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Eric Nordman  
CIPR Director  
816-783-8232  
ENordman@naic.org

Kris DeFrain  
Director, Research & Actuarial  
816-783-8229  
KDeFrain@naic.org

Shanique (Nikki) Hall  
Manager, CIPR  
212-386-1930  
SHall@naic.org

Dimitris Karapiperis  
Research Analyst III  
212-386-1949  
DKarapiperis@naic.org

Anne Obersteadt  
Senior Researcher  
816-783-8225  
AObersteadt@naic.org

**NAIC Central Office  
Center for Insurance Policy and  
Research**

1100 Walnut Street, Suite 1500  
Kansas City, MO 64106-2197  
Phone: 816-842-3600  
Fax: 816-783-8175  
<http://cipr.naic.org>

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*Over the years, we have seen entire industries transformed due to new technologies—from music to banking, publishing, travel and even taxis. Insurance is now grappling with the risks and opportunities of new technologies. The emergence of artificial intelligence (AI) has the potential to disrupt the entire insurance value chain. While insurers are in the early stages of catching this wave, the adoption of AI within insurance is gaining momentum and has been an important catalyst for insurers to improve their services to remain competitive. This article will explore the definition of AI and discuss how AI stands to reshape methods within the insurance industry, especially pertaining to claims, underwriting, fraud detection and customer service.*

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*It was 1945 when the 79th U.S. Congress enacted the McCarran-Ferguson Act. The Act was needed to address the outcome of a 1944 U.S. Supreme Court ruling in *United States v. South-Eastern Underwriters Association*. The *South-Eastern Underwriters* decision overturned the long-held belief insurance was not interstate commerce. The decision created confusion in the insurance markets as suddenly the U.S. government found itself in the business of regulating insurance under the Commerce Clause. However, there were no federal laws or a viable regulatory framework to regulate the solvency or market activity of insurers and insurance producers. This article will discuss how the McCarran-Ferguson Act is as relevant today as it was when it was adopted. It is brilliant in its simplicity. It solved a problem created by a significant court case and demonstrated the flexibility of our democracy.*

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*Air ambulances are often the only available method of quickly transporting patients to hospitals in life-threatening situations. They are a critical part of the health care landscape, particularly in rural areas where hospitals and specialized care have become less available. More than 550,000 patients in the U.S. are transported by air ambulance services every year, according to the Association of Air Medical Services. However, consumer complaints about exorbitant air ambulance bills have risen noticeably over the past several years. State laws that would protect consumers in such cases are preempted by the Airline Deregulation Act. This article will discuss some of the state and federal regulatory efforts to protect consumers from excessive out-of-network charges.*

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*NAIC risk-based capital (RBC) provides a measure of minimum insurer capital adequacy and thus serves as an important part of the U.S. solvency framework. The NAIC RBC formula has undergone a number of enhancements during its use over the past two decades. In recognition of the evolving risk landscape, the NAIC's current focus has been on adding granularity to its reporting categories or expanding the risks quantified in the RBC formula. Among the most significant recent updates is the addition of a charge in the property/casualty (P/C) RBC formula for catastrophe risk from the hurricane and earthquake perils for the 2017 reporting year. This article will focus on how the P/C RBC catastrophe risk charge was developed, the need for it and how its addition has been incorporated into the formula.*

# HOW ARTIFICIAL INTELLIGENCE IS CHANGING THE INSURANCE INDUSTRY

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By Shanique (Nikki) Hall, CIPR Manager

## ◆ INTRODUCTION

What was once science fiction has fast become a fundamental part of our everyday lives. The notion of artificial intelligence (AI), whether on movie screens or in science-fiction books, has long been part of our imaginations. While robots have yet to take over the world, the use of AI has increased exponentially across industries over the past several years. The rise in accessible data, increased computing capabilities and changing consumer expectations has led to a strong acceleration of AI development. We are now using AI throughout the landscape of our lives—often without realizing it—whether it is Google’s search engine, a virtual assistant (such as Apple’s Siri), or online stores that know what you want before you log in.

We have gotten so comfortable with technology doing new and amazing things every day we often do not stop to think about the science behind it. At its essence, AI can be defined as the science of making computers do things requiring intelligence when done by humans, including learning, planning, reasoning, problem solving and decision-making. Various AI-related technologies, such as natural language processing (NLP), computer vision, robotics, machine learning and speech recognition, have substantially progressed over the years to coalesce into systems that do, think, learn and continuously adapt.

Consequently, AI is rapidly evolving and creating viable opportunities for business growth. It is disrupting and improving organizations across all industries, including insurance. Companies such as IBM, Apple, Google, Facebook and Amazon are leveraging AI platforms and solutions for customers, partners and employees. While insurers are in the early stages of catching this wave, they are said to be ripe for transformation in areas such as underwriting, customer service, claims, marketing and fraud detection. Three-quarters of insurance executives (globally) believe AI will either significantly change or completely transform the industry over the next three years, according to Accenture’s *Insurance Technology Vision 2017* report (Accenture Report).

Advances in AI have also caught the attention of venture capitalists and other investors. InsurTech (technology based solutions for insurance) startups in AI were one of the hottest tickets in 2016. According to the Accenture Report, the number of InsurTech startups with a focus on big data, AI, and the Internet of Things (IoT) has skyrocketed in recent years, attracting nearly half of the total funding spent globally on Insurtechs in 2016. InsurTech startups are said

to be using AI technology to enhance customer experience by improving convenience, transparency, timeliness and customer engagement.

There are a number of new and emerging technologies set to revolutionize the financial services and insurance industry, including, telematics, IoT, blockchain, digital platforms and AI. These breakthrough technologies are reshaping the insurance industry by providing innovative ways to measure, control and price risk; engage with customers; reduce cost; improve efficiency; expand insurability; and create new products and business models.

The NAIC recently formed the Innovation and Technology (EX) Task Force to explore the technological developments in the insurance sector. The Task Force will provide a forum for discussion of innovation and technology developments in order to educate state insurance regulators on how these developments will affect consumer protection, insurer and producer oversight, and the state insurance regulatory framework.

## ◆ ARTIFICIAL INTELLIGENCE

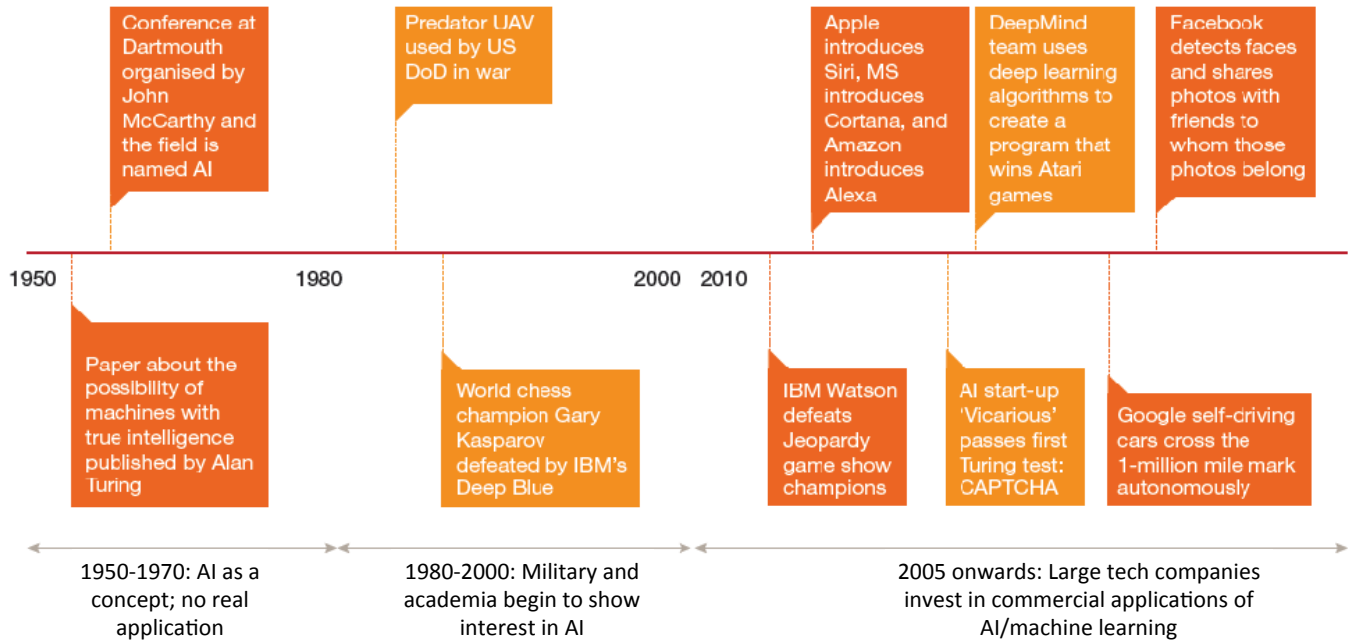
AI is the study and development by which a computer and its systems are given the ability to successfully accomplish a task typically requiring a human’s intelligent behavior. Merriam-Webster defines AI as a branch of computer science dealing with the simulation of intelligent behavior in computers; and the capability of a machine to imitate intelligent human behavior.

Currently, within traditional industries, many tasks are achieved by humans—for example, gathering information, analyzing data by running a model or using personal judgment, and finally making a decision. Algorithms or machines are used to assist humans, but the tasks are still led by humans. AI allows technology to replace humans on all of these steps—from data collection and analysis down to the final decision-making.

Over the years, scientist have consistently tried to find a way to bridge the gap between man and machine. English computer scientist Alan Turing is widely considered to be the father of AI. In the 1940’s, at the dawn of computing, Turing was grappling with the question: “Can machines think?” He later published a paper in 1950 entitled, *Computing Machinery and Intelligence*, in which he described what is now known at the “Turing Test” for determining whether a machine is “intelligent.” During this time, the term AI had not been coined. John McCarthy later coined the term in 1955, a

*(Continued on page 3)*

FIGURE 1: EVOLUTION OF ARTIFICIAL INTELLIGENCE



Source: PwC Analysis.

few years after Alan Turing’s death. Since the advent of the Turing Test, it has been widely used as a benchmark to see if humans can create machines with a high enough level of AI, which is “indistinguishable” from humans. In June 2014, Eugene Goostman, a Ukrainian chatbot, was the first computer program to pass the Turing Test. Goostman managed to convince 10 out of 30 judges it was a real person during the course of a five-minute chat conversation.

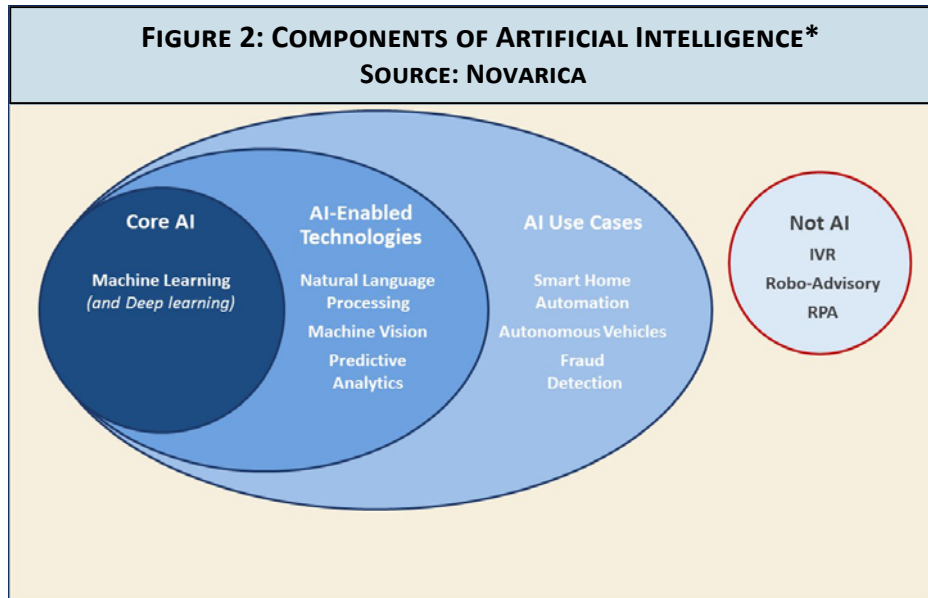
More than 60 years after Turing published his paper, machines that think like humans have not yet arrived, but there are now machines approaching having intelligence to the extent suggested by Turing. AI technology has progressed immensely and continues to develop and improve all the time (Figure 1). It has become increasingly proficient at performing tasks historically difficult for computers to execute, including recognizing images, identifying spoken words and using unstructured data.

It is important to note AI is not a monolithic subject area. It comprises a number of mechanisms adding to the notion of what it means to be intelligent. Machine learning, deep learning and natural language processing (NLP) are all examples of terms relating to the collection of technologies

known as AI (Figure 2 on the following page). They are often used to describe AI in more detail, alongside the term AI, or independently. An example of their definition and scope is as follows:

- **Machine learning** is a subfield of AI based around the science and engineering of making machines “learn” for themselves. At its most basic, machine learning is the practice of using algorithms to parse data, learn from it, understand it, and then make a determination or prediction.
- **Deep learning** is a type of machine learning using multi-layered neural networks to learn and improve upon itself for next time, just as humans would. It is about designing highly complex algorithms that can make robots intelligent, such as face recognition techniques used in drones to detect and target terrorists, or pattern recognition/computer vision algorithms to automatically pilot a plane, a train, a boat or a car. Deep learning is used by Google in its voice and image recognition algorithms and by Netflix and Amazon to decide what you want to watch or buy next.

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\* IVR denotes interactive voice response and RPA denotes robotic process automations.

- NLP is another important component of AI. NLP involves intelligent analysis of written language. NLP applications attempt to understand natural human communication, either written or spoken, and communicate in return using similar, natural language. NLP is the technology making it possible for Alexis, Siri, Cortana and other virtual assistants do their magic.

The recent acceleration in AI is being driven by exceptional technological advances along with a major shift in customer expectations. Higher computer power, memory capacity, cloud computing, big data technologies, and global connectivity of both people and machines have enabled machines to run complex algorithms faster than humans and handle more input data than a human could. Consequently, AI systems are now able to perform tasks previously requiring human intelligence, such as visual and speech processing, decision-making and language translation.

The successes of AI are also being facilitated by the massive amounts of data we have today. The wealth of data we now create is astonishing, and the speed at which data is generated has only made data management tools like AI all the more important. Whether it is structured or unstructured data (e.g., social media, wearables, telematics, sensors, news, weather and traffic reports), AI is helping organizations make sense of big data. As AI is able to execute complex analyses and computations at a speed impossible for humans, it generates faster insights. Driverless cars create roughly 4 terabytes a day of data. Statistical models cannot handle that amount of data.

◆ **AI'S IMPACT ON THE INSURANCE INDUSTRY**

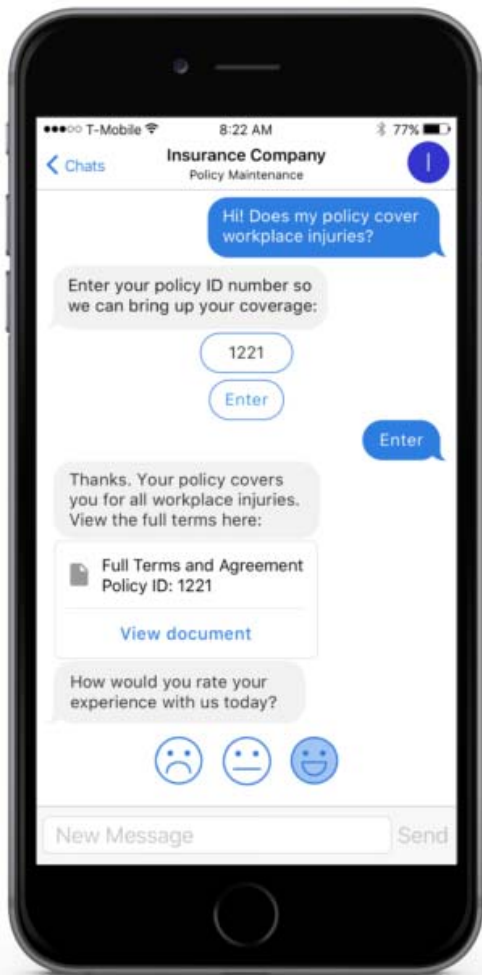
AI has slowly ingrained itself into our everyday lives, from taking full responsibility (as is the case of driverless vehicles) and in some cases intimately listening to our every move (i.e., in the home, with Amazon's Echo). At Amazon Go, Amazon's prototype grocery store, customers can walk in, grab the items they want, and walk out without paying or waiting in a checkout line. Amazon will automatically charge the customer's account and send a receipt. Run out of cereal? No problem. Amazon Prime customers can place an order from their phone and get same-day delivery. Consumers have come to expect these easy, hassle-free experiences—and AI is powering many of them.

Shaped by their experiences with other industries, insurance customers, particularly millennials, now expect quick on-demand services. However, unlike Amazon and many other product and service providers, insurance is an industry with low customer engagement. Traditionally an insurer has just two touch-points to interact with customers: the first is when it sells a product and the second is during the claims process. A 2014 Morgan Stanley Research and Boston Consulting Group study found consumers interacted less with insurers than with any other industry, so the consumer experience with insurers tends to lag behind others.

As such, AI has the potential to affect the insurance industry in multiple ways. The most obvious areas it can be used include claims processing, underwriting, fraud detection and

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**FIGURE 3: FILING A CLAIM USING A CHATBOT  
EXAMPLE FROM PYPESTREAM**



customer service. The Accenture Report notes insurers have begun to use AI technologies as a tool to help improve overall customer experience, with the technology enhancing the way sales and services are executed, facilitating faster claims processing, and enabling more accurate individual risk-based underwriting processes.

Moreover, insurers are sitting on a treasure-trove of big data, the main ingredient AI requires to be successful. When asked about the benefits of embedding AI into their interfaces, more than half of the insurance executives surveyed in the Accenture Report cited better data analysis and insight. The abundance of data fused with unstructured data can be leveraged to increase customer engagement, create more personalized service and more meaningful marketing messages, sell the right product to customers and actually target the right customer.

#### *Customer Service and Marketing*

To improve customer experience, many insurers are investing in virtual assistants like chatbots. A chatbot is a digital service capable of holding natural sounding conversations with human beings with the aim of accomplishing particular tasks, such as answering questions. Two-thirds of the insurance executives surveyed in the Accenture Report said they now use some sort of chatbot in at least one business area to create better customer interactions.

Chatbots are powered by NLP to converse with customers using mobile apps and messaging platforms such as WhatsApp and Facebook Messenger. They answer questions, give basic advice, and address common inquiries and transactions—freeing up human reps to handle the more complicated situations and saving consumers time from having to navigate their way around complicated websites or time-consuming contact centers (Figure 3). Moreover, chatbots are accessible around the clock with no hold times.

One example is Geico’s virtual assistant “Kate,” which launched earlier this year. Kate answers basic policy and billing questions within the app like, “Do you want to know the current balance on your auto insurance policy?,” or, “What about the date of your next payment?” Another example is Allstate’s chatbot, the Allstate Business Insurance Expert (or Able). Able walks customers through the quoting process and retrieves documents for agents.

#### *Claims Management and Fraud Detection*

AI is also changing the way claims are processed. By leveraging AI technology to help manage claims, insurers are looking to reduce the time it takes for a claim to be processed, and, in turn, reduce the handling costs, while improving customer experience. Claims management can be augmented using machine learning techniques in different stages of the claim handling process. For example, machine learning models can help automatically assess the severity of damages and predict the repair costs from historical data, sensors and images.

Metromile, a pay-per-mile car insurer, recently launched an automated claims system designed to speed up the process of verifying and paying out claims. Its new AI-powered claims assistant, AVA, promises to verify and resolve claims in seconds. AVA will also soon be able to issue instant payments and assist with scheduling repairs. Another example is Zurich Insurance, which is deploying AI in deciding personal injury claims. Its chairman recently noted “We recently introduced AI claims handling ... and saved 40,000

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work hours, while speeding up the claim processing time to five seconds.”

Earlier this year, peer-to-peer insurer Lemonade reported a claim handling world record—3 seconds and no paperwork. According to Lemonade, a policyholder submitted a theft claim for a \$979 Canada Goose Langford Parka on Dec 23, 2016. Within seconds, AI Jim, Lemonade’s AI claims bot, reviewed the claim, cross referenced it with the policy, ran 18 anti-fraud algorithms on it, approved it and sent wiring instructions to the bank, informing the policyholder the claim was paid at replacement cost and closed. However, it is important to note the claims process is highly complex and is seldom as simple as this example.

In addition, AI is expected to reduce the instance of insurance fraud by flagging suspicious claims. One of the biggest sources of frustration for insurance agents lies in trying to identify fraudulent claims. Insurers can leverage AI using intelligent automations, self-learning and analyzing patterns to help identify fraudulent claims. AI can help to match information from the claim to the policy and checks for red flags alongside the agent. In addition, AI understands previous behavioral patterns of a customer and can detect patterns or activities with a high probability to be fraudulent otherwise invisible to the human eye.

*Underwriting*

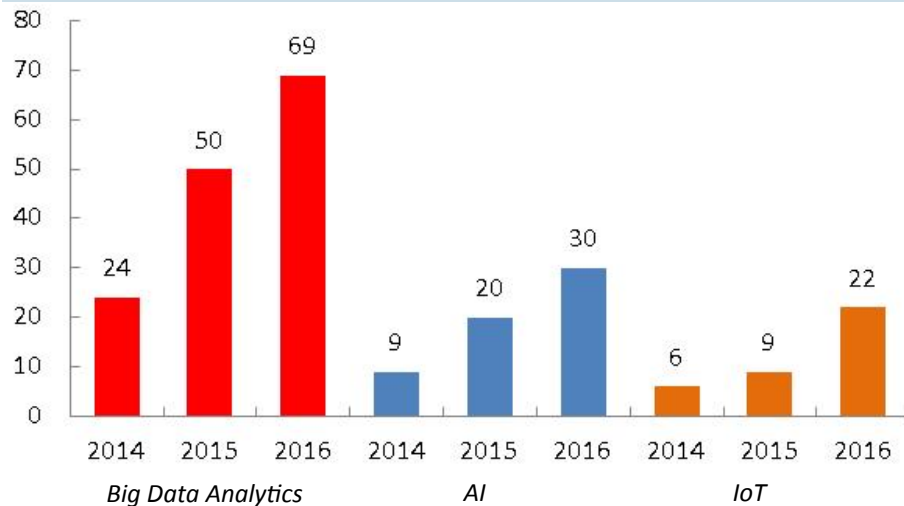
Underwriting is fundamental for every kind of insurance policy. An insurer’s capacity to underwrite risk effectively, that is to assess all risk factors present in a given policy and to price accordingly, is crucial. Factors like health history, age, gender and lifestyle are all critical components of an underwriting assessment. AI can help move underwriting from a manual process predicated on historical data to an automated process using real-time data from thousands of sources to help insurers build a fuller picture of their customers.

In health insurance, for example, data from wearable devices such as Fitbit can track a customer’s activity. AI technologies can analyze this wealth of information quickly and accurately. However, while AI can help improve and speed up underwriting, most agree it can not replace expert human insight and should be viewed as a means to augment human capabilities.

These areas of AI are all just the beginning. AI technology is self-learning. This means over time the systems can adapt, capture data and improve their own analysis capabilities. Moreover, advances in AI extend far beyond cool social apps. Thanks to great progress in deep learning, AI is making inroads in fields of computer vision (e.g., where computers understand the content and context of images). For example, medical startups claim they will soon be able to use

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**FIGURE 4: THE NUMBER OF INSURTECH FIRMS FOCUSED ON AI, BIG DATA AND IOT HAS INCREASED SIGNIFICANTLY**



Source: Accenture.

computers to read X-rays, MRIs, and CT scans more rapidly and accurately than radiologists. Better image recognition is also crucial to unleashing improvements in robotics, autonomous drones, and self-driving cars.

### ◆ CONCLUSION

Over the years, we have seen entire industries transformed due to new technologies—from music to banking, publishing, travel and even taxis. Insurance is now grappling with the risks and opportunities of new technologies. The emergence of AI is a powerful form of technology with the potential to disrupt the entire insurance value chain. So far, the impact of AI in insurance has been minimal. However, the adoption of AI within insurance is gaining momentum and has been an important catalyst for insurers to improve their services to remain competitive.

AI was one of the most popular themes in InsurTech startups last year. According to CB Insights, total funding to InsurTech startups in 2016 hit \$1.7 billion. Big data/analytics, AI and the IoT collectively accounted for 70% of the total value invested. In addition, analysis of data on 450 Insurtech deals over the last three years found deals based on AI and IoT rose by 79% last year (Figure 4 on the previous page). It will be essential for state insurance regulators to engage with InsurTechs to understand the future direction of the industry, as well as the kind of improvements AI is having in the Insurtech space.

While AI provides opportunities for traditional insurers to modernize themselves, a number of obstacles to its adoption in the insurance industry remain. Implementing AI is not straightforward. Insurers face challenges integrating AI into their existing technology due to issues such as data quality, privacy and infrastructure compatibility, according to the Accenture Report. Regulation is also an important factor. Machine learning algorithms can parse through massive amounts of data, generate predictions and make decisions without the ability to explain to humans what it is doing. Transparency will be needed as insurers will have to explain the pricing policies to their customers. “The computer said so” is not an acceptable answer.

In the short-term, AI can help insurers automate some of the routine administrative processes done manually and could help with underwriting, fraud and claims processing. In the long-term, as AI technology evolves, insurers may need to not only address data quality and privacy concerns, but also revamp their IT architectures to support AI features and technical dependences. They will need to identify partners, hire or train for new skill sets, and put new development processes and infrastructure in place.

### ABOUT THE AUTHOR



*Shanique (Nikki) Hall is the manager of the NAIC Center for Insurance Policy and Research (CIPR). She joined the NAIC in 2000 and currently oversees the CIPR's primary work streams, including the CIPR Newsletter; studies; events; webinars and website. Ms. Hall has extensive capital markets and insurance expertise and has authored copious articles on major insurance regulatory and public policy matters. She began her career at J.P. Morgan Securities as a research analyst in the Global Economic Research Division. At J.P. Morgan, Ms. Hall analyzed regional economic conditions and worked closely with the chief economist to publish research on the principal forces shaping the economy and financial markets. Ms. Hall has a bachelor's degree in economics from Albany State University and an MBA in financial services from St. John's University. She also studied abroad at the London School of Economics.*

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## INFRASTRUCTURE INVESTMENT AND THE INSURANCE INDUSTRY

By Dimitris Karapiperis, CIPR Research Analyst

### ◆ BACKGROUND

The U.S., like most developed countries,<sup>1</sup> has an aging infrastructure at various levels of disrepair needing to be replaced or upgraded. Following the definitions of the American Society of Civil Engineers (ASCE) and the Organisation of Economic Co-operation and Development (OECD), “infrastructure” refers to the system of public works in a country or state including roads, transit, ports, water and energy distribution, and transmission lines. An additional type of infrastructure is “social infrastructure,” which typically includes health care facilities, school buildings and waste-management facilities.

In its 2017 infrastructure report, the ASCE graded the nation’s infrastructure with a D+, meaning it is in poor condition and mostly below standard with high risk of failure, as it is approaching the end of its service life.<sup>2</sup> The 2017 grades range across all 16 infrastructure categories, from B for rail to D- for transit. While the cumulative grade remained unchanged from 2013, three categories received a lower grade this year, while seven saw slight improvements.<sup>3</sup>

If nothing else, the poor grade illustrates the urgent need for investment in the nation’s infrastructure. According to the ASCE, in order to meet future needs and restore the country’s global competitive advantage, the estimated \$2.1 trillion 10-year investment gap must be closed. Thus, just to cover existing needs based on current trends, investment from the public and private sectors must increase from 2.5% to 3.5% of U.S. gross domestic product (GDP) by 2025.<sup>4</sup> This estimate may even be on the conservative side, because it does not fully account for all the future infrastructure needs to serve a growing population and accommodate emerging technologies.

Lack of available and sufficient public funding for infrastructure due to fiscal tightening has presented an opportunity for institutional investors with a long-term horizon such as life insurance companies, pension funds, mutual funds, endowments and foundations, which may be uniquely positioned to provide capital for infrastructure projects. In May 2017, the federal Building and Renewing Infrastructure for Development and Growth in Employment (BRIDGE) Act was introduced in the U.S. Senate to establish a national infrastructure bank to help state and local governments to better leverage private investor capital to mend and improve the nation’s infrastructure.<sup>5</sup>

The presumed suitability of infrastructure investment for life insurance companies has further enhanced infrastructure’s

standing as an attractive asset class with hybrid characteristics of equity, debt and real estate.<sup>6</sup> Furthermore, investments offering better-than-average yields are appealing in the current macroeconomic environment characterized by persistent low interest rates. A long duration, higher return investment asset providing steady income stream with moderate volatility would naturally appeal to most life insurance companies. Also, being considered generally uncorrelated with the macro environment makes infrastructure investment seem almost ideal for their investment portfolios.

In May 2016, the U.S. Bipartisan Policy Center issued a report on infrastructure investment, suggesting default rates on infrastructure bonds were generally lower than on corporate bonds, and recommended state insurance regulators consider their performance history in setting capital-related requirements.<sup>7</sup>

However, although infrastructure investment may be able to provide several benefits to investors, it also has a variety of complex and idiosyncratic risks. A detailed and deep understanding of infrastructure financing and contractual structure, as well as knowledge of sophisticated analytical approaches, are needed to fully assess the risk-return profile of each specific infrastructure project.

Furthermore, infrastructure investment is heterogeneous, with many different types which do not always have the same characteristics, making a unique classification challenging for investors as well as regulators. To the extent this is an investment the U.S. insurance industry has less experience with, more granular and detailed reporting of the type and level of activity allowing for more regulatory oversight may be warranted.

Aside from the analytical challenges infrastructure investment may present for valuation and risk assessment, a key question for state insurance regulators is whether the current regulatory framework impedes, in any way, life insurers’ abil-

*(Continued on page 9)*

<sup>1</sup> Most developed countries are members of the OECD whose origins date back to 1960, when 18 European countries, the U.S. and Canada joined forces to create an organization dedicated to economic development. Today, 35 member countries span the globe, from North and South America to Europe and Asia-Pacific, and include many of the world’s most economically advanced countries but also some emerging economies.

<sup>2</sup> [www.infrastructurereportcard.org](http://www.infrastructurereportcard.org).

<sup>3</sup> [www.infrastructurereportcard.org](http://www.infrastructurereportcard.org).

<sup>4</sup> [www.infrastructurereportcard.org](http://www.infrastructurereportcard.org).

<sup>5</sup> [www.congress.gov/bill/115th-congress/senate-bill/1168](http://www.congress.gov/bill/115th-congress/senate-bill/1168).

<sup>6</sup> Weber, B., Staub-Bisang, M. and Alfen, H.W. 2016. “Infrastructure as an Asset Class: Investment Strategy, Sustainability, Project Finance and PPP.” John Wiley & Sons Ltd.

<sup>7</sup> Bipartisan Policy Center. 2016. “Bridging the Gap Together: A New Model to Modernize U.S. Infrastructure” May 2016.



ity to invest in infrastructure and what changes are actually needed, if any. As prudent asset-liability management is a regulatory priority, evaluating the suitability of infrastructure investment for insurance companies cannot compromise the core regulatory mission to preserve the solvency of regulated companies and protect policyholders.

Former NAIC President and Missouri Insurance Director John M. Huff, in his introductory remarks during the Valuation of Securities (E) Task Force special session on infrastructure investment at the 2016 Summer National Meeting, stressed it is critical for regulators, as they consider possible changes in the regulatory regime, to not encourage or incentivize insurance companies to do anything that does not make any sense from an investment perspective or it is not financially prudent.

Insurance companies already have a significant presence in infrastructure financing through their existing bond investments. Insurance companies held approximately \$223 billion in U.S. Treasuries, \$198 billion in general obligation bonds, \$296 billion in municipal revenue bonds and \$780 billion in corporate bonds in infrastructure sectors like utilities, communications, transit, natural resources, power generation and social infrastructure.<sup>8</sup>

### ◆ INFRASTRUCTURE AS AN ASSET CLASS

Given infrastructure's essential role in the economy and for its future growth, the provision of stable and adequate financing to close the infrastructure funding gap could be seen as a societal priority. The ostensible need to enhance private market solutions to better leverage existing capital of institutional investors raises the issue of infrastructure as an asset class.

An asset class is defined as "a set of assets bearing some fundamental economic similarities to each other, and have characteristics making them distinct from other assets that are not part of that class."<sup>9</sup> Therefore, to classify infrastructure investments as an asset class, they must share same risk-return characteristics, behave similarly in the market with returns highly correlated with each other. Also, their price and composition data should be readily available and should be possible to invest in the asset class passively, at the quoted prices.<sup>10</sup>

The absence of those characteristics, combined with the lack of available knowledge on how to benchmark infrastructure, could create additional uncertainty among institutional investors such as life insurance companies tempering their appetite for investing in infrastructure. It would also add to the complexities of classifying, valuing and

providing regulatory guidance as to the treatment of these types of investments by state insurance regulators.

Life insurance companies historically have indirectly invested in infrastructure through corporate bonds of infrastructure-related companies or tax-exempt U.S. municipal revenue bonds. However, bonds more directly earmarked to an infrastructure project or public-private partnership deals may present a number of challenges for investors and regulators alike. Moreover, the issue of direct investments in infrastructure as a relatively untapped sector for investments addressed in this part of the article is further accentuated when we include structures and investment vehicles such as private equity/venture capital, real estate or other alternative investment funds, fund of funds and direct investments or bespoke co-financing structures.

A study by C. Rothballe and C. Kaserer noted the low systematic risk and high idiosyncratic risk of infrastructure investment and argued infrastructure investments are exposed to atypical risk profiles due to construction risk, high operating leverage, low market competition and high levels of asset specificity.<sup>11</sup>

According to Deutsche Bank and Blackrock reports, investors would need to examine each infrastructure investment by infrastructure subsector (e.g., transit, ports, roads, etc.) and stage of development to assess its individual risk-return profile.<sup>12</sup> Infrastructure investments from different subsectors tend to have distinct risk-return profiles, making a narrower analytical approach more meaningful than treating all infrastructure investment as one separate and homogeneous asset class.<sup>13</sup> A number of studies have found significant variance in returns across subsectors within the infrastructure investment space.<sup>14</sup>

During the lifecycle of an infrastructure project, there may be a few different risk-return profiles that may significantly impact its appeal and suitability as an investment for life insurance companies. Infrastructure projects generally go

*(Continued on page 10)*

<sup>8</sup> NAIC 2015 Annual Financial Statements.

<sup>9</sup> Greer, R. J. 1997. "What is an Asset Class, Anyway?" *Journal of Portfolio Management* 23(2), 86-91.

<sup>10</sup> Oberhofer, G. 2001. "Hedge funds – A new asset class or just a change in perspective," *Alternative Investment Management Association Newsletter*, December 2001.

<sup>11</sup> Rothballe, C. and Kaserer, C. 2012. "The risk profile of infrastructure investments: Challenging conventional wisdom." *Journal of Structured Finance*, 18(2), 95-109.

<sup>12</sup> Deutsche Bank. 2014. "European infrastructure update" Technical Report, Blackrock. 2015 "Infrastructure Rising: An Asset Class Takes Shape." April 2015.

<sup>13</sup> Thierie, W. and De Moor, L. 2016. "The characteristics of Infrastructure as an Investment Class." Swiss Society for Financial Market Research, July 2016.

<sup>14</sup> Thierie, W. and De Moor, L. 2016. "The characteristics of Infrastructure as an Investment Class." Swiss Society for Financial Market Research, July 2016.

through four distinct phases—planning, construction, operation and winding-up—with each phase requiring specific risk considerations.<sup>15</sup> An understanding of how expected returns would evolve over a project’s lifecycle and the specific phase at any particular time, as well as the associated risk profile, would fundamentally change investors’ decisions. Accurately assessing the evolving pattern of risk at each phase of a project’s lifecycle would also affect regulators’ concerns and issues regarding the appropriate classification and treatment of the specific infrastructure investment.

Another distinction usually made when considering an infrastructure investment is between greenfield and brownfield infrastructure projects, with each having its own unique characteristics. Greenfield infrastructure investments involve early-stage projects at the pre-operational or construction phase where there are no established demand patterns and no income stream. Greenfield investments pose greater risk for investors in terms of cash flow uncertainty, because there would be no return in the event the project is not completed.

However, greenfield investments provide the chance to realize a greater return with potentially substantial investment gains coming in later years. Brownfield infrastructure investments involve projects already constructed, providing steady and predictable income stream for investors. According to Credit Suisse, brownfield investments typically fall in the lower risk/lower return end of the spectrum, closer to fixed-income than equities, while greenfield projects usually boast a higher risk/higher return profile, with potential investment gains coming in later years.<sup>16</sup>

The generally accepted view of infrastructure investment may be partly the outcome of an idealized market view focusing on a limited set of advantageous characteristics; i.e., inelastic demand profile being largely unaffected by economic or market fluctuations translating into moderate volatility and stable and predictable income streams and no correlation with other investments. While these characteristics tend to be shared among a certain number of infrastructure investments, there is still a large subset where some, but not all, of these favorable characteristics apply. The global financial crisis showed infrastructure investments previously viewed as conservative low-risk investments proved to be quite volatile with much lower-than-predicted cash flow, appreciably higher volatility and correlated with equity markets.

Moody’s Investors Service (Moody’s), in an infrastructure data report,<sup>17</sup> noted there may not be clear distinction between infrastructure and non-infrastructure entities, not

least because infrastructure investments are genuine hybrid credits.<sup>18</sup> A natural gas gathering and processing system, for example, may at first carry a corporate guarantee by its sponsor, which may drop off later on. Thus, the same system may be considered a corporate debt initially and then transition to infrastructure.<sup>19</sup> Often, there may be credits blending specific infrastructure risk and commodity risk. When commodity risk tends to be more dominant, as in the case of mining and oil and gas exploration and production, the infrastructure label on the investment may not even apply.<sup>20</sup>

To meet these challenges and attract institutional long-term investors, Swiss Re, in its presentation during the Valuation of Securities (E) Task Force special session, noted the need for defining a transparent, harmonized, standardized and accessible infrastructure asset class.<sup>21</sup> Ultimately, what is needed, according to Swiss Re, are infrastructure investments sharing characteristics of a widely accepted sector, emphasizing the potential of infrastructure bonds.<sup>22</sup>

### ◆ INFRASTRUCTURE INVESTMENT CHARACTERISTICS

Although infrastructure investment is admittedly a heterogeneous category, some experts have argued infrastructure investment’s appeal is actually based on common characteristics found across many infrastructure investments. However, there is scant empirical evidence regarding the presence and/or prevalence of these characteristics.<sup>23</sup>

The use of infrastructure investment as a countercyclical investment to protect against capital market downturns points to infrastructure’s insensitivity to economic cycles as one of the defining characteristics. Infrastructure investments’ insulation from the macroeconomic environment arises from its inelastic demand, which results in stable cash flows for investors.<sup>24</sup>

*(Continued on page 11)*

<sup>15</sup> [www.value3-advisory.com/infrastructure-investments-promising-option-insurance-companies](http://www.value3-advisory.com/infrastructure-investments-promising-option-insurance-companies).

<sup>16</sup> Credit Suisse. 2010. “Can Infrastructure Investing Enhance Portfolio Efficiency?” Credit Suisse Asset Management, May 2010.

<sup>17</sup> For Moody’s, the term “infrastructure” is used in a broad sense and includes securities issued by both public and private issuers (operating companies and projects) providing large, capital-intensive, critical assets that underpin economic activity.

<sup>18</sup> Moody’s Investors Service. 2016. “Infrastructure Default and Recovery Rates, 1983–2015,” Data Report, July 2016.

<sup>19</sup> *Ibid.*

<sup>20</sup> *Ibid.*

<sup>21</sup> Swiss Re. 2016. “Infrastructure Investing. It Matters.” Presentation to the Valuation of Securities (E) Task Force, August 2016.

<sup>22</sup> *Ibid.*

<sup>23</sup> Thierie, W. and De Moor, L. 2016. “The characteristics of Infrastructure as an Investment Class,” Swiss Society for Financial Market Research, July 2016.

<sup>24</sup> Panayiotou, A. and Medda, F. 2015. “Portfolio infrastructure investments: An analysis of the European and UK Cases,” International Symposium for Next Generation Infrastructure Conference Proceedings.

Furthermore, infrastructure's generally monopolistic market position and the requirement for high initial capital investment could suggest relatively lower default rates than other investments.<sup>25</sup> According to Moody's, infrastructure investments in its rated universe are less likely to suffer credit losses than non-financial corporate debt issuers, especially over longer horizons. In the aggregate, infrastructure debt experiences significantly lower default rates than non-financial corporate issuers. The 10-year cumulative default rate for non-financial corporate issuers is about five times higher than for infrastructure.<sup>26</sup>

Infrastructure investment's long asset lifecycle is another typical characteristic. Infrastructure investments, with their long-time horizon and an undeveloped secondary market, tend to be illiquid investments and, therefore, present a different risk profile in comparison with the broader asset class of corporate bonds. In turn, infrastructure investments should provide an illiquidity premium enhancing its appeal to investors.<sup>27</sup>

The opaqueness as compared to the standard investments of life insurance companies is another feature characterizing infrastructure investment. The relative lack of information available to investors to fully assess the different risk structures creates additional uncertainty and presents a possible barrier to many investors.

An additional characteristic of infrastructure investments often discussed in articles and research reports is their ability to generate attractive inflation-adjusted returns.<sup>28</sup> Despite persistent low inflation, protection from future inflation is still a concern for most investors, adding to the appeal of infrastructure investment. However, there are doubts about the inflation-hedging properties of infrastructure investment. An article by Wurstbauer and Schäfers showed infrastructure investments' ability to hedge inflation depends on many factors such as the specific type of infrastructure, underlying revenue structure, ownership rights and time period. The dependence on multiple factors makes it problematic to definitively conclude infrastructure investments, in general, could be beneficial to investors as inflation-hedging tools.<sup>29</sup> Instead, each specific infrastructure investment should be analyzed separately to assess its individual properties and usefulness for a particular investor.

### ◆ INFRASTRUCTURE INVESTMENTS' PLACE IN INSURER PORTFOLIOS

As noted earlier, life insurance companies, with their long-term investment horizon, appear well suited to be active in the infrastructure investment space. In general, infrastructure investments are expected to be able to provide stable

and secure cash flows for life insurance companies, whose liability structure affords them more flexibility in investing in a relatively illiquid asset.

Insurance companies have also pointed to diversification benefits offered by infrastructure investments to explain their appeal. Although observed correlations are dynamic, changing dramatically with market conditions and due to exogenous factors, infrastructure investment has relatively low correlation with a number of traditional life insurance industry investment assets, with the possible exception of equities.<sup>30</sup>

Another key factor often cited by insurers driving their would-be demand for infrastructure investments is their attractive risk-adjusted returns. The insurance industry has quoted studies noting competitive spreads of 150 basis points (bps) to 250 bps for infrastructure investments with similar default rates, higher recoveries and lower volatility than corporate bonds at the same risk level.<sup>31</sup>

Ultimately, though, for infrastructure investment to earn a place in life insurers portfolios, high-quality data about any specific infrastructure project must be readily available, accessible and standardized for risk assessment.

Particularly for direct infrastructure investments, expert knowledge—not only of the financial instrument, but also of the underlying project—is essential. Public-private partnerships could potentially make infrastructure investments more attractive for life insurance companies relative to other investments. For example, certain fiscal guarantees for revenues of infrastructure projects, could be granted in order to increase the expected return on infrastructure investments and at the same time decrease their risk.<sup>32</sup>

*(Continued on page 12)*

<sup>25</sup> Bianchi R, J. and Drew M, E. 2014. "Is Infrastructure An Asset Class? An Asset Pricing Approach," CSIRO-Monash Superannuation Research Cluster, December 2014.

<sup>26</sup> Moody's Investors Service. 2016. "Infrastructure Default and Recovery Rates, 1983-2015," Data Report, July 2016.

<sup>27</sup> Bianchi R, J. and Drew M, E. 2014. "Is Infrastructure An Asset Class? An Asset Pricing Approach," CSIRO-Monash Superannuation Research Cluster, December 2014.

<sup>28</sup> Thierie, W. and De Moor, L. 2016. "The characteristics of Infrastructure as an Investment Class," Swiss Society for Financial Market Research, July 2016.

<sup>29</sup> Wurstbauer, D. and Schäfers, W. 2015. "Inflation hedging and protection characteristics of infrastructure and real estate assets" *Journal of Property Investment & Finance*, Vol. 33 Issue 1 pp. 19-44.

<sup>30</sup> Credit Suisse. 2010. "Can Infrastructure Investing Enhance Portfolio Efficiency?" Credit Suisse Asset Management, May 2010.

<sup>31</sup> Oliver Wyman. 2016. "Infrastructure Investments" Presented to the Valuation of Securities (E) Task Force at the 2016 Summer National Meeting in San Diego, CA.

<sup>32</sup> Gründl, H., Gal J. and Dong, M. 2016, "The evolution of insurer portfolio investment strategies for long-term investing" *OECD Journal: Financial Market Trends*, Vol. 2016 Issue 1.

While life insurance companies' investment strategies depend on a variety of factors, the regulatory treatment of their investments could be important. Indeed, state insurance regulators could potentially help remove unnecessary barriers for infrastructure investment.

### ◆ REGULATORY CONCERNS AND EFFORTS

In light of the issues and the challenges surrounding infrastructure investments presented in this article, it is no surprise there are a number of concerns shared by state insurance regulators regarding the suitability of such investments for insurance companies.

First, the challenge of properly classifying and treating infrastructure investments whose risk-return profiles can be dramatically different could complicate the task of developing those appropriate regulatory changes to encourage infrastructure investment by insurance companies.

Furthermore, the fact infrastructure investment, unlike corporate debt, does not fit well within established financial metrics to properly assess the risk could be problematic. This, combined with the lack of standardized and available documentation, makes the decision of how to treat infrastructure within the existing regulatory framework challenging.

Valuation rules involving a fair value requirement or disclosure could create additional issues, given infrastructure investments, as it has been shown, are typically illiquid and difficult to value.

As noted earlier, to address these concerns, the Valuation of Securities (E) Task Force held a special session during the 2016 Summer National Meeting to explore the issue of infrastructure investment. Former NAIC President Huff emphasized the need to understand better how to define "infrastructure investment" for regulatory purposes and how it differs from what insurers invest in now.

The goal of the session was to help identify and evaluate any potential impediments to insurers wishing to invest in infrastructure projects and decide whether any changes are required and/or desired.

Working toward tackling some of these issues, the Valuation of Securities (E) Task Force and the Securities Valuation Office (SVO), in cooperation with the insurance industry, are developing new methodologies to evaluate infrastructure investments specifically related to power-generation pro-

jects. The formulation of an SVO methodology, along with the related guidance, is a first step toward articulating an analytical approach to such complex infrastructure investments. It also provides a framework against which insurers can evaluate the regulatory treatment should such transactions actually occur.

### ◆ CONCLUSION

The recognition and acceptance of the existence of a substantial infrastructure investment gap and infrastructure's contribution to economic growth does not imply, in any way, the endorsement of any changes in the regulatory framework to encourage infrastructure investment by insurers. This is especially true, if these changes run counter to the primary goal of state insurance regulation. As Former NAIC President Huff noted during the Valuation of Securities (E) Task Force special session, state insurance regulators' first priority is the solvency of regulated insurers and the financial stability of the industry.

Investing in long-duration infrastructure projects could contribute to the better matching of life insurers' assets and liabilities if they also include well predictable returns. Finding a regulatory solution for the appropriate and fair treatment of infrastructure investment should not, however, mean state insurance regulators need to incentivize insurers to engage in an imprudent investment activity.

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### ABOUT THE AUTHOR



*Dimitris Karapiperis joined the NAIC in 2001 and he is a researcher with the NAIC Center for Insurance Policy and Research. He has worked for more than 20 years as an economist and analyst in the financial services industry, focusing on economic, financial market and insurance industry trends and developments. Karapiperis studied economics and finance at Rutgers University and the New School for Social Research, and he developed an extensive research background while working in the public and private sector.*

## THE RELEVANCE OF THE MCCARRAN-FERGUSON ACT

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By Eric Nordman<sup>1</sup>, Director of Regulatory Services and CIPR

### ◆ INTRODUCTION

It was 1945 when the 79th U.S. Congress enacted the McCarran-Ferguson Act.<sup>2</sup> The Act was needed to address the outcome of a 1944 U.S. Supreme Court ruling in *United States v. South-Eastern Underwriters Association*.<sup>3</sup> The *South-Eastern Underwriters* decision overturned the long-held belief insurance was not interstate commerce. The decision created confusion in the insurance markets as suddenly the U.S. government found itself in the business of regulating insurance under the Commerce Clause. However, there were no federal laws or a viable regulatory framework to regulate the solvency or market activity of insurers and insurance producers.

The McCarran-Ferguson Act is as relevant today as it was when it was adopted. It is brilliant in its simplicity. It solved a problem created by a significant court case and demonstrated the flexibility of our democracy.

### ◆ HISTORICAL PERSPECTIVE

Our journey begins with a story about an insurance agent named Samuel Paul. Mr. Paul was a resident of the commonwealth of Virginia. Mr. Paul was appointed by several New York-based fire insurers to represent them as an agent to sell fire insurance policies to Virginia residents. For that to happen, there were several preconditions. The commonwealth had enacted laws requiring insurers and persons representing insurers to obtain a license and post a bond ranging from \$30,000 to \$50,000 before transacting the business of insurance. Mr. Paul partially complied with the laws of the Commonwealth. He provided the auditor of public accounts with proof of his authorization from the New York insurers to serve as their agent. He submitted an application to the proper office to receive a license. He met several other requirements, including agreeing to pay any taxes due. He balked at providing the required bond. Neither Mr. Paul nor the New York insurers posted the required bond. Mr. Paul's request for a license was denied by the commonwealth based on his refusal to post the required bond.

Despite his unlicensed status, Mr. Paul sold a fire insurance policy to a Virginia resident. Mr. Paul was indicted and convicted for his violation by the city of Petersburg, Virginia. His sentence was a fine of \$50. He appealed the decision and his appeal was eventually heard by the Supreme Court and became a landmark case establishing the regulatory framework for insurers from November 1869 until it was overturned in 1944.

In the case *Paul v. Virginia*, at issue was Article IV, Section 2 of the U.S. Constitution.<sup>4</sup> The pertinent sentence at issue was, "The Citizens of each State shall be entitled to all Privileges and Immunities of Citizens in the several states." Mr. Paul claimed the Virginia law requiring he be licensed and post bond infringed on his privileges granted under the Constitution.

Justice Stephen Johnson Field, an appointee of President Abraham Lincoln, wrote the majority opinion of the court. In it he said, "corporations are not citizens within its meaning. The term citizens as there used applies only to natural persons . . . not to artificial persons created by the legislature, and possessing only the attributes which the legislature has prescribed."<sup>5</sup> He went on to say, "Special privileges enjoyed by citizens in their own States are not secured in other States by this provision. It was not intended by the provision to give to the laws of one State any operation in other states. They can have no such operation, except by the permission, express or implied, of those States. The special privileges which they confer must, therefore, be enjoyed at home, unless the assent of other States to their enjoyment therein be given."<sup>6</sup>

Thus, the conclusion when the Supreme Court ruling affirmed the decision of the Supreme Court of Appeals in Virginia was that insurance was not considered to be interstate commerce subject to jurisdiction by Congress. The court found that insurance policies should be treated as any other contract subject to state law. Therefore, the states were free to regulate and tax the business of insurance as they saw fit.

### ◆ CONCERN ABOUT ANTITRUST ACTIVITIES

Over time, a cartel system evolved for property and casualty insurers where, what we would call today, rating organizations developed. There were a number of these rating organizations and often the by-laws of these organizations required members to adhere to a common set of rates and common policy forms. These requirements were viewed by many as anti-competitive. Significant control was vested

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<sup>1</sup> The purpose of this article is to provide a historical perspective on the McCarran-Ferguson Act and to explore its relevance today. The opinions expressed in this article are solely my own. They are not the opinions of the National Association of Insurance Commission (NAIC) members individually or collectively or opinions shared by other NAIC staff. This article is being drafted as part of the charge of the NAIC Center for Policy and Research (CIPR) to serve as a thought leader and provide information for public policymakers to consider.

<sup>2</sup> 15 U.S.C. §§ 1011-1015.

<sup>3</sup> *United States v. S.-E. Underwriters Ass'n*, 322 U.S. 533 (1944).

<sup>4</sup> *Paul v. State of Virginia*, 75 U.S. 168 (1868).

<sup>5</sup> *Id.* at 177.

<sup>6</sup> *Id.* at 180 181.

with the rating organizations and some of them were ruthless in enforcing their power to the detriment of non-member competitors.

A different scenario developed for life insurers. In the life insurance sector, there were many interlocking directorships, where a buddy system rewarded participants and punished outsiders.

President Franklin D. Roosevelt played a role in the journey. He was interested in fostering competition and was using the National Industrial Recovery Act of 1933 as the tool of choice.<sup>7</sup> That was until it was declared unconstitutional. The National Industrial Recovery Act was part of the legislation designed to help the country recover from the Great Depression. It suspended antitrust laws in favor of an alliance of industries, where businesses were asked to form alliances to write codes of fair competition. Essentially, this was a form of self-regulation. The law created the National Recovery Administration to promote compliance with the self-regulatory guidance, among other things. The National Industrial Recovery Act was declared unconstitutional in May 1935 in the case *A.L.A. Schechter Poultry Corp. v. United States*.<sup>8</sup> At issue was the unlawful assignment of legislative powers to the National Recovery Administration when the Constitution reserved those powers for Congress.

Since the National Industrial Recovery Act could no longer be used to foster competition, the Roosevelt administration turned to the antitrust laws as a way to break up detrimental concentrations of economic power. Ironically the U.S. Department of Justice Antitrust Division looked into a case with ties to Kansas City, MO, the current home of the NAIC. The infamous former Kansas City Mayor Thomas J. Pendergast was under investigation for tax evasion. One element investigated was his failure to report a bribe he received on his income taxes. The bribe originated from a lawyer named Charles Street who represented a Chicago-based fire insurance rating organization. Long story short, Mr. Pendergast shared the bribe with R. Emmet O'Malley, who was, through Pendergast's influence, appointed as superintendent of insurance for Missouri. Discovery during the Pendergast – O'Malley investigation revealed certain anticompetitive behavior by the South-Eastern Underwriters Association, which is covered in the next section.

### ◆ UNITED STATES V. SOUTH EASTERN UNDERWRITERS

It was June 5, 1944, when the U.S. Supreme Court delivered an opinion in the *United States v. South-Eastern Underwriters Association* case.<sup>9</sup> The opinion set the insurance world on its heels. The Supreme Court overturned a long-held belief insurance was not interstate commerce and, there-

fore, not subject to federal anti-trust laws and oversight by the Federal Trade Commission.<sup>10</sup> There was concern a shift from the cartel pricing mechanisms in place at the time would lead to unrestrained competition and many insurer insolvencies.

The South-Eastern Underwriters Association consisted of roughly 200 private stock fire insurers and 27 individuals. In today's parlance, South-Eastern Underwriters would be known as a rating organization. South-Eastern Underwriters was appealing a decision in the district court alleging violations of the federal Sherman Antitrust Act. Specifically, South-Eastern Underwriters was alleged to be part of a conspiracy to restrain interstate trade and commerce by engaging in price fixing and conspiring to monopolize fire and allied lines insurance transactions in several states. Facts presented show South-Eastern Underwriters members controlled 90% of the market in six states (Alabama, Florida, Georgia, North Carolina, South Carolina and Virginia). Among the practices identified were fixing of premium rates and agent commissions; boycotts and other types of coercion and intimidation to force others to join South-Eastern Underwriters; compelling people who needed insurance to buy from South-Eastern Underwriters member insurers; denying reinsurance to non-member insurers; disparaging non-member competitors' services and facilities; and removing appointments for agents who also agreed to work with a non-member insurer.<sup>11</sup>

The Supreme Court majority opinion was written by Justice Hugo Lafayette Black, an appointee of President Franklin D. Roosevelt. In it, Justice Black presents two questions for the court to consider: "Was the Sherman Act intended to prohibit conduct of fire insurance companies which restrains or monopolizes the interstate fire insurance trade?" and, if so, "Do fire insurance transactions which stretch across state lines constitute 'Commerce among the several States' so as to make them subject to regulation by Congress under the Commerce Clause?"<sup>12</sup> The Court assumed an affirmative answer to the first question and focused its analysis on the second question.

Generally, courts do not construe words to have a more narrow meaning than they have in common language. Justice Black noted that to interpret the word "commerce" so

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<sup>7</sup> National Industrial Recovery Act, Pub. L. No. 73-67 § 1, 48 Stat. 195 (1933), *Title I invalidated* by *Schechter Poultry Corp. v. United States*, 295 U.S. 495 (1935) (Title II expired in June, 1935).

<sup>8</sup> *A.L.A. Schechter Poultry Corp. v. United States*, 295 U.S. 495 (1935).

<sup>9</sup> *United States v. South-Eastern Underwriters Ass'n*, 322 U.S. 533 (1944).

<sup>10</sup> *Id.* at 571.

<sup>11</sup> *Id.* at 535-36 (pages 4 & 5).

<sup>12</sup> *Id.* at 538-39.

as not to include the business of insurance would be giving the word a more narrow definition than in the common language. He found the language of the time to be clear and suggested the meaning of the word “commerce” had not changed since the *Paul v. Virginia* decision. He noted the business of insurance employed more than 500,000 people and its annual premium receipts of \$6 billion exceeded the annual revenue receipts of the federal government at the time. He suggested the insurance business touches the home, family, occupation or business of almost every person in the country, often involving more than one state.<sup>13</sup>

He noted that the Commerce Clause must be read broadly so that Congress can “discharge its Constitutional duty to govern commerce among the states.”<sup>14</sup> Furthermore, he found no evidence supporting the notion that the Sherman Act was intended to exclude the business of insurance from its reach. Finally, he determined that the Sherman Act did not necessarily invalidate state laws regulating insurance because few states would allow companies to fix rates and no state would allow the type of destructive business practices alleged in this case.

The Supreme Court was not unanimous in its decision. Writing one of the dissenting opinions was Justice Robert Jackson, another appointee of President Franklin D. Roosevelt. Justice Jackson suggested the majority was not taking a common sense approach to the problem. He said the court was not evaluating the constitutionality of a law enacted by Congress, but rather using a law to strike down the constitutional basis for state insurance regulation.<sup>15</sup> He noted the states had successfully been regulating insurance for more than 100 years. He observed insurance departments have accumulated the institutional experience and wisdom indispensable to good administration.

Justice Jackson noted there was no indication from Congress that it concurs with a plan to federalize insurance regulation and suggested there was evidence to the contrary. He suggested if Congress intended to assume the regulation of the insurance business, it surely would not have relied solely on the anti-trust laws to accomplish the task. He listed several failed bills to establish federal regulation of insurance over a period from 1866 to 1933. He noted that proponents of a federal regulatory system tended to be representatives of the largest insurers. In addition, he pointed out the failure of several federal agencies to effectively regulate other businesses. Specifically mentioned were the Interstate Commerce Commission’s failure to deal with railroad abuses, the Beef Trust and the Oil Trust. He noted *amicus curiae* briefs were received from 35 states protesting the court’s decision.<sup>16</sup>

#### ◆ REACTION TO THE SOUTH-EASTERN UNDERWRITERS DECISION

NAIC President Charles F. J. Harrington (Mass.) opened the 75th Annual Meeting of the NAIC on June 15, 1944, at the Edgewater Beach Hotel in Chicago, IL. In his opening remarks he quoted Chief Justice Harlan F. Stone:

But the immediate and practical effect of the decision now rendered is to withdraw from the states, in large measure, the regulation of insurance and to confer it on the national government, which has adopted no legislative policy and evolved no scheme of regulation with respect to the business of insurance. Congress having taken no action, the present decision substitutes, for the varied and detailed state regulation developed over a period of years, the limited aim and indefinite command of the Sherman Act for the suppression of restraints on competition in the marketing of goods and services in or affecting interstate commerce, to be applied by the courts to the insurance business as best they may.<sup>17</sup>

During the NAIC national meeting, a resolution was adopted unanimously urging the continuation of state regulation of the business of insurance, stating that “the interests of the insuring public can best be served by proper supervision on the part of State Governments, and in keeping with constitutional limitations as defined by the United States Supreme Court over the past seventy-five years.”<sup>18</sup> The insurance regulators were galvanized in support of the continuation of state insurance regulation. They were also concerned, without a resolution, insurers would begin to withhold premium tax payments to the states.

Other forces were in play. Writings at the time reveal the development of three separate schools of thought. Each was based on the self-interest of the parties subject to regulation. The result was the development of three separate bills. The fire insurers liked the cartel system which was essentially a form of self-regulation. They were supportive of the Bailey-Walters bill. This bill began in the U.S. House of Representatives and reported out of the U.S. Senate Committee on the Judiciary. It never reached the floor of the Senate.<sup>19</sup>

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<sup>13</sup> *Id.* at 540-41.

<sup>14</sup> *Id.* At 551.

<sup>15</sup> *Id.* at 565.

<sup>16</sup> *Id.* at 589-94.

<sup>17</sup> 1944 NAIC Proc. 75th Sess. p. 98-99.

<sup>18</sup> *Id.* at 43.

<sup>19</sup> Kevin P. Hennosy, *Fear and Loathing in Insurance Regulation*, 157 Pub. Rough Notes., no. 11, Nov. 2014, at 76, 78 (2014).

## THE RELEVANCE OF THE MCCARRAN-FERGUSON ACT (CONTINUED)

The McCarran-Ferguson Act as initially drafted, fit the interests of the large stock life insurers. They were anxious to maintain their cozy nature with interlocking boards and exclusion of outsiders. In its initial form the bill provided insurers with a temporary exemption from antitrust law and a permanent exemption from enforcement activity by the Federal Trade Commission. The bill sponsors were U.S. Senator Patrick Anthony McCarran (D-NV) and U.S. Senator Homer Samuel Ferguson (R-MI). They were chair and ranking member of the Senate Judiciary Committee, respectively.<sup>20</sup>

The third bill was known as the “commissioners” bill.<sup>21</sup> It was supported by the independent insurers and independent agents. Support came from the National Association of Insurance Agents and a group of independent insurers.<sup>22</sup> Supporters of this approach worked with U.S. Senator Joseph C. O’Mahoney (D-WY). The first section of the bill provided jurisdiction to the states and allowed the states to regulate and tax the business of insurance. It further stated that federal law could not invalidate, impair or supersede state insurance law. Other provisions exempted insurance from oversight by the Federal Trade Commission and the Robinson-Patman Act. It included a limited exemption from the Sherman Act and the Clayton Act.<sup>23</sup>

### ◆ THE MCCARRAN-FERGUSON ACT

Senator O’Mahoney was well connected to the Roosevelt administration and he led the effort to bring the three factions together. As a result, Senate Bill 340 of 1945 was proposed as a substitute for the original bill drafted by Senator McCarran and Senator Ferguson. Ironically, even though the bill still carried his name, Senator McCarran did not support it. He instead favored a total and permanent antitrust exemption for the insurance sector.<sup>24</sup>

The new McCarran-Ferguson Act contained most of the text of the “commissioners” bill. There were two significant changes to it. A provision was added to the boycott provision so that it would cover agreements in addition to acts of boycott, coercion or intimidation. The other change was to delete a provision in the “commissioners” bill allowing the states to keep or enact laws in conflict with the Sherman Act or the Clayton Act. The Senate passed the bill as amended and the House passed the “commissioners” bill. The difference between the two was the Senate amendments.<sup>25</sup>

A conference committee was appointed to discuss and iron out the differences. Key players in the discussion were Senator O’Mahoney (D-WY), Senator Orrice Abram “Abe” Murdock, Jr. (D-UT) and Senator Robert Alphonso Taft (R-OH). The House agreed to the new version without debate on Feb. 23, 1945. The Senate debated the report on Feb. 26

and Feb. 27, 1945. The Senate adopted the bill on Feb. 27, 1945. On March 9, 1945, the conference report version of the law was signed by President Roosevelt and became Public Law 15 of 1945.<sup>26</sup>

The complete text of the enacted McCarran-Ferguson Act is included in the appendix of this article. The key provisions of the Act are as follows:

- Congress declares the continued regulation and taxation by the states of the business of insurance is in the public interest (15 U.S.C. § 1011).
- Silence by Congress shall not be construed to impose any barrier to regulation or taxation of the business of insurance by the states (15 U.S.C. § 1011).
- The business of insurance is subject to the laws of the states which relate to the regulation or taxation of the business of insurance (15 U.S.C. § 1012(a)).
- Every person engaged in the business of insurance is subject to the laws of the states which relate to the regulation or taxation of the business of insurance (15 U.S.C. § 1012(a)).
- No Act of Congress shall be construed to invalidate, impair, or supersede any law enacted by any state for the purpose of regulating the business of insurance unless such Act specifically relates to the business of insurance (15 U.S.C. § 1012(b)). This says Congress must specifically mention the business of insurance if it intends a particular piece of legislation to apply to the business of insurance.
- No Act of Congress shall be construed to invalidate, impair, or supersede any law enacted by any state which imposes a fee or tax upon such business, unless such Act specifically relates to the business of insurance (15 U.S.C. § 1012(b)).

(Continued on page 17)

<sup>20</sup> *Id.*

<sup>21</sup> The complete text of the “Commissioners” bill is included in the appendix of this article.

<sup>22</sup> *Id.* at 86. The National Association of Insurance Agents is now known as the Independent Insurance Agents & Brokers of America, Inc. The group of independent insurers later formed the National Association of Independent Insurers. The National Association of Independent Insurers and the Alliance of American Insurers merged to form the Property Casualty Insurers Association of America (PCI).

<sup>23</sup> Kevin P. Hennoy, *The Moratorium*, 158 Pub. Rough Notes., no. 1, Jan. 2015, at 48, 79 (2015).

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

<sup>26</sup> Kevin P. Hennoy, *Use It or Lose It*, 158 Pub. Rough Notes., no. 2, Feb. 2015, at 70, 72. The complete text of the adopted McCarran-Ferguson Act is included in the appendix of this article.



## THE RELEVANCE OF THE MCCARRAN-FERGUSON ACT (CONTINUED)

- However, the Sherman Act, the Clayton Act and the Federal Trade Commission Act apply to the business of insurance to the extent the business of insurance is not regulated by state law (15 U.S.C. § 1012(b)). This provision requires active regulation by states of the business of insurance to avoid application of the federal anti-trust laws to the business of insurance.
- The Sherman Act applies to any agreement to boycott, coerce, or intimidate, or act of boycott, coercion, or intimidation (15 U.S.C. § 1013(b)). Insurers and persons engaged in the business of insurance remain subject to the Sherman Act. The Sherman Act is an antitrust law intended to prevent monopolies or cartels and encourage competitive markets.
- Insurers remain subject to the National Labor Relations Act, the Fair Labor Standards Act and the Merchant Marine Act (15 U.S.C. § 1014).

### ◆ THE PERIOD FOLLOWING THE ENACTMENT OF THE MCCARRAN-FERGUSON ACT

The enactment of the McCarran-Ferguson Act set off a flurry of activity at the NAIC and in the states. Regulatory frameworks were strengthened and model legislation was discussed and adopted. In a Report of the Subcommittee on Federal Legislation, rate regulation was discussed.<sup>27</sup> Because the cartel approach had clearly been discarded with the enactment of the McCarran-Ferguson Act, the states recognized a pressing need to enact laws to regulate rates used by property and casualty insurers. This led to the development of the Fire and Marine Rating Bill and the Casualty and Surety Rating Bill.<sup>28</sup> These model laws introduced the frameworks for the rating laws in place today. They included several concepts including the formation, licensing and regulation of rating organizations (the advisory organizations of today); the rate standards that rates should not be excessive, inadequate, nor unfairly discriminatory; and the requirements for filing and approval of rates and rating systems. Also included was a prohibition against giving rebates.<sup>29</sup>

It is beyond the scope of this article to go into detail on all the meetings and deliberations of the mechanism established to assemble all the parts needed to effectively implement the authority granted by the McCarran-Ferguson Act. Persons interested in reading further on the aftermath should look at the information on the All-Industry Committee established in 1946 and documented in the NAIC *Proceedings*, Seventy-Seventh Session 1946.

### ◆ RELEVANCE OF THE MCCARRAN-FERGUSON ACT TODAY

The McCarran-Ferguson Act is as relevant today as it was when it was first enacted. It contains the basic delegation of authority from Congress to the states with respect to the regulation and taxation of the business of insurance. It has been affirmed as the law of the land in the Gramm-Leach-Bliley Act and in the Dodd-Frank Act.<sup>30</sup>

In today's world, there is much discussion of deregulation and making things easier for businesses. Designing the appropriate amount of regulation of the business of insurance to ensure solvency, promote competitive markets and ensure sound consumer protection can be challenging. It is important for the insurance industry, consumers, insurance producers and regulators to remember deregulation of the business of insurance is not like deregulation of other sectors of American businesses. The congressional delegation of authority to the states is a contingent delegation of authority.

There are two contingencies affecting the delegation of authority. First, Congress can enact legislation applicable to the business of insurance by mentioning it in a bill and affirmatively stating that the legislation applies to the business of insurance. Second, when the states do not enact or maintain laws to regulate the business of insurance, such regulation is left to Congress under the Sherman Act, the Clayton Act and the Federal Trade Commission Act.

Thus, deregulation of aspects of the business of insurance may be accompanied by some unanticipated outcomes with respect to antitrust laws. For example, sharing loss data among competitors as is done through advisory organizations would be considered an antitrust violation. Organizations such as Insurance Services Office and the National Council on Compensation Insurance can only exist under active state regulation of the products they produce and the information they collect.

In addition, if state insurance regulators fail to regulate, the insurance industry does not become deregulated; it merely finds itself with a new master, the Federal Trade Commis-

*(Continued on page 18)*

<sup>27</sup> 1945 NAIC Proc. 76th Sess. p. 170-171.

<sup>28</sup> Herbert H. Naujoks, *Eight Years After S.E.U.A. – Present Status of the Regulation of Insurance as Commerce*, 35 Marq. L. Rev. 339, 351 (1952).

<sup>29</sup> *Id.*

<sup>30</sup> The Gramm-Leach Bliley Act is formally known as the Financial Services Modernization Act, 15 U.S.C. §§ 6801–6809 (1999). Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010).

sion. This is an outcome no one expects or thinks about. It is important for all not to forget how relevant the McCarran-Ferguson Act remains today.

### ◆ CONCLUSION

It is important for state insurance regulators, as well as regulated individuals and entities, to be familiar with and understand the importance of the McCarran-Ferguson Act. Key concepts in the law provides a contingent delegation of authority to the states to regulate and tax the business of insurance. The contingency is the states must actively regulate the business of insurance or its regulation will return to the federal government under the Commerce Clause of the U.S. Constitution. Insurance is a form of interstate commerce. If there is a regulatory void, federal authorities may fill the void employing the provisions of the Sherman Act, the Clayton Act, and/or the Federal Trade Commission Act.

### ABOUT THE AUTHOR



*Eric Nordman, CPCU, CIE, is the director of the NAIC Regulatory Services Division and the CIPR. He directs the Regulatory Services Division staff in a wide range of insurance research, financial and market regulatory activities, supporting NAIC committees, task forces and working groups. He has been with the NAIC since 1991. Prior to his appointment as director of the Regulatory*

*Services Division, Mr. Nordman was director of the Research Division and, before that, the NAIC senior regulatory specialist. Before joining the NAIC, he was with the Michigan Insurance Bureau for 13 years. Mr. Nordman earned a bachelor's degree in mathematics from Michigan State University. He is a member of the CPCU Society and the Insurance Regulatory Examiners Society.*

**APPENDIX**

LEGISLATIVE PROPOSAL

Submitted to

The Congress of the United States

By

The Executive Committee of the National Association  
of Insurance Commissioners

November 1944

TEXT OF LEGISLATION

Recommended by National Association of Insurance Commissioners

**Section 1.**

That Congress hereby declares that the continued regulation and taxation by the several States of the business of insurance is in the public interest, and that silence on the part of the Congress shall not be construed to impose any barrier to the regulation of such business by the several States.

**Section 2.**

- a) The business of insurance, and every person engaged therein, shall be subject to the laws of the respective States which relate to the regulation of such business and which impose fees or taxes thereon.
- b) No Act of Congress shall be construed to invalidate, impair or supersede any law enacted by any State for the purpose of regulating the business of insurance, or which imposes a fee or tax upon such business, unless such Act specifically so provides.

**Section 3.**

Nothing contained in the Federal Trade Commission Act, as amended, or the Act of June 19, 1936, known as the Robinson-Patman Anti-Discrimination Act, shall apply to the business of insurance or to acts in the conduct of that business.

**Section 4.**

- a) Until July 1, 1948, the Act of July 2, 1890, as amended, known as the Sherman Act, and the Act of October 15, 1914, as amended, known as the Clayton Act, shall not apply to the business of insurance, or to acts in the conduct of such business.
- b) On or after July 1, 1948, the said Sherman Act shall not apply (1) to any agreement or concerted or cooperative action which prescribes the use of rates for insurance, insurance policy or bond forms or underwriting rules or plans if such rates, forms, rules or plans are required, by the law of the State in which they are to be used, either to be approved by the supervisory official or agency of such State having authority with respect thereto, or to be filed subject to disapproval by such official or agency; (2) to the use of any such rates, forms, rules or plans which have been so approved or filed; (3) to any cooperative or joint service, adjustment, investigation, or inspection agreement relating to insurance, or to acts under such agreement; (4) to any agreement or concerted or cooperative action among two or more insurers to insure, reinsure or otherwise apportion risks taken by the parties to such agreement or any of them, or to issue policies or bonds with joint or several liability; (5) to any agreement or concerted or cooperative action with respect to the payment of insurance agents' or brokers' commissions; (6) to any agreement or concerted or cooperative action with respect to the collection and use of statistics or with respect to policy or bond forms; or (7) to any agreement or concerted or cooperative action providing for the cooperative making of insurance rates, rules, or plans, if such arrangement does not require the use of such rates, rules or plans.
- c) Nothing contained in this section shall render the said Sherman Act inapplicable to any act of boycott, coercion or intimidation.

**Section 5.**

Nothing contained in this Act shall be construed to affect in any manner the application to the business of insurance of the National Labor Relations Act, as amended, or the Fair Labor Standards Act of 1938, as amended.

*(Continued on page 20)*

## THE RELEVANCE OF THE MCCARRAN-FERGUSON ACT (CONTINUED)

### Section 6.

As used in this Act, the term "State" includes the several states, Alaska, Hawaii, Puerto Rico and the District of Columbia.

### Section 7.

If any provision of this Act, or the application of such provision to any person or circumstances, shall be held invalid, the remainder of the Act, and the application of such provision to persons or circumstances other than those as to which it is held invalid, shall not be affected thereby.

## COMPLETE TEXT OF THE MCCARRAN-FERGUSON ACT

### 15 U.S. Code § 1011 - Declaration of policy

Congress hereby declares that the continued regulation and taxation by the several States of the business of insurance is in the public interest, and that silence on the part of the Congress shall not be construed to impose any barrier to the regulation or taxation of such business by the several States.

### 15 U.S. Code § 1012 - Regulation by State law; Federal law relating specifically to insurance; applicability of certain Federal laws after June 30, 1948

#### (a) State regulation

The business of insurance, and every person engaged therein, shall be subject to the laws of the several States which relate to the regulation or taxation of such business.

#### (b) Federal regulation

No Act of Congress shall be construed to invalidate, impair, or supersede any law enacted by any State for the purpose of regulating the business of insurance, or which imposes a fee or tax upon such business, unless such Act specifically relates to the business of insurance: Provided, That after June 30, 1948, the Act of July 2, 1890, as amended, known as the Sherman Act, and the Act of October 15, 1914, as amended, known as the Clayton Act, and the Act of September 26, 1914, known as the Federal Trade Commission Act, as amended [15 U.S.C. 41 et seq.], shall be applicable to the business of insurance to the extent that such business is not regulated by State Law.

### 15 U.S. Code § 1013 - Suspension until June 30, 1948, of application of certain Federal laws; Sherman Act applicable to agreements to, or acts of, boycott, coercion, or intimidation

(a) Until June 30, 1948, the Act of July 2, 1890, as amended, known as the Sherman Act, and the Act of October 15, 1914, as amended, known as the Clayton Act, and the Act of September 26, 1914, known as the Federal Trade Commission Act [15 U.S.C. 41 et seq.], and the Act of June 19, 1936, known as the Robinson-Patman Anti-Discrimination Act, shall not apply to the business of insurance or to acts in the conduct thereof.

(b) Nothing contained in this chapter shall render the said Sherman Act inapplicable to any agreement to boycott, coerce, or intimidate, or act of boycott, coercion, or intimidation.

### 15 U.S. Code § 1014 - Effect on other laws

Nothing contained in this chapter shall be construed to affect in any manner the application to the business of insurance of the Act of July 5, 1935, as amended, known as the National Labor Relations Act [29 U.S.C. 151 et seq.], or the Act of June 25, 1938, as amended, known as the Fair Labor Standards Act of 1938 [29 U.S.C. 201 et seq.], or the Act of June 5, 1920, known as the Merchant Marine Act, 1920.

### 15 U.S. Code § 1015 - "State" defined

As used in this chapter, the term "State" includes the several States, Alaska, Hawaii, Puerto Rico, Guam, and the District of Columbia.

## NEW HEIGHTS IN AIR AMBULANCE COSTS

By Eryn Campbell, Research Librarian

### ◆ INTRODUCTION

Air ambulances are often the only available method of quickly transporting patients to hospitals in life-threatening situations. They are a critical part of the health care landscape, particularly in rural areas where hospitals and specialized care have become less available. Air ambulances are generally helicopters equipped with medical equipment and staffed by medical professionals just like traditional ambulances. A patient might need air ambulance transport after an accident when a ground ambulance is too slow or an accident site is inaccessible.

More than 550,000 patients in the U.S. are transported by air ambulance services every year, according to the Association of Air Medical Services.<sup>1</sup> Air ambulance services have grown significantly in recent years; in 2002, there were approximately 400 dedicated air ambulances. By 2008, the number had more than doubled to over 800. Possible reasons for the explosive growth include an aging population, a significant decline in the number of emergency departments in existing hospitals,<sup>2</sup> and changing health care delivery models. Additionally, some stakeholders have argued such high growth in this industry may be an indicator of medically unnecessary use,<sup>3</sup> although more research is needed in this area before definitive conclusions may be drawn.

Consumer complaints about exorbitant air ambulance bills have risen noticeably over the past several years. For example, a 2017 New Mexico Office of Superintendent of Insurance (OSI) study<sup>4</sup> found the average charge per air ambulance claim increased 229% from 2006 to 2015. Additionally, in 2015, the average amount of an air ambulance claim unpaid by insurers was \$26,829. Many states are reporting instances of air ambulance providers not affiliated with a hospital and refusing to contract with an insurer. As such, air ambulances are being called to airlift individuals in emergency situations and billing them for out-of-network charges to the tune of tens of thousands of dollars.

The federal Airline Deregulation Act of 1978 (ADA),<sup>5</sup> originally passed with the intent of encouraging competition in the airline industry, prohibits the states from regulating the amount air carriers charge, including air ambulance providers. As such, any state laws passed to regulate the costs of air ambulance services are preempted by the ADA. Because state insurance departments do not currently have jurisdiction to regulate air ambulance company rates, routes, or

services, and the federal government has not yet addressed the issue, there are no regulations or laws, at present, protecting the economic interests of consumers from high air ambulance costs.

### ◆ AIR AMBULANCE HISTORY

The ADA explicitly prohibits the states from regulating the “rates, routes, or services of any air carrier.” When the ADA was passed in 1978, air ambulances were new and there is no indication the air ambulance industry was given any consideration by the U.S. Congress when crafting the law.<sup>6</sup> However, subsequent court rulings and the U.S. Department of Transportation has consistently found, as early as 1986, air ambulances fall within the definition of “air carriers” promulgated by the ADA, holding the states are, therefore, generally preempted from regulating their services.<sup>7</sup>

Air ambulances generally fall under one of three business models: 1) hospital-based; 2) independent; or 3) government. Early air medical programs were hospital-based, with staff and equipment provided and maintained by the hospital, with pilot and aircraft contracted out. However, in 2002, Medicare released a national fee schedule<sup>8</sup> for air ambulances based on a thorough investigation of the “reasonable cost” for emergency medical services (EMS). The schedule increased the reimbursement rate across the board for air ambulance transport, especially for rural air ambulance services.

This increase enabled the proliferation of for-profit and independent air ambulance providers. As a result of the increase, for-profit operators were able to expand their presence in the air ambulance industry; prior to 2002, for-profit providers were nonexistent, while the market today is dominated by for-profit providers.<sup>9</sup>

(Continued on page 22)

<sup>1</sup>“Air Med 101”. The Association of Air Medical Services. January 9, 2014. Retrieved from: <http://aams.org/publications/air-med/101>.

<sup>2</sup>“Why Are Many Emergency Departments in the United States Closing?” Rand Health. 2011. Retrieved from: [www.rand.org/content/dam/rand/pubs/research\\_briefs/2011/RAND\\_RB9607.pdf](http://www.rand.org/content/dam/rand/pubs/research_briefs/2011/RAND_RB9607.pdf).

<sup>3</sup>“Air Ambulance: Effects of Industry Changes on Services Are Unclear.” U.S. Government Accountability Office. September 20, 2010. Retrieved from: [www.gao.gov/products/GAO-10-907](http://www.gao.gov/products/GAO-10-907).

<sup>4</sup>“Air Ambulance Memorial Study Report”. New Mexico Office of the Superintendent of Insurance. January 2017. Retrieved from: [www.osi.state.nm.us/MiscPages/docs/newsroom/Air%20Ambulance%20Memorial%20-%201.19.17.pdf](http://www.osi.state.nm.us/MiscPages/docs/newsroom/Air%20Ambulance%20Memorial%20-%201.19.17.pdf).

<sup>5</sup>Airline Deregulation Act of 1978. Retrieved from: [www.gpo.gov/fdsys/pkg/STATUTE-92/pdf/STATUTE-92-Pg1705.pdf](http://www.gpo.gov/fdsys/pkg/STATUTE-92/pdf/STATUTE-92-Pg1705.pdf).

<sup>6</sup>Legislative history of the Airline Deregulation Act of 1978. Retrieved from: <https://babel.hathitrust.org/cgi/pt?id=uc1.b4176000;view=1up;seq=454>.

<sup>7</sup>U.S. Department of Transportation Letter to the State of Arizona’s Office of Attorney General. June 16, 1986.

<sup>8</sup>Ambulance Fee Schedule. Centers for Medicare & Medicaid Services. Retrieved from: [www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AmbulanceFeeSchedule/afspuf.html](http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AmbulanceFeeSchedule/afspuf.html).

<sup>9</sup>“Up in the Air: Inadequate Regulation for Emergency Air Ambulance Transportation.” *ConsumersUnion*. March, 2017.

### ◆ WHY IS THIS AN ISSUE NOW?

Although the ADA became law nearly 40 years ago, a confluence of several factors has led to where we are today. As mentioned earlier, the air ambulance market has expanded significantly in the past 15 years, with the number of air ambulances doubling in that time, due in part to Medicare reimbursement increases. Another contributing factor to the growing market is the closure of rural hospitals and clinics, which increases the need for air ambulances to transport patients in emergency situations.

Because the market is now dominated by for-profit providers, reliable and independent data about actual air ambulance transport costs are hard to come by. The Association of Air Medical Services (AAMS) funded a study of its members, which found, on average, Medicare covers only 59% of actual costs. The president of AAMS has said because Medicare and Medicaid reimbursements are so low, air ambulance companies need to collect more from patients with private insurance to recoup these losses.<sup>10</sup>

As with other segments of the health care market, the air ambulance industry has seen a large number of mergers in recent years, with half of the market controlled by three companies. Air Methods, the largest air medical provider in the country, controls nearly 25% of the market as of 2016. The New Mexico OSI study found the providers with the largest market share also “had amongst the highest billed charges.” Air Methods reported a net revenue of more than \$12,000 per patient transport in 2016<sup>11</sup> and regularly uses aggressive legal tactics like debt collection agencies and lawsuits to collect unpaid bills from consumers.<sup>12</sup>

There is some evidence to indicate the huge increase in supply of air ambulances has led to instances of medically unnecessary use. A 2015 study from researchers affiliated with the University of Arizona found in a six-year period at one trauma center, nearly one-third of patients transported by air ambulance were “minimally injured” and would have had similar health outcomes with traditional ground ambulance transport.<sup>13</sup>

The National Transportation Safety Board (NTSB) found evidence in 2009 of highly competitive practices such as building relationships with emergency dispatchers in the hopes of gaining extra referrals. The NTSB requested further study on these issues and, in 2014, published recommendations for “the selection of appropriate transportation modes for urgent care.”<sup>14</sup>

Furthermore, while the health care industry generally seems to be moving toward a model encouraging consumer involvement and smart shopping, that is not always a possibility in emergency situations. A determination is often left up to emergency responders or health care providers who have no knowledge of the patient’s insurance network and for whom the threat of malpractice suits are a significant consideration.

To provide a stable revenue base, some air ambulance companies offer memberships charging a monthly or annual fee to help cover costs above and beyond what insurance plans will pay. However, these memberships are only an effective consumer protection tool if the company issuing the membership is the one responding to the emergency situation, something on which a consumer has no say. These memberships often target rural consumers without close access to major emergency medical services. The Montana Legislature passed a bill in 2017 to regulate these memberships as insurance.<sup>15</sup>

### ◆ WORKERS’ COMPENSATION CONSIDERATIONS

The 2017 New Mexico OSI study found, from 2006 to 2015, the average claim paid by health and workers’ compensation for air ambulance charges increased 50%. Data from the National Council on Compensation Insurance (NCCI) also shows an increase of nearly 40% for some air ambulance services from 2011 to 2015.<sup>16</sup> Many states do not include air ambulance services in their workers’ compensation fee schedule due, in part, to concerns about preemption by the ADA.

*(Continued on page 23)*

<sup>10</sup> “Air Ambulances: Taking Patients for a Ride.” Consumer Reports. April 6, 2017. Retrieved from: [www.consumerreports.org/medical-transportation/air-ambulances-taking-patients-for-a-ride](http://www.consumerreports.org/medical-transportation/air-ambulances-taking-patients-for-a-ride).

<sup>11</sup> Air Methods Corporate Presentation. March 2017. Retrieved from: [www.airmethods.com/docs/default-source/investor-documents/corporate-presentations/roadshow-march-2017.pdf?sfvrsn=2](http://www.airmethods.com/docs/default-source/investor-documents/corporate-presentations/roadshow-march-2017.pdf?sfvrsn=2).

<sup>12</sup> “Sky-Rage: Bills, Debt, Lawsuits Follow Helicopter Medevac Trips.” ABC News. March 16, 2016. Retrieved from: <http://abcnews.go.com/US/sky-rage-bills-debt-lawsuits-follow-helicopter-medevac/story?id=37669153>

<sup>13</sup> “Overuse of helicopter transport in the minimally injured: A health care system problem that should be corrected.” Journal of Trauma and Acute Care Surgery. March 2015. [www.ncbi.nlm.nih.gov/pubmed/25710420](http://www.ncbi.nlm.nih.gov/pubmed/25710420).

<sup>14</sup> Safety Recommendation A-09-103. National Transportation Safety Board. 2014. Retrieved from: [www.ntsb.gov/\\_layouts/ntsb.recsearch/Recommendation.aspx?Rec=A-09-103](http://www.ntsb.gov/_layouts/ntsb.recsearch/Recommendation.aspx?Rec=A-09-103).

<sup>15</sup> House Bill No. 73. Montana Legislature. 2017. Retrieved from: <http://leg.mt.gov/bills/2017/billhtml/HB0073.htm>.

<sup>16</sup> NCCI presentation to the NAIC Workers’ Compensation (C) Task Force. April 10, 2017. [http://naic.org/meetings1704/cmtc\\_c\\_wctf\\_2017\\_spring\\_nm\\_materials.pdf?1498746526260](http://naic.org/meetings1704/cmtc_c_wctf_2017_spring_nm_materials.pdf?1498746526260).

## NEW HEIGHTS IN AIR AMBULANCE COSTS (CONTINUED)

Furthermore, air ambulance companies are challenging state workers' compensation administrators' authority for resolving fee disputes or preventing the practice of balance-billing injured workers. The New Mexico OSI reports an increase in litigation between workers' compensation insurers and air ambulance providers. Additionally, in December 2016, a judge in Texas district court ruled the federal McCarran-Ferguson Act of 1945 preempts the ADA in the narrow case of workers' compensation payments;<sup>17</sup> however, an appeal is likely.

### ◆ STATUS

For ground ambulance services, the federal Patient Protection and Affordable Care Act protects consumers from higher cost-sharing requirements for out-of-network providers and the states can protect consumers from balance-billing. However, in the case of air ambulances, the federal cost-sharing protections are only applied when the service is affiliated with the hospital and, thus, considered an extension of the emergency room service. Various states have attempted to pass laws to protect consumers from out-of-network air ambulance bills, but these laws are preempted by the ADA and air ambulance operations have successfully challenged the majority of these efforts.

After receiving an uptick in consumer complaints, several states have held hearings or launched investigations into air ambulance company practices, including Maryland, New Mexico and North Dakota. A law in North Dakota requiring 911 operators to contact in-network air ambulance providers before out-of-network providers was struck down in 2016 on the grounds the ADA preempts such legislation. A second bill, signed into law in April 2017, mandates hospitals notify patients in non-emergency situations which air ambulance providers are in-network, as well as addresses balance-billing.<sup>18</sup>

The Montana Legislature also took action, commissioning a study of air ambulance membership services in 2016.<sup>19</sup> In 2017, the legislature considered bills intended to impose taxes on air ambulance charges above allowable Medicare costs for providers that do not contract with any insurance networks, to protect patients' credit reports from certain unpaid bills, and to regulate air ambulance "memberships" as insurance products. The Utah Legislature passed a resolution in March 2017 urging Congress to amend the ADA to allow the states to regulate air ambulance companies.<sup>20</sup>

The National Conference of Insurance Legislators (NCOIL) formed a task force in March 2017 to examine ways to legislate this issue successfully at the state level.<sup>21</sup> The National

Association of State EMS Officials has a standing committee on air medical services, which, in September 2016, issued model rules for the regulation of air medical services intended to "assist states with regulatory language intended to avoid conflict with the ADA."<sup>22</sup> These models only address issues relating to the medical care provided on air ambulances, such as licensure of medical personnel and medical equipment requirements and best practices, and avoid touching matters of aviation safety and economic regulation so as not to impinge on federal law.

There is some recent movement at the federal level, as well, where this issue has received bipartisan attention. At the request of the U.S. House of Representatives' Transportation and Infrastructure Committee leadership U.S. Rep. Bill Shuster (R-PA) and U.S. Rep. Peter DeFazio (D-OR), the U.S. Government Accountability Office is studying pricing and competition in the air medical transport industry. U.S. Sen. Jon Tester (D-MT) introduced S. 471<sup>23</sup> in February 2017, which carves out an exemption in the ADA for state regulation of air ambulances. This bill does not insert the states in federal oversight of any other type of aviation. The bill was referred to the U.S. Senate Committee on Commerce, Science and Transportation where it awaits further action.

In addition, the U.S. Government Accountability Office (GAO) studied pricing and competition in the air medical transport industry in a report issued in July, 2017.<sup>24</sup> This report found trends identified in the GAO's 2010 report have intensified: a greater concentration of independent providers, balance-billing of privately insured patients to recoup losses by Medicaid and Medicare patients, a lack of reliable data on provider costs and information, and rates charged by air ambulance providers continue to swell.

*(Continued on page 24)*

<sup>17</sup> "Texas Mutual: Judge Upholds State Regulation of Air Ambulances." Insurance Journal. December 30, 2016. Retrieved from: [www.insurancejournal.com/news/southcentral/2016/12/30/436942.htm](http://www.insurancejournal.com/news/southcentral/2016/12/30/436942.htm).

<sup>18</sup> Senate Bill No. 2231. North Dakota Senate. 2017. Retrieved from: [www.legis.nd.gov/assembly/65-2017/bill-index/bi2231.html](http://www.legis.nd.gov/assembly/65-2017/bill-index/bi2231.html).

<sup>19</sup> "Study of Air Ambulances." The Montana Legislature. 2016. <http://leg.mt.gov/css/committees/interim/2015-2016/Economic-Affairs/Committee-Topics/Ambulance/ambulance-memberships.asp>.

<sup>20</sup> "Concurrent Resolution on Air Ambulance Providers." Utah State Legislature. 2017. Retrieved from: <https://le.utah.gov/~2017/bills/static/SCR002.html>.

<sup>21</sup> "NCOIL Announces Air Ambulance Task Force." National Conference of Insurance Legislators. Mary 7, 2017. Retrieved from: <http://ncoil.org/wp-content/uploads/2017/03/air-ambulance-task-force-FINAL.pdf>.

<sup>22</sup> Air Medical Committee. National Association of State EMS Officials. [www.nasemso.org/Projects/AirMedical](http://www.nasemso.org/Projects/AirMedical).

<sup>23</sup> Isla Rose Life Flight Act, S. 741, 115th Congress. Retrieved from: [www.congress.gov/bill/115th-congress/senate-bill/471](http://www.congress.gov/bill/115th-congress/senate-bill/471).

<sup>24</sup> Air Ambulance: Data Collection and Transparency Needed to Enhance DOT Oversight." U.S. Government Accountability Office. July 27, 2017. Retrieved from: <https://www.gao.gov/assets/690/686167.pdf>

## NEW HEIGHTS IN AIR AMBULANCE COSTS (CONTINUED)

Finally, U.S. Rep. Rob Woodall (R-GA) offered an amendment to a Federal Aviation Administration (FAA) reauthorization bill to create an advisory committee for the development of air ambulance industry regulation. While this does not give any regulatory authority to the states, it does propose to include state insurance regulators on the committee. The amendment passed unanimously, but at the time of this writing, the bill remains in the House Transportation and Infrastructure Committee. The NAIC issued its support for this amendment in a letter to Congress in July, 2017.<sup>25</sup>

### ◆ CONCLUSION

While state laws protecting consumers in such cases are preempted by the ADA, members of both the Senate and the House are drafting bipartisan legislation to amend the ADA and allow the states to regulate air ambulances in a limited way to protect consumers from excessive out-of-network charges. The NAIC membership is closely monitoring this issue. The Workers' Compensation (C) Task Force is in dialogue with the NCCI to monitor the impact of air ambulance costs and their impact on workers' compensation insurance. A number of NAIC groups are interested more broadly in the practice of balance-billing, which features prominently in many consumer complaints regarding air

ambulance transport. However, federal action is ultimately needed to provide a workaround to the ADA to allow the states the authority to regulate the air ambulance industry. The NAIC supports S. 471 and is closely following its status in Congress.

### ABOUT THE AUTHOR



*Eryn Campbell is a Research Librarian at the NAIC where she conducts research for NAIC members, regulators, and staff and maintains a specialized and historic collection of nearly 10,000 items. Prior to joining the NAIC in 2014, she was a medical librarian at a small regional health system. Campbell earned a Master of Library Science from Emporia State University and a Bachelor of Arts In English from Southern Nazarene University.*

<sup>25</sup> NAIC Letter to Congress on 21st Century AIRR Act Air Ambulance Provision. July 12, 2017. [www.naic.org/documents/government\\_relations\\_171217\\_letter\\_to\\_congress\\_21st\\_century\\_airr\\_act\\_air\\_ambulance\\_provision.pdf](http://www.naic.org/documents/government_relations_171217_letter_to_congress_21st_century_airr_act_air_ambulance_provision.pdf)



## NAIC ENHANCES P/C RBC FORMULA FOR CATASTROPHE RISK CHARGES

By Anne Oberstedt, CIPR Senior Analyst

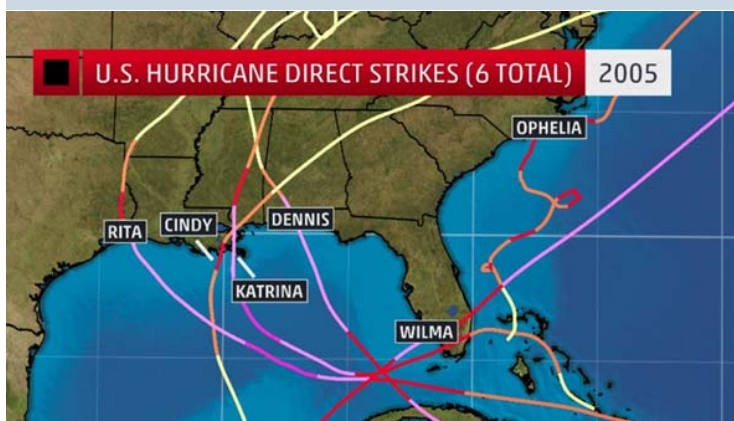
NAIC risk-based capital (RBC) provides a measure of minimum insurer capital adequacy and thus serves as an important part of the U.S. solvency framework. The NAIC RBC formula has undergone a number of enhancements during its use over the past two decades. In recognition of the evolving risk landscape, the NAIC's current focus has been on adding granularity to its reporting categories or expanding the risks quantified in the RBC formula. Among the most significant recent updates is the addition of a charge in the property/casualty (P/C) RBC formula for catastrophe risk from the hurricane and earthquake perils for the 2017 reporting year. This article will focus on how the P/C RBC catastrophe risk charge was developed, the need for it and how its addition has been incorporated into the formula.

### ◆ RECORD CATASTROPHES HEIGHTEN AWARENESS

The 2004 Atlantic hurricane season resulted in record-breaking property damage of more than \$40 billion in states from Florida through North Carolina. The season marked the end of a decade of relatively quiet tropical storm activity in the U.S. By the end of the year, 15 storms and 9 hurricanes had impacted the U.S. Of the five hurricanes which made landfall in the U.S., three were category 3 or stronger major hurricanes: Charley; Ivan; and Frances.<sup>1</sup>

The 2004 record was easily surpassed by the 2005 Atlantic hurricane season. In a seven-month span, 28 storms and 15 hurricanes engulfed the Atlantic basin. Six of these hurricanes hit the U.S. in 2005, four of which (Dennis, Katrina, Rita and Wilma) were Category 3 or stronger. Figure 1 displays the U.S. hurricane tracks for 2005. Economic losses from the four major hurricanes which made landfall are estimated to be more than \$143 billion, making this season the most destructive in history.<sup>2</sup>

FIGURE 1: U.S. HURRICANE TRACKS, 2005



Source: Weather.com

The severity of losses in 2005 resulted in large part from Hurricane Katrina. This hurricane alone caused \$108 billion of destruction across seven states (primarily Louisiana, Mississippi and Alabama), making it the costliest U.S. hurricane. Much of the damage actually arose from Hurricane Katrina's storm surge, which reached a record height of 27.8 feet and breached the levees protecting New Orleans. Hurricane Katrina took more than 1,200 lives, making it one of the most deadly hurricanes to date.<sup>3</sup>

The most intense hurricane recorded in the Atlantic Basin, Hurricane Wilma, also occurred in 2005. Its barometric pressure reached a historic low of 882 millibars before making landfall on the U.S.<sup>4</sup> The hurricane resulted in five deaths and damage of \$16.8 billion in southern Florida. Hurricane Rita was the year's third Category 5 hurricane, impacting mostly southwestern Louisiana and southeastern Texas. It also produced an estimated 90 tornadoes across the southern states. Hurricane Rita claimed seven lives and destroyed \$10 billion in property in the U.S. Hurricane Dennis was the first major hurricane of the season, setting a short-lived record for the earliest arriving major Atlantic hurricane. Luckily, the hurricane moved through quickly and resulted in only \$2.2 billion in damages, mostly across the Florida Panhandle, and the loss of three lives in the U.S.<sup>5</sup>

### ◆ INSURANCE INDUSTRY RESPONDS

Two consecutive record-shattering Atlantic hurricane seasons raised awareness of the hurricane risk in the insurance industry. According to Munich Re, tropical cyclones resulted in global insured losses of \$30 billion in 2004 and more than \$80 billion in 2005.<sup>6</sup> As illustrated in Figure 2 on the following page, U.S. insured losses from the three costliest hurricanes to make U.S. landfall totaled more than \$19 billion in 2004 and more than \$57 billion in 2005. Both hurricane seasons were marked by unusually high early-season activity, peak intensity, new tracks and a record number of tropical cyclones.<sup>7</sup>

(Continued on page 26)

<sup>1</sup> Machos, G. (2004). *Summary of the 2004 Season*. Retrieved from [www.hurricaneville.com/2004.html](http://www.hurricaneville.com/2004.html).

<sup>2</sup> Dolce, C. (2015, June 8). *2005's Record-Breaking Hurricane Season: By the Numbers*. Retrieved from <https://weather.com/storms/hurricane/news/2005-hurricane-season-by-the-numbers>.

<sup>3</sup> Ibid.

<sup>4</sup> Barometric pressure (atmospheric pressure) is used to measure the strength of a hurricane. The lower the pressure in a hurricane, the stronger its winds.

<sup>5</sup> National Hurricane Center (n.d.). *Hurricanes in History*. Retrieved from [www.nhc.noaa.gov/outreach/history](http://www.nhc.noaa.gov/outreach/history).

<sup>6</sup> Munich Re. (2006). *Topics Geo, Annual Review: Catastrophes in 2005*. Retrieved from [www.preventionweb.net/files/1609\\_topics2005.pdf](http://www.preventionweb.net/files/1609_topics2005.pdf).

<sup>7</sup> Ibid.

**FIGURE 2.**  
**2004–2005 COSTLIEST ATLANTIC HURRICANES**

Dates	Hurricane	Affected Area	Overall Loss	Overall Insured Loss	U.S. Insured Loss (000's)
Aug. 2005	Katrina	LA, MS, AL, FL	125,000	62,200	41,100
Oct. 2005	Wilma	BS, CU, HT, JA, MX, USA	22,000	12,500	10,300
Sept. 2005	Rita	FL, LA, MS, TX	16,000	12,100	5,627
Sept. 2004	Ivan	FL, AL, CARGO	23,000	13,800	7,110
Aug. 2004	Charley	FL, CU, JA, KY	18,000	8,000	7,475
Sept. 2004	Frances	FL, BS, CA, KY, TC	12,000	5,500	4,595

Source: Overall Figures: Munich Re, NatCatSERVICE, 2015; U.S Figures: Property Claim Services (PCS).

In response, insurers, regulators, vendors and rating agencies implemented new assumptions and tools into their risk-management frameworks. Among these was more attention to cumulative losses and the impact of multiple storms in a single year. For example, one out of five Florida residential buildings in 2004 was estimated to be damaged from the impact of four hurricanes in the same season.<sup>8</sup> Often, insurance adjusters were unable to assess damage before the next hurricane struck.

#### State Legislative Changes

The state of Florida passed new legislation in 2004 to address the issues raised by cumulative losses from consecutive storms. The new legislation effectively made policy deductibles aggregate by reimbursing homeowners for multiple deductibles applied in a single season. Beginning with the 2005 season, Florida also restricted insurers to the application of a single deductible. Additionally, Florida passed legislation requiring the Florida Office of Insurance Regulation be given access to insurers' actuarial assumptions and factors before the Florida Commission on Hurricane Loss Projection Modeling (FCHLPM) determined them to be reliable enough to be used in a rate filing.<sup>9</sup>

#### Insurer Policy and Coverage Changes

Insurers also revised their policy language and underwriting guidelines. The changes reflected lessons learned from the treatment of flood coverage in wind-only policies in the aftermath of storm surge flooding. Often, the ability to distinguish damage from wind or water was difficult, especially in cases of total destruction. Insurers found they were responsible for damage they believed should have been covered under National Flood Insurance Program (NFIP) policies. As a result, insurers reworded policy contracts to better differentiate between wind and water losses or to exclude flood coverage altogether. Higher deductibles and lower wind limits were also common.<sup>10</sup>

#### Catastrophe Model Changes

Catastrophe model vendors made significant updates to their U.S. hurricane models in 2006. At the time of the 2004–2005 hurricane seasons, catastrophe models were designed to apply demand surge on the occurrence of single events. Demand surge is the inflationary effect of repair costs from a shortage of labor and materials following a catastrophe or series of catastrophes. This single event view resulted in modeled losses drastically underrepresenting the inflationary effect of actual demand surge from multiple events in back-to-back hurricane seasons. Vendors responded by incorporating aggregate demand surge in their catastrophe models, which remains the standard today. Vendors also added near-term views of risk options to incorporate the potential for warm waters to alter historical results. Additionally, many modelers updated their storm surge models and vulnerability functions to include new experience data and building-performance characteristics.<sup>11</sup>

#### Rating Agency Changes

Rating agencies also took significant steps after these hurricane seasons by revising their rating requirements and expanding the data required from insurers. Fitch Ratings moved from a single-point view of risk to focusing on tail value at risk (TVaR), which is an average measure of all the modeled losses above a specified threshold. A.M Best began requiring insurers to take ancillary lines of business into account. They also required insurers to include options for storm surge, fire following earthquake and demand surge in their loss estimates. Additionally, insurers were required to

(Continued on page 27)

<sup>8</sup> Guy Carpenter. (2004). Ten-year Retrospective of the 2004 and 2005 Hurricane Seasons. Retrieved from [www.guycarp.com/content/...content/Ten-Year-Retrospective-of-the-2004-and-2005-Hurricane-Seasons-Part-1.pdf](http://www.guycarp.com/content/...content/Ten-Year-Retrospective-of-the-2004-and-2005-Hurricane-Seasons-Part-1.pdf).

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

<sup>11</sup> Ibid.

## NAIC ENHANCES P/C RBC FORMULA FOR CATASTROPHE RISK CHARGES (CONTINUED)

provide exposure information on aggregate insured value. Standard & Poor's (S&P) moved from a 100-year loss to a 250-year aggregate catastrophe loss to assess the capital charge for reinsurers with property catastrophe risk. A.M. Best, S&P and Moody's began to require a near-term view of hurricane event frequency.<sup>12</sup>

### NAIC RBC Enhancements

#### *Existing Framework:*

State insurance regulators also recognized the need for insurers to hold enough capital to remain solvent in the face of severe catastrophe losses. The NAIC's RBC framework, adopted in 1992, serves as a risk-based measure of capital adequacy relative to the underlying risk of the insurer's business and asset quality. An insurer's RBC ratio is its total adjusted capital assessed against its total RBC; i.e., the amount of capital determined to be adequate for its size and risk.

The RBC framework sets a minimum ratio threshold for regulatory action. When an insurer's RBC ratio is found to be inadequate, state insurance regulators can step in and take various corrective actions to help prevent insolvency. However, prior to the changes coming for year-end 2017 reporting requirements, the P/C RBC formula did not include a charge specific to catastrophe risk. Instead, catastrophe risk was embedded in the underlying data used to develop the formula's underwriting risk charge. As such, the P/C RBC formula may have underrepresented catastrophe risk in 10-year periods of relatively low catastrophe experience, and overrepresented it in 10-year periods of high catastrophe experience.

The absence of an explicit catastrophe risk charge in the P/C RBC formula was largely due to the formula's reliance on annual financial reporting statements. The statements did not separately capture catastrophe loss information or growth or geographical concentration of property exposure. Given losses from hurricanes had remained relatively consistent and low, the associated cost and complexity of add-

ing such a charge did not seem material. The severity of the 2004 and 2005 hurricane seasons changed this perception.

#### *Creation of a Subgroup to Address the Issue:*

The NAIC Catastrophe Risk (E) Subgroup was appointed the following year to develop a methodology for including catastrophe risk in the P/C RBC formula. After several years of research, discussion and debate, the NAIC membership adopted changes in 2012 to the P/C RBC formula to incorporate a catastrophe risk charge into the formula. The changes were effective for the 2013 reporting period and required insurers to report their catastrophic risk charges for earthquake and hurricane exposures.

The catastrophe risk charge was reported on an informational basis for four years to allow the Subgroup time to examine the impact of the calculation changes on insurers. Finding no significant concerns, the NAIC membership adopted changes in 2016 to fully implement the catastrophe risk charge (Ref #2016-07-CR). As a result, the 2017 reporting year RBC for P/C insurers will reflect this additional charge.

### ◆ A CLOSER LOOK AT RCAT

#### RBC Formula

RBC is, in essence, a measure of risk. As such, each major business line (life, health and P/C) has distinct formulas reflecting its specific risk characteristics. The formulas are calculated on the legal-entity level and, in certain situations, at the group level. RBC is calculated using the following steps: 1) apply risk factors to statutory annual statement figures; 2) sum risk amounts and adjust for statistical independence (using covariance formula); 3) calculate authorized control level (ACL) RBC amount; and 4) compare ACL to total adjusted capital (TAC). Ratios generated by the RBC formula are assessed against five stepped levels of regulatory intervention. Figure 3 illustrates these five action levels.

*(Continued on page 28)*

<sup>12</sup> Ibid.

**FIGURE 3: RBC ACTION LEVELS AND RATIOS**

No Neg. Trend, No Action	TAC is at least twice its ACL	>200%
Company Action Level	TAC is at least 1.5 times, but less than twice its ACL	150%-200%
Regulatory Action Level	TAC is at least equal to, but less than 1.5 times its ACL	100%-149%
Authorized Control Level	TAC is at least 0.70 times its ACL but less than its ACL	70%-100%
Mandatory Control Level	TAC is less than 0.70 times its ACL RBC	<70%

*Note: RBC ratio is TAC divided by ACL RBC (i.e., actual statutory capital divided by estimated minimum capital, or \$2 of capital and surplus for every \$1 of "risk" at the 200% RBC level).*

Catastrophe Risk (Earthquake and Hurricane)

The Rcat component was added to the existing six major risk factors for the 2017 P/C RBC calculation (Figure 4). It should be noted the final catastrophe charge calculation was amended to combine the R6–Catastrophe Risk – Earthquake and R7–Catastrophe Risk – Hurricane components reported on an informational basis during the prior years into one Rcat component. The change simplifies the covariance adjustment formula by allowing additional catastrophe perils to be added to Rcat in the future.<sup>13</sup>

The ACL RBC is one-half of the total RBC after covariance. The total RBC after covariance formula was updated to apply the covariance to Rcat. The charges and covariance adjustment are applied separately because the hurricane and earthquake perils are not correlated. A separate contingent credit risk charge is also included to account for risk of uncollectible reinsurance in a catastrophe.

The new covariance formula is:

$$R0 + \text{SQRT}(R1^2 + R2^2 + R3^2 + R4^2 + R5^2 + \mathbf{Rcat^2}) = \text{Total RBC After Covariance}$$

Key Approaches for Calculating Rcat

Of primary importance was establishing the best method to quantify catastrophe risk. A summary of the P/C catastrophe risk charge calculation criteria is illustrated in Figure 5. The Subgroup decided there were too many deficiencies in using historical data to develop accurate catastrophe charges. Historical experience does not account for the geographical location of catastrophes or an increase in loss exposure (such as new construction in risk prone areas). Additionally, historical data can be distorted by infrequent and severe catastrophes. Thankfully, the frequency of major hurricanes is too low to satisfy the requirements for statistical predictability. This statement is even more true for major earthquakes.

FIGURE 4. P/C RBC RISK FACTORS	
R0	Asset Risk – Subsidiary Insurers
R1	Asset Risk – Fixed Income
R2	Asset Risk – Equity
R3	Credit Risk
R4	Underwriting Risk – Reserves
R5	Underwriting Risk – Premiums
RCAT	Catastrophe Risk (Earthquake and Hurricane)

Instead, catastrophe models were chosen for their ability to model future catastrophic losses for an insurer based on expected future frequency of catastrophic events of all severities and the insurer’s own current property exposures, policy coverage terms and catastrophe reinsurance structure. Insurers are permitted to calculate the catastrophe charge using the Florida Public Hurricane Loss Model (FPHLM) or an AIR, EQECAT, Risk Management Systems (RMS) or Applied Research Associates (ARA) model. They can also use a blend of these models. These five models were chosen because most have been in use for more than 20 years and have undergone many updates and extensive field testing, including those mentioned previously in this article.

Insurers are allowed to use their own set of assumptions, but must attest the model exposure data input and parameters are the same for their internal catastrophe risk management. Additionally, insurers must include with their RBC filing an explanation for the following modeling options and assumptions used in their calculations: 1) time dependency;

*(Continued on page 29)*

<sup>13</sup> NAIC. (2016, August). *Property and Casualty Risk-Based Capital Newsletter*. (Vol. 20.1). [www.naic.org/documents/committees\\_e\\_capad\\_prbc\\_related\\_newsltr\\_1608.pdf](http://www.naic.org/documents/committees_e_capad_prbc_related_newsltr_1608.pdf).

FIGURE 5. RCAT AT-A-GLANCE	
✓	Charge Applied to 1-in-100-Year Modeled Loss, Net of Reinsurance
✓	Charge Applied Separately to Each Peril and Each Subject to Covariance Adjustment
✓	Contingent Credit Risk Charge of 4.8% applied to Reinsurance Recoverables
✓	Aggregate Exceedance Probability (AEP) and Occurrence Exceedance Probability (OEP) Modeled Results Permitted
✓	Florida Public Hurricane, ARA, RMS, AIR and EQECAT Models Allowed
✓	Value at Risk (VaR)
✓	Model Inputs and Parameters Identical to Internal Risk Management

2) demand surge; 3) storm surge; 4) fire following earthquake; and 5) secondary uncertainty.

Catastrophe models work by first developing a geographical grid, and placing every one of the insured properties contained in the insurer's portfolio at its precise location on the grid. Next, a great many hypothetical catastrophic events based on the applicable science (meteorology for hurricanes, seismology for earthquakes) are generated and probabilities are assigned to each one. Next, the degree to which the intensity of each event diminishes with distance from the center of the event's greatest intensity is modeled, and the modeled impact of the event is measured for every insured property on the insurer's geographical grid. Based on construction and other characteristics of each individual property, damage estimates are modeled. Finally, an estimated loss for the property due to the modeled event is calculated from the damage estimate and the property's insurance coverage information.

These estimates are summed over the entire grid to get an aggregate modeled insured loss for the event as a whole. At this point, the modeled events can be sorted by size to form an exceedance probability curve for the probability of a loss exceeding a certain amount in a year. When the exceedance probability is expressed as the number of years between times when such an amount might be exceeded, it is called a "return period." The probability-weighted average of all of the modeled events can also be calculated; this yields the average annual loss (AAL), or the expected loss per year, a value needed for ratemaking applications.

In keeping with the function of RBC as a measure of minimum capital, the catastrophe risk charge is based on the 1-in-100-years' modeled hurricane and earthquake loss level, net of reinsurance. However, there was concern this loss level would be insufficient to contain extensive losses on the level of those experienced during Hurricane Andrew. To address this concern, insurers will also be required to report their modeled losses at the 1-in-250-years' and 1-in-500-years' levels in their annual RBC report on an informational basis.

### ◆ REMOVING DOUBLE-COUNTING IN THE RBC FORMULA

As mentioned earlier, catastrophe losses are embedded in an insurer's reported loss figures. To avoid double-counting, historical hurricane and earthquake losses must be removed from the industry and company loss numbers used in the Underwriting Premium Risk Charge (R5) portion of the formula. Industry figures will be adjusted using by-line catastrophe loss information from statistical providers. Catastrophe events will be those reported by the Insurance Services Office's (ISO) Property Claim Services (PCS) for the U.S. and SIGMA and NATCAT for those outside the U.S. Insurers are required to collect and report their domestic and non-U.S. catastrophe losses by annual financial statement line and by

accident year. The Schedule P pages of the RBC report were updated in 2012 for these additional catastrophe loss columns. Additionally, the industry factors have been updated to reflect the exclusion of catastrophe losses.<sup>14</sup>

### ◆ FUTURE CONSIDERATIONS

Catastrophic risk exposure continues to rise due to population growth, higher valued construction in risk-prone areas, and climatic changes. Insurers face the potential for increased insured losses from catastrophic events, which could have a significant impact on their solvency. As such, it is important for state insurance regulators to help ensure insurers maintain adequate capital to mitigate against severe catastrophe losses. The addition of a catastrophe risk charge to the RBC for P/C insurers is an important step to accomplishing this.

In 2017, the NAIC membership will consider additional enhancements to the P/C RBC catastrophe risk charge. Should partial privatization of the National Flood Insurance Program (NFIP) occur, the potential risk for private flood insurers could be considerable. For this reason, the NAIC membership may consider adding the flood peril to the catastrophe risk charge and will evaluate the potential to add other catastrophe risks, such as severe storm and tornados, wild-fire and terrorism. Important considerations in assessing peril additions is the solvency risk potential and modeling capabilities. The NAIC membership may also consider developing procedures for internal catastrophe model use to calculate the catastrophe risk charge. Finally, the NAIC membership will consider expanding the *Financial Condition Examiners Handbook* to include procedures and best practices for insurer catastrophe management.

### ABOUT THE AUTHOR



Anne Obersteadt is a researcher with the NAIC Center for Insurance Policy and Research. Since 2000, she has been at the NAIC performing financial, statistical and research analysis on all insurance sectors. In her current role, she has authored several articles for the CIPR Newsletter, a CIPR Study on the State of the Life Insurance Industry, organized forums on insurance related issues, and provided support for NAIC working groups. Before joining CIPR, she worked in other NAIC Departments where she published statistical reports, provided insurance guidance and statistical data for external parties, analyzed insurer financial filings for solvency issues, and authored commentaries on the financial performance of the life and property and casualty insurance sectors. Prior to the NAIC, she worked as a commercial loan officer for U.S. Bank. Ms. Obersteadt has a bachelor's degree in business administration and an MBA in finance.

<sup>14</sup> NAIC Catastrophe Risk (E) Subgroup. (2010, June 23). Draft Proposal for Risk-Based Capital Charge for Property Catastrophe Risk Based on the Results of Catastrophe Modeling. [www.naic.org/documents/committees\\_ex\\_isfff\\_100623\\_capital\\_reg.pdf](http://www.naic.org/documents/committees_ex_isfff_100623_capital_reg.pdf). id.



NAIC Central Office  
Center for Insurance Policy and Research  
1100 Walnut Street, Suite 1500  
Kansas City, MO 64106-2197  
Phone: 816-842-3600  
Fax: 816-783-8175

<http://www.naic.org>

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