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Storm Chasing on Wall Street

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Correction Appended

LONG before Hurricane Ivan began bearing down on the Gulf Coast last week, a special breed of money managers was carefully tracking its development. The managers monitored its intensity, searching for any sign that it might veer toward Florida's major coastal cities. They consulted forecasts from the National Hurricane Center in Miami and the Met Office in Britain. They scanned water temperature readings from ocean buoys and ran sophisticated computer models to try to predict the storm's likely course and to estimate the damage. Then they went hunting for cats.

No, not the furry variety. The interest-bearing kind. Cat bonds, short for catastrophe bonds, are little-known securities through which investors bet on hurricanes, earthquakes and even terrorist attacks. Insurance companies issue them to help pay excess claims from such events. Most of the bonds are intended to protect insurers from disasters that happen once or maybe twice in a century, the sort they might otherwise have trouble covering.

Cat bonds pay unusually high interest rates - between 5 and 15 percent annually, depending on the bond - which is part of what makes them attractive to hedge funds and other institutional investors. But they are also somewhat riskier than other bonds: if the insured losses from a catastrophe exceed a certain threshold, the bondholders could lose their investments.

When cat bonds were developed after Hurricane Andrew devastated the insurance industry in 1992, some people predicted that they would revolutionize the way insurance companies handled risk, ultimately eliminating the need for reinsurance. That has not happened. Most insurance companies still lay off risk by buying traditional reinsurance, which is cheaper and can be arranged on shorter notice than a bond issue. But cat bonds continue to be issued.

When it comes to hurricanes, the trading of these bonds, and the computer models that investors watch, can provide insights into the kind of damage a storm might cause. That information is crucial for the insurance industry and its investors - and, ultimately, it could help people in a hurricane's path, as well as emergency agencies, to be better prepared.

Last year, $1.73 billion in new cat bonds were issued in eight transactions, according to Guy Carpenter

& Company, a tracking firm, and its affiliate, MMC Securities. At the end of 2003, about $4 billion in cat bond debt was outstanding worldwide, about $1.3 billion of it relating to North Atlantic hurricane risk.

The bonds are held by 100 to 200 investors, all large institutions or hedge funds with a high tolerance for risk. "There are no widows and orphans investing in these bonds," said Christopher McGhee, head of investment banking for MMC Securities, which helps companies issue cat bonds. The bonds trade over the counter and through private transactions.

For those who follow cat bonds, these have been hectic weeks. For the first time since 1964, Florida has been hit by three hurricanes in a year - and the season is not yet over. "It's been a rough month; let's put it that way," said James Doona, a director in the insurance capital markets area at Standard & Poor's.

Mr. Doona and his colleagues decide whether to downgrade cat bonds - most of which are issued with BB, or marginal, ratings - if it appears that a storm may trip their triggers and wipe out bondholders.

Despite some nervous moments, S.& P. has not issued any downgrades. The triggers are not easy to trip; according to insurance trackers, most of the bonds have an expected loss of less than 0.8 percent a year. It would take something like a Category 5 hurricane scoring a direct hit against Miami or Tampa, an event that might cause more than $15 billion in insured losses, to force bondholders to surrender their principal.

Hurricane Charley, which skirted Orlando, looked as if it might cause this sort of damage, but initial insurance claims now put insured losses from that storm at $6.8 billion. Estimates of the damage caused by Hurricane Frances range from $3 billion to $10 billion, according to various catastrophe-modeling firms that work with the industry.

Most of the bonds have four-year maturities and have triggers tied to one event. A few are issued for one year, and some of these have triggers that cover multiple events - meaning that they could be set off by several smaller hurricanes, rather than one big storm.

Still, even these, while not exactly Treasury notes, have been relatively safe bets for investors. For instance, the insurer USAA bought reinsurance from an offshore entity called Residential Re that issued $160 million in three-year hurricane and earthquake notes last year. The notes have a trigger that is tripped if the carrier sustains more than $653 million in claims - beyond its other existing reinsurance - from any number of events. So far, USAA estimates that it has sustained at most $260 million in insured losses from Hurricanes Frances and Charley - meaning that it could endure much more damage from Ivan and other storms before bondholders have to worry.

"To my knowledge, there has never been a payment on a cat bond to date," said Howard Kunreuther, co-director of the Risk Management and Decision Processes Center at the Wharton School of the University of Pennsylvania. "It's not as if a lot of people have lost money on these things."

Investors are aware of that, which is why hurricane bonds trade mostly at par, or face value, if they trade at all. (Investors like to hold on to them to earn those outsize interest payments.) But when major storms approach the East Coast, nervous investors may start unloading cat bonds for less, and hedge

funds often begin trolling for bargains.

Hedge fund managers reported bonds trading lower as Hurricanes Charley and Frances neared landfall. (Prices were down about 10 percent for Charley and 20 percent for Frances.) As Ivan approached, some hedge fund managers were eager for more trades. "We would have thought the activity would have been greater early in the week as Ivan approached," said Greg Hagood, co-founder of Nephila Capital, a hedge fund in Bermuda that specializes in cat bonds.

By the time Ivan made landfall, however, little trading was taking place. "The general sense is that if there were nervous sellers, they sold in Frances and Charley already," said Mr. McGhee of MMC Securities.

Another factor was that only a few hurricane bonds are linked to property outside of Florida. When Ivan turned west, toward Alabama, bondholders breathed easier. Though Ivan would cause much damage in the Florida Panhandle, the property values there are lower than in southern Florida.

But how do investors know if buying hurricane bonds is really a good risk? The answer lies in the catastrophe-modeling software developed for insurers and now used by cat bond investors. These models use meteorology, engineering and underwriting data to create real-time color maps of estimated damage. Most include information from every recorded tropical storm back to the late 1890's, detailed information on building construction and the effects of various wind speeds on different kinds of structures. They also include information on how property is insured - applying, for instance, deductibles and policy limits.

"We can go right down to the level of a city block on the coast in modeling the risk," said Robert Muir-Wood, head of research at RMS, a catastrophe-modeling company in Newark, Calif. Emergency agencies have begun to use the same modeling simulations to plan for possible hurricane damage. And the catastrophe-modeling firms often release alerts on damage estimates.

DESPITE their sophistication, the models are not perfect - particularly in forecasting how storms will behave as they come onshore. "No one would have forecast Charley would be at Category 4 at landfall when it was only Category 2 a few hours before," Mr. Muir-Wood said.

The catastrophe-modeling companies now send teams of wind engineers to survey the damage immediately after hurricanes pass, and use the information they gather to improve their software.

"There is no question that this marketplace could not exist if we did not have sophisticated natural-disaster models," Mr. McGhee of MMC Securities said. "And the models are just getting better all the time."

Of course, the hedge fund managers who use these models had better hope that they don't become too good. If everyone knows exactly what a hurricane is going to do, there will be no reason to trade.

Eric Dash contributed reporting for this article.

Correction: *Oct. 3, 2004, Sunday*

An article on Sept. 19 about catastrophe bonds, used by insurers to cover disaster risks like those from hurricanes, referred incorrectly to Guy Carpenter & Company, a source of data about the value of those issued last year. The company is a reinsurance broker, not a tracking firm.

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