

Focus on alternatives: Catastrophe bonds explained



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Catastrophe bonds are almost entirely uncorrelated with macroeconomic variables – a characteristic which makes them highly relevant for those seeking diversification away from equities. Investors may be particularly wary of involvement with catastrophe risk securities in the aftermath of the disaster in Japan. However, for reasons that will be discussed later in this piece, this could actually be a beneficial time to enter the market.

What is the need for catastrophe bonds?

The devastation wreaked by natural disasters has risen dramatically over recent generations. Population growth has increased the concentration of property in areas susceptible to natural hazards. In addition, a rise in extreme weather conditions associated with climate change may increase the frequency of large-scale disasters. On top of the devastating Japanese earthquake, the past year has seen floods submerge Queensland and Brazil, forest fires ravage Russia, and severe winter weather bring much of Europe to a standstill.

Natural catastrophes occur relatively rarely, but can be devastatingly destructive when they do. The societal and environmental consequences of such events are often tragic, and from a financial viewpoint all it takes is for one disaster to hit a highly populated area, and an insurance company's capital base can be completely wiped out. When Hurricane Andrew hit the coast of Florida to the south of Miami in 1992, it destroyed US\$15.5 billion dollars worth of insured property (from total losses of close to US\$30 billion)¹, and caused 11 insurance companies to go bust. Estimates of the damage caused by the Japanese earthquake lie between US\$110 and US\$200 billion – US\$12 to US\$35 billion of that to insured property².

Most insured events tend to take place independently of one another. The number of insurance claims arising from incidents such as car crashes follows a normal distribution, and can be predicted with a good degree of accuracy. In contrast, natural disasters occur relatively infrequently but cause a huge number of claims to be made together. The high variability of the payouts insurance companies must make in the aftermath of 'act-of-God' events drives them to pass some risk onto third parties, such as reinsurance companies. This allows them to underwrite large risks they would otherwise lack the capacity to cover.

However, in some cases the reinsurance companies themselves may wish to spread their risk. In addition, reinsurers may be less willing or able to take on risk from insurance companies in the aftermath of large-scale catastrophic events, and this leads to increased reinsurance costs. Catastrophe bonds (nicknamed 'cat bonds') provide an alternative to traditional reinsurance in enabling insurance companies to prepare for the possibility of natural disasters without having to limit the coverage they provide to policy holders or increase the premiums they charge.

¹ Catastrophe Insurance Risks: The Role of Risk-Linked Securities and Factors Affecting Their Use. United States General Accounting Office – Report to the Chairman September 2002

² Schroders, March 2011

What are catastrophe bonds?

Catastrophe bonds, which were developed in the mid 1990s, are risk-linked securities issued by insurance or reinsurance companies. The return an investor receives from holding these bonds is linked to the incidence of a pre-specified catastrophe within a particular time period. The occurrence of the catastrophic event triggers the loss of the investor's principal, which passes to the insurance company and helps them pay claims arising in the aftermath of the disaster. On the other hand, if the insured event fails to take place within the predetermined period (a more likely scenario) the investor earns a good return on their bond – usually between 8% and 15%.

Catastrophe bonds can be designed to cover any natural disaster. Some popular issuances cover US hurricanes, European windstorms and Japanese earthquakes. They have even been issued to cover non-natural catastrophes. For example FIFA issued catastrophe bonds worth US\$260 million to provide protection against the possibility of the 2002 FIFA World Cup being cancelled.

Catastrophe bonds are rated using complicated mathematical models that take account of factors such as past and predicted weather patterns, population density, and property prices. As there is a chance that investors may lose their principal investment, catastrophe bonds tend not to be investment grade. Bonds triggered by extremely unlikely combinations of events – known as multi-peril cat bonds – are often an exception to this rule, as the reduced likelihood of losses leads them to be rated more favourably.

The catastrophe bond market currently has around US\$13 billion of capital outstanding – a mere fraction of the total debt outstanding on the worldwide bond market. Despite the limited market depth there is a secondary market in catastrophe bonds which trades daily and provides a reasonable level of liquidity. However, the spread on catastrophe bonds is relatively large compared to that on conventional assets, and while it is possible for sophisticated investors to access the catastrophe bond market through specialist funds or via the secondary market, this asset class is currently inaccessible for smaller investors.

Why invest in catastrophe bonds?

The returns from catastrophe bonds are largely uncorrelated with macroeconomic factors, a rare thing in the investment world. This unique characteristic allows them to bring valuable diversification attributes to portfolios of more traditional asset classes, and holds particular appeal in uncertain financial climates when investors may wish to protect themselves from market forces. For example in 2008, a year of intense economic upheaval, catastrophe bonds were one of the few asset classes which provided positive returns over the course of the year.

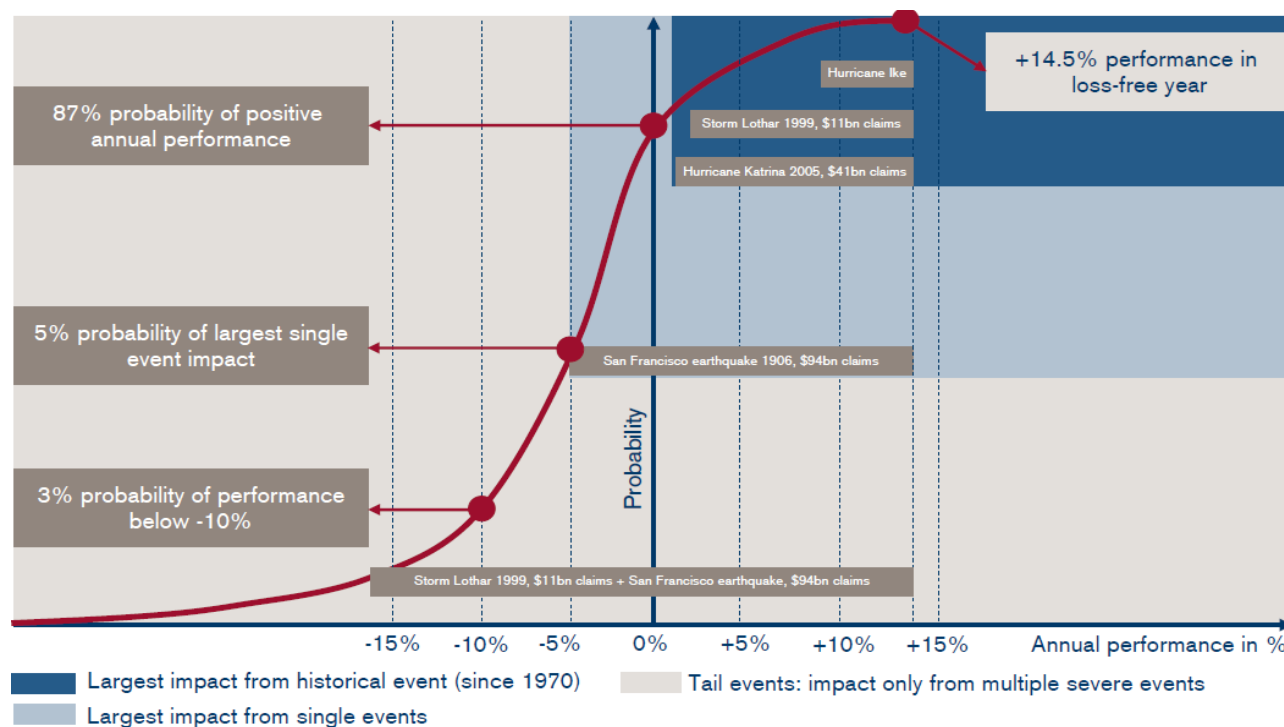
One particularly attractive feature of catastrophe bonds and other catastrophe risk securities is that poor performance tends to be self-correcting. Following a particularly destructive natural disaster, a number of factors serve to inflate insurance premiums (and thus the potential returns to catastrophe risk securities), providing investors with the opportunity to recoup some, if not all, of their losses within a relatively short time-frame. These factors include increased demand for insurance, a reduced ability of insurance and reinsurance companies to take on risk, and upward revision of the probability models that are used to price insurance and catastrophe risk securities.

While the recent earthquake in Japan has led to large losses in the catastrophe risk market, insurance premiums have since been pushed up by around 50% for earthquake risk and 20% for other catastrophe risk. Some investors may be wary of entering the market with the recent disaster still fresh in their minds. However, while further seismic activity in Japan may serve as a well-justified deterrent against investments in Japanese earthquake risk, the potentially enhanced returns associated with elevated insurance premiums means that this could be a good time to invest in other catastrophe risk securities.

In addition, while investors face the possibility of losing some or all of their principal investment in the event that a catastrophe does occur, their risk exposure can be dramatically reduced by diversifying across many different catastrophe bonds as the probability of numerous large-scale natural disasters occurring within the same limited time frame is very low. For example in 2005, in spite of heavy losses associated with Hurricane Katrina, many catastrophe risk funds still made money overall.

A final benefit of investing in catastrophe bonds is that the likelihood of incurring extreme losses is far lower than the chance of benefitting from extreme returns. This is clearly demonstrated on the graph below, which models the distribution of probable returns to a catastrophe risk fund. At 3%, the probability of losses greater than 10% is far below that of obtaining a 14.5% return, and there is an 87% chance of positive returns.

Return distribution probability of a catastrophe risk fund



Source: Schroders/Credit Suisse/Bloomberg, December 2009.

Conclusion

The powerful diversification properties of catastrophe bonds make them a potentially valuable addition to many portfolios. Investors shouldn't be alarmed by the name – if anything, the lack of correlation between catastrophe bonds and numerous traditional asset classes could help divert disaster for many investors. One of the simplest ways to gain exposure to catastrophe bonds is to hold them as part of a diversified alternative assets portfolio, serving as a complement to your equity investments.

The recent disaster in Japan has pushed up insurance premiums not only for earthquake risk, but for other forms of catastrophe risk too. While it may be wise to avoid the Japanese earthquake market in case of further seismic activity in this region, this could be an excellent opportunity to benefit from potentially enhanced investment returns in unrelated markets, such as hurricane risk. However, it is important to remember that catastrophe bonds are a risky security, and that there is a chance of losing all of your principal investment.

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