The Need for Long-Term Flood Insurance and Mitigation Loans

—Invited Comment

The past 15 years have witnessed a series of large-scale catastrophes that have inflicted historic economic and insured losses. One figure is eye-opening: of the 25 most costly insured disasters that occurred in the world between 1970 and December 31, 2008, 14 occurred since 2001, 13 here in the United States, and all were natural disasters except for the 9/11 terrorist attacks. The growing concentration of population and structures in high-risk areas, combined with the potential consequences of global warming, are likely to lead to even more devastating catastrophes in the coming years unless cost-effective risk reduction measures are put in place.

The challenge, however, is that many people do not invest in such measures voluntarily. Even after the devastating 2004 and 2005 hurricane seasons, a large number of residents had still not invested in relatively inexpensive loss-reduction measures with respect to their property, nor had they undertaken emergency preparedness measures. In 2006 the *New York Times* published the result of a survey of 1,100 adults living along the Atlantic and Gulf coasts undertaken in May of that year: 83 percent of the responders had taken no steps to fortify their home, 68 percent had no hurricane survival kit, and 60 percent had no family disaster plan. One of the principal reasons this is the case is that individuals are myopic. They tend to focus on returns only over the next couple of years so that preparedness measures are not viewed as financially attractive. Catastrophe risk insurance continues to be sold as one-year contracts, so it is hard for policyholders to take a longer view of how mitigation measures can reduce their damage. But it does not have to be that way.

Need for Long-Term Insurance

We propose moving from the standard one-year insurance contracts for residential properties to long-term insurance (LTI) so as to encourage property owners to invest in cost-effective mitigation measures. Flood risk is a natural candidate for LTI as it is a national program, in contrast to homeowners insurance, which is state regulated.

We argue that the development of LTI should encourage individuals to invest in cost-effective mitigation measures. Many homeowners do not invest in such measures because they are unwilling to incur the high upfront cost associated with these investments relative to the small insurance premium discount they would receive the following year—that discount reflects the expected annual benefits of the mitigation measure. If an LTI policy were coupled with a long-term home improvement loan tied to the mortgage (e.g. for retrofitting), the reduction in insurance premiums would exceed the annual loan payment if the mitigation measure was cost-effective. The social welfare benefits could be significant: there will be less damage to property, reduction in costs of protection against catastrophic losses by insurers, more secure mortgages, and lower costs to the government for disaster assistance.

Why Have a Long-Term Flood Insurance Policy?

In 1968 the U.S. Congress created the National Flood Insurance Program (NFIP) as a means of offering coverage on a nationwide basis through the cooperation of the federal government and private insurance companies. Today most coverage under NFIP is under the Write Your Own Program, where private insurers receive an expense allowance from the federal government to market annual policies and settle flood claims while the NFIP retains financial responsibility for underwriting losses.

It would be useful to consider whether flood insurance could be made long term by tying policies to mortgages. By instituting such a program, insurance would be connected to the property rather than to the homeowner. One might also consider requiring everyone in flood prone areas to take out insurance just as those who own a car are required to take out insurance whether or not they are financing the purchase of that car. If a homeowner moved to another location, the flood insurance policy would remain with the property.

A long-term flood insurance program would offer homeowners residing in flood-prone areas a fixed rate for a specified period of time (e.g., 5, 10, or 20 years). If the homeowner moved from the area before the end of the policy period, then the policy would automatically be transferred to the new property owner at the same rate. For homeowners being charged subsidized rates because their homes were constructed before the community joined the NFIP, rates would be maintained for the length of the policy period. For homeowners who constructed homes after their community joined the program, their rates would be actuarially based.

There are a number of reasons why such a long-term flood insurance policy would be a great improvement over the current annual policies from the perspective of the relevant stakeholders: homeowners, FEMA, banks and financial institutions and the general taxpayer. By fixing flood insurance rates at a fixed price, homeowners would be provided with financial stability. They would also know they are protected against water damage from floods and hurricanes. This would reduce the legal problems that have plagued recent hurricane disasters (Florida hurricanes of 2004, Katrina and Ike). Homeowners would not have to argue their losses were due to wind so they could collect on their homeowners policy. There would still be a question as to whether the government would be paying for some of the loss because it was caused by water or whether private insurers would be responsible because it was wind-related damage.

Long-term flood insurance would also assure the spread of risk within the program since most homeowners in flood prone areas would be covered. If flood insurance were required for all homeowners residing in hazard-prone areas, then there would be even a larger spread of risk. Over time, this much larger policy base would provide much needed financial revenue for the program.

Long-term policies would prevent individuals from cancelling their policies after they have not experienced a flood for several years even if they are required to purchase the policy as a condition for a federally insured mortgage. The banks and financial institutions have often not enforced this regulation because few of them have been fined or the mortgages are transferred to banks in

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Consider the flood in August 1998 that damaged property in northern Vermont. Of the 1,549 victims of this disaster, FEMA found 84 percent of the homeowners in Special Flood Hazard Areas did not have insurance, even though 45 percent of these individuals were required to purchase coverage.

Insurers and Climate

Peter Levene, chairman of Lloyd's of London, told the San Diego *Union-Tribune* in 2004 that the issue with climate change "for insurers is natural disasters, which are a very great concern. And the impact of those disasters has been increasing because the climate has been changing."

Federal and private insurers paid out more than $320 billion in weather-related claims between 1980 and 2005 under flood insurance and crop protection programs. Private insurers paid about 76 percent of this total.

According to the U.S. Government Accountability Office, "Assessment by key governmental bodies generally found that rising temperatures are expected to increase the frequency and severity of damaging weather-related events, such as flooding or drought, although timing and magnitude are as yet undetermined."

In 2007 before the U.S. House Select Committee on Energy Independence and Global Warming, GAO's John B. Stephenson said, "While both major private and federal insurers are exposed to increases in the frequency or severity of weather-related events associated with climate change, the two sectors are responding in different ways. Many major private insurers are incorporating elements of climate change into their annual and strategic risk management practices to reduce their exposure to catastrophic risk—that is, their vulnerability to extreme weather-related events and the associated financial losses.

"One consequence is that they are transferring some of their exposure to policyholders and to the public sector. Federal insurance programs ... have seen their exposure grow significantly—NFIP's total coverage has quadrupled from 1980 to 2005, nearing $1 trillion, and program expansion has increased FCIC's (Federal Crop Insurance Corporation) total coverage nearly 26-fold to $44 billion." (**www.gao.gov/cgi-bin/getrpt?GAO-07-820T**)

A 2007 report by Ceres (**www.ceres.org/Page.aspx?pid=858**), a coalition of investors, environmental organizations and investment funds, found that insurers both nationally and internationally have "a huge opportunity today to develop creative loss-prevention solutions" to climate change. The group identified "422 real-world examples from 190 insurers, reinsurers, brokers and insurance organizations from 26 countries."

For instance, Arkwright Mutual Insurance examined climate change and flooding. The Insurance Australia Group is working with the University of Oklahoma on high-resolution climate modeling. Insurance broker Willis is collaborating with researchers in the United Kingdom and Japan on next-generation climate modeling, with greater resolution to enable the evaluation of changing typhoon risks and associated insurance implications

Swiss Re and the Association of British Insurers have also coupled climate models with insurance loss models. Swiss Re projects an average increase in losses of between 16 percent and 68 percent from European winter storms between 1975 and 2085.

But GAO's Stephenson says that government programs are lagging: "The federal insurance programs have done little to develop the kind of information needed to understand the programs' long-term exposure to climate change."

—Dan Whipple

Insurance...

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non-flood prone regions of the country that are not focused on the flood hazard risk. Consider the flood in August 1998 that damaged property in northern Vermont. Of the 1,549 victims of this disaster, FEMA found 84 percent of the homeowners in Special Flood Hazard Areas (SFHAs) did not have insurance, even though 45 percent of these individuals were required to purchase coverage.

If long-term loans for mitigation were offered by banks, individuals with long-term flood insurance policies would be encouraged to invest in cost-effective risk reduction measures. To highlight this point, consider the following simple example. Suppose a property owner could invest $1,500 to floodproof his home so as to reduce the water damage by $30,000 from a future flood or hurricane with an annual probability of 1 in 100. The NFIP should be willing to reduce the annual premium by $300 (i.e., 1/100 x $30,000) to reflect the lower expected losses that would occur if a flood or hurricane hit the policyholder's area. If the house was expected to last for 10 or more years, the net present value of the expected benefit of investing in this measure would exceed the upfront cost at an annual discount rate as high as 15 percent.

Weighing the Future

Today many property owners would be reluctant to incur the $1,500 expenditure, because they would get only $300 back next year and are likely to only consider the benefits over the next few years when making their decisions. If they underweight the future, the expected discounted benefits would likely be less than the $1,500 upfront costs. In addition, budget constraints could discourage them from investing in the mitigation measure. Other considerations would also play a role in a family's decision not to invest in these measures. The family may not be clear how long they will reside in the house and/or whether their insurer would reward them again when their policy is renewed. There may also be a failure to appreciate the interdependencies associated with floods, earthquakes, and other disasters. More specifically, by investing in mitigation measures, one will not only reduce the potential losses to one's own property but alleviate damage to neighboring structures.

If a 20-year flood insurance policy were tied to the property, then the homeowner could take out a 20-year, $1,500 home improvement loan linked to the mortgage at an annual interest rate of 10 percent, resulting in payments of $145 per year. If the insurance premium was reduced by $300, the savings to the homeowner each year would be $155. Alternatively, this loan could be incorporated as part of the mortgage at even a lower interest rate than 10 percent.

Long-term insurance and mitigation loans would constitute new financial products. A bank would have a financial incentive to provide this type of loan, since it would now be better protected against a catastrophic loss to the property. The NFIP knows that its potential loss from a major disaster is reduced. Moreover, the general public will now be less likely to have large amounts of its tax dollars going for disaster relief. Indeed, prior to the 2005 hurricane season, which inflicted nearly $18 billion in flood claims, the NFIP had a cumulative deficit of about $3 billion after 37 years of operation. Long-term flood insurance promises to be a win-win-win-win situation for all!

Given that the NFIP is up for renewal in Congress this spring there may be a window in the coming months for debating the merits and challenges of long-term flood insurance. The recent financial crisis has forced all of us to think about ways of overcoming our short-term horizons. Long-term contracts in the form of insurance and loans may be one way to encourage individuals to take steps to protect themselves in the long-run in ways that are financially attractive to them and other interested parties.

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References

This column draws heavily on a paper by Kunreuther and Michel-Kerjan, "Market and Government Failure in Insuring and Mitigating Natural Catastrophes: How Long-Term Contracts Can Help," presented at the American Enterprise Institute Conference on Private Markets and Public Insurance Programs, Washington, DC, January 15, 2009.