Editorial

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At the time of publication, the 2017 Atlantic Ocean hurricane season has given rise, in fast succession, to three storms of enormous destructive power: Harvey, Irma and José. It is too early to tell their full impact but it seems likely that it will be massive in terms of human lives, livelihoods and financial losses. There is a clear need for the insurance industry to enhance its partnerships with governments and other stakeholders to help societies build resilience to the increasing risks of natural catastrophes (Cats).

Financial losses associated with extreme events are experienced directly or indirectly by many stakeholders (that is, governments, businesses and individuals), hampering socio-economic development, particularly in the most vulnerable nations.¹

A region's economic vulnerability to extreme events will depend on a range of factors linked to: (i) increasing exposure and vulnerabilities such as higher concentrations of people and property in cities in exposed coastal regions, poor development planning, complex inter-dependent supply chains and trade patterns, cascading failure effects of critical infrastructure and cascading impacts of natural and man-made Cats; and (ii) increasing incidence and severity of hazards such as extreme weather events due to climate change. These factors contribute to the rising financial impacts of disasters.²

In absolute terms, the financial costs of disasters are highest for high-income countries. However, in relative terms, the financial effects of extreme events are much more devastating for middle- and low-income countries when analysed in relation to their average GDP. Recurring disasters present a significant challenge to socio-economic development and poverty reduction efforts in those countries. As is too often the case, the poorest communities are the most vulnerable.³

A comprehensive risk management strategy is required to prevent and/or limit the economic impacts of disasters. The 2014 World Development Report, "Risk and Opportunity: Managing Risk for Development" argued that risk management can be a powerful instrument for development, not only by building people's resilience and preventing development setbacks, but also by allowing them to take advantage of opportunities for improvement.

¹ World Bank (2014).

² Golnaraghi *et al.* (2017).

³ Von Peter *et al.* (2012).

A comprehensive risk management strategy should consider several options to reduce and prevent economic losses.⁴ *Preventive* measures such as land-use planning, enforcement of appropriate building codes, retrofitting of homes, commercial buildings and critical infrastructure (for example, energy, transport, water and sanitation), better construction practices and investment in the natural infrastructure (for example, wetlands) are critical for reducing and preventing economic losses associated with disasters.⁵ These can be combined with *emergency preparedness and response procedures linked to early warnings*, to further reduce the risks.⁶

The decision to invest in such measures should be underpinned by an understanding of the risk and cost–benefit analysis (CBA) of risk reduction and risk prevention measures. However, despite such risk reduction or preventive efforts, some residual economic risk will always remain. *Risk financing and risk transfer measures* (such as insurance) provide protection cover and can distribute or pool the residual economic risk. Finally, these can be complemented by *effective reconstruction plans*, sometimes involving rezoning, that aim to reduce future disaster risks and build resilience after any major event.

Disasters lead to a number of direct and indirect financial impacts on governments, businesses and individuals. Post-disaster financial needs are often defined by three phases: (i) immediate *relief and rescue response*; (ii) *early recovery*; and (iii) the *reconstruction* phase. The funding needs will differ in each phase. *Relief and rescue* requires immediate access to funds for urgent rescue, food, medicine, clean water and shelter for those injured, affected and displaced. *Early recovery* requires funding within weeks to restore livelihoods, help communities return to some level of normality and restart their economic activities. *Reconstruction* requires more substantial funds to be mobilised for the repair and rebuilding of damaged assets such as homes and critical infrastructure. Funds are therefore required on different timescales. Delays in receiving funding can hamper each phase, negatively impacting the population and the economy.

It is crucial to align risk management strategies to the development level of specific nations. The recovery of economic activity to “normal levels” after a Nat Cat event is a process that can last around two years in high-income countries and up to eight years in middle- and low-income countries. However, the most vulnerable and least developed nations may never be able to recover.

Insurance solutions are the key to improved disaster risk management and a more resilient world. While governments around the world are increasingly recognising the socio-economic benefits of risk transfer tools such as insurance, the integration of risk management strategies into national development planning and budgeting is slowly coming into focus.

Benefits of insurance and risk transfer tools are recognised globally, yet there is still a large and, in some places, growing protection gap, indicating that risk transfer is not used to its full potential. Countries with a robust penetration of market-based disaster insurance

⁴ See: Golnaraghi *et al.* (2016) and World Bank (2014).

⁵ Several studies indicate that these *ex ante* preventive risk management measures are more cost-effective than post-disaster response and reconstruction crisis-management approaches.

⁶ Well-coordinated early warning and emergency preparedness systems primarily lead to reduction in loss of lives and in some cases reduction of some damage to homes if the public has the incentives and knows what measures to take (Golnaraghi, 2012). Early warnings are also proving useful to (re)insurance companies to design contingency plans that could expedite claims management processes, following a disaster.

coverage recover faster from the financial impacts of extreme events. It is the uninsured part of losses that drives macroeconomic costs. Well-insured events can be inconsequential or even positive for economic activity. A key driver of this is the speed and efficiency of an insurance response to an event, which supports a quick recovery of individuals and businesses and protects overall economic activity and governmental budgets in an affected area.⁷ A number of recent studies indicate that, following a major disaster, countries with lower levels of insurance penetration experience larger declines in economic output and more considerable fiscal losses than those with higher levels of insurance penetration.³

However, while these examples point towards clear macroeconomic benefits of insurance, it is important to note that any comparison of events and countries needs to be seen in the broader context of the overall level of economic development and the state of institutions, as well as the exact nature, location and duration of a Cat event. All those factors will determine if and how a disaster will be felt through the economic system—in the short and longer term.

However, despite increasing evidence, on average, financial savings and insurance are used by only about 10–17 per cent of people in low- and middle-income countries, compared with 45–50 per cent of people in high-income countries. Cat risk insurance penetration is even lower, usually less than 5 per cent in most developing countries (except countries like Turkey where earthquake insurance is compulsory through the Turkish Catastrophe Risk Insurance Pool).

The World Bank¹ highlights factors that create hurdles for the expansion and penetration of risk transfer solutions in high-, middle- and low-income countries. In middle- and low-income countries, uninsured individuals develop coping strategies to deal with disaster losses, but these come at a very high cost. Uninsured governments face similar choices, which have to be made in times of crisis. Usually, the resources “raided” are funds allocated to long-term programmes and investments, and so the opportunity cost is high. Insurance is therefore needed to assist with long-term planning and lower overall costs.

Risk management broadly—and the development of financial solutions more specifically—is a dynamic process. There is no one-size-fits-all solution. Insurance is a powerful instrument, but it is one item in the disaster risk finance toolbox. This has led to a constantly expanding menu of financial products which allow for customised solutions. The solutions have involved, and will continue to involve, a diverse array of instruments including credit lines, credit guarantees, risk pooling mechanisms, revolving funds, insurance, derivatives and capital market mechanisms.

A network of stakeholders is working with and for government to address hurdles and facilitate the development of these markets. The Geneva Association⁸ highlights the evolution of stakeholders engaged in the development of disaster risk management and latest international initiatives to support the development of risk transfer markets. We would like to highlight in particular the contributions of the insurance industry and its

⁷ For example, growing evidence that insured events have no significant impact on longer economic output, whereas uninsured events create a cumulated loss in output over 10 years of 2.3 per cent or more. Other studies point to a one percentage point rise in insurance penetration that can reduce the burden on the taxpayer by 22 per cent. Insurance can also affect sovereign ratings post-disaster. According to Standard & Poor’s (2015) large natural catastrophes (250 year events) can weaken sovereign ratings, more so if there is no insurance in place.

⁸ Source: Golnaraghi and Khalil (2017).

collaboration with the international development community to benefit and expand innovative and relevant risk transfer solutions to middle- and low-income countries over recent years. An example is the partnership of the global insurance industry and the small island states, facilitated by the World Bank Group's Disaster Risk Financing and Insurance Program (DRFIP), to create regional risk pools such as the Caribbean Catastrophe Risk Insurance Facility (CCRIF) or the Pacific Catastrophe Risk Insurance Facility.⁹ Following Hurricane Irma that hit the Caribbean in September 2017, CCRIF will pay out approximately USD 15.6 million to the Governments of Antigua and Barbuda, Anguilla and St. Kitts and Nevis: these countries' parametric tropical cyclone insurance policies were triggered. Another example is the new Cat risk insurance program launched by the Government of the Philippines with the assistance of the World Bank. Placed on the international reinsurance markets, the USD 206 million innovative dual level insurance coverage is designed to provide cash injections directly to both national government agencies and local governments, supporting rapid response after major typhoons and earthquakes.

In addition to products themselves, insurance principles are a key mechanism in resilience and sustainable development. Insurance brings in the discipline of well-established financial risk management principles. Actuarial techniques for probabilistic risk assessment, CBA, scenario analysis and portfolio management principles can be designed to improve the financial efficiency of risk management. None of this is new thinking; it is just a new place to apply principles and mechanisms that are used daily in other parts of the global financial system.

However, a number of building blocks of financial risk management are still missing. These include legal, regulatory frameworks—many countries still lack a firm foundation of supervision and oversight for the insurance sector, especially related to Cat risk insurance supervision, which is vital for these innovative solutions and products to work properly—as well as scientific/technical training and local capacity; risk models that are accessible to decision makers such as Ministries of Finance and the financial analysis to help them make more informed decisions and, very importantly, a culture of risk management, of asking the “what if” questions, of long-term thinking that goes beyond the political cycle.

The World Bank and The Geneva Association therefore have a joint interest in the issues of disaster risk management. These two organisations have developed a close partnership to promote further public–private initiatives in disaster risk management with particular focus on building capacities in risk financing and risk transfer. This special issue of *The Geneva Papers on Risk and Insurance—Issues and Practice* is an illustration of this successful collaboration that aims to foster better knowledge and innovative ideas on the development of effective, affordable and sustainable disaster risk financing strategies.

The articles published in this special issue contribute to a better understanding of these issues from various perspectives.

⁹ The Disaster Risk Financing and Insurance Program (DRFIP), a joint partnership between the World Bank and the Global Facility for Disaster Reduction and Recovery (GFDRR), provides advisory and analytical services on disaster risk finance to more than 60 developing countries. It helps countries identify, prepare and implement disaster risk finance strategies to increase the financial resilience of the country, the depth of the domestic catastrophe risk insurance markets and the capacity of the government to provide efficient and timely financing for rapid response, recovery and reconstruction post-disaster.

Clarke *et al.* propose a framework to evaluate and compare sovereign disaster risk finance instruments available to governments for funding disaster response. The framework helps choose between different financial instruments, or between different combinations of instruments, to achieve appropriate and financially efficient strategies to fund disaster losses. The authors show how a mix of instruments can minimise the overall cost of financing, given the risk profile of the country and its macroeconomic framework.

Botzen *et al.* examine integrated risk management for floods, which are among the costliest natural perils. The authors analyse the economic desirability of flood-proofing different types of commercial buildings in a specific flood-prone region of Europe. Their CBA shows that, on average, dry flood-proofing is economically attractive for certain categories of commercial buildings.

Noy *et al.* examine the role of business interruption insurance in business recovery following the Christchurch earthquake in 2011. They find that insured firms are more likely to survive after a disaster in the medium term (2–3 years) and they experience increased productivity and improved performance following a Cat. Their analysis indicates not only the importance of adequate insurance coverage but also the importance of rapid claims settlement.

Wrede *et al.* present an urban crisis-management system for better monitoring and management of critical infrastructures. They examine if and how insurance companies can contribute as actors in such innovative systems to holistically protect critical infrastructures by conducting an expert survey in the insurance industry. While they discover occasional interest regarding the insurer's predefined roles as a data/knowledge provider, investor or data user, they highlight that each participation possibility poses challenges for insurance companies.

Porter and White analyse the potential to combine Cat risk modelling with economic analysis of vulnerability to poverty using the example of drought hazard impacts on the welfare of rural households in Ethiopia. The aim is to determine the potential for applying a derived set of damage (vulnerability) functions, based on realised shocks and household expenditure/consumption outcomes, to a forward-looking view of drought risk. They outline the Cat risk modelling framework and the role of the vulnerability module and present results of a regression model estimating *ex post* drought impacts on consumption for heterogeneous household types. They assess the generalisability of the derived functions to infer applicability to a Cat risk modelling framework and stress test the model using statistical models of resampling to establish external validity. They conclude with caution that a full Cat risk model could be applied.

Finally, Jensen *et al.* conduct a comparative study of social protection programmes, which aim to use public funds to reduce poverty and vulnerability. Cash transfers have proven to be an effective social protection strategy in many contexts but they are extremely expensive. They explore claims made by various researchers that the integration of multiple interventions could improve the efficiency of protection programmes, but there are few evidence-based recommendations on how to best implement such approaches. The study uses household-level panel data to estimate the marginal impacts of observed cash and index insurance transfers (subsidies) on household income in northern Kenya. Those estimates are used to simulate sample-level poverty indices as an outcome of a standard cash transfer programme and of a similar programme that reallocates a small portion of the budget to the vulnerable as an insurance subsidy. They find that the integrated programme

reduces poverty to a greater degree than cash transfers alone, highlighting the importance of protecting the vulnerable in addition to supporting the poorest.

We are proud to deliver this special issue of The Geneva Papers on Risk and Insurance—Issues and Practice on Managing Extreme Events and Climate Risks, as a collaboration between The World Bank and The Geneva Association. These papers offer important messages for policymakers on how to develop disaster risk financing strategies, including the role of the private insurance sector. We thank each of the authors for providing us with such quality research, and the renowned team of reviewers for their time and effort to provide constructive feedback to the authors. We sincerely hope that you will enjoy reading these papers.

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