



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

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Insurance generally serves to transfer 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, however, 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 risk 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. The primary insurer typically continues to service the initial policy, while the

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reinsurer operates in the background. [Reinsurance](#) is particularly important to smaller insurers who may not be large enough to spread local risks that are spatially correlated, such as a storm hitting a particular area, across a broader geographic area. Reinsurers, however, often have the size to diversify risks on a global scale.

## NFIP Reinsurance Purchases

The NFIP's first large reinsurance purchase was in January 2017, when [FEMA purchased \\$1.042 billion of reinsurance](#) for an annual premium of \$150 million. The reinsurance covered 26% of losses between \$4 and \$8 billion arising from a single flooding event. FEMA has paid over \$8.7 billion in claims for Hurricane Harvey, triggering a full claim on this reinsurance.

In January 2018, [FEMA paid a \\$235 million premium for \\$1.46 billion reinsurance](#), structured to cover losses above \$4 billion for a single flooding event, covering 18.6% of losses between \$4 and \$6 billion, and 54.3% of losses between \$6 and \$8 billion. FEMA has not claimed on this reinsurance.

## 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](#) (or cat 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 2018);
- *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 2018 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 2018).

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 cat bonds. In 2009, [Mexico became the first sovereign state to issue cat bonds](#), and the [World Bank is now one of the largest participants in the catastrophe bond market](#). The [New York City Metropolitan Transit Authority issued cat bonds to protect against storm surge](#). According to the [reinsurer Swiss Re](#), more than \$10.5 billion in catastrophe bonds were issued in 2017, with \$278.0 billion outstanding overall.

## NFIP and Catastrophe Bonds

On August 1, 2018, [FEMA entered into its first transfer of NFIP risk to private markets through an ILS transaction](#), in the form of a three-year agreement with [Hannover Re](#), a reinsurance company. Hannover Re is acting as a “transformer,” transferring \$500 million of the NFIP's financial risk to the capital markets by sponsoring issuance of an indemnity-triggered cat bond. Hannover Re will indemnify FEMA

for a portion of claims for a single qualifying flooding event that occurs between August 1, 2018, and July 31, 2021. The agreement is structured into two tranches. The first provides reinsurance coverage for 3.5% of losses between \$5 and \$10 billion, and the second for 13% of losses between \$7.5 and \$10 billion. FEMA paid a premium of \$62 million for the first year of coverage. Unlike the earlier reinsurance purchases, which covered all NFIP flood losses, the catastrophe bond applies only to flooding resulting directly or indirectly from a named storm and covers only the 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands.

Combined with the January 2018 reinsurance placement, FEMA has transferred \$1.96 billion of the NFIP's flood risk for the 2018 hurricane season to the private sector. 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.

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