

Recipes for Disaster

Countries prepare for catastrophic events in sundry ways and the differences are instructive for insurers.



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Events such as the Tohoku earthquake in Japan are always tragic. While insurance cannot replace lost lives and livelihoods, appropriate insurance and other risk transfer mechanisms can accelerate the recovery process.

Without the right insurance or other funding mechanisms in place,

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societies recovering from catastrophes must deplete public and private reserves, levy taxes, borrow extensively, or become reliant on the mercy of the international community. Even the best-prepared countries see uninsured losses that can exceed 50% of all economic losses.

Countries vary a great deal in how they manage and insure against catastrophes, and there is much to be learned from these differences. Key considerations include:

- Income available to spend on insurance or save in disaster funds.
- The availability of affordable insurance coverage.
- Awareness of the scale and scope of possible catastrophes.

Key Points

- ▶ **The Situation:** When countries encounter high uninsured losses due to a catastrophic event, their economies can be stunted.
- ▶ **The Background:** Poor building codes and uncoordinated risk management programs often make bad situations worse.
- ▶ **The Way Ahead:** Access to capital, stricter construction rules and better preparation help governments limit destruction and loss of life.

- Implementation and enforcement of appropriate building codes.
- Access to global risk transfer markets.
- The effectiveness of public-private risk transfer partnerships.

Examining differences among uninsured loss figures from a number of high-profile natural disasters, and the reasons for those differences, can give a better understanding of catastrophic risk and how different countries manage such risk.

If a country's individuals and government do not have the means to purchase insurance, insurers have little incentive to operate there, and reinsurance mechanisms also will not be in place.

Haiti, for example, is the poorest country in the Western Hemisphere, with the vast majority of its population living in poverty. Its insurance market is just 0.3% of its gross domestic product—half of which is automobile insurance, according to risk modeler RMS. The Inter American Development Bank estimated direct economic losses from the 2010 Haiti earthquake at \$8 billion.

China, while significantly wealthier than Haiti, also had little private insurance coverage at the time of the 2008 Sichuan earthquake. According to Swiss Re, that quake generated \$366 million in insured losses, compared with an economic loss of \$125 billion.

Compare these figures with Chile. An Aon Benfield report found its insurance market share to be around 1.2% of GDP.

Chile is the third-largest property insurance market in Latin America with about \$1.4 billion in property premiums written in 2009. A favorable regulatory environment has helped boost participation by international insurers and reinsurers, supporting competition and the broader transfer of risk.

More than 75% of large commercial properties and 30% of small commercial properties had some earthquake insurance at the time of the 2010 earthquake. On the residential side, Chilean insurers cover about 95% of mortgaged homes but less than 5% of nonmortgaged homes. Across the regions affected

by the earthquake, about 24% of the residential dwellings had earthquake insurance.

The U.S. insurance market has an even higher percentage of GDP dedicated to property/casualty insurance—between 3% and 4%.

However, even in highly developed countries, insurance for perils is not always adequate or available due to market conditions. In the United States, flood insurance often is not purchased, can be expensive in high-risk areas, and can include multiple exclusions. This led to relatively high uninsured losses from Hurricane Katrina.

A similar shortage of in-force flood insurance prevails in Australia, where up to 50% of residents in flood-prone areas were denied flood insurance altogether due to high risk. This led to significant underinsuring of losses from the recent Queensland flooding.

Additionally, a substantial number of Japanese homeowners buy residential insurance from cooperatives. The largest of these is the National Mutual Insurance Federation of Agricultural Cooperatives, also known as Zenkyoren or JA Kyosai. Its main product is building endowment insurance, a unique long-term savings product with almost 11.5 million policies in force as of 2009, according to the company. Building endowment insurance automatically provides earthquake coverage.

Both private earthquake insurance and cooperative insurance cover only up to 50% of the applicable fire insurance policy limit. Even taking both cooperatives and private insurers into account, probably less than 40% of Japanese residences have earthquake insurance, and coverage provided to those residences may be inadequate.

Modeling for Cats

The ability to estimate the likelihood of catastrophes and prepare for them is paramount in minimizing uninsured losses.

Developing better flood-plain

maps in Australia, for example, would help insurers and reinsurers understand and price their risk and help homeowners understand their need for insurance.

Chile benefited from sophisticated modeling of potential losses before its 2010 quake. Insurers' models of physical damage turned out to be quite accurate, enabling them to protect their bottom lines while servicing claims effectively.

However, models generally failed to predict the extent of losses from the resulting tsunami, because tsunamis are not modeled perils, reported modeler AIR Worldwide. Soil liquefaction and business interruption were not well-modeled, either, leading to surprises for insurers and insureds alike.

Chile and New Zealand enforce strong building codes that mandate earthquake-resistant construction. This greatly limited the number of lives lost in these countries' two recent quakes as well as the extent of property damage.

Rigidly enforced building codes in Japan also limited deaths from the Tohoku earthquake, although they still number in the tens of thousands, mainly from the tsunami.

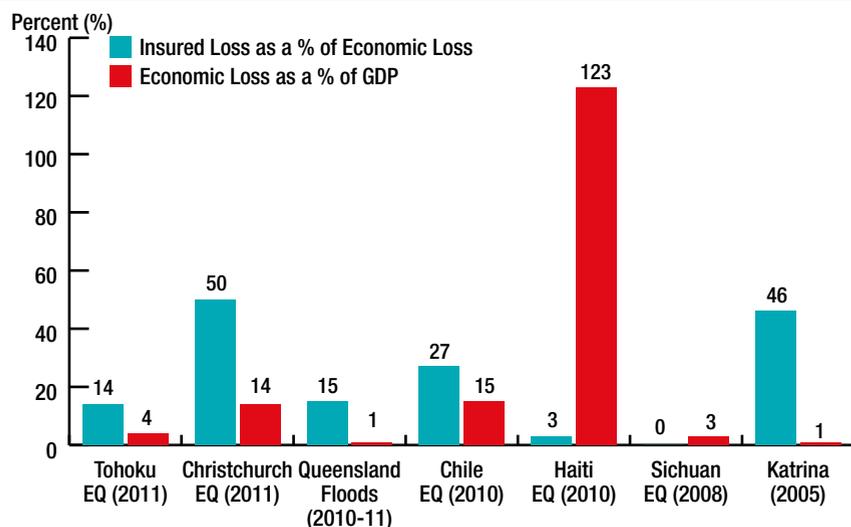
China, where the 1976 Tangshan earthquake killed 244,000 people, went on to create strong building codes, but lax enforcement and the fast pace of development led to substandard buildings that collapsed in the Sichuan quake.

Haiti's infrastructure was among the least-prepared of any country that has suffered a major earthquake in recent years. While the island experiences destructive hurricanes regularly, the last time Haiti experienced a major earthquake was 1860. Haiti has virtually no enforced building codes, and up to 90% of buildings near the epicenter of the quake were destroyed, according to reports.

It can be difficult for individuals to see the value in purchasing expensive insurance against events

The Cost of Catastrophe

Insured losses and economic losses from selected natural disasters, 2005-2011



Source: Milliman

that may or may not happen within their lifetimes. Government can play a significant role by requiring insurance or levying taxes or fees that are used to build up disaster relief funds.

Government Intervention

New Zealand's Earthquake Commission, formed by the national government in 1945, manages a national disaster fund created by a levy on residential insurance policies. The commission placed strict deadlines on claims reporting, leading to faster resolutions and more-predictable costs for insurers.

At the other extreme is China, which has no government program to insure commercial or residential property against catastrophic events and few requirements for carrying insurance, including homeowners insurance. Banks are responsible for residential property losses and defaults due to death or destitution.

In extreme circumstances such as the Sichuan quake, the Chinese government relies on fiscal appropriations. It provided 25 billion yuan (US\$3.8 billion) for rescue and evacuation, plus 30% of reconstruction costs, estimated at 300 billion yuan

over the next couple of years.

The Caribbean Catastrophic Risk Insurance Facility, created by the World Bank in 2007 and funded by participating countries and donations from world governments, provides short-term liquidity in the event of a catastrophe. Haiti paid a premium of US\$385,000 in the 2009-10 policy year and received almost \$8 million from the group as a result of the 2010 earthquake.

While the payout represents a small fraction of the losses, the CCRIF stands as a successful innovation for catastrophe insurance in poor regions. Furthermore, it provides immediate disaster relief when other mechanisms may not yet have made funds available.

Hurricane Katrina damaged homes through wind, which is covered by homeowners insurance, and flooding, which is covered by the National Flood Insurance Program backed by the U.S. government. One challenge following Katrina was determining which policies covered which claims, leading to a number of high-profile lawsuits.

Overall, both the United States and Australia lack a comprehensive or coherent national approach to

insuring catastrophes. Given recent events, both countries are having serious conversations about implementing national catastrophe insurance programs.

The Role of Reinsurance

Reinsurance has played a major role in funding recovery from catastrophes in recent years. According to the Reinsurance Association of America, "61% of hurricanes Katrina, Rita and Wilma's losses were ultimately borne by reinsurers; and in 2008, approximately one-third of insured losses from hurricanes Ike and Gustav were reinsured."

Compared with Chile, this figure is actually low. Of the US\$8.5 billion in insurance losses resulting from the 2010 earthquake in Chile, about 95% was ceded to reinsurers, Aon Benfield reported. In New Zealand, the EQC reinsures losses between NZ\$1.5 billion and NZ\$4 billion per event. The EQC's reserves of \$5.6 billion before the 2010 Canterbury earthquake funded \$1.5 billion of losses, while \$1.25 billion to \$2 billion of losses were covered by reinsurers. That left significant EQC reserves to pay for damage resulting from the 2011 Christchurch earthquake.

For residential earthquake insurance from private companies, Japan takes a highly structured approach to earthquake reinsurance. The Japan Earthquake Reinsurance Co. Ltd., a private entity, assumes all earthquake insurance written for homes in Japan, retains a portion and cedes to insurers and the Japanese government based on the magnitude of total losses.

The formula is quite complex, but generally the government takes more of the loss at the higher-loss tiers. If aggregate losses exceed a certain amount, all insured losses are prorated. Earthquake insurance from cooperatives is reinsured on the global reinsurance market, not through JER.

In China, the global reinsurance

market is growing due to a lowering of regulatory barriers. In 2009, both Munich Re and Swiss Re recorded more than 30% growth in premiums, though total premium remains low. Given China's growing openness to international firms, as well as its increased risk exposure due to urbanization and economic growth, the global reinsurance market is expected to grow in coming years.

Countries such as Haiti lack the economic resources to participate in domestic insurance markets, or even basic building code enforcement. Schemes such as the CCRIF can provide some measure of preparation, but they can only go so far in addressing a disaster on the scale of the 2010 Haiti earthquake.

China also has very low insurance penetration. Although the market is growing, the nation faced extremely high uninsured losses from the Sichuan earthquake.

At the other end of the spec-

trum are Chile and New Zealand, both with highly developed insurance markets, strongly enforced and appropriate building codes, heavy use of reinsurance and deep and coherent government involvement in catastrophe planning and insurance. Both are expected to recover fairly quickly from their major seismic events, which had surprisingly little loss of life and lower uninsured losses than comparable economies.

Somewhere in the middle of this preparedness spectrum are Australia and the United States. Both favor a "free-market" approach, have ad hoc relationships between public and private entities and lack a comprehensive national program of catastrophe insurance.

In the case of the United States, state programs such as wind or hurricane pools in high-risk areas may transfer specific risks. Both the United States and Australia faced relatively high uninsured losses

from their respective disasters, possibly with greater overall economic consequences.

With relatively low earthquake insurance penetration, Japan's uninsured losses are likely to be relatively significant. These losses may negate Japan's growth this year. While that is significant, the country should absorb the losses in the long run thanks to its large economy.

The need is great to spread risk and know the sources of capital for recovery, whether through compulsory or at least affordable insurance, well-designed government programs or greater access to reinsurance markets. Proactive risk mitigation, risk management and disaster preparation also help countries minimize damage from such events and recover more quickly.

With global economies, the ability of one country to recover may have an impact well beyond its own borders. **BR**