



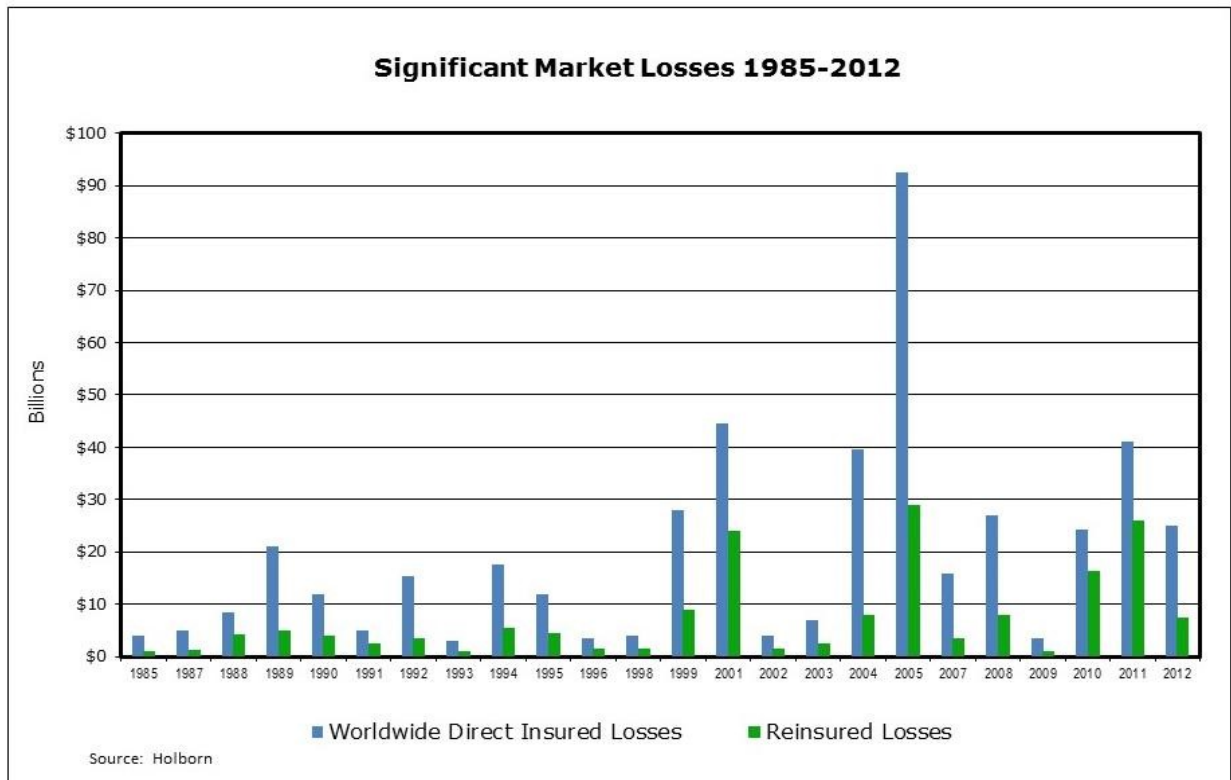
FLOOD RISK: A GROWTH OPPORTUNITY FOR THE PRIVATE MARKET

The reinsurance market has both capacity and interest to underwrite flood insurance risk. This capacity can be utilized to help insurers and the Federal National Flood Insurance Program (NFIP) manage their respective catastrophe exposure, providing benefits to policyholders and taxpayers.

Role of Reinsurance

Reinsurance is routinely utilized by insurers and government programs to provide a crucial safety net for low frequency, high severity natural and man-made events that result in extreme insured losses. Insurers rely on reinsurers to assume losses for a single event or, in many cases, for an accumulation of losses from hurricanes, earthquakes, winter storms, wildfires, or terrorist attacks. Some historic events illustrate this. Hurricanes Katrina, Rita and Wilma in 2005 caused \$90 billion in insured losses. Reinsurers bore nearly \$30 billion of the losses from those events. Reinsurers covered approximately 60% of the insured losses from the terrorist events of September 11. Insurers experienced \$19 billion in losses from Superstorm Sandy, with reinsurers taking 40% of those losses. The pattern of risk transfer for catastrophe-exposed property insurance to the reinsurance market applies across the global insured landscape as well. (Exhibit 1).

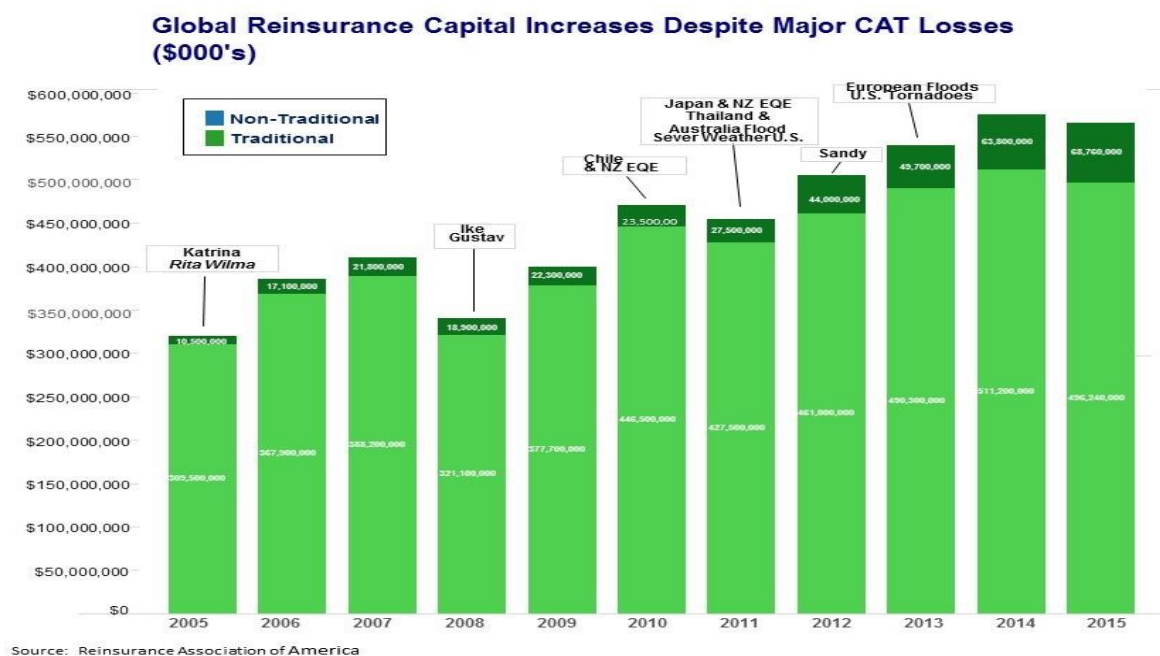
EXHIBIT 1



Reinsurers have historically addressed the volatility of insurance markets and ensured the viability of those markets following extreme catastrophe events. In recent years, the recovery period for insurers has been compressed and any spikes in reinsurance rates have quickly declined and returned to pre-disaster levels due to the competitive nature of the market and the robust nature of the capacity available to insurers. Further demonstrating the resiliency in the market, during the period 2004-2014, reinsurers have assumed multiple low-frequency, high-severity events and the market has been able to absorb these losses with acceptable profitability.

The reinsurance market for catastrophe coverage has expanded during this same period for both traditional reinsurance, as well as “alternative” capital frequently in the form of catastrophe bonds from the capital markets. Notwithstanding billions of dollars in losses from global catastrophes, such as the Japanese tsunami and flood, European floods, Hurricane Ike and Superstorm Sandy, and the Chilean and New Zealand earthquakes, capital in the reinsurance and alternative markets has grown from \$320 billion in 2005 to \$565 billion in 2015. (Exhibit 2).

EXHIBIT 2

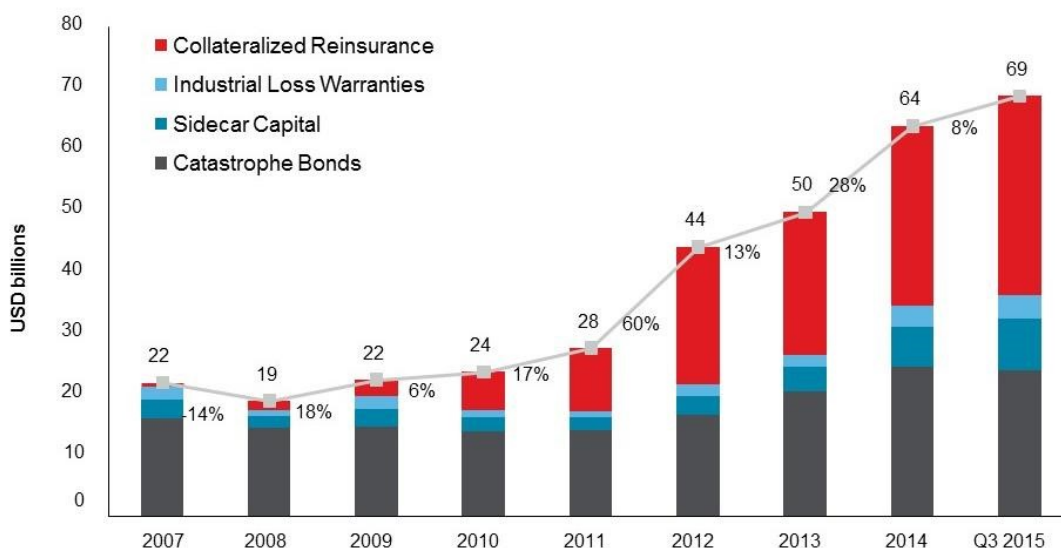


The December 2014 Federal Insurance Office report, *The Breadth and Scope of the Global Reinsurance Market*, also demonstrates this market strength and resiliency.

The dramatic growth in the capacity for natural catastrophe risk provided by investors outside the traditional reinsurance market is worth noting. Together with other forms of alternative capacity, this market segment is estimated to be nearly \$70 billion of current capacity. (Exhibit 3).

EXHIBIT 3

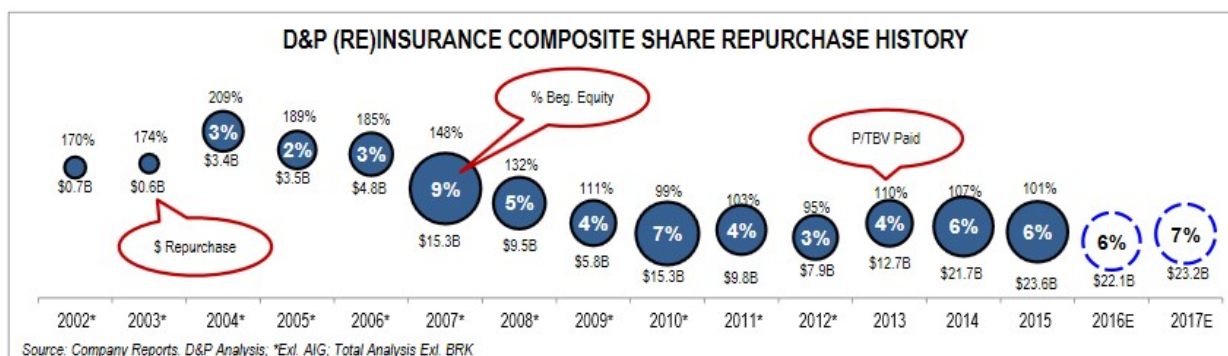
Bond and collateralized market development



Source: Aon Securities Inc.

During this period of growth of capital and historic loss experience, insurers have been repurchasing their shares in amounts exceeding the loss experience of the NFIP.

EXHIBIT 4



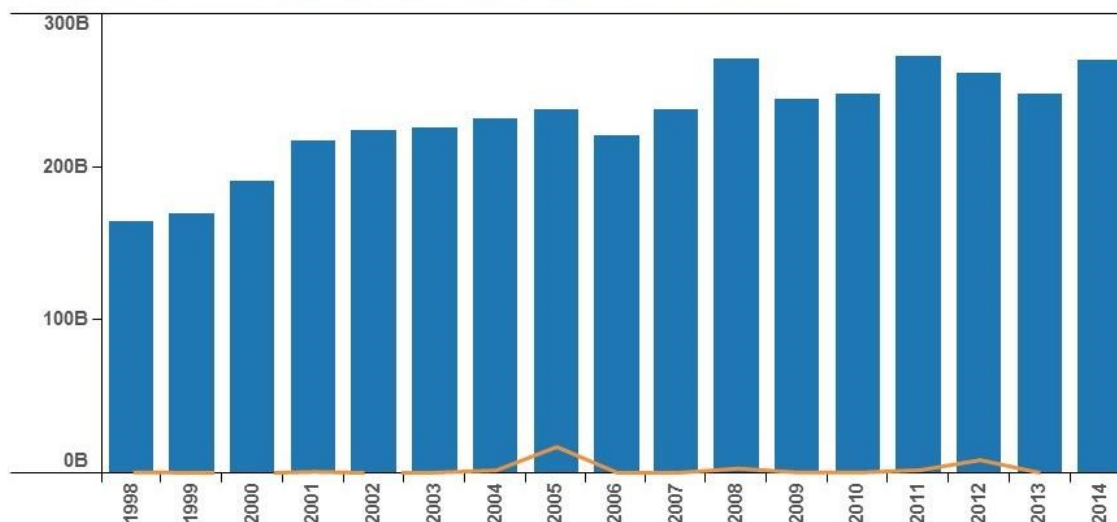
P/TBV Paid=Repurchase Price Relative to Book Value

Flood

Relative to the insurance industry's recent annual insured loss history, flood losses from the National Flood Insurance Program (NFIP) are modest at best. Exhibit 5 shows the industry's loss experience net of reinsurance recoverable (blue bar), (approximately \$240B per year since 2008), the reinsured portion, and compares it to the average annual loss of the NFIP (approximately \$2.5 Billion per year—orange bar).

EXHIBIT 5

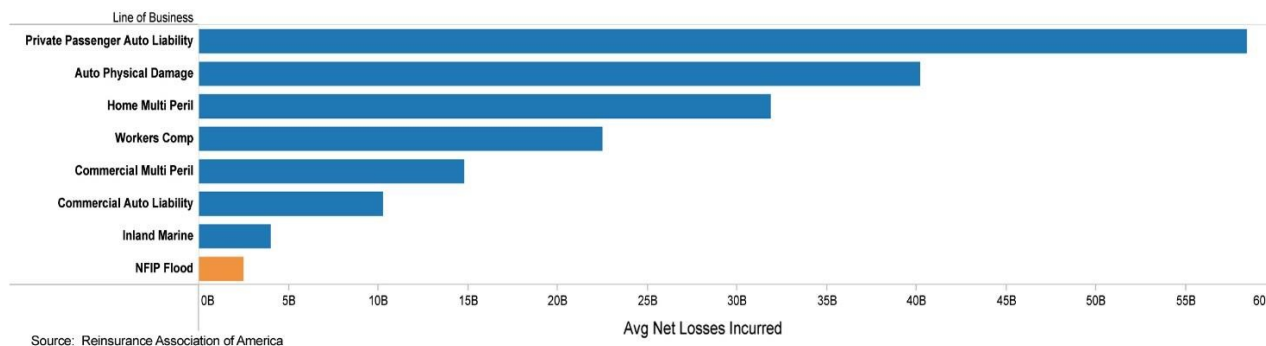
Net Losses Incurred--(Excluding Allied Lines) Vs. NFIP Losses



Even looking at the loss history by line of business (Exhibit 6), flood costs in the NFIP would not be considered significant.

EXHIBIT 6

1998 - 2014 Average Net Losses Incurred--Select Lines of Business



Aon Benfield notes that “flood remains a major global growth opportunity” for the reinsurance and capital markets (Aon Benfield Reinsurance Market Outlook, January 2016). Of the \$40 billion annual global economic impact of catastrophes, only 13% is covered by insurance. Over the last 25 years, flood represents nearly a quarter of all global catastrophe perils. However, less than 8% of flood losses have been covered by flood insurance.

Advances in flood modeling and mapping have greatly enhanced the ability of the market to assess flood experience. Evidence of that is the placement of over \$2 billion in reinsurance coverage in 2016 for the UK’s Flood Re, a new private-public facility to provide flood insurance for homeowners. Market reports noted that additional capacity was available as well, and that the placement was significantly over-subscribed.

Flood can be an insurable risk if insurers can utilize risk-based rates and if they don't have to compete with subsidized rate competition from the NFIP. As the flood market transitions, the reinsurance market has the underwriting appetite and robust capacity to provide protection to private insurers and the NFIP for extreme flood risk.