SOME REFLECTIONS ON THE INSURANCE ASPECTS OF TSUNAMI DAMAGE

GEORGE R WALKER

1. INTRODUCTION

The Great Indian Ocean Tsunami of 26 December 2004 created a disaster of such proportions that it had one of the greatest impacts on human society of any other disaster in the last 50 years other than the 9/11 terrorist attacks on New York and Washington in 2001 and the persistent famine in Africa.

Among those impacted was the insurance industry. However the impact on the insurance industry was small compared with its general impact on the world. The insured losses from tsunami are not expected to exceed US$4 billion, and may be less than US$2.5 billion. Compared with an estimated total insured losses world wide from natural hazards in 2004 of the order of US$46 billion (Swiss Re, 2005), it was only a moderate event from a global insurance industry point of view. Hurricane Ivan alone caused an estimated insurance loss of US$11 billion, while Hurricanes Ivan, Charley, Frances and Jeanne together caused an estimated insurance loss of US$28 billion in the US, Caribbean and Gulf of Mexico.

This might suggest that, as hurricane damage is largely insurable, there should be few concerns about insuring against losses caused by tsunamis. However there were reasons for the low insured losses in the 2004 Great Indian Ocean Tsunami, and in other circumstances much higher insured losses could occur from tsunamis.

Like much of the rest of the world, before December 2004 the insurance industry had not given a great deal of thought to the risk to insurance companies from tsunamis. Like much of the rest of the world the insurance industry is now reviewing its attitude towards tsunamis.

2. THE 2004 GREAT INDIAN OCEAN TSUNAMI AND INSURANCE

Initial estimates of the insured losses from the tsunami varied widely up to US$13 billion. Subsequently, an estimate of US$5 billion was widely quoted, but with time even this has seemed too high. Latest estimates of total loss are now US$2.5 – US$4 billion. Reported losses by the major reinsurers are relatively low with Lloyds estimating total losses of US$100 million, Swiss Re US$45 million, and Munich Re US$69 million.

Many months after the event, detailed information is still difficult to obtain. This is probably due to the nature of the insured losses, which is significantly different from that of most catastrophic events causing large insured losses. Of the 40 most costly events to the insurance industry since 1970, the 2004 Great Indian Ocean Tsunami is the only one that did not have a significant impact on a major developed country, or on major centres or concentrations of infrastructure in developing countries. Most of those

who died were poor by modern developed world standards, and by the same standards, most of the property destroyed was of low economic value. Losses were also dispersed widely over many countries.

Insurance penetration in the affected areas is generally low, particularly in regard to domestic property and small businesses. The countries impacted by the tsunami are characterised by a large number of small localised insurance companies which spread their risk primarily through national reinsurance companies, generally by proportional reinsurance. A significant amount of the risk ceded by both of them to the major international reinsurance market is non-proportional excess of loss reinsurance, with the local companies retaining losses up to a specified retention limit. For individual companies, and even national reinsurers, their losses were probably not large relative to their retentions. As a consequence, it is likely that most of the estimated total insured loss will be borne by the hundreds of local and national insurance and reinsurance companies, for some of whom it may have been a significant loss, but for very few of whom it would have been a disastrous event.

One of the major unrecognised problems exposed by the tsunami is the risks created by global tourism, which is focussed largely on coastal areas, from major coastal hazards. The tsunami impacted a number of significant concentrations of international tourist resorts, especially in Thailand, Sri Lanka and the Maldives. The buildings and tourists were probably largely insured offshore, causing an impact on international and local insurers world wide. It is, however, likely that the losses were reasonably well spread among a number of insurers, probably roughly in proportion to the size of the insurers, but it has highlighted a consequence of globalisation that had previously been largely unrecognised.

3. INSURABILITY OF TSUNAMI LOSSES

The low penetration of insurance in the areas impacted by the 2004 Great Indian Ocean Tsunami was not because insurance was not available for tsunami losses. In general it was readily available. For motor, life and health insurance it appears to an automatic standard inclusion. For buildings, contents and business interruption it is generally an automatic inclusion with either earthquake cover or flood cover, which are generally voluntary additions to fire cover. In Asian countries fire cover itself is only common for larger commercial and industrial properties, and only a relative small proportion of these also purchase earthquake and/or flood insurance. Residential properties and small business tend to only purchase fire insurance if subject to a bank mortgage requiring this, and almost never purchase earthquake and/or flood insurance. Another factor in the low level of insured losses is the low local building costs when expressed in terms of international currencies like the US dollar.

Had the penetration of property insurance been as high as in highly developed countries like Australia, where there is close to 100 percent penetration for all hazards for which cover is readily available, and building costs been on a par with those in the developed world, the insured losses would have been many times higher, and it would have probably been the largest ever single insured loss from a natural hazard. If the areas inundated by the tsunami had been in heavily populated areas of more developed

countries, total industry losses of tens of billions of US dollars would have been quite feasible, maybe even exceeding US$ 100 billion. It is considerations such as this that is raising concern within the insurance industry about the insurability of tsunamis.

How realistic is this concern?

Tsunamis are not rare events at a global level, and no coastal area on the globe can be regarded as immune from them. Although many people were surprised by the region affected by the 2004 Great Indian Ocean Tsunami it has happened before. It is just a rare event. The largest tsunami events in the past 100 years have been generated off the coasts of Alaska and Chile and it has been assumed that it is tsunamis generated in these regions that pose the largest risks. Few remember that 250 years ago, the Great Lisbon earthquake of 1755 produced a large tsunami off the Portuguese Coast that hit Lisbon 20 minutes after the earthquake. It is reported to have reached 6m in height in many places, and up to 15m in some places, and to have been responsible for many of the 60,000 to 100,000 deaths estimated to have been caused by the event (Tiedemann, 1992). It also resulted in tsunami inundation up to about 3m in the Caribbean 10 hours after the earthquake. What would be the insured loss if this event had happened today?

A potential major problem with earthquake-generated tsunamis is their common relationship with earthquakes. Major tsunami losses on top of major building damage due to shaking and fire caused by an earthquake, as happened in Lisbon, could have a big impact on the reinsurance industry if losses were mostly covered by insurance. The last great tsunami off South America occurred at a time when insurance penetration in South America was very low. A repeat of the 1960 Chilean earthquake and the tsunami that accompanied it could produce much greater insurance losses than occurred from the 2004 Great Indian Ocean Tsunami.

A characteristic that distinguishes tsunamis from most other major hazards is that they appear to have no sensible upper limits to the level of losses that they could cause. There are limits to the level of losses that can occur from earthquake shaking and from tropical cyclones. There are probably limits to the losses that could occur from tsunamis generated by earthquakes. But if scientists are correct, the upper limit of losses from tsunamis caused by landslides, volcanic eruptions or meteorite impact could be orders of magnitude larger than the potential maximum losses in San Francisco, Los Angeles or Tokyo from earthquakes.

The most severe would be a major meteorite impact on the ocean. At its worst such an impact could result in the extinction of most life on earth due to a combination of the massive tsunami that could be generated combined with the associated severe changes in climate. The probabilities associated with tsunamis generated by meteorite impact are very small, but they exist, and every coastline in the world is at similar risk from them.

There has been speculation that a more credible event in a short period of time is a tsunami created by a landslide into the ocean from the Cumbre Vieja volcano on the island of La Palma in the Canary Islands. This volcano started to slip during the last eruption in 1949. It is feared that the next major eruption may cause a block of land of

the order of 400 square kilometres in area to slide into the sea, causing a tsunami that would cause devastation to the coasts of North and South America, and cause significant inundation of coastlines fronting onto the Atlantic Ocean in Europe and Africa. The losses arising from a worst-case scenario are almost beyond imagination.

In this respect tsunamis resemble droughts. Droughts are more common, always cause much local distress, and occasionally impact on the national economy of countries. History shows however that although most only last for a short time, occasionally they last for many years and they have been one of the major causes of the end of strong civilisations. For this reason droughts are uninsurable in the long term. There is good reason to believe that tsunamis are as well, at least in respect of normal full insurance.

The normal insurance industry approach to uninsurable hazards has been to exclude them totally. This has left the problem with governments to resolve, and has led to a number of national disaster insurance funds or pools, either completely run by the government as in the case of the U.S. Flood insurance scheme, and the N.Z. residential earthquake insurance scheme, or to joint government / insurance industry schemes like the Taiwan Residential Earthquake Insurance Program (TREIP).

A characteristic feature of some government schemes, especially where the possible magnitude of the loss, and not the frequency of the loss, is the problem, has been the imposition of limits on the insurability. This has been largely pioneered in Japan where in addition to limits being placed on the liability of the insurance industry to earthquake losses, with government providing a guarantee above this, a limit is also set on the contribution of the government, and above this the policyholders share the loss on a proportional basis. TREIP also embodies this approach. This latter approach may be the only way by which tsunami risk can be covered in a manner that would be sustainable over the long term.

4. IMPLICATIONS FOR AUSTRALIA

Unlike in most Asian countries and its neighbour New Zealand, cover for tsunami losses is excluded in most Australian insurance policies through a clause excluding losses due to ‘water from or action by the sea, tidal wave or high water’ or something similar. The term ‘tidal wave’ simply reflects the age of the clause, ‘tidal wave’ being the term used in the English language for tsunamis before the Japanese term became the more accepted term.

Australia is not alone in this respect, the other major country where the commercial insurance industry does not generally cover losses from coastal inundation, including tsunami, being the US. However unlike in Australia, there is a national government flood insurance scheme managed by the Federal Emergency Management Agency (FEMA) which provides cover against coastal inundation including tsunamis. Being a voluntary scheme, however, while penetration in vulnerable coastal areas at risk from hurricane storm surges is probably significant, it is likely that in areas where tsunamis are the only significant risk the penetration is very low.

From the current perspective of the Australian insurance industry tsunamis do not appear to pose a threat, except in relation to travel insurance for Australians travelling overseas, Australian companies with overseas operations in coastal areas, and Australian insurance companies with overseas subsidiaries. From the perspective of the community and the governments, however, they pose a major problem in relation to insurance. If a major tsunami occurred on the New South Wales coastline causing the destruction of several thousand houses, all uninsured, there would be huge pressures on both the Federal and State Governments for compensation of some form. Furthermore insurance speeds up recovery and reduces stress on property owners by making cash quickly available for repair and reconstruction. Without it there will be inevitable delays and human distress while the authorities work out how they will respond.

Tsunamis are not the only threat in this regard. Tropical cyclone storm surges and, to a lesser extent, major riverine floods are in this category as well. A repeat of the 1918 Innisfail and Mackay cyclones, both of which were accompanied by major storm surges, would result in large losses which on paper would not be insured. (It will however have to be proven that the losses were primarily due to the storm surge and not to the wind, wind damage being covered, and this may significantly reduce the actual amount of losses attributed to storm surge.)

While a case can be made that, providing sound flood management practice is adopted, losses from riverine floods and tropical cyclone storm surges are insurable, this may not be the case for tsunami losses. In this case a national flood insurance scheme, modelled on the earthquake schemes in use in Japan and Taiwan, may be the only solution for losses due to coastal inundation from tsunamis. If such a scheme were developed, however, it may prove beneficial to also include losses from tropical cyclone storm surge and riverine flooding as well.

There was serious consideration of a natural disaster system in Australia following the Brisbane floods and Cyclone Tracy in 1974. Perhaps it is now time to revisit this issue, utilising the powerful computer based tools available for risk assessment and financial risk management, which did not exist at that time.

5. ACKNOWLEDGEMENT

This paper is based on work undertaken by the author in the preparation on a report on the insurability of tsunami losses in the Asia Pacific region which was recently published by Aon Re Australia (2005).

6. REFERENCES

Aon Re Australia, (2005) Tsunamis and insurance, Sydney.

Swiss Re (2005) Natural catastrophes and man-made disasters in 2004, Sigma No.1/2005, Zurich.

Tiedemann, H. (1992) Earthquakes and volcanic eruptions: a handbook on risk assessment, Swiss Re, Zurich.