

INFORMED DECISIONS ON CATASTROPHE RISK

Who's paying and who's benefiting most from flood insurance under the NFIP?

A Financial Analysis of the U.S. National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) is a federal program that insures \$1.25 trillion of property in the U.S.

Reforming the operation of the NFIP is on the agenda of Congress.

More than two-thirds of NFIP policies are located in just five coastal states: Florida, Texas, Louisiana, California and New Jersey.

The aggregate premiums/claims ratio varies significantly across states.

- In the United States, basic insurance against flood hazard is primarily provided by the federally-run National Flood Insurance Program (NFIP), which was established in 1968. The program benefits from partnership with private sector insurance companies and agents that write the policies and settle claims on behalf of the federal government (the NFIP retains 100 percent of the underwritten risk).
- Coverage for flood damage resulting from rising water is explicitly excluded in standard homeowners' insurance policies. Amounts greater than the \$250,000 building-coverage limit that is available from the NFIP can be obtained from commercial insurers.
- The total value of property insured under the NFIP was \$165 billion in 1978, rising to \$348 billion in 1990, and \$703 billion in 2000 (corrected for inflation). From 2000 to 2009, the total exposure increased by 75 percent, reaching \$1.25 trillion at the end of 2011. This increase results from higher average quantity of insurance purchased per policy (\$114,000 in 1978 versus \$217,000 in 2009) and more people in flood risk areas who need coverage.
- The NFIP has been renewed 11 times since October 1, 2008 for very short periods with short expiration dates.
- The House passed its reform bill in July 2011; the Senate bill will soon be introduced.
- 20,000 communities across the nation participate in the NFIP. However, data reveal that flood insurance policies are concentrated in a small number of states.
- The state of Florida, which represented less than 6 percent of the U.S. population in 2011, had nearly 40 percent of the total number of flood policies issued by the NFIP in the fall, of 2011.
- Better understanding how much policyholders have paid in premiums versus how much they have collected in claims is important.
- Our analysis of the entire NFIP portfolio between 1978 and 2008 reveals that in some states, policyholders have paid as much as 15 times in premiums than they have collected in claims; in other states, policyholders have received 5 times more in insurance claims than they paid in premiums over this period.

The public-private partnership worked well when faced with the most catastrophic event in its history.

As it was designed to do, the NFIP borrowed from the U.S. Treasury to pay for 2005 and 2008 claims.

- Hurricane Katrina and the failure of the levee system in 2005 led to the most catastrophic loss in the history of this federal program.
- One year after the disaster, virtually all claims were settled, providing insured victims with nearly \$16 billion in claims payments and illustrating the effectiveness of the partnership with private insurers.
- Our analysis, which is based on financial data provided to us by the NFIP, shows that at the end of 2004, the NFIP was facing a \$1.5 billion cumulative deficit since its inception in 1968 (in 2008 prices). This deficit seemed manageable given the scope of the program and the significant non-claim expenses it faces.
- The program, which was not designed to cover truly catastrophic losses by itself, borrowed over \$19 billion from the U.S. Treasury to pay claims from the 2005 and 2008 hurricane seasons, and it is not clear how this debt will be repaid.

During the period 1978-2008, in some states, policyholders cumulatively paid much more in premiums than they received in claims... others, much less.

The state-level analysis reveals the inherent difficulty in pricing insurance coverage for low probability, high consequence events.

A policyholders' analysis (i.e., excluding all administrative costs and payment to participating insurers and agents who sell NFIP policies and manage claims on behalf of the program) at the *state* level is revealing, too:

SOME STATES PAID **MORE** IN PREMIUMS THAN THEY RECEIVED IN CLAIMS:

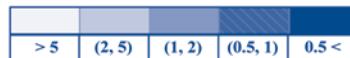
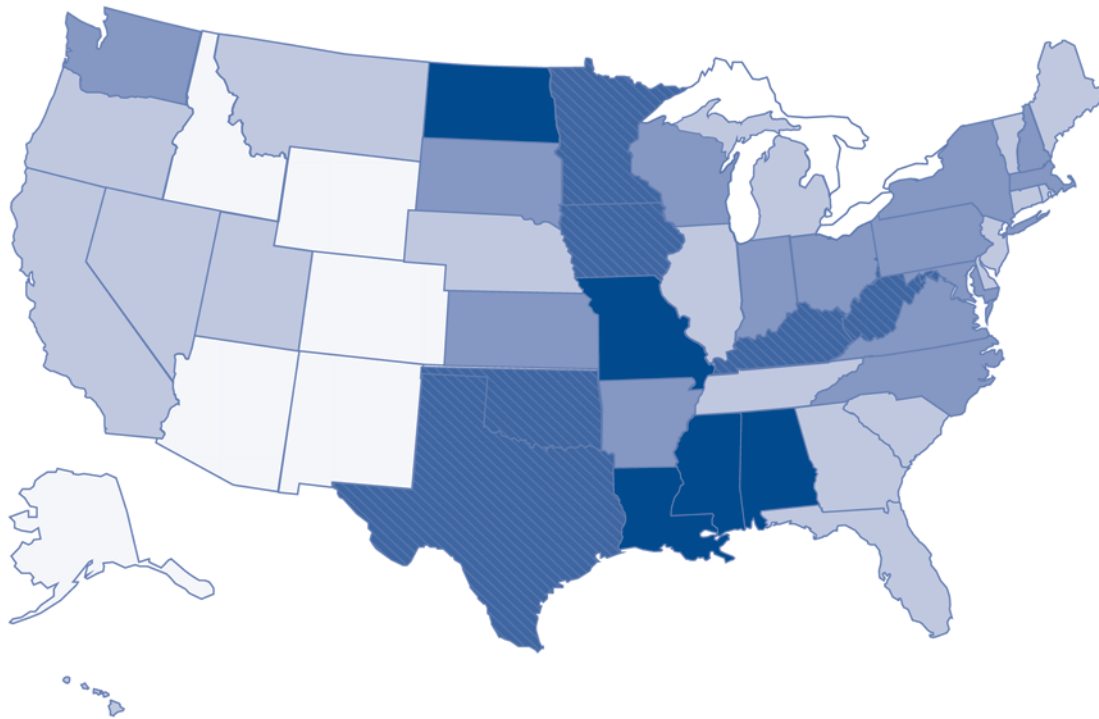
- **Florida:** policyholders paid \$16.1 billion in premiums but collected only \$4.5 billion in claims reimbursements: that is, premiums paid over time were about **3.6 times** the insurance reimbursements (see Figure 1).
- **California:** policyholders paid \$3.5 billion in premiums but collected only \$710 million in claims reimbursements: that is, premiums paid over time were about **5 times** the insurance reimbursements.
- **Colorado:** policyholders paid more than **15 times** what they collected in insurance reimbursements between 1978 and 2008.

OTHER STATES PAID **LESS** IN PREMIUMS THAN THEY RECEIVED IN CLAIMS:

- **Louisiana:** policyholders paid \$4.4 billion in premiums, but collected \$16.7 billion in claims; premiums paid for only **one-quarter** of the claims. *Note: excluding paid claims associated with Hurricane Katrina in Louisiana (\$13.2 billion), the balance of Louisiana's policyholders over this period would have been positive.*
- **Texas:** policyholders paid \$4.5 billion in premiums but collected \$6.7 billion in claims; premiums paid for only **two-thirds** of the claims.
- Although we might expect such insurance to display a high volatility, the difference among states is significant given that the analysis looks at a fairly long period, over three decades.
- A massive flood in Florida or California next year would produce changes in the policyholder's cumulative balance for those states.

Figure 1. NFIP Policyholders' Balance by State, 1978–2008

Ratio of flood insurance premiums collected by the NFIP from policyholders, over flood claims paid to the policyholders, by state, for data available 1978–2008 (in 2008 prices)



Colorado	15.1	Illinois	4.2	Connecticut	2.5	Massachusetts	1.6	Oklahoma	0.9
New Mexico	10.4	Nebraska	3.8	New Jersey	2.3	South Dakota	1.5	West Virginia	0.7
Wyoming	7.9	Hawaii	3.7	Tennessee	2.2	Virginia	1.4	Minnesota	0.7
Idaho	7.2	Florida	3.6	South Carolina	1.9	Indiana	1.4	Texas	0.7
Alaska	6.4	Montana	3.6	Wisconsin	1.9	Ohio	1.4	Iowa	0.5
Arizona	6.1	Utah	3.3	Arkansas	1.9	Washington	1.3	North Dakota	0.4
California	4.9	Georgia	3.0	New York	1.9	Kansas	1.2	Missouri	0.4
Michigan	4.5	Nevada	3.0	Maine	1.8	Pennsylvania	1.1	Alabama	0.4
Rhode Island	4.3	Delaware	2.9	Maryland	1.6	North Carolina	1.1	Louisiana	0.3
Vermont	4.2	Oregon	2.6	New Hampshire	1.6	Kentucky	0.9	Mississippi	0.2

This map presents the cumulative policyholders' balance as a ratio of flood insurance premiums collected by the NFIP from policyholders in that state, over flood claims paid to the policyholders of that state (in 2008 prices) during the period 1978–2008. The ratio for each state is provided in the table. A ratio near 1 means that payments and claims are about equal. The states that paid less in premiums than they received in claims are in darker shades.

For more information, please access the full study or contact the author:

Erwann Michel-Kerjan (2010). *Catastrophe Economics. The National Flood Insurance Program. Journal of Economic Perspectives*, Vol. 24, No. 4, 165-186.

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INFORMED DECISIONS ON CATASTROPHE RISKS issue briefs are published by the Wharton Risk Management and Decision Processes Center of the University of Pennsylvania. For additional information, contact Carol Heller, hellerc@wharton.upenn.edu or 215-898-5688.

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Erwann O. Michel-Kerjan (ErwannMK@wharton.upenn.edu) teaches at the Wharton School and is the Wharton Risk Center's managing director. He also chairs the OECD Secretary-General Board on Financial Management of Catastrophes which advises the governments of its 34 member countries on catastrophe risk management. In 2007, he was named a Young Global Leader by the World Economic Forum (Davos), a five-year nomination bestowed to recognize the most extraordinary leaders of the world under the age of forty. He currently co-leads with Carolyn Kousky (Resources for the Future) a multi-year NSF-supported research program on the reform of the NFIP. Recent books include *The Irrational Economist* (with P. Slovic, PublicAffairs, 2010) and *At War with the Weather* (with H. Kunreuther, MIT Press, 2009), which in 2011 received the prestigious Kulp Wright Award for the most influential contribution to the field of risk management and insurance.