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INSIGHT

The National Flood Insurance Program (NFIP), Reinsurance, and Catastrophe Bonds

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Insurance transfers risk from one entity who does not want to bear that risk to another entity that does. An initial insurance purchase, such as homeowners buying a policy to cover damage to their home, is often only the first transfer of that risk. The initial (or *primary*) insurer may then transfer (or *cede*) some or all of this risk to another company or investor, such as a *reinsurer*. Reinsurers may also further transfer (or *retrocede*) risks to other reinsurers. Such transfers are, on the whole, a net cost for primary insurers, just as purchasing insurance is a net cost for homeowners.

The Homeowner Flood Insurance Affordability Act of 2014 (P.L. 113-89) revised the authority of the National Flood Insurance Program (NFIP) to secure reinsurance from "private reinsurance and capital markets." Risk transfer to the private market could reduce the likelihood of the Federal Emergency Management Agency (FEMA) borrowing from the Treasury to pay claims. In addition, it could allow the NFIP to recognize some of its flood risk up front through premiums it pays for risk transfers rather than after-the-fact borrowing, and could help the NFIP to reduce the volatility of its losses over time. However, because reinsurers charge premiums to compensate for the assumed risk as well as the reinsurers' costs and profit margins, the primary benefit of reinsurance is to manage risk, not to reduce the NFIP's long-term fiscal exposure.

Reinsurance

The most common form of risk transfer is a primary insurer purchasing coverage for its risks from another (re)insurer. Reinsurance is particularly important to smaller insurers who may not be large enough to spread correlated local risks, such as a storm hitting a specific area. Reinsurers generally have the size to diversify risks globally.

NFIP Reinsurance Purchases

The NFIP's first large reinsurance purchase was in 2017, with additional purchases in 2018, 2019, 2020, and 2021. The details of these purchases have varied, but they have all covered losses from a single flooding event starting at $4 billion and going up to $8-$10 billion, with potential payouts of $1.042-$1.46 billion and premiums of $150-$235 million. Claims from Hurricane Harvey exceeded $10 billion,

triggering a full claim of $1.042 billion on the 2017 reinsurance. No reinsurance claims have been made since 2017. To date, the traditional reinsurance purchases have been a net fiscal positive for the NFIP with a total of $0.971 billion in premiums paid and $1.042 billion received from claims. Unless another large scale flooding event occurs, the balance of premiums vs. claims is likely to turn negative in the next two to three years if FEMA continues similar reinsurance purchases.

Catastrophe Bonds

In addition to reinsurance, new forms of "alternative" risk transfer have also developed. One category of such instruments are known as insurance linked securities (ILS)—financial instruments whose values are driven by insurance loss events and which transfer major natural disaster risks to capital market investors. The most common form is catastrophe bonds, which operate somewhat like other bonds, but whose payout is dependent on the occurrence of a particular catastrophe.

Catastrophe bonds are structured so that payment depends on the occurrence of an event of a defined magnitude or that causes an aggregate insurance loss in excess of a stipulated amount. Only when these specific triggering conditions are met do investors begin to lose their investment. There are three main types of triggers:

- *Indemnity*—bonds triggered by the losses experienced by the sponsoring insurer following the occurrence of a specified event (e.g., if an insurer's residential property losses from a hurricane in Florida exceeds $25 million in 2022);
- *Industry Loss*—bonds triggered by a predetermined threshold of industry-wide losses following the occurrence of a specified event (e.g., if a total of all insurers' residential property losses from floods in 2022 exceeds $20 billion); or
- *Parametric*—bonds triggered by physical conditions occurring during a disaster such as wind speed or earthquake size (e.g., if a 25-foot storm surge hit New Orleans in 2022).

Catastrophe bonds were first used in the mid-1990s following Hurricane Andrew and the Northridge earthquake. The public sector has become increasingly interested in the use of catastrophe bonds. In 2009, Mexico became the first sovereign to issue catastrophe bonds, and the World Bank is one of the largest participants in the market. The New York City Metropolitan Transit Authority issued catastrophe bonds to protect against storm surge. According to Swiss Re, $11.3 billion of ILS were issued in 2020, the highest recorded year of issuance since the inception of the catastrophe bond market.

NFIP and Catastrophe Bonds

In August 2018, FEMA entered into its first transfer of NFIP risk through an ILS transaction in the form of a three-year agreement with the reinsurer Hannover Re, and has made four more capital market placements since then. FEMA has issued notice that it intends to pursue another placement in 2022. In each case, Hannover Re acts as a "transformer," transferring between $0.3 and $0.575 billion of the NFIP's risk to capital markets by sponsoring issuance of an indemnity-triggered cat bond. In the 2021 issuance, Hannover Re has indemnified FEMA for a portion of claims for a single qualifying flooding event between February 23, 2021, and February 22, 2024. The 2021 agreement is structured to cover 12.5% of losses between $6 and $7 billion and 22.5% of losses between $7 and $9 billion. A storm comparable to Hurricane Katrina would result in a total loss for the catastrophe bond investors, while a storm comparable to Hurricanes Sandy or Harvey would erode the principal of both tranches but not cause a total payout.

Unlike the traditional reinsurance purchases, which cover NFIP losses for a single flood event anywhere in the United States and its territories, the catastrophe bonds apply only to flooding resulting directly or

indirectly from a named storm and cover only the 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands. The NFIP has not claimed on any of the catastrophe bonds.

Author Information

Diane P. Horn
Analyst in Flood Insurance and Emergency Management

Baird Webel
Specialist in Financial Economics

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