

Insuring hurricanes: Perspectives, gaps, and opportunities after 2017

A year marked by several devastating hurricanes raises fundamental strategic questions about the readiness of the United States for the next decade of large-scale catastrophes. Insurers and policy makers have an opportunity to take actions and have a transformative impact to mitigate loss and significantly reduce the insurance gap.

Erwann Michel-Kerjan
Giambattista Taglioni

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Executive summary

With total estimated economic losses surpassing \$200 billion, according to our projections, the 2017 hurricane season will likely be the most expensive on record, mostly due to three major hurricanes: Harvey, Irma, and Maria (HIM). Harvey caused calamitous flooding in southeast Texas. Although Irma's last-minute turn to the west mitigated the effect on Florida, the losses were still catastrophic, particularly in Cuba, the Dominican Republic, and Haiti. And Maria devastated most of Puerto Rico.

This article focuses on the impact of the 2017 hurricane season on the insurance industry and how the industry could boost financial protection to support resilience in the face of hurricanes and other natural disasters. While it will take a long time for all claims to be processed, we estimate that each of the three major hurricanes of the season will be among the ten most costly insured natural catastrophes globally, ever.

Based on our research, we anticipate the following [effects on the insurance industry](#):

- These disasters will, for most insurers and reinsurers, be a [story of earnings volatility and not of capital](#) due to the record-high surplus of the US property and casualty industry.
- [Personal-auto and business-interruption insurance](#) will be the biggest unexpected losses, given that flooding is typically not covered in homeowners' contracts.
- These consecutive disasters [will stress insurance operations](#), including large-volume claim management and loss creeps, due to spikes in adjustment expense.
- In the coming months, insurers will likely face a [significant consumer experience and public relations risk](#). Insurers need to go into crisis-management mode and deliberately and proactively address the risk, starting now.
- The long-term [impact on premium rates](#) will depend on the willingness of investors to recapitalize and continue to invest. If investors get scared by a new trend of increased losses in the wake of natural disasters, rate increases may be substantial and contribute to the ending of a prolonged soft cycle.

Looking forward, we believe the industry should consider the following tactics:

- [Ensuring resilient operations](#). As part of the fallout from HIM, several carriers will face challenges to their operating models and claims organizations. With digital technology, process automation, and effective talent deployment, insurers can build the resilience needed to convert an operational challenge into increased productivity and customer loyalty.

- *Seizing the opportunity.* The United States is the world's largest insurance market, yet the majority of the total economic losses from these disasters are underinsured or uninsured. According to data from the Federal Emergency Management Agency (FEMA), the majority of residents affected by the flooding in Texas did not have flood insurance for their homes, despite their houses being their most significant assets. The figure for small-business owners is likely to be even worse, who are even less likely to have flood insurance. Insurers would be wise to work to reach these underinsured and uninsured people and businesses.
- *Reviewing a public-private partnership structure of the flood market.* The debate on the future structure of the National Flood Insurance Program (NFIP) will surely intensify in the coming months, as Congress voted to forgive \$16 billion of the program's debt in October. Should flood insurance be mandatory for all who live in flood-prone areas, independent of their risk level? Can insurance—public or private—be risk-based to signal risk level and encourage better risk-management practices? What is the role of the private sector in increasing the market and ensuring more Americans are protected financially? These and other questions will be debated in Congress and in state legislatures across the country, particularly in the regions most exposed to natural disasters. With the right products and pricing strategy, insurers could seize \$30 billion to \$50 billion in untapped revenue just on flood risk insurance.



The past year's virulent hurricane season highlights the need for a structural answer to the long-standing national insurance gap. Indeed, the increasing threat of catastrophe coupled with the large number of uninsured and underinsured individuals and businesses creates an opportunity, if not a responsibility, for insurers and policy makers to act. ■

Introduction

After several relatively quiet years for the insurance industry, Hurricane Harvey hit Texas on August 25, 2017, as a powerful Category 4 hurricane on the Saffir-Simpson hurricane wind scale, which ranks hurricanes from 1 to 5. It was the day after the 25th anniversary of Hurricane Andrew; this storm devastated Florida and was, at the time, the most expensive insured disaster ever at \$40 billion.¹ In 2005, Hurricane Katrina far outpaced Andrew, costing about \$160 billion.

Two weeks after Harvey, Hurricane Irma swept through several Caribbean islands as a Category 5 storm, leaving behind destruction and casualties. While most weather models predicted Irma would threaten Florida's east coast, the hurricane eventually turned and instead hit the state's west coast, which has a much lower concentration of population and assets.

While losses were less than expected in Florida, Harvey's and Irma's devastation will have a broad and enduring impact on how individuals, corporations, and governments think about and act upon extreme events. In total, more than 160 people died as a result of the storms.

Then on September 20, Hurricane Maria hit Puerto Rico and several other islands, causing massive devastation and more deaths.

But 25 years after Andrew, 12 years after Katrina, and five years after Superstorm Sandy, the United States is better prepared for such catastrophes. Given the scale and destructive power of these hurricanes, emergency management on the US mainland has been remarkable on many levels. The situation in Puerto Rico, however, has been challenging because of its current debt crisis, economic situation, and geographic location, which complicates delivering relief.²

Recovery has started across affected areas, but if experience serves as a guide, it will take years to achieve normalcy—if that ever happens. The city of New Orleans has lost one-third of its population since Katrina. And rebuilding after HIM will be very expensive; our preliminary estimate is that it will cost around \$200 billion—equivalent to the GDP of Portugal.³ While insurance will contribute a significant amount through claim payment, the vast majority of the losses are uninsured.

Determining who will pay for the recovery, as well as how best to operationally organize recovery financing, is a critical element of building resilience.

The following pages focus on the economic impact these disasters will have on the insurance industry, as well as the role of the industry in this and future natural disaster recoveries. Is the insurance industry ready?

With more than \$700 billion of policyholder surplus at the time the hurricanes hit, the US P&C industry is ready to pay its share of losses from a capital and risk management perspective—but the industry is not as ready as it could be from an operational and customer-experience

perspective. Looming reputational risks need to be adequately addressed. In addition, the insurance industry and governments providing public insurance should address the structural needs to measurably close the insurance gap on flood insurance, a long-standing issue that has slowed down recovery efforts.

Part one: Diagnosis

It is important to provide an initial diagnosis of the impact of these disasters on the insurance industry, recognizing that the situation will continue to evolve and that it will take months to determine the full extent of the losses.

About the hurricanes

Harvey was a Category 4 hurricane when it made landfall in Texas. Based on the Saffir-Simpson scale, which is roughly logarithmic in wind speed, a Category 4 (sustained winds from 130 to 156 mph, or 209 to 251 kmh) is much more damaging than a Category 3 hurricane (sustained winds from 111 to 129 mph, or 178 to 208 kmh). Severe structural damage should be expected, as should long-term power outages—and these effects are from wind only. A Category 4 hurricane also pushes massive amounts of water inland, and significant rain will continue for days, often making flooding an even larger issue than wind damage. And indeed, nearly 200,000 houses were damaged or destroyed in Texas (more than by Andrew in 1992), some by the wind but more by rain and water pushed inland from the Gulf of Mexico. Commercial and industrial properties were severely affected, as was public infrastructure. And, worst of all, Harvey took more than 80 lives.

Irma came less than two weeks later as a Category 5 and ravaged several Caribbean islands. As Irma passed over Puerto Rico on September 6, the storm reached its peak intensity with winds of 185 miles per hour (298 kmh). Irma hit Florida's east coast as a Category 3 on September 10, then lessened to a Category 2 before becoming a depression, meaning winds slowed down to below 39 miles per hour. Throughout its life cycle, Irma killed more than 80 people, including 38 in the United States.

Two weeks later, Maria hit Puerto Rico, which had already been affected by Irma, as a powerful, high-end Category 4 storm. Maria killed more than 90 people, half of whom were in Puerto Rico.

As a reference point, Katrina, the most expensive disaster in recent US history, killed more than 1,300 people and cost about \$160 billion.⁴ Of that amount, just \$50 billion was insured by the insurance and reinsurance industry and another \$20 billion was insured by the NFIP, which is run by FEMA. Combined, we estimate recovery from the three 2017 hurricanes will cost around \$200 billion.

Impact on the P&C insurance industry

Timing is important. The US P&C industry had a record high surplus of \$710 billion entering the 2017 hurricane season, compared with less than \$600 billion when Sandy hit in 2012 and just more than \$400 billion when Katrina hit in 2005. That 2017 surplus translates

into \$1 in surplus for every \$0.75 of net premium written—the industry’s strongest claims-paying historical position. Since only a limited portion of the cost of HIM will be covered by the industry, even if insured losses total \$70 billion, that would be a 10 percent shock to the surplus’s base—significant for sure, but not disruptive. In addition, a large portion of local catastrophic losses are largely reinsured and spread across a high number of market participants around the world, making individual losses more bearable, albeit severe for some.

We anticipate, therefore, that for the industry as a whole, HIM will be an earnings volatility story, as financial impact on most carriers will be short-term, not a capital story—even though, of course, some carriers (primary or reinsurance) will be seriously affected. These back-to-back hurricanes are reminders of the importance of planning for catastrophes, both operationally and from a capital and reinsurance perspective.

Impact on individual carriers and reinsurance/third-party capital

HIM will mostly affect three insurance segments: homeowners, auto, and commercial/specialty. Given the scale and duration of the flooding, we anticipate many total losses on auto insurance. Business interruption is likely to add to the losses for commercial lines.

Texas has nearly 2,000 domestic and licensed foreign insurers. The state is the second-largest market in the nation, including for P&C. As such, Harvey will have an impact on a large number of carriers, but national and international carriers with strong financials have significant market share. Florida also has thousands of carriers, but local regulations discourage well-capitalized national carriers in favor of regional carriers with smaller balance sheets. Insured losses in Puerto Rico surprised those who thought about the island mostly as a resort destination; the island is also home to significant manufacturing activities, which were severely impaired by the hurricane and subsequent interruption of electricity. As a result, privately insured losses from Maria might well be as high, if not higher, than from Harvey or Irma.

The impact on each company will depend on its risk exposure, underwriting policies, reinsurance program, and balance sheet strength. The third-quarter earnings, released in October by insurers showed that several of them, including some seen as fairly sophisticated players, were surprised by the scale of the losses.

These results pile onto an already bad year for losses. Tornado and hail damage in the United States already made the first quarter of 2017 the worst first quarter for the industry in 20 years. The damage surprised many—including large, sophisticated insurers, many of which posted catastrophe-related losses higher than anticipated.

The Florida insurance market is uniquely dependent on the capital relief provided by the reinsurance market and the state-run Florida Hurricane Catastrophe Fund. As Irma developed, reinsurers’ stock prices followed the fortunes of the insurers that they protect—dropping sharply before recovering as the hurricane diverted from Miami. Harvey never threatened reinsurers in the same way; losses always seemed likely to be largely retained on the balance sheets of primary carriers.

In the 12 years since Katrina, a revolution has occurred in how the reinsurance of catastrophe risk is capitalized. While the shareholders of reinsurers are still exposed to natural catastrophes, an increasing portion of natural-catastrophe risk has been transferred to the capital markets—largely through insurance-linked securities. These funds directly affect the reinsurance market by transferring risk from insurers and indirectly affect it by transferring risk from reinsurers (retrocession). The risk of major impairment to most of these third-party capital providers receded as the potential losses from Irma decreased, but structural issues, including the liquidity of the secondary catastrophe bond market and “trapped” collateral, could still have an impact on the supply and demand of reinsurance when the bulk of reinsurance deals renew at the end of the year.

We expect prices to increase at January renewals—but prices would have been higher if the industry were not so capitalized and diversified. Given the price pressure we observed these past few years, even a 20 percent price increase in property reinsurance rates would keep prices below their level three years ago. Whether the new rates will be attractive enough for third-party capital players to maintain their commitment to this segment is yet to be seen. Most likely the funds that succeed in the coming years will be those that understand the gaps, know how to serve clients differently than more traditional insurers and reinsurers, and are fast at sizing growth opportunities.

Impact on the National Flood Insurance Program (NFIP)

In addition to hurricane wind-related losses, flood losses will mostly affect insurers for auto and commercial lines since flooding is usually not covered by homeowners policies. As noted earlier, residential and small business flood losses are mainly covered today through the FEMA-run NFIP. A number of insurers (“write-your-own companies”) sell NFIP policies and settle claims on behalf of the federal government in exchange for a fee, but they do not take the underlying risk. Established in 1968, the program now has, according to FEMA data, five million policies in force, covering \$1.23 trillion in assets nationally. Residential coverage, on which we focus here, is capped at \$250,000 and \$100,000 for building and content coverage, respectively.⁵

Harvey and Irma hit the two largest markets for the program in terms of NFIP policies in force. As of September 2017, Florida had 1.7 million policies, or 35 percent of the program, followed by Texas with 590,000, or 12 percent. Puerto Rico had only about 5,000 NFIP policies in place; with more than three million residents affected by Maria, flood insurance is likely to play a minimal role in economic recovery.

Texans are likely to file a large number of NFIP claims—and they will largely be expensive claims because of the amount and duration of flooding caused by Harvey. Our calculations show that for Katrina, the NFIP paid about 167,000 claims, each averaging nearly \$100,000—the highest number, and amount, in 50 years of the federal program’s operation. Superstorm Sandy triggered more than \$8 billion in NFIP payments for 130,000 paid claims, each averaging \$64,000.

The NFIP collects \$3.5 billion in premiums per year nationally, of which 27 percent are from Florida and 10 percent from Texas. While premiums vary widely, the average nationwide premium for an NFIP policy is \$700 per year—about \$2 per day.

Contrary to private insurers who can select who to insure or not, the NFIP must insure everyone who purchases coverage, independent of the risk level of his or her residence. Before the start of the 2017 hurricane season, the program was already \$24 billion in debt, mostly due to paying out catastrophic claims for Hurricanes Katrina, Rita, and Wilma in 2005, Ike in 2008, and Sandy in 2012.

To pay out claims to policyholders when catastrophic losses occur, the program was designed to borrow money from the US Treasury after approval from Congress, which the program repays over time—and it has done so on several occasions. Initial estimates suggest HIM-related insured flood losses on the NFIP will cost roughly \$20 billion, making more loans from the federal government inevitable. And indeed in October the US Congress voted for a relief package that included forgiveness of \$16 billion of the program's debt. Competing bills have been introduced; some would increase the role the insurance industry can play in insuring flood risk to complement the federal government's efforts while others are pushing for an overhaul of the program. It is unclear how HIM will impact the discussion on Capitol Hill on the reform of the program after December when the program is set to expire, but we anticipate it will be a short-term deferral to gain time for a thorough discussion of the future role and scope of FEMA in providing flood insurance.

Part two: Operational and strategic considerations

The P&C insurance industry has not overreacted to this series of extreme events. The industry continues to write property and business interruption policies. Contrary to what happened in the past, such as with terrorism coverage after 9/11, rates on line haven't spiked, and the reinsurance market is still liquid and receptive. Indeed, the industry is facing some of its most costly natural catastrophe losses with remarkable resilience and maturity, allowing P&C to offer critical support of the economic and social recovery to those who had purchased protection. In our view, the industry must consider the following key operational and strategic questions:

Question 1: Are our claim operations modern enough to cope with these types of events?

HIM is challenging the effectiveness of every insurer's and reinsurer's claim operations. Overload in volumes will stress claim operations of every carrier. In particular, we observed a bottleneck in loss adjustors, whose prices have increased between 15 and 25 percent, triggering possible loss creeps beyond normal standards. We also anticipate some regulatory bottlenecks. For example, many of the flood-damaged vehicles will be a "total loss," but for an insurer to pay that claim it legally needs to take physical ownership of the car itself, including the keys and the original title. If the vehicle owner's home was also flooded, producing these items might be hard for that person, delaying the claim payment and creating frustration for the customer.

In recent years, several leading insurers have considerably improved their claims process, using more automation and digital capabilities to expedite claims assessment, reduce payment time to closure, lower fraud rates, and improve the consumer experience significantly. Use of drones, granular satellite imagery, social media, and other modern technologies are a few examples of what is now considered standard practice for claim departments.

But a large operational performance gap remains. These disasters will likely demonstrate significant value for those insurers that have made the investment in digital tools. Insurers that have not and were highly exposed to the hurricanes will find their operations severely challenged, leading to higher claim payments, longer time to closure, and significant reputation issues as their customers see competitors do a much better job.

Claim effectiveness is measured in decimal points. A few percentage points of overpayment, and the portfolio turns from profitable to unprofitable. In a highly competitive market like property P&C insurance, tolerance for mistakes is razor thin.

Question 2: Can the industry shift its value proposition from payer to partner?

The P&C insurance industry is a mature, competitive, and fragmented industry. Customers have ample choice and risk coverage that are standard across carriers. More demanding customers also put pressure on insurers to offer a different value proposal, and branding has been a key driver of new business.

While HIM will initially keep teams of actuaries busy stress testing their pricing and underwriting models, we argue that the maturity of the P&C insurance industry means it has the opportunity to reconsider its value proposition and explore new ways of differentiation. For example, P&C insurers could consider adapting their strategic posture from simply being a payer of claims to being a true partner, working with many more clients before, during, and after a loss.

For many insurers, this transition could be a true transformational effort across education support, prevention services, risk mitigation support, assistance, and customer care. This partner approach has already helped lower losses by more systematically rewarding mitigation efforts and increasing lifetime value of the portfolio. This tactic has also proven to significantly improve reputation and trust, which typically reduces lawsuits and increases customer retention. Advances in digitization and analytics allow for this partner approach to be deployed on a much larger scale and at a reasonable cost not to commercial lines but to personal lines.

Question 3: Is the industry ready to address the reputational risks subsequent to such surge claim events?

Of course, the industry is not directly responsible for flood losses insured by the federal government, but many consumers will still probably think flooding is covered by their homeowners policy. In the past, there has been significant litigation that centered on whether the damage was caused by wind or water—which determines the responsibility of the insurer if

a flood hazard is excluded from the policy. Such litigation is likely to reoccur, adding legal costs to claim settlements and delaying the recovery process.

Moreover, if claim management is inefficient and operational and regulatory bottlenecks are not anticipated, well communicated to clients, and addressed, policyholders are even more likely to fault the insurer for their stressful situation.

Whether or not this is the case is secondary from a reputation standpoint. It is important for insurers to appoint a crisis management team responsible for anticipating and mitigating future risks in the aftermath of these terrible disasters.

Combatting reputational risks does not just hinge on better communication. Insurers must put clients first, organize around this vision, and deliver on it in the coming months.

Question 4: How can players in the insurance industry act together to close the massive insurance gap?

Our analysis of flood insurance penetration in counties most affected by HIM reveals that as many as 80 percent of Texas homeowners, 60 percent of Florida homeowners, and 99 percent of Puerto Rican homeowners did not have flood insurance. Across the country, the low flood insurance take-up rate has been vexing.⁶

Eighty percent of residents in areas affected by Sandy also lacked flood insurance. The proportion was even worse for small businesses, 90 percent of which were unprotected for flood losses.⁷ Exhibit 1 summarizes residential flood insurance take-up rates in areas affected by recent storm-related flood events (using preliminary estimates for 2017 events).

Many residents purchase flood insurance either after a big disaster makes the need for coverage salient or because the bank requires the insurance to protect a federally backed mortgage when buying a new home. So why are so many residents unprotected or under-protected? Research shows that many people underestimate the risk and think accidents will not happen to them, or they believe their homeowners insurance covers all hazards. Many find the purchasing process complicated and understanding coverage and exclusions cumbersome. Others simply consider flood insurance to be too expensive. Others expect to be bailed out, so they don't purchase coverage.⁸

But even among those who purchase flood insurance, many let the policy lapse after an average of just three to four years. Flood insurance might have been required at the closing of the mortgage, but when the mortgage is sold on the secondary market or securitized, the flood insurance requirement is often not part of the discussion. Many banks actually have limited, if any, information about their exposure to disaster-related mortgage defaults.

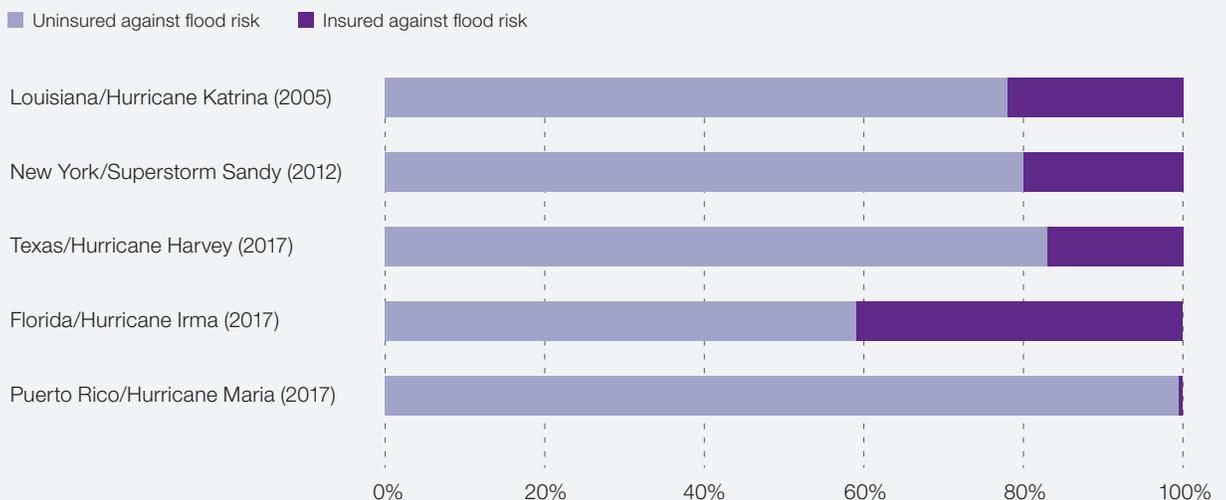
In recent years, with modern, much-improved flood risk-assessment technology and a desire to allocate capital to new risks, private insurers and reinsurers have re-entered the flood

insurance market in the United States—but this process has been slow. Florida has 20,000 private flood insurance policies compared with 1.7 million NFIP policies. Some insurers are still hesitant due to issues, such as a lack of historical data on claims, competition with NFIP, wind/water correlation and aggregation, a lack of in-house expertise, and an unfamiliarity with the hazard. What they learn from those that do enter the market at this point will be important for the growth of the industry overall in the near future.

Given the significant lack of insurance coverage for both flood and earthquake risks, insurers, possibly in collaboration with the public sector, face huge opportunities that could be tremendously valuable in the current soft market and low-growth environment in P&C. How should the insurance industry take advantage of this untapped growth opportunity and fulfill its mission to protect Americans against the next HIM-like disaster? How can the industry collectively advocate this position with policy makers and deploy capital to design new products that will be acceptable to regulators and attractive to customers? What can insurers learn from FEMA’s 50 years of operating the NFIP? How does one nudge those who are exposed to acquire financial protection, for their own good as well as that of their families?

The insurance industry can learn from broader knowledge developed in the past few decades about consumer decision making and more recent discoveries from behavioral economics about choice architecture—and what works and what does not. The states most exposed to natural disasters might consider making flood insurance a mandatory offer with an opt-out option—much as the Terrorism Risk Insurance Act has done since 2002 with terrorism insurance for some commercial lines. Insurers would have to include flood coverage in their homeowners insurance packages with a larger choice of deductibles and limits than currently

Exhibit 1 The United States faces a massive insurance gap.



Source: McKinsey analysis

offered by FEMA, which could be retained on their books or issued as an NFIP policy if so authorized, similar to the practices of a write-your-own company. Policyholders could decide to opt out, but experience from several markets (terrorism insurance, voluntary retirement contribution, etc.) show many will not. The current opt-in choice design clearly does not work for reasons we mentioned above, including the fact that millions of residents and small business owners are unprotected. The default option—not doing anything—should be one that protects them.

We estimate that this course of action, if risk-based, could represent \$30 billion to \$50 billion in written premiums annually (residential and small business combined) and better protect the United States against economic flood losses.

Question 5: What is the optimal private-public risk-transfer structure?

Despite being the world's largest insurance market, the United States has become one of the most generous members of the Organisation for Economic Co-operation and Development for government disaster relief, filling the insurance gap—especially on the residential and public sector side. Currently, the governor of an affected state can petition the president to declare a “major disaster,” which could trigger federal assistance. The number of such declarations has grown dramatically, from 191 declarations during the 1961–1970 period to 597 during the 2001–10 period.⁹ Media coverage in the immediate aftermath of catastrophes often makes the event politically salient, leading governments to provide significant disaster relief for uninsured losses—a relatively recent undertaking in US history. An examination of several major disasters in the past 60 years clearly shows the growing role of the federal government in assisting with economic relief after large disasters (Exhibit 2).

The proportion of the losses paid by taxpayers has typically been larger when catastrophes are larger as well. For instance, the US government spent “only” 35 percent of the total losses for Hurricane Ike in 2008. But altogether, over a larger set of hurricanes, government relief has represented an average of almost two-thirds of the total economic losses in recent years. This generosity, so to speak, poses a significant moral problem. If a city or state—or an individual, for that matter—thinks it will receive free money in the aftermath of a disaster, what is its economic incentive to invest in risk-reduction measures to prevent the calamity, limit the loss, or to purchase insurance?

Congress took less than a week to agree on the first \$50 billion for a relief package in the aftermath of Katrina in 2005 (ultimately more than \$100 billion of taxpayers' money was spent); but it took three full months of debate to finally agree on a similar level of post-disaster funding for Sandy in 2012. During the Sandy debates, many lawmakers raised the issue of the long-term impact created by such a de facto government payment guaranty. Does further lowering the demand for insurance in the future create an even higher demand for government relief the next time, exacerbating a potentially dangerous spiral?

How much federal relief Congress will support in total for the states affected by the 2017 disasters, and how long it will take not only to make that decision but also for the funding to actually be spent to rebuild (hopefully better and stronger), is yet to be seen.

Our analysis reveals that the ratio of annual cost of natural disasters to GDP was on average one-tenth of a percentage point in the United States in the 1980s. In the 1990s and 2000s, that level tripled, and it almost quadrupled from 2010 to 2017. From 1980 to 1990, the United States averaged fewer than three annual disasters that cost more than \$1 billion; since 2010, the average has risen to ten per year.¹⁰

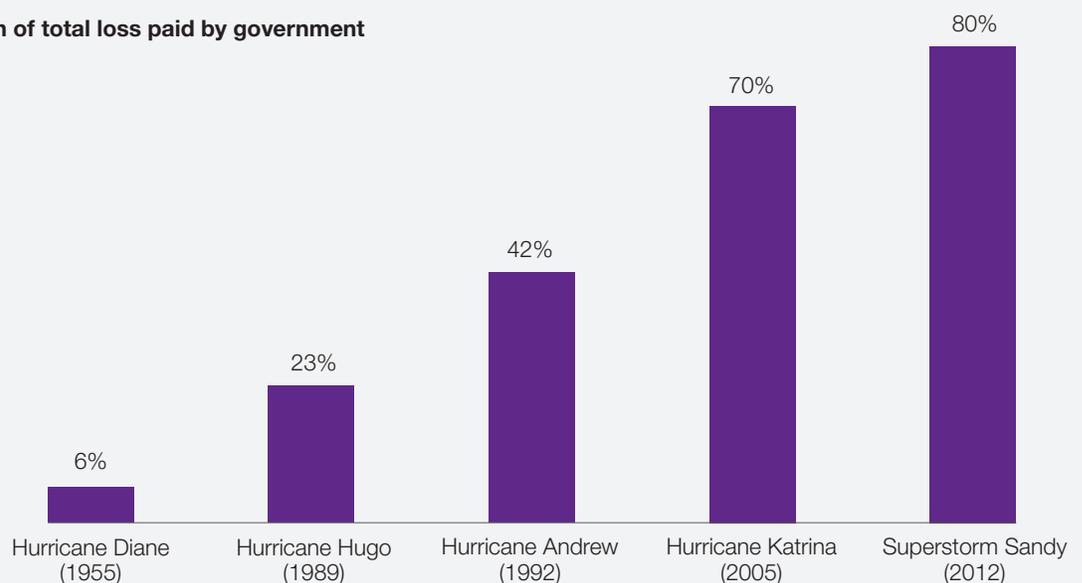
If the frequency of large-scale disasters continues to accelerate, then the sustainability of this massive government relief is questionable. There are significant market opportunities for insurers, reinsurers, and specialized funds to size an offering tailor-made to provide financial protection to many more people and businesses as well as to state and local governments—and to encourage predisaster risk reduction.

By being a partner to these public entities and bringing their know-how to solve this problem, insurers also can significantly help reduce exposure and strengthen the resilience of communities and businesses that operate in regions prone to catastrophes. Economic resilience also improves economic competitiveness. Rating agencies have recently started to take a closer look at sovereign and municipality exposure to disaster—which remains a largely untapped market for insurance.

What role should the insurance industry play to stimulate a healthy debate about the future of catastrophe financing? What is the most effective public-private partnership structure

Exhibit 2 The US federal government has played an increasingly significant role in covering disaster losses.

Proportion of total loss paid by government



Source: McKinsey analysis

to protect individuals and businesses in the United States and other countries? The value at stake underneath these questions is enormous. Acting on them requires a strategic vision, competitive boldness, and execution skills.

Conclusion: A checklist

For the insurance industry, a key question raised by the 2017 hurricane season is not whether the industry will be able to absorb the shock in the short term. It will. The question is how the industry can pose the fundamental strategic questions about the readiness of the United States for the next decade of large-scale catastrophes. It is about how insurance, including alternative risk transfer and public insurance, can significantly increase its role and effectiveness in financial protection.

The following checklist can prove useful to insurance practitioners as they reflect on post-disaster situations:

Ten-point executive checklist

- 1 How fast did we have an accurate estimate of our losses? Were those aligned with our risk appetite and risk tolerance?
- 2 Are we satisfied with our claims process after the most recent catastrophes? How satisfied are our customers about their claims experience with us? Have we actually measured it? How has it affected our retention rate? How could we improve further?
- 3 Are we prepared for reputation risks? How so? Who is responsible and accountable for these risks?
- 4 Have the catastrophes revealed surprises about our underwriting process and pricing models? Have our underwriters taken more risk than we are compensated for?
- 5 What is the disaster's expected impact on rates? How is that impact influencing our underwriting strategy for the coming year and our financial targets?
- 6 How can we move our organization from "payer" to "partner" of our clients? What new services, capabilities, and organizational changes are required to do it at scale?
- 7 Can the industry, including InsureTech, significantly innovate to reduce the insurance gap, whether on flood/earthquake risk for homeowners and small businesses or by developing new products dedicated to local or state governments?
- 8 Would we support some states in establishing an opt-out policy for flood risk attached to homeowners and small-business property insurance?
- 9 How can the industry act together more effectively to propose a new paradigm for private-public risk sharing?
- 10 How can we engage our governing board (or equivalent) more proactively on these topics?

¹ Figures in this paragraph were adjusted for inflation.

² The poverty rate in Puerto Rico is higher than any of the 50 US states. In 2014, the US Census estimated that 58 percent of Puerto Rico's children lived below the federal poverty level.

³ Economic estimates often vary significantly depending on what is actually measured; direct versus indirect economic losses, or short-term versus longer-term losses that, from a macroeconomic perspective, can be partially offset by the significant post-disaster reconstruction activities.

⁴ Adjusted for inflation.

⁵ Some coverage is also available from the private market in excess of that amount or as an alternative to the NFIP but private flood insurance represents a very small portion of the market today. Coverage limits are higher for small business.

⁶ Earthquake insurance also has a low take-up rate. For instance, 90 percent of California residents do not have earthquake insurance. (Earthquake risk is also excluded from homeowners insurance, except for fire following loss.) Those who do have earthquake insurance through the privately funded and publicly managed California Earthquake Authority.

⁷ *A stronger, more resilient New York*, New York City, 2013, nyc.gov.

⁸ Erwann Michel-Kerjan and Howard Kunreuther, "Redesigning flood insurance," *Science*, 2011, Volume 333, Number 6041, pp. 408–9.

⁹ Erwann O. Michel-Kerjan, "Have we entered an ever-growing cycle on government disaster relief?," The Wharton School, University of Pennsylvania, March 14, 2013, opim.wharton.upenn.edu/risk/library/US-Senate-Small-Business-Cte_2013Mar14_MichelKerjan.pdf.

¹⁰ Adjusted for inflation.

Erwann Michel-Kerjan is a partner in the New York office, where **Giambattista Taglioni** is a senior partner.

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