machine learning and image processing, help create a real-time view of what happens around an autonomous vehicle and help it learn and act from past experience. Amazingly, most of these technologies didn't even exist ten years ago.

Figure 1: Topic areas within artificial intelligence (non-exhaustive)



As the above diagram shows, artificial intelligence is not a monolithic subject area. It comprises a number of things that all add to our notion of what it means to be “intelligent.” In the pages that follow, we provide some examples of AI in the insurance industry; how it’s changing the nature of the customer experience, distribution, risk management, and operations; and what may be in store in the future.

Personalized customer experience: Redefining value proposition

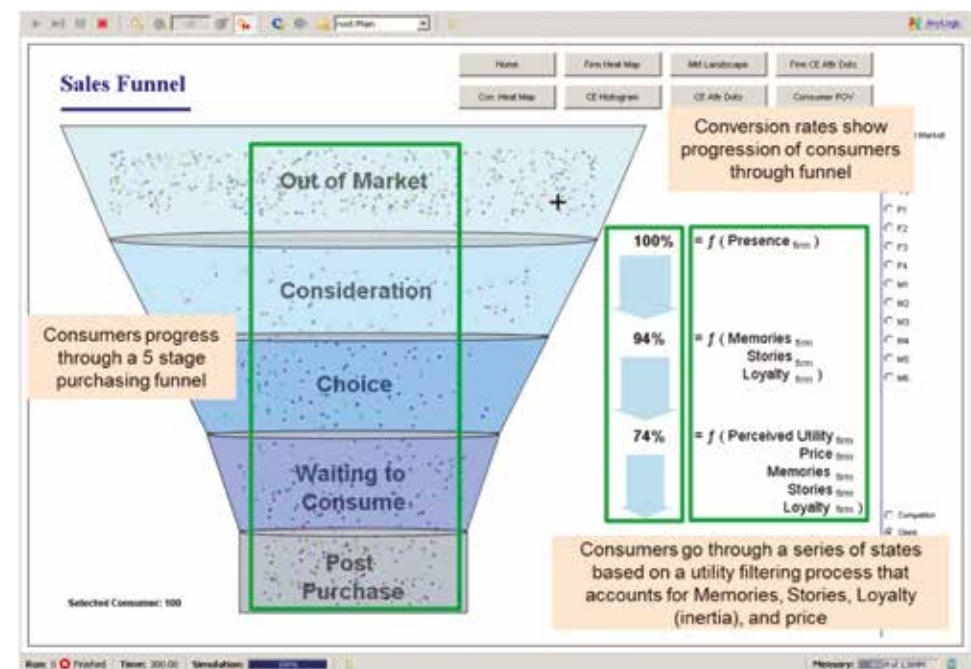
Customer experience

- **Early Stage:** Many insurers are already in the early stages of enhancing and personalizing the customer experience. Exploiting social data to understand customer needs and understanding customer sentiments about products and processes (e.g., claims) are some early applications of AI.
- **Intermediate Stage:** The next stage is predicting what customers need and inferring their behaviors from what they do. Machine learning and reality mining techniques can be used to infer millions of customer behaviors.
- **Advanced Stage:** A more advanced stage is not only anticipating the needs and behaviors of customers, but also personalizing interactions and tailoring offers. Insurers ultimately will reach a segment of one by using agent-based modeling to understand, simulate, and tailor customer interactions and offers.

AI in customer experience

- **Natural Language Processing:** Use of text mining, topic modeling, and sentiment analysis of unstructured social and online/offline interaction data.
- **Audio/Speech Analytics:** Use of call center audio recording to understand reasons for calls and emotion of callers.
- **Machine Learning:** Decision tree analysis, Bayesian learning and social physics can infer behaviors from data.
- **Simulation Modeling:** Agent-based simulation to model each customer and their interactions.

Figure 2: PwC's Experience Navigator: Agent-based Simulation of Experience



Digital advice: Redefining distribution

Financial advice

- **Early Stage:** Licensed agents traditionally provide protection and financial product advice. Early robo-advisors have typically offered a portfolio selection and execution engine for self-directed customers.
- **Intermediate Stage:** The next stage in robo-advisor evolution is to offer better intelligence on customer needs and goal-based planning for both protection and financial products. Recommender systems and “someone like you” statistical matching will become increasingly available to customers and advisors.
- **Advanced Stage:** Understanding of individual and household balance sheets and income statements, as well as economic, market and individual scenarios in order to recommend, monitor and alter financial goals and portfolios for customers and advisors.

AI in financial advice

- **Natural Language Processing:** Text mining, topic modeling and sentiment analysis.
- **Deep QA Systems:** Use of deep question answering techniques to help advisors identify the right tax advantaged products.
- **Machine Learning:** Decision tree analysis and Bayesian learning to develop predictive models on when customers need what product based on life-stage and life events.
- **Simulation Modeling:** Agent-based simulation to model the cradle-to-grave life events of customers and facilitate goal-based planning.
- **Virtual Personal Assistants:** Mobile assistants that monitor the behavior, spending, and saving patterns of consumers.

Figure 3: PwC's \$ecure: AI-based Digital Wealth Management Solution





Automated & augmented underwriting: Enhancing efficiencies

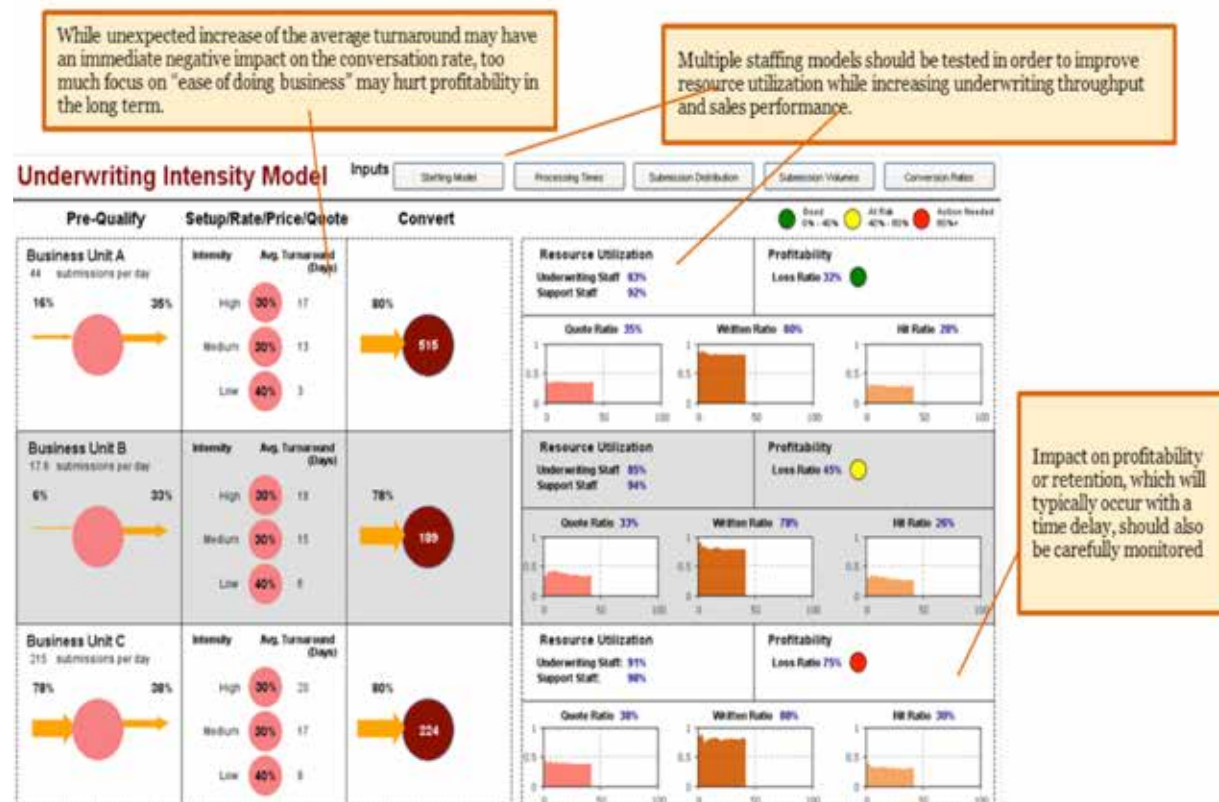
Underwriting

- **Early Stage:** Automating large classes of standardized underwriting in auto, home, commercial (small & medium business), life, and group using sensor (internet of things – IoT) data, unstructured text data (e.g., agent/advisor or physician notes), call center voice data and image data using Bayesian learning or deep learning techniques.
- **Intermediate Stage:** Modeling of new business and underwriting process using soft-robotics and simulation modeling to understand risk drivers and expand the classes of automated and augmented (i.e., human-performed) underwriting.
- **Advanced Stage:** Augmenting of large commercial underwriting and life/disability underwriting by having AI systems (based on NLP and DeepQA) highlight key considerations for human decision-makers. Personalized underwriting by company or individual takes into account unique behaviors and circumstances.

AI in underwriting

- **Deep QA Systems:** Using deep question answering techniques to help underwriters look for appropriate risk attributes.
- **Soft robotics:** Use of process mining techniques to automate and improve efficiencies.
- **Machine Learning:** Using decision tree analysis, Bayesian networks, and deep learning to develop predictive models on risk assessment.
- **Sensor/Internet of Things:** Using home and industrial IoT data to build operational intelligence on risk drivers that feed into machine learning techniques.
- **Simulation Modeling:** Building deep causal models of risk in the commercial and life product lines using system dynamics models.

Figure 4: Discrete-event modeling of new business and underwriting



Robo-claims adjuster: Reducing claims processing time and costs

Claims	AI in claims
<ul style="list-style-type: none"> • Early Stage: Build predictive models for expense management, high value losses, reserving, settlement, litigation, and fraudulent claims using existing historical data. Analyze claims process flows to identify bottlenecks and streamline flow leading to higher company and customer satisfaction. • Intermediate Stage: Build robo-claims adjuster by leveraging predictive models and building deep learning models that can analyze images to estimate repair costs. In addition, use sensors and IoT to proactively monitor and prevent events, thereby reducing losses. • Advanced Stage: Build claims insights platform that can accurately model and update frequency and severity of losses over different economic and insurance cycles (i.e., soft vs. hard markets). Carriers can apply claims insights to product design, distribution, and marketing to improve overall lifetime profitability of customers. 	<ul style="list-style-type: none"> • Soft robotics: Use of process mining techniques to identify bottlenecks and improve efficiencies and conformance with standard claims processes. • Graph Analysis: Use of graph or social networks to identify patterns of fraud in claims. • Machine Learning: In order to determine repair costs, use of deep learning techniques to automatically categorize the severity of damage to vehicles involved in accidents. Use decision tree, SVM, and Bayesian Networks to build claims predictive models. • Sensor/Internet of Things: In order to mitigate risk and reduce losses, use of home and industrial IoT data to build operational intelligence on frequency and severity of accidents. • Simulation Modeling: Building deep causal claims models using system dynamic and agent-based techniques and linking them with products and distribution.

Emerging risk identification through man-machine learning



“People worry that computers will get too smart and take over the world, but the real problem is that they’re too stupid and they’ve already taken over the world.”

Pedro Domingos
author of *The Master Algorithm*

Emerging Risks & New Product Innovation – Identifying emerging risks (e.g., cyber, climate, nanotechnology), analyzing observable trends, determining if there is an appropriate insurance market for these risks, and developing new coverage products in response historically have been creative human endeavors. However, collecting, organizing, cleansing, synthesizing, and even generating insights from large volumes of structured and unstructured data are now typically machine learning tasks. In the medium term, combining human and machine insights offers insurers complementary, value generating capabilities.

Man-Machine Learning – Artificial general intelligence (AGI) that can perform any task that a human can is still a long way off. In the meantime, combining human creativity with mechanical analysis and synthesis of

large volumes of data – in other words, man-machine learning (MML) – can yield immediate results.

For example, in MML, the machine learning component sifts through daily news from a variety of sources to identify trends and potentially significant signals. The human learning component provides reinforcement and feedback to the ML component, which then refines its sources and weights to offer broader and deeper content. Using this type of MML, risk experts (also using ML) can identify emerging risks and monitor their significance and growth. MML can further help insurers to identify potential customers, understand key features, tailor offers, and incorporate feedback to refine new product introduction. (N.B.: Combining machine learning and agent-based modeling will enable these MML solutions.)

Computers that “see”

In 2009, Fei-Fei Li and other AI scientists at Stanford AI Laboratory created ImageNet, a database of more than 15 million digital images, and launched the ImageNet Large Scale Visual Recognition Challenge (ILSVRC). The ILSVRC awards substantial prizes to the best object detection and object localization algorithms.

The competition has made major contributions to the development of “deep learning” systems, multi-layered neural networks that can recognize human faces with over 97% accuracy, as well as recognize arbitrary images and even moving videos. Deep learning systems now can process real-time video, interpret them, and provide a natural language description.

Artificial intelligence: Implications for insurers



AI's initial impact primarily relates to improving efficiencies and automating existing customer-facing, underwriting and claims processes. Over time, its impact will be more profound; it will identify, assess, and underwrite emerging risks and identify new revenue sources.

- **Improving Efficiencies** – AI is already improving efficiencies in customer interaction and conversion ratios, reducing quote-to-bind and FNOL-to-claim resolution times, and increasing new product speed-to-market. These efficiencies are the result of AI techniques speeding up decision-making (e.g., automating underwriting, auto-adjudicating claims, automating financial advice, etc.).
- **Improving Effectiveness** – Because of the increasing sophistication of its decision-making capabilities, AI soon will improve target prospects in order to convert them to customers, refine risk assessment and risk-based pricing, enhance claims adjustment, and more.

Over time, as AI systems learn from their interactions with the environment and with their human masters, they are likely to become more effective than humans and replace them. Advisors, underwriters, call center representatives, and claims adjusters likely will be most at risk.

- **Improving Risk Selection & Assessment** – AI's most profound impact could well result from its ability to identify trends and emerging risks, and assess risks for individuals, corporations, and lines of business. Its ability to help carriers develop new sources of revenue from risk and non-risk based information also will be significant.

Starting the Journey



Most organizations already have a big data & analytics or data science group. (We have addressed elsewhere³ how organizations can create and manage these groups.) The following are specific steps for incorporating AI techniques within a broader data science group.

1. Start from business decisions –

Catalogue the key strategic decisions that affect the business and the related metrics that need improvement (e.g., better customer targeting to increase conversion ratio, reducing claims processing time to improve satisfaction, etc.).

2. Identify appropriate AI areas –

Solving any particular business problem very likely will involve more than one AI area. Ensure that you map all appropriate AI areas (e.g., NLP, machine learning, image analytics) to the problem you want to address.

3. Think big, start small –

AI's potential to influence decision making is huge, but companies will need to build the right data, techniques, skills, and executive decision-making to exploit it. Have an evolutionary path towards more advanced capabilities. AI's full power will become available when the AI platform continuously learns from both the environment and people (what we call the “dynamic insights platform”).

4. Build training data sets –

Create your own proprietary data set for training staff and measuring the accuracy of your algorithms. For example, create your own proprietary database of “crash images” and benchmark the accuracy of your existing algorithms against them. You should consistently aim to improve the accuracy of the algorithms against comparable human decisions.

5. Pilot with Parallel Runs –

Build a pilot of your AI solution using existing vendor solutions or open source tools. Conduct parallel runs of the AI solution with human decision makers. Compare and iteratively improve the performance/accuracy of AI solution.

6. Scale & Manage Change –

Once the AI solution has proven itself, scale it with the appropriate software/hardware architecture, and institute a broad change management program to change the internal decision-making mindset.

³ Data & Analytics: Creating or Destroying Shareholder Value? Paul Blase and Anand Rao, PwC Report, 2015.

Are you fit for growth?



When it comes to scrutinizing costs, most insurance companies can say “Been there, done that. Got the t-shirt.” Managers are familiar with the refrain from above to trim here and cut there. The typical result is flirtation with the latest management trends like lean, outsourcing and offshoring, and others. However, the results tend to be the same. Budgets reflect last year’s spend plus or minus a couple of percent in the same places.

Meanwhile, managers attempt to develop strategies to capitalize on the trends reshaping the industry – customer-centricity, analytics, digital platforms and disruptive delivery and distribution models. Yet, after all of the energy companies exert to reduce expenses, there is often little left over to spend on these strategic initiatives.

Why do you need to look at your expense structure?



A variety of pressures have led carriers to improve their cost structures. In all parts of the market, low interest rates and investment returns are forcing carriers to scrutinize costs in order to improve return on capital, or even to maintain profitability to stay in business.

After all of the energy companies exert to reduce expenses, there is often little left over to spend on strategic initiatives.

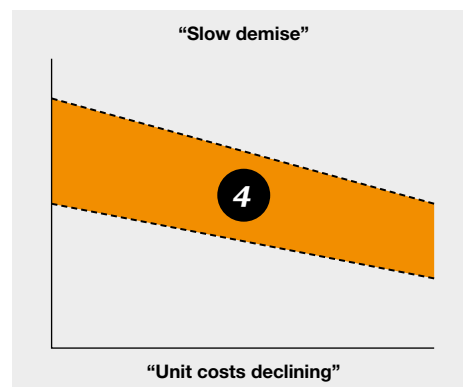
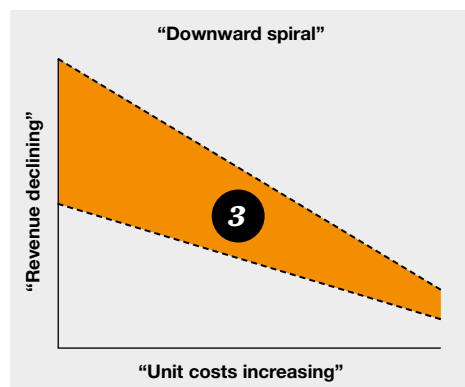
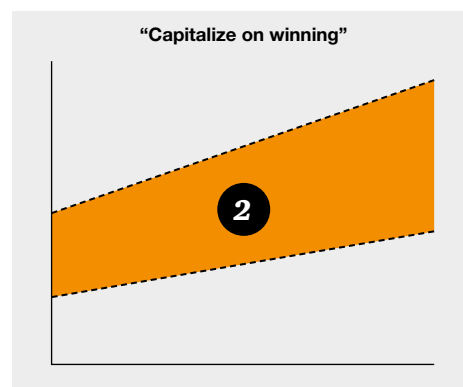
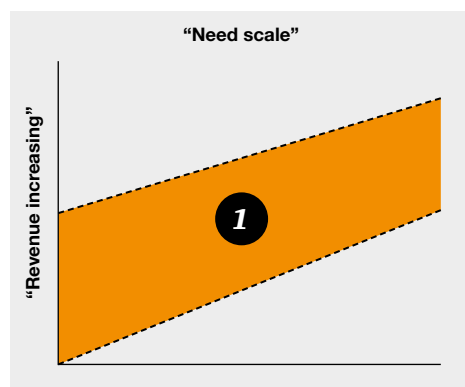
P&C carriers with lower-cost distribution models have been able to channel investments into advertising and take share, forcing competitors to reduce costs in order to defend their positions. Consolidation in the health, group and reinsurance sectors have forced smaller insurers to either a) explore more scalable cost structures or b) put themselves up for sale. For life & retirement companies, lower interest rates have taken a toll on the competitiveness of investment-based products.

This spells trouble for companies that have not adequately sorted out their expense structure. And a shrinking insurance company sooner or later will run afoul of regulators, ratings agencies, distributors, and customers. Even if expenses are shrinking but revenue is declining more quickly, then the downward spiral will accelerate. It is virtually impossible to maintain profitability without growth. Expenses

increase with inflation, tick upward with each additional regulatory requirement, and can spike dramatically when attempting to meet customer and distributor demands for improved experiences and value-added services.

The reality is companies have to grow, and that's difficult in a mature market, especially in times when "the market" isn't helping. What's the key to success then? In short, growth comes from better capabilities, service, customer-focus, and products – all of which require on-going investment in capabilities.

Figure 1: Reducing Costs: “Been there, done that?”



Description

- 1** You’re winning in the marketplace, but you’ll need scale to win over the longer term.
- 2** You’re winning in the marketplace and your cost structure is helping.
- 3** You’re losing in the marketplace and are not, or cannot control costs.
- 4** You’re losing in the marketplace, and though it doesn’t happen often, your costs are improving.

Potential path forward

- New channels, partnerships and business models that significantly change the cost curve.
- Capitalize on the opportunity to knock out competitors or leverage capabilities into new markets.
- BPO may be an option. Or a merger. You’ll need to move fast because distribution, regulators and rating agencies will not stand idly by.
- Consider all the options, including initiatives with room to get more strategic about both growth and cutting costs.

The math doesn't work unless you're finding ways to spend less in unimportant areas and allocate those savings to more important ones. If your answer to any of the following questions is "no," then it's important that you look at your allocation of resources for capital, assets and spend:

- Are you making your desired return on capital?
- Are your growth levels acceptable?
- Do you have an expense structure that lets you compete at scale?

The transformation of insurers from clerk-intensive, army-sized bureaucracies to highly-automated financial and service operations has been a decades-long process. The industry has invested heavily enough in standardization and automation that one would expect it to be a highly efficient, well-oiled machine. However, when we look under the covers, we see an industry with a considerable amount of customization and one-offs.

In other words, it behaves more like cottage industry than an industrial, scalable enterprise.

We know that expenses are difficult to measure, let alone control. But why are they so intractable? As we intimate above, the issue is scale. The industry's poorly kept secret is that insurers, even larger ones, have sold many permutations of products with many different features. All of these have risk, service, compensation, accounting, and reporting expenses, as well as coverage tails so long the company can't help but operate below scale.

Why are expenses so intractable? The issue is scale.

What defines operating at scale for you? A straightforward way to answer this question is to consider whether or not you're operating at a level of efficiency on par with or better than the best in

the marketplace. Where do you draw the line? The top 10 to 15 percent? The top 20 to 25 percent? Next, ask yourself if you, in fact, are operating at scale. Remove large policies and reinsurance that disguise operating results, sort out how many differentiated service models you are supporting. Are you in the bottom half-of-performers? Are you in the top 50 percent, but not the top quartile? Are you in the top quartile, but not the top decile?

Every insurer needs a more versatile and flexible expense structure in order to fully operate at scale and be more competitive. We explain immediately below why this is especially urgent now.

Competition is changing



Customers now have access to a wealth of information and are increasingly using it to make more informed choices. New market entrants are establishing a foothold in direct and lightly assisted distribution models that make wealth management services more affordable for more market segments. Name brands are establishing customer mind-share with extensive advertising. FinTech is shifting the way we think about adding capabilities and creating new capabilities near real time. Outsourcers are increasingly more proficient and are investing in new technologies and capabilities that only the largest companies can afford to do at scale.

The competitive landscape will continue to change. More products will be commoditized – after all, consumers prefer an easy-to-understand product at a readily comparable price. As they do now, stronger companies will go after competitors with less name recognition, scale, and lower ratings. Customer research and behavioral analytics will more accurately discern life-long customer behavior and buying patterns for most lifestyles and socio-demographic groups. The role of advisors will change, but customers of all ages will still like at least occasional advice, especially when their needs – and the products they purchase to meet them – are complex.

Table stakes are greater each year and now include internal and external digital platforms, data-derived service (and self-service) models, omni-channel distribution models, and extensive use of advanced analytics. The need to improve time-to-market has never been more important. Scale matters. Because they

can increase scale, partners also matter even more than in the past. If they have truly complementary capabilities, new partners can help you improve your cost curve because you can leverage their scale to improve yours (and vice-versa).

In conclusion, all companies – regardless of scale – need to ensure that their capital and operating spend aligns with their strategy and capabilities and the ways they choose to differentiate themselves in the market. In this transformative time, the ones that can't or won't do this will fall increasingly behind the market leaders.

Implications: Leave no stone unturned



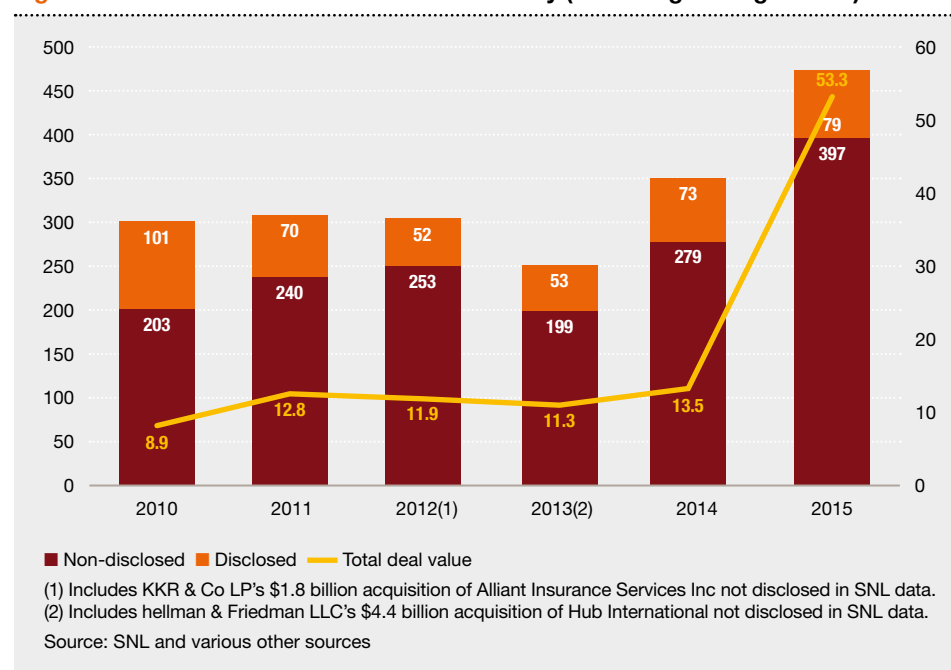
- Managing expenses is a job that is never finished. Even if you've already looked at expenses, it doesn't mean that you get a pass from scrutinizing them afresh. You will always have to keep rolling that particular boulder up the hill. Acknowledging that you could always manage expenses better is the first step to doing it well.
- Every company needs to invest. Every company needs to be "fit for growth." You will need to increase expenses where it helps you compete and decrease it where it doesn't. Admittedly, this is hard to do, but the companies that don't do it successfully will be left by the wayside.
- Identify and commit to the cost-curves that get you to scale. This may require new thinking about sourcing partners and which evolving capabilities hold the most promise for the future of the company. How transformative do your digital platforms need to be? Can the cloud help you operate more efficiently and economically? How constraining is your culture, management and governance?

The insurance deals market



Insurance M&A activity in the US rose to unprecedented levels in 2015, surpassing what had been a banner year in 2014. There were 476 announced deals in the insurance sector, 79 of which had disclosed deal values with a total announced value of \$53.3 billion. This was a significant increase from the 352 announced deals in 2014, of which 73 had disclosed deal values with a total announced value of \$13.5 billion. Furthermore, unlike prior years where US insurance deal activity was isolated to specific subsectors, 2015 saw a significant increase in deal activity in all industry subsectors.

Figure 1: Announced US Insurance Deal Activity (excluding managed care)



The largest deal of the year occurred in the property & casualty space when Chubb Corporation agreed on July 1, 2015 to merge with Ace Limited. The size of the combined company, which assumed the Chubb brand, rivals that of other large global P&C companies like Allianz and Zurich. This merger by itself exceeded the total insurance industry disclosed deal values for each of the previous five years and represented 53 percent of the total 2015 disclosed deal value for the industry. However, even without the Chubb/Ace megamerger, total 2015 deal value was still nearly double that of 2014.

While the insurance industry saw a significant increase in megadeals in 2015, there also was a significant increase in deals of all sizes across subsectors.

Figure 2: Top 10 US Insurance Deals Announced FY15 (by value) – Excluding Managed Care

Rank	Announcement	Target Name	Buyer Name	Buyer Nation	Sector	Value (\$ in millions)	% of Total
1	7/1/2015	Chubb Corporation	ACE Limited	Switzerland	Property & Casualty	28,300	53.1%
2	6/10/2015	HCC Insurance Holdings Inc	Tokio Marine & Nichido Fire Insurance Co Ltd	Japan	Property & Casualty	7,500	14.1%
3	7/23/2015	StanCorp Financial Group Inc	Meiji Yasuda Life Insurance Company	Japan	Life & Health	5,002	9.4%
4	8/11/2015	Symetra Financial Corporation	Sumitomo Life Insurance Company	Japan	Life & Health	3,732	7.0%
5	11/9/2015	Fidelity & Guaranty life	AB Infinity Holding Inc	China	Life & Health	1,583	3.0%
6	12/18/2015	Rural Community Insurance Agency Inc	Zurich American Insurance Company	USA	Property & Casualty	1,050	2.0%
7	9/9/2015	Employee benefits business	Sun Life Assurance Company of Canada	Canada	Life & Health	940	1.8%
8	9/17/2015	Lifestyle protection insurance business	AXA	France	Life & Health	536	1.0%
9	6/5/2015	AmeriLife Group LLC	JC Flowers & Co LLC	USA	Life & Health	390	0.7%
10	1/20/2015	QBE US Agencies Inc	Alliant Specialty Insurance Services Inc	USA	Property & Casualty	300	0.6%
Top 10 deal value						49,333	92.63%
Total disclosed deal value						53,258	100.0%

Source: SNL financial



Disclosed deal value (\$billion)

2014 (all deals)

\$13.5

2015 ACE-Chubb merger

\$28.3

2015 (all deals)

\$53.3

The 2015 Chubb-ACE merger represented 55% of the disclosed deal value of all 2015 deals and more than twice the disclosed deal value of all 2014 deals. 2015 disclosed deal value was four times that of 2014; discounting the ACE-Chubb merger, it was still almost double that of 2014.

Tokio Marine & Fire Insurance Company's acquisition of HCC Insurance Holdings, announced in June of 2015, was the second largest announced deal with a value of \$7.5 billion. The purchase price represented a 36 percent premium to market value prior to the deal announcement.

The largest deal in the life space (and third largest deal in 2015) was Meiji Yasuda Life Insurance Company's acquisition of Stancorp Financial Group for \$5 billion. The purchase price represented 50 percent premium to market value prior to the deal announcement and continued what now appears to be a trend with Asian domiciled financial institutions (particularly from Japan and China) acquiring mid-sized life and health insurance companies by paying significant premiums to public shareholders.

The fourth and fifth largest announced deals in 2015 were very similar to the Stancorp acquisition. They also were acquisitions of publicly held life insurers by foreign domiciled financial institutions seeking an entry into the US market. In each of these instances, the acquirers paid significant acquisition premiums.

In 2014, we anticipated this trend of inbound investment – particularly from Japan and China – and expect it to continue in 2016 as foreign domiciled financial institutions seek to enter or expand their presence in the US market.

Independent of these megadeals, the overwhelming number of announced deals in the insurance sector relate to acquisitions in the insurance brokerage space. These deals are significant from a volume perspective, but many are smaller transactions that do not tend to have announced deal values.

In addition to the disclosed transactions listed in the tables above, there were a number of transactions involving insurance companies with significant premium exposure in the US, but which are domiciled offshore and therefore excluded from US deal statistics. Some examples from 2015 include the acquisition of reinsurer PartnerRe Ltd. by Exor N.V. for \$6.6 billion, the \$4.1 billion acquisition of Catlin Group Limited by XL Group plc, and Fosun's acquisition of the remaining 80 percent interest of Ironshore Inc. for \$2.1 billion.

We expect continued inbound investment as foreign institutions seek to enter or expand their presence in the US.

Drivers of deal activity



- Inbound foreign investment** – Asian financial institutions looking to gain exposure to the US insurance market made the largest announced deal of 2014 and four of the five largest announced acquisitions in the insurance sector in 2015. Their targets were publicly traded insurance companies, which they purchased at significant premiums to their market prices. Foreign buyers have been attracted to the size of the US market, and have been met by willing sellers. Aging populations, a major issue in Japan, Korea, and China, as well as an ambition to become global players, will continue to drive Asian buyer interest in the US. However, the ultimate amount of foreign megadeals in the US may be limited by the number of available targets that are of desired scale and available for acquisition.
- Sellers' market** – Coming out of the financial crisis, there were many insurance companies seeking to sell off non-core assets and capital intensive products. This created opportunities for buyers, as these businesses were being liquidated well below book values. Starting in 2014, the insurance sector became a sellers' market (as we mention above, largely because of inbound investment). Many of the large announced deals in 2015 involved companies that were not for sale, but were the direct result of buyers' unsolicited approaches. This aggressiveness and the significant market premiums that buyers have paid on recent transactions should be cause for US insurance company boards to reassess their strategies and consider selling off assets.
- Private equity/family office** – Private equity demand for insurance brokerage companies continued in 2015, even as transaction multiples and valuations of insurance brokers increased significantly. However, we have also seen increased interest among private equity investors in acquiring risk bearing life and P&C insurance companies. This demand has grown beyond the traditional PE-backed insurance companies that have focused primarily on fixed annuities and traditional life insurance products. Examples include 1) Golden Gate Capital-backed Nassau Reinsurance Group Holdings' announced acquisition of both Phoenix Companies and Universal American Corp's traditional insurance business; 2) HC2's acquisition of the long term care business of American Financial Group Inc.; and 3) Kuvare's announced acquisition of Guaranty Income Life Insurance Company. We anticipate private equity activity will continue in both insurance brokerage and carrier markets in 2016.
- Consolidation** – While there has been some consolidation in the insurance industry over the past few years, it has been limited primarily to P&C



reinsurance. With interest rates near historic lows and minimal increases in premium rates over the last few years, we expect the economic drivers of consolidation to increase in the industry as a whole as companies seek to eliminate costs in order to grow their bottom lines.

- **Regulatory developments** – MetLife recently announced plans to spin off its US retail business in an effort to escape some of the requirements related to its systemically important financial institution (SIFI) designation and thereby make the company's regulatory oversight consistent with most other US insurers'. MetLife's announcement was followed by fellow SIFI AIG's announcement that it intended to divest itself of its mortgage insurance unit, United Guaranty. The two other non-bank financial institutions that have been designated as SIFIs, GE Capital and Prudential Financial, have differing plans. While GE Capital has been in the process of divesting most

of its financial services businesses, Prudential Financial has yet to announce any plans to sell off assets.

In other developments, the new captive financing rules the NAIC enacted in 2015 and the implementation of Solvency II in Europe may put pressure on other market participants to seek alternative financing solutions or sell US businesses in 2016 and beyond.

- **Technological innovations** – The insurance industry historically has lagged behind other industries in technological innovation (for example, many insurance companies use multiple, antiquated, product-specific policy administration systems). Unlike in banking and asset management, which have been significantly disrupted by technology-driven non-bank financing platforms and robo-advisors, the insurance industry has not yet experienced significant disruption to its traditional business model

from technology-driven alternatives. However, we believe that technological innovations that will significantly alter the way insurance companies do business – likely in the near future. Many market participants are focusing on being ahead of the curve and are seeking to acquire technology that will allow them to meet new customer needs while optimizing core insurance functions and related cost structures.

Implications



- We expect inbound foreign investment – especially from Japan and China – to continue fueling US deals activity for the foreseeable future. If there is an impediment to activity, it likely will not be a lack of ready buyers, but instead a lack of suitable targets.
- Private equity will remain an important player in the deals market, not least because it has expanded its targets beyond brokers to the industry as a whole.
- The need to eliminate costs in order to grow the bottom line will remain a primary economic driver of consolidation.
- Regulatory developments are driving divestments at most, though not all, non-bank SIFIs. This remains a space to watch, as a common insurance industry goal is to avoid federal supervision.
- Actual and impending technological disruption of traditional business models is likely to lead to increased deals activities as companies look to augment their existing capabilities and take advantage of – rather than fall victim to – disruption.

Market segments

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The promise and pitfalls of cyber insurance



Cyber insurance is a potentially huge but still largely untapped opportunity for insurers and reinsurers. We estimate that annual gross written premiums will increase from around \$2.5 billion today¹ to \$7.5 billion by the end of the decade.² Accordingly, many insurers and reinsurers are looking to take advantage of what they see as a rare opportunity to secure high margins in an otherwise soft market.

However, wariness of cyber risk is widespread. Many insurers don't want to cover it at all. Others have set limits below the levels their clients seek, and also have imposed restrictive exclusions and conditions – such as state-of-the-art data encryption or 100% updated security patch clauses – which are difficult for any business to maintain. Given the high cost of coverage, the limits imposed, the tight attaching terms and conditions, and the restrictions on claims, many companies question if their cyber insurance policies provide real value.

Insurers are relying on tight policy terms and conditions and conservative pricing strategies to limit their cyber risk exposures. But how sustainable is this approach as clients start to question the value of their policies and concerns widen about the level and concentration of cyber risk exposures?

1 Speech by John Nelson, Lloyd's Chairman, at the AAMGA, 28 May 2015 (<https://www.lloyds.com/lloyds/press-centre/speeches/2015/05/vision-2025-and-aamga>)

2 PwC estimate

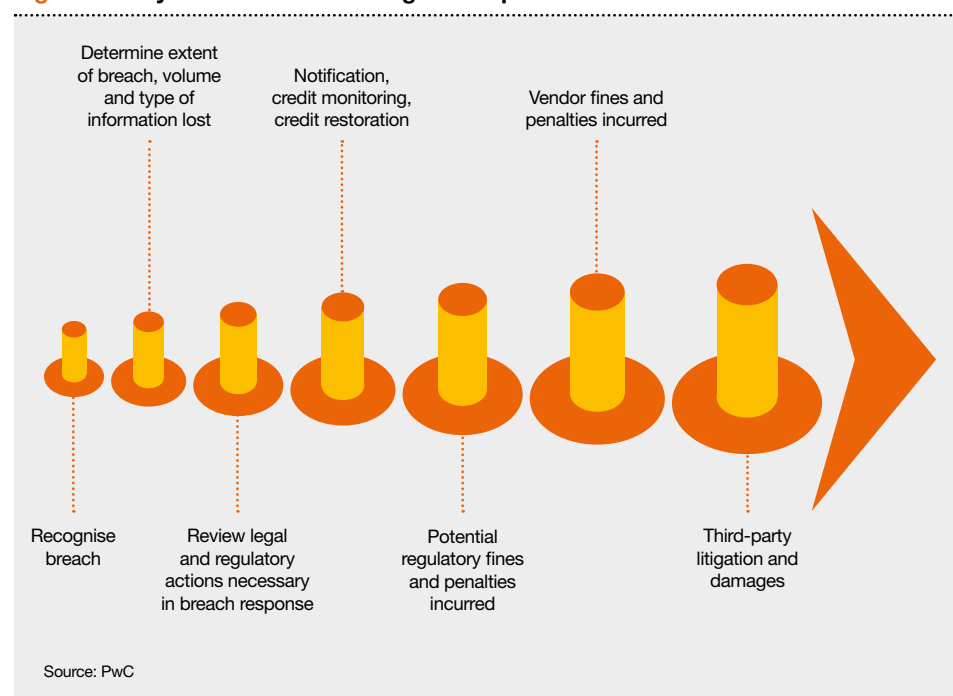
The risk pricing challenge

The biggest challenge for insurers is that cyber isn't like other risks. There is limited publicly available data on the scale and financial impact of attacks and threats are very rapidly changing and proliferating. Moreover, the fact that cyber security breaches can remain undetected for several months – even years – creates the possibility of accumulated and compounded future losses.

While underwriters can estimate the cost of systems remediation with reasonable certainty, there isn't enough historical data to gauge further losses resulting from brand impairment or compensation to customers, suppliers, and other stakeholders. And, although the scale of potential losses is on par with natural catastrophes, cyber incidents are much more frequent. Moreover, many insurers face considerable cyber exposures within their technology, errors & omissions, general liability, and other existing business lines. As a result, there are growing concerns about both the concentrations of cyber risk and the ability of less experienced insurers to withstand what could become a rapid sequence of high loss events.

So, how can cyber insurance be a more sustainable venture that offers real protection for clients, while safeguarding insurers and reinsurers against damaging losses?

Figure 1: A cyber breach has a long and unpredictable tail



Real protection at the right price

We believe there are eight ways insurers, reinsurers and brokers could put cyber insurance on a more sustainable footing and take advantage of the opportunities for profitable growth.

- 1. Clarify risk appetite** – Despite the absence of robust actuarial data, it may be possible to develop a reasonably clear picture of total maximum loss and match it against risk appetite and tolerances. Key inputs include worst-case scenario analysis. For example, if your portfolio includes several US power companies, then what losses could result from a major attack on the US grid? What proportion of claims would your business be liable for? What steps could you take now to mitigate losses by reducing risk concentrations in your portfolio to working with clients to improve safeguards and crisis planning?

Asking these questions can help insurers judge which industries to focus on, when to curtail underwriting, and where there may be room for further



coverage. Moreover, even if an insurer offers no standalone cyber coverage, it should gauge the exposures that exist within its wider property, business interruption, general liability and errors & omissions coverage.

Even if an insurer offers no standalone cyber coverage, it should gauge the exposures that exist within its wider property, business interruption, general liability and errors & omissions coverage.



Cyber risks are increasingly frequent and severe, loss contagion is hard to contain, and risks are difficult to detect, evaluate, and price.

2. Gain broader perspectives – Bringing in people from technology companies and intelligence agencies can lead to more effective threat and client vulnerability assessments. The resulting risk evaluation, screening, and pricing process could be a partnership between existing actuaries and underwriters who focus on compensation and other third-party liabilities, and technology experts who concentrate on data and systems. This is similar to the partnership between CRO and CIO teams that many companies are developing to combat cyber threats.

3. Create tailored, risk-specific conditions – Many insurers currently impose blanket terms and conditions. A more effective approach would be to make coverage conditional on a fuller and more frequent assessment of the policyholder's vulnerabilities and agreement to follow advised steps. This could include an audit of processes,

responsibilities and governance within a client's business. It also could draw on threat assessments by government agencies and other credible sources to facilitate evaluation of threats to particular industries or enterprises. Another possible component is exercises that mimic attacks to test both weaknesses and plans for response. As a result, coverage could specify the implementation of appropriate prevention and detection technologies and procedures.

This approach can benefit both parties. Insurers will have a better understanding and control of risks, lower exposures, and more accurate pricing. Policyholders will be able to secure more effective and economical protection. Moreover, the assessments can help insurers forge a closer, advisory relationship with clients.

4. Share data more effectively – More effective data sharing is the key to greater pricing accuracy. For reputational reasons, many companies are wary of admitting breaches, and insurers have been reluctant to share data due to concerns over loss of competitive advantage. However, data breach notification legislation in the US, which is now set to be replicated in the EU, could help increase available data volumes. Some governments and regulators have also launched data sharing initiatives (e.g., MAS in Singapore and the UK's Cyber Security Information Sharing Partnership). In addition, data pooling on operational risk, through ORIC, provides a precedent for more industry-wide sharing.

5. Develop real-time policy updates

– Annual renewals and 18-month product development cycles will need to give way to real-time analysis and rolling policy updates. This dynamic approach could be likened to the updates on security software or the approach taken by credit insurers to dynamically manage limits and exposures.

6. Consider hybrid risk transfer –

Although the cyber reinsurance market is relatively undeveloped, a better understanding of evolving threats and maximum loss scenarios could encourage more reinsurers to enter the market. Risk transfer structures likely would include traditional excess of loss reinsurance in the lower layers, and the development of capital market structures for peak losses. Possible options might include indemnity or industry loss warranty structures, and/or some form of contingent capital. Such capital market structures could

prove appealing to investors looking for diversification and yield. Fund managers and investment banks could apply reinsurers' and/or technology companies' expertise to develop appropriate evaluation techniques.

7. Improve risk facilitation –

Considering the complexity and uncertainty surrounding cyber risk, there is a growing need for coordinated risk management solutions that bring together a range of stakeholders, including corporations, insurance/reinsurance companies, capital markets, and policymakers. Some form of risk facilitator – possibly brokers – will need to bring together all parties and lead the development of effective solutions, including the cyber insurance standards that many governments are keen to introduce.



Evaluating and addressing cyber risk is an enterprise-wide matter – not just one for IT and compliance.

8. Enhance credibility with in-house safeguards –

If an insurer can't protect itself, then why should policyholders trust it to protect them? If the sensitive policyholder information that an insurer holds is compromised, then it likely would lead to a loss of customer trust that would be extremely difficult to restore. The development of effective in-house safeguards is essential in sustaining credibility in the cyber risk market, and trust in the enterprise as a whole.



Key questions for insurers as they assess their own and others' security

From the board on down, insurers need to ask:

- Who are our adversaries, what are their targets, and what would be the impact of an attack?
- We can't defend everything, so what are the most important assets we need to protect?
- How effective are our processes, assignment of responsibilities, and systems safeguards?
- Are we integrating threat intelligence and assessments into proactive cyber defense programs?
- Are we adequately assessing vulnerabilities against the tactics and tools perpetrators use?



Implications



- Even if an insurer chooses not to underwrite cyber risks explicitly, exposure may already be part of existing policies. Therefore, all insurers should identify the specific triggers for claims, and the level of potential exposure in policies that they may not have written with cyber threats in mind.
- Cyber coverage that is viable for both insurers and insureds will require more rigorous and relevant risk evaluation informed by more reliable data and more effective scenario analysis. Partnerships with technology companies, cyber specialist firms, and government are potential ways to augment and refine this information.
- Rather than simply relying on blanket policy restrictions to control exposures, insurers should consider making coverage conditional on regular risk assessments of the client's operations and the actions they take in response to the issues identified in these regular reviews. This more informed approach can enable insurers to reduce uncertain exposures and facilitate more efficient use of capital while offering more transparent and economical coverage.
- Risk transfer built around a hybrid of traditional reinsurance and capital market structures offer promise to insurers looking to protect balance sheets.
- To enhance their own credibility, insurers need to ensure the effectiveness of their own cyber security. Because insurers maintain considerable amounts of sensitive data, any major breach could severely impact their market credibility both in the cyber risk market and elsewhere.

Commercial insurance: cyclicalality and opportunity on the road to 2020



Beyond the secular forces that we describe in our [Future of Insurance series](#)¹, more immediate and cyclical issues will be shaping the insurance executive agenda in 2016.² Commercial (re)insurers face tough times ahead with underwriting margins that are being pressured by softening prices and a potentially volatile interest rate environment.

In recent years, reserve releases, generally declining frequency and severity trends (except for specific lines of business such as commercial auto) and lower-than-average catastrophe losses have allowed commercial insurers to report generally strong underwriting results. However, redundant reserves are being/have been depleted, and the odds of a continued benign catastrophe environment are low. For example, one insurance executive recently observed that, “The odds of this long of a lucky streak occurring is less than 1%.”

Therefore, and with varying degrees of focus, commercial P&C (re)insurers have been mitigating the risk environment by taking a variety of strategic actions. In 2016 and beyond, they will need to accelerate their strategic efforts in four key areas: 1) Core systems and data quality, 2) New products, pricing discipline, and terms & conditions, 3) Corporate development, and 4) Talent management.

The commercial insurance market has had generally strong underwriting results in recent years, but this is likely to change – potentially very soon.

¹ Available at <http://www.pwc.com/gx/en/industries/financial-services/insurance/future-of-insurance.html>.

² For more information see Stephen O'Hearn, Jamie Yoder and Anand Rao, “Insurance 2020 & beyond: Necessity is the mother of reinvention,” PwC white paper, 2015, <http://www.pwc.com/gx/en/industries/financial-services/insurance/publications/insurance-2020-necessity-mother-of-reinvention.html>

1 Core systems and data quality



93% of Insurance CEOs – a higher percentage than anywhere else in financial services – see data mining and analysis as more strategically important for their business than any other digital technology.³ Nevertheless, many commercial insurers operate with networks of legacy systems that complicate the timely extraction and analysis of data. This is no longer acceptable and leading insurers are continuing to transform their system environments as a result. Significantly, these transformations do not focus solely on specific systems for policy administration, claims, finance, etc.

In order to ensure timely quality data across the entire commercial P&C value chain, they also focus on how the various systems integrate with each another.

To put this in context, consider that when a dollar of premium is collected, it not only “floats” across time until it is paid out in claims, but it also “floats” across a variety of functions and their related systems: billing systems process premium dollars; ceded reinsurance systems process treaty and facultative transactions; policy administration systems (PAS) process endorsement changes; claims systems process indemnity and expense payments; actuarial systems process pricing and reserving analyses; and financial systems process GAAP, statutory and management reporting. Code structures underlie each of these systems. If all of the codes are not rationalized on an enterprise-wide basis, then (re)insurers will not be able to efficiently accumulate and analyze data, which will put them at a competitive disadvantage relative to more efficient insurers.⁴

Disconnected data environments not only prevent the timely and efficient extraction and analysis of internal data, but also complicate the focused and efficient use of external data, especially unstructured data. Such “big data” is becoming increasingly popular considering the insights insurers can derive from it.⁵ However, such insights only become actionable to the extent that companies can assess the external environment in the context of the internal environment; in other words, to the extent that big data can enhance or otherwise inform the internal data’s findings.

If all functional and systemic codes are not rationalized on an enterprise-wide basis, then it is very difficult to efficiently accumulate and analyze data.

³ PwC 18th Annual CEO Survey, 2015, <http://www.pwc.com/gx/en/ceo-survey/>

⁴ For more information see Joseph Calandro, Jr., Francois Ramette and Richard Pankhurst, “Creating an underwriting information advantage through cross-functional efficiency,” Property & Casualty 360, 02/15/2015, <https://www.propertycasualty360.com/2015/02/12/creating-an-underwriting-information-advantage-thr>

⁵ For more information see Scott Busse, et al., Doing more with more: How P&C insurers are creating an information advantage with 3rd party data, PwC white paper, 2014, <https://www.pwc.com/us/en/insurance/publications/assets/pwc-third-party-data-insurance.pdf>

2 New products, pricing discipline and terms & conditions



Commercial (re)insurers are generally not known as product innovators, but that sells them short. Global trends are driving opportunities for product innovation in commercial insurance. Global supply chains increase the need for worldwide insurance coverage and complicate the analysis of business interruption as more stakeholders are involved across disparate locations and regulatory environments.

Technological advancements, such as drones and driverless cars, present new sources of liability that need to be considered relative to existing general liability and auto offerings. The increased use of independent contractors to fulfill on-demand distribution models poses questions about who is liable for their actions and if the company needs to provide workers' compensation coverage. As the profile of cyber-related risks increases, the need for cyber-related commercial insurance grows, thereby offering numerous opportunities for product innovation.⁶

Cyber risk, as is the case with other new insurable exposures, can be difficult to underwrite as frequency and severity data are nascent and therefore both pricing and risk accumulation models are in various stages of development. Furthermore, legal precedents have not been established about who is liable and for how much in the event of a claim. Therefore, prescient carriers are carefully

⁶ For more information see Joseph Calandro, et al., "Managing cyber risks with insurance: Key factors to consider when evaluating how cyber insurance can enhance your security program," PwC white paper, 2014, <https://www.pwc.com/us/en/increasing-it-effectiveness/publications/assets/pwc-managing-cyber-risks-with-insurance.pdf>

tracking and comparing their cyber pricing practices and coverage grants with those of key competitors. To be effective, such practices should be consistent with existing price, terms and conditions, and monitoring processes. For example, leading insurers regularly (i.e., at least quarterly and typically monthly) track actual-to-expected premiums and rates. Such analyses are even more effective when insurers compare them to key competitors' rules and rates.

Insights from this kind of analyses apply to both new and existing products. The underwriting cycle is inherently a pricing phenomenon and (re)insurers that have both greater and more timely product and pricing insights have a competitive advantage relative to those insurers that do not. To explain, in addition to lower rates, the “soft” parts of the underwriting cycle tend to be characterized by the loosening of policy terms and conditions, which can erode profitability just as quickly as inadequate prices can.

Therefore, the most competitive insurers carefully and continuously track the adequacy of policy terms and conditions. While recurring actuarial analyses and standardized reporting can monitor pricing, identifying new or evolving risks and monitoring the use of modified terms and conditions is inherently qualitative (e.g., through audits/account reviews or underwriting referrals). Therefore, this analysis can be time consuming, especially for insurers with suboptimal PAS environments.⁷ However, almost all companies find it well-worth the effort.⁸

In addition to lower rates, the “soft” parts of the underwriting cycle tend to be characterized by the loosening of policy terms and conditions, which can erode profitability just as quickly as inadequate prices can.



⁷ For information on PAS see Imran Ilyas, et al. “Fire, ready aim: Don’t miss the point of a policy administration transformation,” PwC Viewpoint, September 2011, <http://www.pwc.com/us/en/financial-services/publications/viewpoints/policy-administration-system-transformation.html>

⁸ Joseph Calandro, Jr., Katie Klutts and Francois Ramette, “Balancing transactional engagement and portfolio management,” Property & Casualty 360, 02/28/2015, <http://www.propertycasualty360.com/2015/10/28/balancing-transactional-engagement-and-portfolio-m>

3 Corporate development



The combination of historically low interest rates, favorable frequency and severity trends, and the relative lack of severe catastrophes has resulted in record policyholder surplus in P&C commercial insurance. Executives have a number of options on how to deploy surplus, one of which is corporate development.

“Corporate development” commonly means mergers and acquisitions, but it can encompass book purchases/rolls, renewal rights and runoff purchases, etc. Determining the best option depends on many factors, including but not limited to purchase price, competitive implications, and an assessment of how the acquired assets and any related capabilities can complement/enhance existing underwriting capabilities.

Accordingly, some insurers are beginning to augment traditional due diligence processes (such as financial diligence, tax diligence, and IT diligence) with underwriting-specific diligence to help ensure value realization over time.⁹

If a corporate development opportunity offers underwriting capabilities that at least align to and preferably enhance existing capabilities, then it can help facilitate a smooth integration, thereby mitigating underwriting risk (a key cycle management consideration).

Using surplus for corporate development is much more effective if traditional due diligence processes are augmented with underwriting-specific diligence that helps promote value realization over time.

⁹ For more information see Joseph Calandro, Jr., et al, “Underwriting Due Diligence Roadmap For Insurance M&A,” Carrier Management, 04/18/2013, <http://www.carriermanagement.com/features/2013/04/08/103893.htm>

4 Talent management



For the most part, commercial underwriting decisions cannot be fully automated because they require qualitative judgement. Therefore, it is natural for underwriting talent to be a top priority. However, insurance executives have lamented to us (and others) that it is a major challenge for the industry to attract and retain knowledgeable personnel.

Two trends make commercial insurance talent management particularly challenging: First, experienced underwriters are leaving the industry. According to one study, “The number of employees aged 55 and over is 30 percent higher than any other industry – and that, coupled with retirements, means the industry needs to fill 400,000 positions by 2020.”¹⁰ Second, underwriting talent is relatively difficult to attract. For example, according to The Wall Street Journal, insurance ranks near the top of the list of least-desirable industries according to recent graduates. The image of the industry is that it is generally behind the times and offers little in terms of career development. Therefore, developing a performance-driven culture that enables the recruitment, development, and retention of underwriting talent is more crucial than ever.¹¹

To help accomplish this, tools and resources that both educate and empower underwriters can articulate career development opportunities, performance expectations and career paths throughout their careers. This is important because the expectations in commercial underwriting are high and the nature of the job requires a diverse range of skills (e.g., analytical, relational, sales, financial, and risk). Furthermore, the best commercial underwriters are entrepreneurial, which employers should highlight as they recruit and manage their underwriting staffs.

Commercial insurers face a looming talent crunch and have to find ways to present themselves as – and actually be – places where young people can have rewarding careers.

¹⁰ “The great talent gap,” Intelligent Insurer, 11/20/2013, <http://www.intelligentinsurer.com/article/the-great-talent-gap>

¹¹ Please see the “Top Insurance Industry Issues in 2016” section on the aging workforce.

Implications



- The relatively strong underwriting results of recent years are likely to soften in the coming year. Accordingly, commercial underwriters will need to accelerate their strategic efforts in
 - 1) Core systems and data quality,
 - 2) New products, pricing discipline, and terms & conditions,
 - 3) Corporate development, and
 - 4) Talent management.
- Core systems transformations go beyond individual competencies. In order to ensure timely, quality data across the entire commercial P&C value chain, insurers also are focusing on how the various systems integrate with one another in order to enjoy timely and efficient extraction and analysis of internal data, and focused and efficient use of external data (especially unstructured data).
- There are real opportunities to create new products, but to maintain profitability, insurers must exercise pricing discipline and carefully and continuously track the adequacy of policy terms and conditions. Although this is hard work, it does pay off.
- Current surpluses have enabled insurers to invest in corporate development and some of them have been prescient enough to augment traditional due diligence processes (such as financial diligence, tax diligence, and IT diligence) with underwriting-specific diligence to help promote value realization over time.
- Commercial insurers – like many other kinds of insurers – have an aging workforce and are facing an impending talent crunch. Automation cannot replace the qualitative judgment that is necessary for effective underwriting. Therefore, it is vital for insurers to develop a performance-driven culture that enables the recruitment, development, and retention of younger underwriting talent.

Group insurance in flux



The group insurance market shows real promise but, as of yet, most carriers are still trying to determine the best path forward. Moving from being in a quiet sector to the front lines of new ways of doing business has shaken the industry and confronted it with challenges – and opportunities – many could not have foreseen even a decade ago.

For starters, let's take a look at where the market is right now. Three recent trends in particular are having a profound impact on it:

- The Affordable Care Act, which has led health carriers to increase their focus on non-major medical aspects of the parts of their business that the legislation has not affected. In turn, this has led to intensifying competition.
- Consumerism, which has resulted largely from workers' increasing responsibility for choosing their own benefits. This has created disruption as employees/consumers have become increasingly dissatisfied with the gap between group insurance service, information, and advice and what they have come to expect from other industries.

- The aging distribution force, which means that experienced brokers/agents are leaving the work force and are being replaced by inexperienced producers at decreasing rates or not being replaced at all.

The impact of the above has led group players – which historically have been conservative in their market strategies – to focus on aggressively driving profitable growth. To do this, they are concentrating on four key areas: 1) growing their voluntary business, 2) streamlining their operating models, 3) re-shaping their distribution strategies, and 4) making significant investments in technology.

Group insurance is no longer a quiet sector of the industry but instead is in the front lines of developments in customer-centricity and technological innovation.



Growing the voluntary business –

The voluntary market has been of interest to traditional group insurance carriers for more than two decades, but the success of its core employer paid group insurance business has resulted in a lack of robust voluntary capabilities. However, with employers shifting more costs to employees, voluntary products have become a key way to manage group benefit costs while expanding the portfolio of employee products.

Some carriers are expanding their voluntary businesses by offering a modified employer paid group product in which the employee “checks the box” to pay an incremental premium and receive additional group coverage (e.g., long term disability (LTD), life, and dental). Other carriers are exploring models where employees can sign up for an individual policy at a special premium rate. The former example is a traditional voluntary product, while the latter example is a traditional worksite product.

For most carriers, adding the traditional voluntary product is fairly straightforward because it is still a product that the group underwrites. However, more carriers are looking into the worksite product (which AFLAC and Colonial Life & Accident have executed particularly well) because, with the passage of the Affordable Care Act, some see a potential opportunity to reach small businesses that previously may not have been interested in group benefits.

Streamlining operating models –

Group carriers also are trying to develop streamlined, cost effective, customer-centric operating models. The traditional group insurance operating model has been built around product groups such as group LTD, short-term LTD, dental, etc. However, the product-based model is inefficient because it increases service costs, slows speed to market, and fails to support the holistic views of the customer that enables carriers to serve customers in the ways they prefer.

Group insurers are now investing both time and capital to understand how to remove inefficient product-focused layers of their operations and streamline their processes in order to profitably grow. Many have focused on enrollment, which cuts across products and is a frequent source of frustration for everyone. Carriers are frustrated because they can spend days and weeks trying to ensure that everyone is properly enrolled in the right plan. Moreover, what should be a fairly straightforward, automated process often can require considerable manual intervention to ensure that employees are properly enrolled. In the meantime, employees are frustrated with recurring requests for information and the slowness of the enrollment process. Employers are frustrated by the additional time and effort that they have to expend and the poor enrollee experience. Producers become frustrated because the employer often holds them accountable for the recommended carriers’ performance.

Reshaping distribution strategies –

In terms of distribution, private exchanges initially promised to connect group carriers with the right customers using extremely efficient technology platforms. As a result, many group carriers joined multiple exchanges expecting that this model would put them on the cusp of the next wave of growth. However, success has proven more elusive than they expected, largely because they’ve spread themselves too thin across too many, often unproven exchanges. And, while private exchanges still offer great potential, many carriers have now begun to rethink their private exchange strategies with the realization that the channel is not yet a fully mature group insurance platform.

Investing in technology – Whether group carriers are focusing most on entering the voluntary market, streamlining operations or refining their private exchange strategies, success in all these areas depends on technology. Group technology investments have lagged behind the



rest of the industry. The reasons for this range from a lack of proven technology solutions that truly focus on the group market to deliberate underinvestment and the resulting reliance on “heroic acts” acts and dedication of committed employees to drive growth, profits, and customer satisfaction.

However, viable technological solutions now exist – and they are probably the most critical element in the march toward effective data integration, efficient customer service, and ultimately profitable growth. Every facet of the business –underwriting, marketing, claims, billing, policy administration,

enrollment, renewal, and more – is critically dependent upon technological solutions that have been designed to meet the unique needs of the group business and its customers. Prescient group carriers understand this and have been investing in developing their own solutions and partnering with on-shore and offshore solutions providers to fill gaps in non-core areas.

Whatever their primary focus – growth, operations, or distribution – a necessary element for success is up-to-date and effective technology.

A market in flux



In conclusion, group insurance is in a time of transition. Major mergers and acquisitions have already started to reshape the market landscape, and existing players are likely to use acquisitions and divestitures as a way to refine their market focus.

Moreover, new entrants are looking to exploit openings in the group space by providing the kind of focus, cutting-edge product offerings, and service capabilities that many incumbents have not. These developments show group's promise. The winners will be the companies that wisely refine their business models and effectively employ technology to meet the unique needs of new, consumer driven markets.

Implications

- We will continue to see group carriers focus on the voluntary market, especially traditional group underwritten products. They will look to not only round out their product bundle by providing solutions that meet consumer needs, but also integrate their offerings with other employee solutions like wealth and retirement products.
- Group insurers will continue to aggressively streamline processes to promote productive and profitable customer interactions.
- Private exchange participation strategy needs to align with target markets goals, including matching products with appropriate exchanges. Focusing on participation means that group carriers avoid spreading themselves too thin trying to support the various exchanges (often with manual back end processes).
- Group carriers can no longer compete with antiquated and inadequate technology. Fortunately, there are now group-specific solutions that can make modernization a reality, not just an aspiration.



Operations

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The Aging Workforce

Lessons for the insurance industry from America's Pastime



In the 1988 film “Bull Durham,” Nuke LaLoosh, a young pitcher with great talent but no professional experience (or maturity), embarks on his professional career with the minor league Durham Bulls.

Crash Davis, an experienced though aging catcher near the end of his playing days, is responsible for grooming LaLoosh into a more polished player. Davis and the team’s coaches and managers spend an entire summer trying to teach LaLoosh the finer points of baseball, and – as importantly – think and comport himself like a professional. LaLoosh, Davis, and the Bulls have many ups and downs as the season progresses, but eventually, Davis’ mentoring of LaLoosh is effective and the young pitcher is poised to go onto to bigger and better things, just as Davis prepares to retire from the game.

There are many similarities between the insurance industry and “America’s Pastime,” not the least of which is how to manage and solve the challenges of maintaining a pipeline of young talent. The insurance industry can learn a great deal from baseball’s tried and true strategy of developing talent organically through the minor leagues.

Moreover, professional teams – which, like insurers, are in a data-driven business – have invested significantly in data analytics in order to operate more economically and efficiently with the resources they already have. Utilizing similar strategies, the insurance industry can build an effective strategy for recruitment, training, and development, as well as for sustainable operations, thereby establishing a platform for long-term success.

Too many Crash Davises and not enough Nuke LaLooshes



The insurance industry is facing a looming crisis – a rapidly aging workforce. According to the US Bureau of Labor Statistics, the number of insurance professionals aged 55 years and older has increased 74 percent in the last ten years; by 2018, a quarter of insurance industry employees will be within five to ten years of retirement. Moreover, by 2017, one in every three US employees will be a Millennial, and Millennials will comprise 75 percent of the global workforce by 2025.¹

These workforce changes mirror the demographic shifts in the US population. The US Census Bureau estimates that, in the US alone, 10,000 baby boomers (those born between 1946 and 1964) will turn age 65 each and every day until 2030. While the expected number of Americans age 65 and older who leave the workforce will grow 75 percent by 2050, the expected number of American workers age 25 to 54 will grow by only two percent.²

Most US employers are woefully unprepared for the business realities of an aging workforce and face a potentially massive loss of skilled, knowledgeable workers. Companies that effectively recruit, train and develop dedicated future staff and leaders will differentiate themselves and set themselves up for success into the future. Like professional baseball teams, they are trying to find ways to maximize existing talent and replenish it. Also like baseball teams, they are attempting to more effectively

utilize analytics to improve functional efficiencies (e.g., scouting in baseball and claims/underwriting in insurance), as well as continue to automate routine/recurring processes (e.g., data collection in both industries).

Recruit

Traditionally, baseball teams have employed scouts who are responsible for finding and evaluating amateur baseball talent. The scouts talk with each other and college and high school coaches to develop a network of contacts and resources.

Human resources recruiters are the scouting departments of the insurance industry. Similar to baseball, where major league teams can either hire qualified free agents or grow talent organically through the minor league system, insurance recruiters have two options – to hire experienced candidates or recruit and develop raw talent through effective training programs. (For the purposes of

¹ For a detailed look at employment in the insurance industry, please see: <http://data.bls.gov/search/query/results?cx=013738036195919377644%3A6ih0hfrgl50&q=insurance+industry+workforce>

² For more on the insurance industry, please see: <http://www.census.gov/econ/isp/sampler.php?naicscode=52&naicslevel=2>

this report, we focus below on acquiring and retaining young talent.)

Effective college campus and entry level hiring programs are just the first step in growing talent organically. Organic growth can only occur with the development of robust recruiting programs that focus on two key things:

- Improving the insurance industry brand. Show Millennials that insurance isn't boring. Insurance isn't just about adjusting claims or underwriting risks and it's not necessarily an office-bound industry. It offers technical, sales, account management, data analytics, and new product development jobs similar to those in other industries that have a more "hip" image.
- Educating talent about the variety of roles available in the industry. Letting young people know there are rewarding career paths available in insurance (and working with them

to make the promise a reality) is more likely to result in long-term employment.

To recruit Millennials, companies must adapt their recruiting strategies. Companies must think like this generation, supplementing recruiting on college campuses and at career fairs with outreach via social media and online talent communities.

In "Bull Durham," Annie Savoy says, "Well, actually, nobody on this planet ever really chooses each other. I mean, it's all a question of quantum physics, molecular attraction, and timing." However, as an employer, you DO choose employees and need to be in the best possible position to make them want to choose you.

Train

Training new employees, much like training baseball rookies, is critical to retaining talent. Companies that find ways to deliver cost-effective, interesting, and meaningful training in fundamentals, coupled with mentorship programs that pair young employees with experienced ones, will create sustainable leadership pipelines. Of note, companies that utilize eLearning, which appeals to Millennials much more than conference room meetings and presentations, will especially benefit:

- Company perceived as cutting-edge. A newly-hired Millennial trained via an easy-to-follow eLearning system that is technologically up-to-date, with quality graphics and sound, will perceive that the company is on the cutting edge of technology.
- Millennials feel respected. Companies that develop a high-quality, customized eLearning program, catered to the way

Millennials learn, will demonstrate value and respect for the time and talents of their employees and build loyal, hard-working and fulfilled employees.

- Cost-effective and agile. eLearning is well-suited to today's work environment, which is fast-paced and characterized by constant change. Easily customizable and cost-effective, eLearning easily keeps pace with the rate at which technology, work procedures, and workers develop.

When asked if he's heard of Walt Whitman, Nuke says, "No. Who's he play for?" Hopefully your personnel development and education is easier, but you should have the processes and systems in place to answer the questions of a younger generation that is learning on the job.



Develop

A succession management plan that prioritizes leadership development not only improves retention, building a solid pipeline of talent for years to come, but also reduces recruiting costs.

Over the last fifteen years, many baseball owners have realized that a high payroll does not necessarily result in on-field success. Expensive free agents are not a sure thing, and savvy clubs realized that they could be competitive (and have a lower payroll) by developing young players in-house. The World Series champion Kansas City Royals are a case in point: the team has developed much of its roster – and many of its best players – in its own system.

Because top talent clearly is a competitive differentiator, companies will define future success by developing deep and enduring bench strength – a pipeline of players with the leadership skills to be successful in the “big leagues.”

Good development results in beneficial, life-long lessons that benefit the employee and employer. Consider the following exchange after Nuke and Crash fight:

Crash: Did you hit me with your right hand or did you hit me with your left?

Nuke: My left.

Crash: Good! That's good! When you get in a fight with a drunk you don't hit him with your pitching hand.

Remaining competitive even after the veterans leave



Attracting and hiring Millennials is only one way to address the challenge of an aging workforce, and building a developmental system is not the only way companies can promote the transfer of knowledge from one generation to the next. Many organizations are now seeking operational efficiencies via outsourcing, predictive analytics, and automation to help address the challenges of an aging workforce.

Shifting back office operations (e.g., claims processing, call centers, and mail rooms) to an outsourcing provider can help obviate the need to replace retiring workers. While companies historically have considered outsourcing from a cost and labor arbitrage perspective, they are now making it part of their overall growth strategy because the right outsourcing partners can help them create efficiencies, lower costs, and enjoy bottom line savings.

Moreover, by consolidating existing and incoming information into standardized management systems and utilizing advanced analytics to interpret this data, companies can position themselves to make better business decisions – consider the Oakland A's now famous and commonly utilized “Moneyball” approach – with a smaller workforce. Some companies have gone so far as to globally standardize key processes by using business process management or workflow software that promotes

procedural consistency throughout the enterprise.

As has been the case with forward-thinking baseball teams, these types of investments have enabled leading carriers to more effectively manage and utilize the vast amounts of structured and unstructured data they possess. Perhaps as importantly, these companies also have increased worker productivity because their employees are now able to focus much more of their time on value-added activities instead of routine, low- to no value administrative and clerical tasks.

Last but not least, the carriers that have made meaningful investments in outsourcing, business process improvement, and advanced analytics have created a virtuous cycle in terms of recruiting. Companies that are on the cutting edge of business technology are also more attractive to Millennials. As a result, these employers not only need fewer employees, they attract higher caliber newcomers.

Insurers that standardize information management and utilize advanced analytics to enhance their decision-making are taking a “Moneyball” approach that is now the standard in professional baseball.

To meet the challenges of an aging workforce, prescient carriers, agencies, and brokers are already changing how they recruit and assess their workplace. They are modifying policies to appeal to Millennials, making physical changes to create a more inviting workplace, and facilitating knowledge transfer to improve the long-term viability of their organizations. With the impending profound demographic changes, the need to build a pipeline of new talent is mission critical. In addition, to further minimize the effects a shortage of workers may have, many companies have recognized the need to modernize processes and systems to more effectively manage the business even with a smaller workforce.



Implications



- The insurance industry is facing an impending talent crunch. If it does not take steps to attract young employees, the crunch will become a crisis. To paraphrase “Field of Dreams,” another 1980s baseball movie, if you don’t build it, they WON’T come.
- Millennials will soon predominate in the workforce, and insurers need to differentiate themselves from companies in other industries as being attractive places for Millennials to work. They can do this by:
 - Effective recruiting that demonstrates rewarding career paths exist in the industry.
 - Training that pairs new hires with experienced employees and helps build mentoring relationships; eLearning is a cost-effective way to do this and one that Millennials like.
 - Developing leaders internally – akin to a minor league system – which both encourages retention among younger employees and also eases internal succession planning because it ensures there is a healthy talent pipeline.
 - To survive and even thrive despite a shrinking pool of experienced employees, strategic outsourcing that focuses on complementary capabilities and not just cost-reduction, modernizing business processes, and effectively employing advanced analytics can significantly improve efficiencies, reduce costs, foster a focus on the things that really add value to the business, and attract the best and the brightest newcomers to the industry workforce.

BPO for the life & annuity market



Life and annuity insurers are focusing on three areas to drive growth: distribution, product and brand. Growth is hard enough in today's market, but it's even harder when your back-office holds you back, both in terms of fixed costs and limited capabilities. Accordingly, achieving operational efficiency is table stakes for life & annuity insurers competing in an extended soft market.

Fortunately, given recent advances in technology and expansion of provider capabilities, business process outsourcing (BPO) has become a feasible way to reduce costs and increase efficiencies. Based on what we've seen in the market, we think BPO providers are ready to move from their traditional role as vendors to true business partner. With scale, advanced technology, and money to invest, the best of them offer great opportunity for insurers to significantly lower costs and benefit from complementary services over the long term.

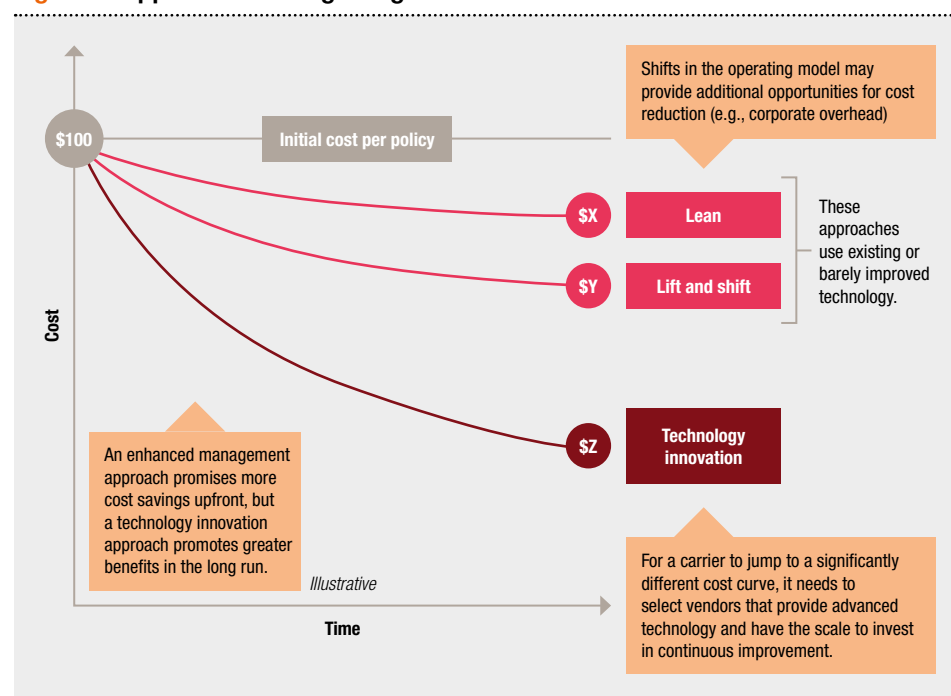
Why BPO and why now?

For years, insurers have tried numerous methods to achieve greater operational efficiency, including process reengineering, Six Sigma, and LEAN. Many companies also have pursued sourcing (primarily in IT) to stem the tide of rising fixed costs. While these initiatives have reduced costs and complexity to a certain extent, they have not lowered costs and operational complexity enough to enable the business to focus first and foremost on growth.¹

Fortunately, times have changed. Some BPO providers have recently offered savings on a per policy basis (inclusive of both operational and IT costs) of anywhere from 20 to 40 percent. (Benefits depend on how much savings a company has already realized and how much additional opportunity for savings remains.)

BPO now offers the potential for greater long-term cost reductions and efficiencies than the methods insurers have used in the past.

Figure 1: Opportunities for gaining cost efficiencies



¹ For more on cost management that facilitates growth, please see "Are You Fit for Growth?" in this same publication, or at <http://www.pwc.com/us/en/insurance/publications/assets/pwc-insurance-top-issues-fit-for-growth.pdf>



In Europe, BPO/ITO has already played a major role in closed block businesses. Life, annuity and pensions BPO has a global market of over \$2.6B, nearly half of it in the United Kingdom.² In this case, the main point of BPO has been legacy policy cost reduction, but it also offers carriers an alternative operational platform for achieving faster speed to market for new products and for tapping into advanced customer service capabilities.

Legacy modernization is another important reason for considering BPO. As key staff retire, there is a real threat of knowledge loss, not least because legacy systems are concurrently moving toward the end of their effective working lives. Many BPO providers feature up-to-date and evolving technology platforms that are an attractive alternative to incurring ongoing fixed costs in-house.

The key for carriers is to select a BPO provider that will keep its platform current rather than simply provide a “your mess for less” service (i.e., administration of your aging platforms). Without the right scope, BPO can backfire and actually result in a more complex operating model, with resulting stranded costs and a suboptimal customer experience.

² Nelson-Hall, Targeting Life, Annuities and Pensions BPO Services. July 2013. Available at: <http://research.nelson-hall.com/sourcing-expertise/healthcare-insurance/life-annuities/?avpage-views=article&id=78440&fv=1>

What is Large-Scale BPO?



In order to understand what BPO entails it is helpful to compare the different kinds of shared services that are available.

- **Captive shared services** are when a carrier creates a wholly owned subsidiary to deliver services at a reduced cost. They can be established domestically, near-shore, or off-shore.
- **Out-tasked shared services** occur when a carrier hands over administration of its systems to a third party that offers wage arbitrage, but the carrier still maintains ownership of the process and underlying systems.
- In contrast, in a **BPO transaction**, the insurer hands over administration to a partner who runs the former's technology platform. In other words, the partner owns the process. Implementation may occur through a lift & shift approach (i.e., the partner takes over the carrier's legacy

platforms), through conversion (data is converted from the carrier's legacy to the partner's modern platform), or a phased combination of both. In order to smooth the transition, ameliorate community and reputational concerns, and improve change management, there is typically a significant amount of rebadging of employees from the carrier to the BPO partner.

Ideally, after BPO, the insurer is a service level agreement (SLA) manager and the BPO partner controls the process. (N.B.: Contracts should be in place that stipulate performance requirements.) The insurer's focus on the sourced business should be on performance and analytics, made possible through regular data feeds from the BPO partner.

- In **brokered BPO**, the insurer contracts with a third party that isn't itself offering BPO services but instead will manage the transition to and the SLA with a BPO provider. Ideally, the third party manager will have successful past experience with the BPO provider and managing the complex details of conversion from legacy platforms to new ones.

BPO is not one-size-fits-all. There are different varieties that insurers can match to their individual goals and circumstances.

Managing Retained Alongside Sourced Business



Because different blocks of business often require different service capabilities, a single BPO partner may not be the best option for many companies.

While transitioning the entirety of operations and IT to a BPO provider may seem appealing, insurers realistically will continue to be involved in many operational and IT activities. They often will retain key components of their operations and IT that they deem to be market differentiators. These most often relate to the customer experience (both with the agent and insured) and include call centers, portals, and analytics. In order to remain effective, the operational platform that support retained components will continue to require ongoing maintenance, upgrades, and BPO integration. Extensive up-front effort will be necessary to promote seamless integration of retained and outsourced components.

In addition, despite inclusion of a broad scope of operations and IT components, certain operational functions will remain with the insurer, namely HR, legal, and compliance. Given significant sourcing, the question is if the insurer's reliance on

these functions will decrease and, if so, how to shrink them without increasing operational risks like:

- **Interruption of customer channels and operations:** Businesses have been caught by surprise when service grinds to a halt at a provider.
- **Brand-damaging criticism:** Businesses that fail to meet customer expectations – even if the cause is outside their walls – may see an increase in complaints, some going viral on social media.
- **Regulatory violation:** A data error or breach at your service provider can put you in violation of regulations and jeopardize your customers' trust.
- **System vulnerabilities:** In a complex infrastructure that has dependencies you don't even realize, a service interruption might trigger a series of problems that can affect your business.

- **Inaccurate Reporting:** Service provider processing errors can cause a misstatement of compliance, performance, operational, or financial information.
- **Risk management lapse:** Not knowing the controls around service contract terms can lead to unreported breakdowns in areas hitherto considered secure.

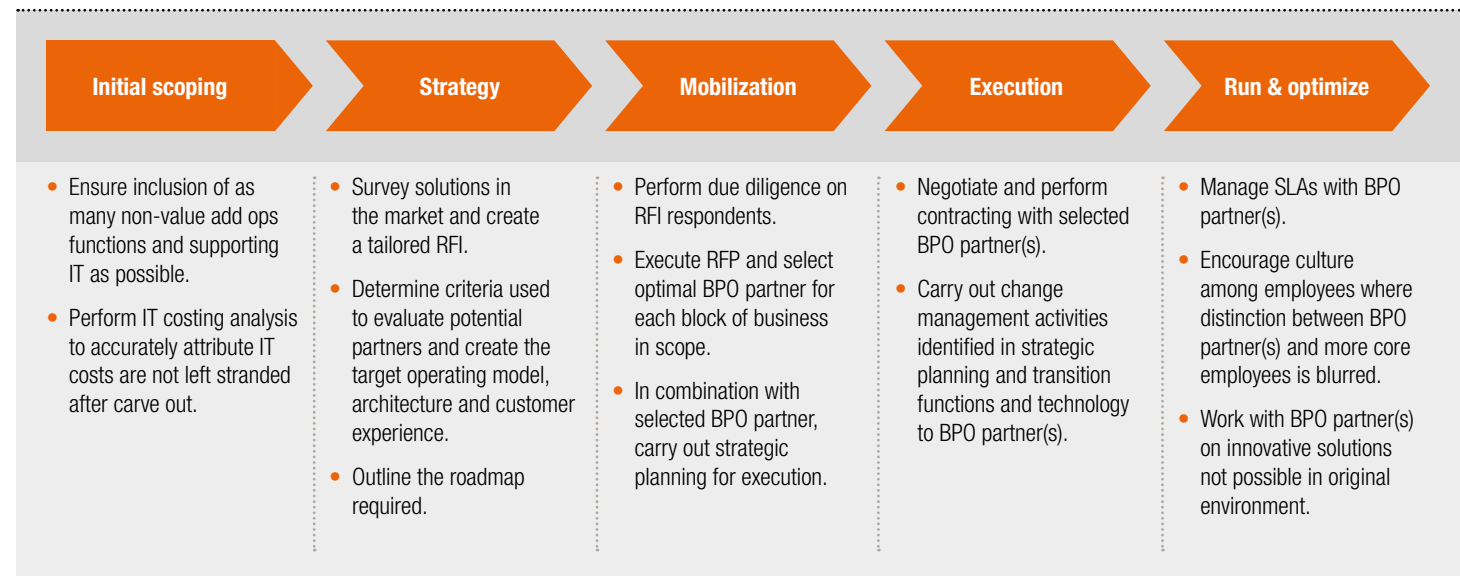
A good way to reduce the chance of BPO-related risks is to insist on a provider that comports with advanced Service Organization Control (SOC) reporting. SOC 2 provides assurance that the provider has controls around the sourced technology and systems supporting the sourced business processes, but only to a pre-defined audience. SOC 3 provides the same assurance but more broadly to anyone interested in the provider's control and allows the posting of a public seal on the provider's website.

Embarking on BPO: An end-to-end approach

Given the significant potential for disruption to distribution partners, policy/annuity holders, employees, and the community at large, BPO requires a more iterative approach to execution than many other forms of operating model transformation. We suggest a five stage process (see below) to fully transition into BPO, although there will be significant differences between large legacy blocks and net-new business.

When evaluating BPO partners that best match criteria for in-scope functions and blocks of business, some carriers find that a single BPO partner may not meet all needs. Accordingly, it is imperative to determine the best BPO fit for each block of business.

Figure 2: BPO: An end-to-end approach



Implications: Insights from BPO initiatives



1. Plan big. Scope thoroughly enough to actually simplify management instead of just adding another layer of complexity to what you already have.
2. Choose a partner, not a vendor. Approach the BPO as a relationship that will grow over time. Vet your prospective partner's record of investment in other relationships and appropriately incent each other with thoughtful contracts that promote accountability.
3. When vetting BPO providers, consider the amount of investment they'll make to upgrade their platforms over time in order to continue delivering effective service.
4. Don't underestimate the amount of time staff need to prepare for BPO. Identify all necessary business rules and ensure that key individuals and cryptic systems are aware of and understand them. You do not want any service interruptions.
5. Map all dependencies on the policy administration platforms you're seeking to move, inclusive of all ancillary applications.
6. Realize that each part of the operating model you retain will add another layer of integration complexity to BPO.
7. The prevalence of shared services and the opacity of many service-based cost-pools mean that many companies struggle to understand their IT spend. Therefore, it is vital to have an agreed upon allocation method that won't leave behind significant stranded IT costs post-BPO.
8. Considering there will be more lines of accountability for running the business during and after the BPO, unless you use a brokered approach, you'll have to create or augment an existing service provider management team.
9. You may need multiple BPO partnerships. For example, the BPO partner that best meets your life book needs may not be the best choice to meet your annuity book needs.
10. Ensure contracts account for all reasonable contingencies (e.g., growth, M&A, divestitures, and spin-offs).

Risk & regulatory

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The Regulatory Environment



Like the rest of the financial services industry, insurers are subject to increasingly complex and prescriptive regulations and standards. In the year ahead, insurers will need to focus on the new U.S. Department of Labor fiduciary standard, which is likely to have a significant effect on how insurance products are sold. Moreover, global developments, especially those related to the developing International Capital Standard, will require insurers to closely monitor – and ideally contribute to – official discussions about how globally active insurers should manage capital.

DOL Fiduciary Standard



In 2015, the U.S. Department of Labor (DOL) proposed regulation on the way investment advisors and brokers are compensated¹. Under the proposal, recommendations to an employee retirement benefit plan or an individual retirement account (IRA) investor will be considered “fiduciary” investment advice, thus requiring the advice to be in the “best interest” of the client rather than being merely “suitable.” As a result, insurance brokers and agents who provide investment advice will face limits on receiving commission-based (as opposed to flat fee) compensation.

The proposed compensation limitation does not apply to general investment education. Furthermore, the proposal’s amended Prohibited Transaction Exemption 84-24 (PTE 84-24) allows commission-based compensation for the sale of certain insurance products. However, in order to continue receiving commissions for certain products (e.g., variable annuity (VA) sales to IRAs), insurance brokers would need to utilize a separate Best Interest Contract (BIC) exemption.

In addition to compensation structure, the new fiduciary standard will have significant operational and strategic impacts, especially in the areas of technology, compliance, product pricing and development.

There are four main considerations for insurance company and broker-dealer (BD) compliance with the new fiduciary standard:

- The BIC allows certain forms of commission-based compensation, but there are enhanced disclosure and contract requirements, including:
 - Financial institutions will have to disclose to retirement investors the total projected cost of each new investment over holding periods of one, five, and ten years, prior to the execution of the transaction. This could potentially cause a delay in new transactions, especially if the company’s current technology does not store this cost information in a central location.
 - In addition, insurers must wait for customers to acknowledge the projected costs before a transaction can be completed.

¹ A Department of Labor fact sheet explains certain provisions of the new standard (including what constitutes advice and how commissions will still be permitted): <http://www.dol.gov/ebsa/newsroom/fsconflictsofinterest.html>



Insurers will have to make investments in employee training and technological enhancements.

- There are new contractual BIC obligations, including the requirement to have a three-way written contact between the financial advisor/insurance agent, financial institution, and investor indicating the fiduciary status of the advisor and describing the fiduciary compliance program.
- Insurance companies have the option of moving to an “advisory” model.
 - Flat fee for advisory services.
 - Sales incentives would need to be adjusted to address the move from commission-based to flat fee compensation. Clients could resist paying a standard flat fee for what they consider to be minimal investment advice.
- Insurance companies could also move to a self-directed/order taker model.
 - This would allow insurers to maintain their current fee structure, but rely on customers’ direct orders (i.e., requests for broker advice and assistance).
- The PTE 84-24 exemption would allow insurers to sell certain products to fund retirement plans and IRAs, but it:
 - Prohibits commission-based compensation for sales of VA contracts to fund IRAs vehicles.
 - Prohibits the payment of certain types of fees to insurance advisors.
 - Requires disclosure of conflicts of interest and that the insurer act in the “best interest” of the plan, plan participant, or IRA.

All of the above will have a significant impact on insurance company profitability and the competitive landscape. Insurers will have to make investments in employee training and technological enhancements. If companies leverage the BIC exemption, they will need to enhance their systems in order to detect and block disallowed products.

Because insurers often do not have a central repository of relevant fee and cost data, new user interface tools may be necessary to produce timely pre- and post-sale customer disclosures. This increased disclosure and communication burden could mean companies will reconsider the appropriateness of maintaining smaller client accounts. In addition, new market entrants, such as low cost (often automated), fee-based service providers, could disrupt future business. Accordingly, in order for insurance companies to remain competitive in the middle market, they may need to develop a new class of simple, low-cost products.

Transitioning from the suitability standard to the “best interest” standard also will be significant for insurance-affiliated broker dealers and their agents/registered representatives because of restrictions on providing investment advice to prospective clients. Agents will need to enhance their client profiling to refresh and verify clients’ objectives on an ongoing basis in order to determine what is in their best interest. Retail financial advisors and non-affiliated broker dealers also will experience adjustments to compensation structures and be subject to training that ensures registered representatives know which product recommendations will subject them to the new fiduciary standard.

The new fiduciary standard may be issued as early as this March, with compliance required by next year.

Lastly, the DOL fiduciary standard will come into effect very soon. Policy riders that could have prevented or delayed its promulgation were not in the final draft of the omnibus appropriations bill that Congress passed in December 2015. The White House is pushing for the rule to be issued as early as March 2016, with a 2017 compliance deadline.



International Capital Standard (ICS)



The proposed International Capital Standard (ICS) is intended to be a consistent capital measure for globally active insurers. The ICS's advocates promote it as a solution for group wide supervisors to have a better understanding of how insurers manage capital allocation in an international business.

In the wake of the 2008 financial crisis, the Financial Stability Board directed regulators to improve the regulatory system – particularly capital standards – for all of financial services. While the banking industry has received the lion's share of attention, the insurance industry is subject to a call for wider change. Initiatives have included the development of methodologies to identify and determine accompanying capital requirements for global systemically important insurers (G-SIIs), as well as insurers that are active in multiple jurisdictions (called internationally active insurance groups (IAIGs)) but are not necessarily globally systemically important. The ICS is intended to be a truly global group measure unlike any current regulatory practice.

If the final ICS calculation is different from current practices, then all functional areas could be affected because of a knock-on effect on product portfolio, pricing and investment strategy.

Potential effects



Many insurers are concerned that the ICS will potentially force insurers to adopt “foreign” calculations that differ from current regulatory process and conflict with existing capital practices. In addition, there has been considerable regulatory change in recent years and the ICS is yet another initiative insurers would have to address. If the final ICS calculation is different from current practices, then all functional areas could be affected because of a knock-on effect on product portfolio, pricing and investment strategy.

Accordingly, as the ICS continues to develop, insurers should begin to consider the potential impact it may have on available capital reserves, required capital levels, and capital management. Insurers should consider how new capital standards will interact with current regulatory capital requirements and prepare to identify additional capital resources, understand changing stakeholder and investor reporting expectations, and assess the wider business impacts such as insurance product pricing and risk appetite. Furthermore, they should already be taking an active role in influencing capital standards development, becoming involved in industry groups and forums, and regularly communicating with stakeholders in order to manage expectations and ensure appropriate treatment of company specific issues. Financial reporting teams should consider the need for updated or new capital disclosures, the communication of capital ratios, and rating agency concerns.

The ICS is likely to increase the need to adapt, modernize, and enhance the efficiency of core operations.

If enacted, the ICS also is likely to increase the need to adapt, modernize, and enhance the efficiency of core operations. To prepare for this eventuality, insurance groups should complete readiness assessments and review their key systems, data flow, processes and internal controls to determine if they need new systems and processes.

More specifically, insurers may need to develop and implement internal models and adjusted calculation methods, including incorporating new risk margin calculations and alternative methods of classifying available capital. The calculation of required capital could pose more granular technical issues in regimes where an economic capital assessment has not previously formed

part of the regulatory framework or common ancillary metric. Compliance, risk management and finance functions will have to assess emerging changes in reporting requirements and determine their role, how to educate the business and how to monitor the impacts going forward. Insurers will need their ERM functions to identify, measure, aggregate, report, and manage risk exposures within predetermined tolerance levels, across all activities of the insurance group with clearly defined and documented structures, frameworks, and procedures.

In relation to organizational structure, insurance holding groups will need to assess the potential impact of the ICS on the classification of their separate legal entities. They should review their legal entity organization charts and be prepared to assign and categorize the

regulatory classification of each operating legal entity within the structure, as various capital frameworks across multiple jurisdictions could apply.

Overall, the ICS is only part of the overall regulatory framework for globally active insurers, called Comframe.² Other aspects of Comframe, like governance, risk management policies and ORSA also will have a significant impact on many areas of an insurers business, regardless of what becomes of the ICS. It's too early to say for certain what the final ICS will look like, but even the regulators who question its necessity seem reconciled to the notion that a common standard will eventually become reality. The big debate is what the one true ICS should entail and the nature of its calculations supporting it.



In relation to organizational structure, insurance holding groups will need to assess the potential impact of the ICS on the classification of their separate legal entities.

2 For more information on ComFrame, please see: <http://iaisweb.org/index.cfm?event=getPage&nodeId=25229>

Implications



DOL Fiduciary Standard

- The “best interest” standard is likely to restrict certain investment advice to prospective clients and certainly will impact how the insurers approach and conduct sales. In particular, insurers will need distinguish what’s considered investment advice and what’s not. One related development to watch is if the fiduciary standard increases insurers’ implementation of robo-advice for routine transactions and research.
- There will be significant operational and strategic impacts, especially in the areas of technology, compliance, employee training, product pricing and development. Moreover, it appears that compliance with the standard will be mandatory as of next year, which means insurers and affiliated and independent brokers and agents have to address all of these considerations in a very short period of time.

ICS

- The ICS has the potential to affect the entire organization, not just risk and capital management. Product portfolio, pricing, and investment strategy all will feel the standard’s effect, with resulting pressure to modernize and enhance core operations. To prepare for this eventuality, insurance groups should complete readiness assessments and review their key systems, data flow, processes and internal controls to determine if they need new systems and processes.
- Because the ICS is still in the developmental stage, we strongly encourage insurers to take an active role in influencing capital standards development, become involved in industry groups and forums, and be in regular communication with stakeholders in order to manage expectations and ensure appropriate treatment of company specific issues.

The evolution of model risk management



One of the fastest growing concerns on insurers' enterprise risk agenda is model risk management. From being a phrase that primarily actuaries and other modelers used, "model risk" has become a major focus of regulators and the subject of intense activity and debate at insurers. How model risk management has evolved from ad hoc efforts to its current proactive stage is an interesting story. But more interesting still is what we believe could be its next stage – generating measurable business value.

Generating measurable business value is model risk management's next developmental stage.

The table below illustrates the four stages of model risk management's evolution.

Ad Hoc	Reactive	Proactive	Productive
2008 & before	2009 – 2013	Starting in 2014	TBD

Ad Hoc

Organizing and utilizing past experience to predict future claims is core to the business of insurance. By necessity, models are required to do this. Recognizing the importance of models, insurers and industry professionals, particularly actuaries, have long incorporated model reviews into their work.

As new models were introduced or changes made to existing ones – especially if third-party systems were involved – insurers were careful to ensure consistency between old and new models. Additionally, internal and external auditors' procedures recognized the risk that models entail and incorporated verification and testing in their processes.

What distinguishes this earliest stage is not that model risk was ignored but rather that model risk management was dispersed and generally, informal. Practices differed across the industry, across different types of professional organizations, and across different parts and functions within an insurer. Standards for documentation, both of the models and the validation process, were largely absent. Typically, not all models were reviewed. Establishing a comprehensive inventory of all significant models was not the norm. Likewise, it was not common for insurers to follow consistent procedures to validate models across the enterprise.



Reactive



Although a comprehensive guide to help banks mitigate potential risks arising from reliance on models was available as early as 2000, concerted attention to the issue in insurance can be dated to the Great Recession and its aftermath. In reaction to the events of 2008/2009, regulators and insurers themselves revisited their risk management processes and governance.

The US Federal Reserve Board (FRB) took the lead in promulgating new requirements for the banking sector, including supervisory guidance on model risk management issued in 2011. Many insurers, especially those designated as SIFIs, have been working to adopt these guidelines. In 2012, the North American CRO Council released its model validation principles for risk and capital models, which included eight core validation principles. For insurers operating in Europe, Solvency II provided the potential to use an internal model to establish their capital requirements. In order to take advantage of this opportunity, insurers needed to adhere to model validation expectations prescribed by regulators. In the US, the ORSA Guidance Manual requires insurers to describe their validation process.

Reacting to the 2008/2009 crisis and regulators' demands, insurers began to establish the key elements of an enterprise wide model risk management program:

- Governance and independence policies;
- An inventory and risk assessment of all significant models; and
- Documentation and validation standards.

Only after these basic building blocks had been put in place did insurers develop the practical experience to begin their transition to the next, proactive stage.

Proactive



The reactive stage and the beginning of the proactive stage effectively started in 2014. In the early months of that year, PwC conducted a survey of 36 insurers operating in the US. The survey provided the opportunity for participants to self-assess their programs across ten dimensions characterizing the key elements of an MRM process. Modal responses across these dimensions were typically “weak” or “developing.” Almost all insurers admitted they had work to do and indicated that they had plans in place to improve their processes.

In the intervening two years, we have observed a significant investment in MRM capabilities. In the absence of detailed insurance-focused regulatory guidelines, most insurers have shaped their developments so as to best fit their own circumstances. For example, while there has been a near uniform increase in resources allocated to MRM, how insurers deploy these resources has differed significantly. Some have formed large centralized model management functions and others have allocated most of the validation responsibility to business units. How the responsibilities are dispersed across risk, actuarial, compliance and audit functions vary considerably. We expect that most of these differences are attempts to fit the task to the insurer’s existing structure and culture.

Likewise, we have seen insurers, both individually and as a group, more proactively develop procedures that better fit the unique circumstances of the insurance sector instead of banking or financial services in general. Three areas in which the insurance sector is increasing its attention are:

1. Incorporating the unique aspects of actuarial models and the development of standards by actuarial professional organizations;
2. Emphasizing the process of assumption setting and the governance of this process; and
3. Emphasizing ongoing monitoring and benchmarking necessitated by the long time frame and the lack of market data in order to measure the performance of many insurance models.

Productive



Recent discussions with forward thinking insurance company executives and board members leads us to think a fourth stage may be next. The common theme is recognition that an insurer's key asset is the information it possesses and the models it has developed to turn this information into support for profit generating decisions. Seen in this light, models are not inconveniences substituting for "real" data. Rather, they are the machinery that insurers use to turn their raw materials (data) into salable, profitable customer solutions.

Model risk management then becomes the mechanism to ensure this machinery is performing at its best. This includes the normal activities that one would associate with maintenance, like finding and correcting inadequate performance. But, it also provides a way to determine how better machinery can be developed and brought on-line.

In many respects, the transition to this stage mirrors the transition that has occurred in risk management in general. Not too long ago, risk management was seen as a strictly defensive activity. It was more about saying "no" than finding the right opportunities to say "yes." Now, risk management is seen as an important strategic activity that plays a central role in an insurer's deployment of capital and its selection of growth opportunities.

Putting models and the data that feeds them at the center of an insurer's value creation engine instead of at its periphery, provides a new perspective. And, by transitioning model risk management to the productive stage, insurers can better utilize this new perspective to address customer expectations in an information rich environment.

Implications



- Model risk management is no longer an ad hoc or reactive activity. A proactive approach is now a necessity to meet internal and external stakeholder demands.
- Insurers are attempting to develop model risk management practices that fit the needs of their industry. They will need to continuously communicate to regulators, standards setters, and other stakeholders how the business of insurance has unique characteristics compared to elsewhere in financial services.
- Models are among insurers' greatest assets, and the machinery that they use to turn data into salable, profitable customer solutions. Putting models and the data that feeds them at the center of value creation can provide new perspectives that better addresses customer expectations. Model risk management becomes the tool to keep this machinery productive.

Tax

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Legislative outlook and judicial & administrative developments



Election-year politics are dominating legislative action this year as both parties lay down policy agendas for 2017 and beyond. President Obama and the Republican leaders of Congress are offering competing plans on how to reform the US tax system and to promote other policies intended to increase economic growth and make American companies more competitive. At the same time, both Democratic and Republican candidates seeking their party's presidential nomination are advancing tax reform plans.

During his final year in office, President Obama likely will continue to rely on his Administration's regulatory authority and the presidential veto to preserve the 2010 Affordable Care Act (ACA) and other legislative and regulatory actions taken during his years in office.

Obama Administration action



President Obama on February 9 submitted an FY 2017 budget to Congress that reaffirms his support for “business tax reform” that would lower the top US corporate tax rate to 28 percent, with a 25-percent rate for domestic manufacturing income.

Significant international tax increase proposals that have been re-proposed include a 19-percent minimum tax on future foreign income, and a one-time mandatory 14-percent tax on previously untaxed foreign income. The President’s budget again reserves revenue from a large number of previously proposed tax increases to support business tax reform, including specific proposals affecting insurance taxation (discussed below), but his budget identifies only part of the revenue that would be needed to support his proposed corporate rate reductions.

Congressional action



House Speaker Paul Ryan (R-WI) has called for House Republicans to vote in 2016 on comprehensive tax reform legislation and on changes to federal entitlement programs as a way to define and build support for a conservative legislative agenda. Senate Majority Leader Mitch McConnell (R-KY) also is expected to advance a conservative legislative agenda with a focus on demonstrating an ability to govern and with an eye on protecting the 54-seat Republican Senate majority.

House Ways and Means Committee Chairman Kevin Brady (R-TX) recently outlined his goals for producing a blueprint for comprehensive tax reform and plans to “move forward immediately to draft international tax reform legislation.” Chairman Brady has said that he hopes the Obama Administration and Congress can reach common ground on some policies and build on the momentum from the last year’s “tax extender” legislation, which included a provision making permanent Subpart F exceptions for active financing income.

Chairman Brady said that comprehensive tax reform “will not happen until we have a new president” but he is “hopeful that next January we will have a president – Republican or Democrat – who is committed to making pro-growth tax reform a reality for the American people.” The chairman outlined several principles for comprehensive tax reform, including a “competitive tax rate” and a “permanent modern territorial-type system that helps American companies compete and win

overseas.” He also said that the Ways and Means Committee will look “with fresh eyes” at a range of tax ideas, including “consumption tax, cash flow tax, reformed income tax, and any other approach that will be pro-growth.”

On international tax reform, Chairman Brady said “developments in the global environment demand our immediate attention.” He pointed to OECD “base erosion and profit shifting” (BEPS) proposals that “disproportionately burden American companies” and the European Commission anti-tax avoidance package that would provide EU member countries with an “arsenal of new revenue-grabbing tax measures.” He also discussed the growing number of corporate inversions and foreign acquisitions involving US companies. “We will send a clear signal to American companies and shareholders that help is on the way – that we won’t stand idly by while our tax code drives them overseas or makes them a target for a foreign takeover,” said Chairman Brady.



Senate Finance Chairman Orrin Hatch (R-UT) has said he “doubts very much” that international-only tax reform can be enacted this year. The Finance Committee Republican Majority staff have been working on options for corporate integration tax reform proposals that would seek to eliminate the double-taxation of corporate earnings. Corporate integration proposals generally have focused on approaches providing that any distributions made by such entities either would be deductible by the entity (dividends paid deduction) or would be excludable by the recipient (dividend exclusion). A December 2014 report prepared by the Senate Finance Committee Republican staff stated that a dividends paid deduction “would generally be easy to implement and would largely equalize the treatment of debt

and equity.” Chairman Hatch recently asked Treasury Secretary Lew to “keep an open mind” to a corporate integration proposal might help to address make US corporations more competitive globally and reduce inversions.

Although there is bipartisan agreement that the US corporate tax rate should be lowered significantly and that our international tax system should be updated, there is significant disagreement over key business tax issues, including how to offset the cost of a corporate rate reduction.

Insurance-related revenue raisers



The Obama Administration's FY 2017 budget re-proposes several revenue-increase measures specific to insurance companies. The proposed legislative changes generally would apply for tax years beginning after December 31, 2016.

Among the insurance-related measures are provisions that would:

- **Disallow the deduction for non-taxed reinsurance premiums paid to affiliates** – This proposal would disallow any deduction to covered insurance companies for the full amount of reinsurance premiums paid to foreign affiliated insurance companies with respect to reinsurance of property and casualty risks if the premium is not subject to US income taxation. The proposal would provide a corresponding exclusion from income for reinsurance recovered with respect

to a reinsurance arrangement for which the premium deduction has been disallowed. The proposal also would provide an exclusion from income for ceding commissions received with respect to a reinsurance arrangement for which the premium deduction has been disallowed. The exclusions are intended to apply only to the extent the corresponding premium deduction is disallowed. The proposal would provide that a foreign corporation that is paid a premium from an affiliate that would otherwise be denied a deduction under this provision may elect to treat those premiums and the associated investment income as income effectively connected with the conduct of a trade or business in the United States. If that election is made, the disallowance provisions would not apply.

- **Conform net operating loss rules of life insurance companies to those of other corporations** – This proposal would modify the carryback and carryforward periods for losses from operations of life insurance companies to conform the treatment to that of other taxpayers. Under the proposal, losses from operations of life insurance companies could be carried back up to two taxable years prior to the loss year and carried forward 20 taxable years following the loss year.
- **Modify rules that apply to sales of life insurance contracts, including transfer for value rules** – This proposal would create a reporting requirement for the purchase of any interest in an existing life insurance contract with a death benefit equal to or exceeding \$500,000. The proposal also would modify the transfer for value rule to ensure that exceptions to that rule would not apply to buyers of policies.

- **Modify dividends received deduction for life insurance company separate accounts** – This proposal would repeal the present-law proration rules for life insurance companies and apply the same proration regime separately to both the general account and separate accounts of a company. Under the proposal, the policyholders' share would be calculated based on a ratio of the mean of the reserves to the mean of the total assets of the account. The company's share would be equal to one less the policyholders' share.
- **Expand pro rata interest expense disallowance for company-owned life insurance ("COLI")** – This proposal would curtail an exception to a current law interest disallowance of a pro rata portion of a company's otherwise-deductible interest expense, based on the unborrowed cash value of COLI policies. As modified, the exception would apply only to policies covering the lives of 20-percent owners of the business. The proposal would apply to contracts issued after December 31, 2016, in tax years ending after that date.
- **Repeal special estimated tax payment provision for insurance companies under section 847** – This proposal would repeal IRC Section 847 and would include the entire balance of an existing special loss discount account in income in the first tax year beginning after 2016. Alternatively, the proposal would permit an election to include the balance in income ratably over four years. Existing special estimated tax payments would be applied.



Insurance Developments: Judicial and Administrative



A number of judicial and administrative developments occurred in 2015 concerning insurance companies.

These developments affected insurers in various lines of business:

- Life insurers** – The most significant development for life insurers was not solely a tax development. Life principle-based reserves (PBR) will be effective when 42 states representing 75% of total direct written premiums amend their standard valuation law. At the current rate of adoption, Life PBR is expected to be effective January 1, 2017, for contracts issued on or after that date. Life PBR will implicate a number of tax issues, and for the first time the IRS and Treasury included guidance on Life PBR in its annual Priority Guidance Plan. Also during 2015, the Tax Court decided in *Webber v. Commissioner*, 144 T.C. No. 17 (June 30, 2015) that a policyholder was liable for taxes on income earned on assets supporting a variable life insurance contract based on the policyholder's control over the assets. The case accorded deference to a number of the IRS's "investor control" revenue rulings and could result in closer attention to variable life insurance and annuity contracts that are privately placed.
- Non-life insurers** – The Tax Court in 2015 addressed what qualifies as insurance risk for purposes of classifying contracts as insurance contracts. In *R.V.I. Guaranty Co., Ltd v. Commissioner*, 145 T.C. 9 (September 21, 2015), the court held that residual value insurance (RVI) contracts that protect against an unexpected decline in the market value of leased personal property qualify as insurance contracts for Federal income tax purposes. The case's reasoning relies heavily on the treatment of the contracts by non-tax regulators, and it provides taxpayers further guidance for distinguishing between investment risk and insurance risk.
- Health insurers** – In 2015, a Treasury Inspector General for Tax Administration (TIGTA) report criticized the IRS for the "finality" requirement that prevents the Service from assessing health insurers that inadvertently or otherwise were not assessed the correct amount (or any) of the Health Insurance Provider Fee, which is apportioned among all covered health insurers. Other health insurance providers still wait for the IRS to act on refund requests of the fee in 2015. The ultimate resolution remains uncertain.
- Captive insurance companies** – During 2015, the IRS issued two Chief Counsel Advice (CCA) that analyze whether specific types of policies issued by captive insurance companies constitute insurance for federal income



tax purposes. In CCA 201511021, the IRS determined that contracts indemnifying the policyholder for loss of earnings resulting from foreign currency fluctuations did not satisfy the three-prong test to be considered insurance, because foreign currency risk is not an insurance risk. The CCA was issued before the tax court's decision in *R.V.I. Guaranty Co., Ltd.*, so did not take the tax court's approach into account. In CCA 201533011, the IRS concluded that excess loss policies issued by a captive insurance company that covered healthcare risks of members of unrelated HMOs are not insurance contracts because they lacked the requisite element of risk shifting. Based on the facts as presented, the CCA analysed the arrangement as an interest-bearing deposit, but then concluded that receipts were included in income and deductions were allowed for future claim payments when made. Also in 2015, the IRS issued IR 2015-19, which added section 831(b) companies to the "Dirty Dozen" list of tax scams, indicating that

the IRS would target these companies in examination.

- **PFIC exception for income derived in the active conduct of an insurance business** – During 2015, the IRS proposed regulations that would provide guidance on investment income that is treated as derived in the active conduct of an insurance business and therefore not treated as "passive income" under the passive foreign investment company (PFIC) rules. In particular, Prop. Reg. §1.1297-4 would provide that "active conduct" requires that an insurer conduct its activities through its own officers and employees, and that investment income be earned on assets held to meet obligations under insurance and annuity contracts. Several comments were submitted on these issues and on the use of a bright line test for whether assets are held to meet obligations under insurance contracts.

- **Cross-border reinsurance** – The Court of Appeals for the District of Columbia Circuit ruled in *Validus Reinsurance, Ltd v. United States of America*, 786 F.3d 1039 (2015) that the Federal Excise Tax (FET) on insurance premiums does not apply to retrocessions between two foreign insurers regardless of whether the underlying risks are US-based. Accordingly, the IRS issued Rev. Rul. 2016-3, 2016-3 I.R.B. 282, which revokes the ruling setting forth the IRS's prior position on the application of FET on a cascading basis to either reinsurance or retrocession arrangements between two foreign insurers. The *Validus* decision and Rev. Rul. 2016-3 mark the end of controversy with the IRS on this issue, and most companies already have submitted claims for refund of previously-paid excise tax on a cascading basis, or plan to do so.

- **Inversions** – In 2014, the Treasury Department (Treasury) and the IRS issued Notice 2014-52, which describes regulations the Treasury and IRS intend to issue concerning transactions sometimes referred to as “inversions.” The notice included a “cash box” rule, which targeted taxpayers who engage in certain inversion transactions with foreign corporations and their subsidiaries with substantial liquid assets. As a follow up to that notice, the Treasury and IRS issued Notice 2015-79, providing more information about the intended regulations. In particular, Notice 2015-79 describes regulations that IRS and Treasury intend to issue addressing transactions that are structured to avoid the purposes of §7874 (concerning expatriated entities) and addressing “post-inversion tax avoidance transactions.” The latter notice clarifies that property held by a US insurance corporation and a foreign corporation that is engaged in the active conduct of an insurance business will be exempted from the “cash box” rule.

As in prior years, the IRS and Treasury jointly issued a Priority Guidance Plan outlining guidance it intends to work on during the 2015-2016 year. The plan continues to focus more on life than property and casualty insurance companies. The following insurance-specific projects were listed as priority items. Many carried over from last year’s plan, including:

 - Final regulations under §72 on the exchange of property for an annuity contract. Proposed regulations were published on October 18, 2006;
 - Regulations under §§72 and 7702 defining cash surrender value;
 - Guidance on annuity contracts with a long-term care insurance feature under §§72 and 7702B;
- Guidance under §§807 and 816 regarding the determination of life insurance reserves for life insurance and annuity contracts using principles-based methodologies, including stochastic reserves based on conditional tail expectations;
- Guidance under §833 (expected to address de minimis MLR relief);
- Guidance on exchanges under §1035 of annuities for long-term care insurance contracts; and
- Guidance relating to captive insurance companies.

Implications



- Election year politics and disagreements between President Obama and Congressional Republicans (notably on how to offset any corporate tax reductions) make domestic or international tax reform unlikely in the coming year.
- President Obama's FY2017 budget proposes several revenue-increase measures specific to insurance companies. However, it remains to be seen which, if any, of the measures will come into effect.
- Multinational insurers and reinsurers should closely monitor legislative and regulatory developments pertaining to taxation of overseas profits. Both the PFIC regulation and the promised regulations on inversions could have a significant effect on some companies and their shareholders.
- Life insurers should consider the effect of Life PBR tax issues on product development, financial modeling, and compliance as they prepare for the January 1, 2017, effective date.
- Non-life insurers with non-traditional lines of business should consider the effect, if any that the R.V.I. Guaranty Co. case and the two Chief Counsel Advice memoranda on the nature of insurance risk and the presence of risk shifting may have on insurance qualification.
- Captive insurers should be prepared for additional IRS scrutiny as a result of the Priority Guidance Plan item promising guidance, and the inclusion of §831(b) companies in the IRS "Dirty Dozen" list.

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Strategy

InsurTech: A golden opportunity for insurers to innovate

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