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March 14, 2006

National Flood Insurance: Crisis and Renewal

Executive Summary

- Congress created the National Flood Insurance Program through enactment of the "National Flood Insurance Act of 1968" (P.L. 90-448). The NFIP was created to promote three complementary goals: to provide property flood insurance coverage since such coverage was not available through private insurers; to reduce taxpayer-financed, *ad hoc* disaster assistance for property owners affected by floods; and to reduce the total amount of property flood damage through floodplain management.

- Over 20,000 communities in all 50 States participate in the National Flood Insurance Program. The NFIP is now the nation's largest single-line property insurer in the United States, with 4.8 million policies insuring in excess of $800 billion in assets.

- The insured flood damage caused by the hurricanes of 2005 is estimated to exceed $24 *billion*, a figure 10 times greater than the amount of premium income the NFIP generated in all of 2005, and one-and-a-half times more than the total dollar value of claims the NFIP has paid out in its 37-year history. The NFIP is now bankrupt and only able to continue in operation as a result of Congress providing it more than $20 billion in emergency supplemental appropriations.

- While the magnitude of 2005's hurricane-related flood losses may have been improbable, the eventual bankruptcy of the NFIP was not. The program was never designed to charge full risk-based rates or to build the reserves necessary to meet its financial commitments. By failing to charge prices that reflect the value of the flood insurance in-force, the NFIP has been accumulating unfunded liabilities that eventually would have to be financed by taxpayers – an eventuality that has arrived.

- If the NFIP is to remain in operation without exposing taxpayers to undue burdens, then dramatic programmatic reforms are necessary. In the process of designing a sustainable NFIP, Congress should also look at other problems with the program, including its potential to induce commercial and residential development in areas prone to flooding, its low participation rates, and its often contradictory interaction with other federal disaster assistance programs.

- Specifically, Congress should phase out explicit subsidies, expand mandatory flood-insurance purchase requirements, grant FEMA more flexibility to increase NFIP rates, and investigate ways to increase property owners' compliance with mandatory purchase requirements.

Introduction

It is rare for a government program to face an existential crisis. President Reagan once quipped that a government program is the nearest thing to eternal life we will see on this earth. Yet, due to flooding damages caused by the hurricanes of 2005, the National Flood Insurance Program (NFIP) is bankrupt and facing claims so far in excess of its prospective income that its future is in doubt.

When Hurricane Katrina hit the Gulf Coast in August of 2005, the NFIP had outstanding borrowing of $225 million and cash on hand totaling $289 million.[1] Yet, the insured flood damage caused by that storm alone is estimated to exceed $22 *billion*, a figure 10 times greater than the amount of premium income the NFIP generated in all of 2005, and one-and-a-half times more than the total dollar value of claims the NFIP has paid out in its 37-year history.[2] The total borrowing necessary to pay claims resulting from the 2005 flooding (that also includes Hurricanes Rita and Wilma) is estimated to exceed $24 billion.[3]

To prevent the bankrupt NFIP from defaulting on its obligations to policyholders, Congress increased the NFIP's statutory borrowing limit of $1.5 billion to $18.5 billion in November of 2005 (P.L.109-106). Based on available data, it appears that this limit will have to be raised by another $5.6 billion sometime this fiscal year to pay the remaining 27 percent of hurricane-related claims.[4] And with the interest expense on this debt likely to exceed any potential surplus the program may generate, Congress will likely have to increase the borrowing limit again near (or at) the end of the current fiscal year.[5]

While the magnitude of 2005's hurricane-related flood losses may have been improbable, the eventual bankruptcy of the NFIP was not. The program was never designed to charge full risk-based rates or to build the reserves necessary to meet its financial commitments. By failing to charge prices that reflect the value of the flood insurance in-force, the NFIP has been accumulating unfunded liabilities that eventually would have to be financed by taxpayers – an eventuality that has arrived.

That the hurricanes of 2005 produced such catastrophic flooding does not mean that flood losses of a similarly large scale will be rare in the future. In addition to the continued risk of catastrophic river flooding, the National Weather Service warns that the hurricane seasons in the

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[1] David M. Walker, Comptroller General, Government Accountability Office, in testimony before the Senate Banking Committee, January 25, 2006.
[2] David I. Maurstad, Acting Director, FEMA Mitigation Division, in testimony before the Senate Banking Committee, January 25, 2006.
[3] Donald B. Marron, Acting Director, CBO, in testimony before the Senate Banking Committee, January 25, 2006. CBO estimates that explicit subsidies in 2005 reached $1.3 billion.
[4] Maurstad. The 27 percent is based on the dollar value of claims outstanding, not the percentage of claims themselves.
[5] Language in the 2006 DHS Appropriations Act limits interest payments to the Treasury to $30 million, which is not sufficient for the program to fulfill its interest obligations. In order for the program to meet its obligations to the Treasury, the interest cap needs to be waived or raised to at least $670 million. At prevailing short term interest rates (4.5 percent), a balance of $24.1 billion would require annual interest payments of just over $1 billion.

next two to three decades may be "much more active" than they have been since the 1970s.[6] Much of the population located along the United States Atlantic and Gulf coastlines lies less than 10 feet above mean sea level.[7] Given the natural process of coastal erosion and the recent development of seaside communities, the potential for further catastrophic, hurricane-induced flood losses may only intensify in the coming years. Indeed, "even bigger flooding events than Katrina are possible and, over the long-term, certain."[8]

Given this statistical eventuality, Congress must look for ways to reduce the taxpayers' future burden. And, while it may be tempting to limit the NFIP's total flood-risk exposure to improve its solvency (or simply end the program altogether), pursuing such a course would not address the taxpayer burden for two reasons. First, as the experience of Katrina demonstrates,[9] flood victims not compensated for their losses through the NFIP are likely to receive direct Federal Emergency Management Agency (FEMA) grants and other forms of *ad hoc* disaster supplemental spending. Thus, limiting or ending the NFIP merely moves the source of the aid from one Treasury account to another, but would be unlikely to reduce (substantially) the total cost to taxpayers. Secondly, the NFIP is the one mechanism that exists to pre-fund future flood disaster assistance payments. That is, eliminating the NFIP would deprive the Treasury of premium income but do little, if anything, to reduce flood damage-induced outlays.

If the NFIP is to remain in operation without exposing taxpayers to undue burdens, dramatic programmatic reforms are necessary. In the process of designing a sustainable NFIP, Congress should also look at other problems with the program, including its potential to induce commercial and residential development in areas prone to flooding, its low participation rates, and its often contradictory interaction with other federal disaster assistance programs.

Background on the National Flood Insurance Program

Congress created the National Flood Insurance Program through enactment of the "National Flood Insurance Act of 1968" (P.L. 90-448). The NFIP was created to promote three complementary goals: to provide property flood insurance coverage since such coverage was not available through private insurers; to reduce taxpayer-financed, *ad hoc* disaster assistance for property owners affected by floods; and to reduce the total amount of property flood damage through floodplain management, including the implementation of flood maps and the enforcement of building standards that require structures to be moved or elevated.[10]

Private insurers have generally refused to underwrite flood risk for several reasons. First, losses from floods are a virtual certainty in certain low-lying and coastal areas, yet consumers who live in these areas are not willing to pay premium prices sufficient to cover this risk.

[6] Chris Landsea, National Weather Service, in testimony before the Senate Banking Committee, October 18, 2005.
[7] Landsea.
[8] Category 5 hurricane storm surges at high tide hitting Miami Beach or New York City and Long Island are examples of much larger potential flooding events. See J. Robert Hunter, Director of Insurance, Consumer Federation of America, in testimony before the Senate Banking Committee, February 2, 2006.
[9] As of February 17, 2006, the Senate has approved $105 billion in supplemental spending to assist victims of the 2005 Hurricanes. U.S. Senate Republican Policy Committee, "Actions Taken by the Senate in Response to Hurricanes Katrina and Rita," updated February 17, 2006.
[10] Walker.

Secondly, consumers with lower flood risks are not willing to purchase coverage at a pooled rate, which leaves insurers unable to pool policyholders with varying degrees of exposure to flood losses. Finally, since flood losses are often catastrophic in nature, it is extremely costly to build the reserves of claims-paying capital necessary to meet obligations.[11]

With no private insurance available prior to 1968, flood victims came to depend on federal, taxpayer-financed, *ad hoc* disaster assistance.[12] Congress found such payments problematic because "they were unpredictable and necessitated bargaining after each major natural disaster."[13] A major goal of the 1968 Act was to "pre-fund" these flood assistance payments through a federal insurance mechanism.[14] Although flood insurance was voluntary at first, low participation rates led Congress to enact the "Flood Disaster Protection Act of 1973" (P.L. 93-234) to compel certain property owners in high-risk areas to buy the insurance.[15] Thus, from almost the very outset of the program, the NFIP was designed as a form of social insurance – like Social Security or Medicare – with compulsory premium payments used to pre-fund a self-sustaining system with pre-determined payouts.

In an effort to reduce total amount of property flood damage, Section 1315 of the Act prohibits the NFIP from providing flood insurance unless the participating community adopts and enforces floodplain management regulations that meet or exceed the floodplain management criteria established by the Act.[16] To better condition land use and building standards in participating communities, the NFIP has attempted to identify and map the nation's floodplains. Such maps – known as Flood Insurance Rate Maps (FIRMs) – were intended to provide the flood risk information necessary for both floodplain management and to set flood insurance rates for commercial and residential structures.

Subsidies Were Authorized to Encourage Participation

Between 1968 and 1973, it became apparent that communities located in low-lying (or otherwise high-risk) areas were not willing to pre-fund their own disaster assistance if required to pay full risk-based rates. In the program's first five years, only 5,000 communities elected to participate. As such, federal *ad hoc* disaster assistance payments remained largely unchanged, and land-use management techniques were not adopted on a large scale.[17]

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[11] American Insurance Association, *Studies of Floods and Flood Damage 1952-1955*, New York: American Insurance Association, May 1956.
[12] Federal Emergency Management Agency, "National Flood Insurance Program: Program Description," April 1, 2002.
[13] Rawle O. King, "Federal Flood Insurance: The Repetitive Loss Problem," CRS Report for Congress RL32972, June 30, 2005.
[14] King.
[15] King. The 1973 Act revised the earlier law to make the purchase of flood insurance mandatory by requiring federally-regulated lending institutions to ensure that property owners purchase and maintain coverage when making loans to finance these properties. The 1973 Act also prohibited federal funds from being used for construction in floodplains located outside of NFIP-participating communities.
[16] FEMA. These floodplain management criteria are contained in 44 Code of Federal Regulations (CFR) Part 60, Criteria for Land Management and Use. The emphasis of the NFIP floodplain management requirements is directed toward reducing threats to lives and the potential for damages to property in flood-prone areas.
[17] Congressional Quarterly Weekly Report, "Disaster Response: Does the Country Need a New National Strategy?" October 15, 1993.

Congress responded by authorizing the NFIP to introduce subsidies in the form of steep premium discounts on buildings constructed before the effective date of a community's FIRM (or before the application of the new NFIP construction standards on December 31, 1974), to induce communities' participation.[18] Congress also exempted owners of these subsidized, or "pre-FIRM," structures from the NFIP's floodplain management requirements, unless these structures are at some later point substantially damaged or substantially improved. Either of those events then trigger a requirement to rebuild to current construction and building code standards.[19]

This policy – coupled with the new mandatory purchase requirements mentioned above – worked as intended: during the seven years following the 1973 Act, "nearly every community with a flood hazard joined the NFIP and the insurance policy count eclipsed 2 million by 1979."[20] Today, over 20,000 communities in all 50 States, representing about 95 percent of the highest-risk floodplains, participate in the NFIP. The NFIP is now the nation's largest single-line property insurer in the United States, with 4.8 million policies insuring in excess of $800 billion in assets.[21]

Subsidies Have Resulted in a Large Actuarial Imbalance

While the subsidies and floodplain management exemptions succeeded in increasing participation, they resulted in a dramatic deterioration in the NFIP's long-term solvency. Today, 26.4 percent of policyholders pay explicitly subsidized premiums for a portion of the coverage.[22] The Congressional Budget Office (CBO) estimates that these policyholders pay only 35 percent to 40 percent of the risk-based rate,[23] which translates into an annual subsidy of $1.3 billion.[24] These explicit subsidies are equal to 65 percent of the program's $2 billion in annual premium income. This means that the program is 40 percent underfunded on an actuarial basis.[25]

Since 1981, the NFIP has been designed to achieve "fiscal solvency," whereby premium rates are set at a level sufficient to cover expenses and losses equal to the "historical average loss year."[26] By setting the program's overall premium income at a level sufficient to pay for the losses experienced in a "normal" year, the NFIP has been able to operate roughly at balance since 1988, but has not built any reserves.[27] The lack of a reserve of claims-paying capital

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[18] Thomas L. Hayes and Shama S, Sabade, "Actuarial Rate Review," National Flood Insurance Program, November 30, 2004. (P.L. 93-234)
[19] King.
[20] Hayes and Sabade.
[21] FEMA.
[22] Hayes and Sabade.
[23] Marron. The explicit subsidies received by those policyholders apply only to a first tier of coverage by statute. For example, subsidies apply to the first $35,000 of coverage for a one-to-four-family dwelling and the first $100,000 for nonresidential and larger residential properties. Additional coverage above those limits is purchased at FEMA's estimated actuarial rates. The Actuaries at NFIP do not believe the explicit subsidies are as large, but have not provided a counter estimate.
[24] Marron.
[25] Marron.
[26] Hayes and Sabade.
[27] King.

exposes taxpayers to considerable risks in the event of a catastrophic loss event like Hurricane Katrina.

Implicit Subsidies Also Exist

While the explicit subsidies afforded to pre-FIRM structures are the main source of the NFIP's long-run actuarial insolvency, it is important to recognize that the other 73.6 percent of policyholders also receive an implicit subsidy. What the NFIP describes as "actuarially rated" policies would not be considered actuarially sound in the world of private insurance because, as explained in the NFIP *Actuarial Rate Review*, "the possibility of borrowing funds [from the Treasury] would be present even if all NFIP policyholders paid full-risk premiums."[28]

As the Chief Economist of the Insurance Information Institute, Robert P. Hartwig, explained in testimony before the Senate Banking Committee, "Actuarially sound rates, by definition, must *fully* account for the risk being underwritten, including the possibility of mega-catastrophes such as Hurricane Katrina."[29] The admission that borrowing may be necessary even if all policies were actuarially rated suggests that the NFIP would fail the most basic test of claims-paying ability to which regulators subject private property and casualty insurers.[30]

The existence of implicit subsidies should be no surprise given the unique features of flood insurance demand mentioned above. The fact that flood risk is considered "uninsurable" suggests that markets would price many flood insurance policies at rates that would be "prohibitively expensive, if not infinite."[31] Although CBO has not attempted to value this subsidy, it is conceptually similar to a free reinsurance contract whereby the Treasury foregoes the amount of premium income that would otherwise be required to compensate taxpayers for their risk exposure to a catastrophic loss, also known as a "risk load."[32] This reinsurance is essentially provided free to the policyholder, but it is likely to be very costly for taxpayers, as private reinsurance premiums for natural disasters are usually based on risk loads of five times to seven times annual expected losses (which would be \$12.4 billion to \$17.4 billion in the case of the NFIP).[33]

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[28] Hayes and Sabade.

[29] Robert P. Hartwig, Chief Economist, Insurance Information Institute, in testimony before the Senate Banking Committee, October 18, 2005.

[30] The National Association of Insurance Commissioners (NAIC) model calls on state regulators to deny an insurer's application "if it finds that the resulting premiums would be inadequate, excessive, or unfairly discriminatory." The NAIC language is used by virtually every state's insurance legislation. For example, see the Texas State insurance title Texas Insurance Title at: http://www.capitol.state.tx.us/statutes/docs/I1/content/word/i1.001.00.000005.00.doc.

[31] Sheldon Richman, "Federal Flood Insurance: Managing Risk or Creating It?" *Regulation*, Vol. 16 No. 3, 1993. Former FEMA chief Harold T. Duryee acknowledged in 1990 that the program does not charge full-risk premiums and that to do so would add at least \$10,000 to the cost of a policy.

[32] Marron.

[33] This figure could be thought of as the dollar value of the implicit subsidy if one were to compare the current arrangement to one in which the NFIP were a private insurer seeking to transfer its catastrophic flood risk to a private reinsurer. Robert E. Litan, "Sharing and Reducing the Financial Risks of Future 'Mega-Catastrophes,'" Brookings Institution, November 11, 2005. Figures based on "projected average annual written premium" estimates provided in Exhibit E in Hayes and Sabade.

The NFIP's Implicit Subsidies Have Encouraged Imprudent Development

The NFIP's implicit subsidization has directly encouraged lenders, homebuilders, and homebuyers to take imprudent risks. As Banking Committee Chairman Richard Shelby has noted, "Where, prior to the program, there were areas where construction did not occur because financing was not available for it, we now see expensive homes and commercial properties."[34]

According to Hartwig, for private insurers, "there are occasions when the actuarially sound decision is to refuse to underwrite coverage at any price – in other words to just say no."[35] By making flood insurance available in high-risk areas where no private insurer would be willing to write policies, the NFIP encourages more people to locate in these areas, which has the effect of exposing more assets to flood risk and increases the total economic losses from flooding.[36] As Regina Lowrie, Chair of the Mortgage Bankers Association, explained in testimony before the Senate Banking Committee, "Without a reliable and uninterrupted source of flood insurance…mortgage credit would, at best, be more expensive, or at worst, unavailable in many markets."[37] Similarly, David Pressly, President of the National Association of Homebuilders, praised the NFIP for giving "homebuyers and homebuilders the opportunity to live in a home of their choice in a location of their choice, even when the home lies within a floodplain."[38]

Given the NFIP's inducement to development in flood-prone locales, it is ironic that the NFIP argues that its land-use management and standards for new construction save an estimated $1.1 billion annually in flood damage avoided.[39] Since this estimate fails to take into account the economic development that has occurred due to the NFIP's existence, it is probable that the savings heralded by the NFIP have been more than eclipsed by the damage claims to structures that otherwise would have not been built!

The Conundrum of Low Demand for Flood Insurance

Given the large explicit and implicit subsidies provided by the NFIP, one might expect flood insurance coverage to be widespread in high-risk areas, but this is not the case. According to the Census Bureau, 74.5 million American families own their own home.[40] Adding to this figure the estimated 4.5 million commercial structures in the United States implies that the 4.8 million NFIP policies cover no more than 6 percent of structures nationwide.[41] While it is not surprising that the owners of homes and buildings located well above sea level or alluvial river beds may choose to forego flood coverage, it is estimated that *fewer than 30 percent of*

[34] Chairman Richard Shelby, Member Statement, Committee Hearing: "Proposals to Reform the National Flood Insurance Program," January 25, 2006.
[35] Hartwig.
[36] Richman.
[37] Regina Lowrie, Chair, MBA, in testimony before the Senate Banking Committee, February 2, 2006.
[38] David Pressly, President, NAHB, in testimony before the Senate Banking Committee, February 2, 2006.
[39] Hayes and Sabade.
[40] The Census Bureau, "Homeownership Rates," April 25, 2005.
[41] Figure based on a study cited in "A Growing Sensitivity to What's in the Air," The New York Times, February 22, 1998. Census data show there were 5.7 million firms with employees and 17.6 million without employees in 2002. The Internal Revenue Service (IRS) estimates there were 29.3 million nonfarm business tax returns in 2004. Both of these estimates likely overstate the number of firms, as one business can operate more than one taxable entity and not all businesses require a unique building. Additionally, some families own more than one home. Thus, the 6 percent figure represents the maximum penetration rate.

vulnerable homeowners are insured nationwide.[42] FEMA estimates that of the 11 million households located in Special Flood Hazard Areas (SFHA),[43] 8 million do not have an NFIP policy.[44]

Congress has responded to concern about low participation rates in the past by reaffirming the program's role as social insurance. Following the "Great Flood of 1993," which occurred along the Missouri and Upper Mississippi River basins and required $2 billion in disaster aid (P.L. 103-75), Congress passed the "National Flood Insurance Reform Act of 1994" (NFIRA, P.L. 103-325) to strengthen mandatory purchase requirements.

Already mandatory before enactment of the NFIRA was the 1973 Act requirement that owners of all structures located in SFHAs must purchase and maintain flood insurance as a condition of receiving a mortgage or home equity loan from a federally regulated lending institution.[45] The NFIRA built on the 1973 Act by requiring the lender (or loan servicer) to "force-place" the flood insurance by purchasing it on behalf of the property owner if the owner refuses to get (and maintain) the coverage, and then bill the property owner.[46] Failure to enforce the mandatory purchase requirement subjects mortgage lenders to civil monetary penalties. The NFIRA also required property owners in SFHAs who receive disaster assistance after September 23, 1994, for flood disaster losses to real or personal property to purchase and maintain flood insurance coverage for as long as they live in the dwelling.[47] If flood insurance is not purchased and maintained, the NFIRA requires FEMA to deny future disaster assistance.

Although data on lender compliance with this requirement is not fully known,[48] in testimony before the Banking Committee, the Acting Director of FEMA's Mitigation Division, David Maurstad, estimated the level of non-compliance to be between 40 percent and 60 percent.[49] This estimate was challenged by the Mortgage Bankers Association, whose Chair cited an American Institutes for Research study that demonstrates lenders fulfill their obligations "in good faith and with few errors."[50] Although the NFIP's *Actuarial Review* made no estimate of the compliance rate, it did note that, in recent years, the NFIP's policyholder growth "has been

[42] Douglas J. Elliott, President, Center on Federal Financial Institutions, in testimony before the Senate Banking Committee, October 18, 2005.
[43] SFHAs are defined as zones where the annual chance of flooding is 1 percent.
[44] "National Flood Insurance Compliance," NFIP, October 22, 2004. Available at: http://www.fema.gov/nfip/complian.shtm.
[45] This requirement is actually on the lender to ensure that the borrower purchase and maintain the coverage.
[46] This requirement also applies to mortgage loans purchased by government-sponsored enterprises.
[47] The NFIRA also requires the current owner to notify the buyer of the house of the need to purchase and maintain flood insurance if the structure is sold. If the buyer is not notified, suffers uninsured flood losses, and receives Federal disaster assistance, the seller may be required to repay the Federal Government any Federal disaster assistance the buyer received.
[48] A General Accountability Office study into the matter concluded that the rate of compliance could not be established. GAO, "Extent of Noncompliance with Purchase Requirements is Unknown," GAO Report 02-396, June 2002.
[49] Maurstad.
[50] Lowrie. "The National Flood Insurance Program's Mandatory Purchase Requirement: Policies, Processes, and Stakeholders," American Institutes for Research, March 2005.

only 1 percent to 2 percent. This slower policy growth is not due to a lack of new business, but to a high non-renewal or lapse rate."[51]

It is important to recognize that, even if the mortgage lender and servicer compliance rate were 100 percent, it is estimated that only 10 percent of those who live in SHFAs buy flood insurance if they are not required to do so by lenders (as a point of reference, of the single family owner-occupied homes in the United States, about 70 percent were mortgaged and 30 percent were not).[52] And, as a separate but equally problematic issue, the law mandates only that mortgage borrowers purchase insurance up to the amount of the mortgage, leaving the possibility that even property owners in full compliance could be dramatically underinsured.[53]

Confusing Information May Contribute to Homeowners' Decision to Forego Insurance

One explanation for the low demand for flood insurance may be the failure of residents to comprehend their vulnerability. It is common for SFHAs to be called "100 year floodplains," which many interpret to mean that a flood only occurs in these zones once every 100 years.[54] However, a "100 year flood" is a probabilistic assessment that means a given event has a one-in-one hundred chance (1 percent) of occurring in any given year.[55] This means that a "100 year" flood has a 9.6 percent chance of occurring in 10 years, a 22 percent chance of occurring in 25 years, a 39 percent chance of occurring in 50 years, and an 86 percent chance of occurring in 100 years.[56] Moreover, to reliably predict a 100-year recurrence event, geologists "would need 1,000 years of records, which [they] do not have. Flood predictions, like those of the weather, depend on a unique set of environmental variables which are almost never repeated."[57]

Based on participation rates, it seems unlikely that most residents of a "100 year floodplain" realize that structures located there (i.e., in SFHAs) have a 26-percent chance of being flooded over the course of a 30-year mortgage, compared to a 4-percent chance of fire over the same period. Yet homeowners who avoid "costly" flood coverage are unlikely to avoid fire insurance, even absent lender requirements.[58]

Many Property Owners Believe they Live Outside of "Floodplains"

Property owners outside of SFHAs, for whom flood insurance is not mandatory, are even less likely to participate in the NFIP. In fact, the use of the word "floodplain" has become so synonymous with "100-year" SFHAs that many people living outside of these highest-risk zones believe their property is somehow immune to flood damage and elect to forego coverage. Only

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[51] Hayes and Sabade.
[52] US Census Bureau, "Housing: Financial Characteristics," September 17, 2004.
[53] P.L. 103-75. For example, an owner of a $200,000 home may only have an outstanding balance of $30,000 on his mortgage. In this instance, the property owner could be fully compliant with the legal mandate, but remain underinsured in the event of a catastrophic flood loss.
[54] Rebecca Quinn, Legislative Officer, Association of State Floodplain Managers, COFFI: "Flood Insurance Policy Forum," Sept. 30, 2005.
[55] J. David Rogers, Karl F. Hasselmann Hasselmann Chair in Geological Engineering, University of Missouri-Rolla, "Say, What is a 100-year Flood?" Available at: http://web.umr.edu/~rogersda/flood_hazards/What%20Is%20a%20100%20Year%20Flood.htm.
[56] Rogers.
[57] Rogers.
[58] Fire is covered in almost every comprehensive "all-risk" insurance product.

about 1.8 million properties, including commercial properties, that are located outside of an SFHA are current policy holders. Perhaps typical is New Orleans flood victim Linda Gibson, who explained that she elected not to purchase flood insurance because "my insurance agent told me I was in a flood-free zone."[59]

Yet, as the NFIP explains on its marketing web site, "Everyone lives in a flood zone – it's just a question of whether you live in a low, moderate or high risk area."[60] In fact, the NFIP estimates that 20 percent to 25 percent of all flood insurance claims are filed in low- to moderate-risk areas.[61] This percentage may have even been higher in the Gulf Coast, where as many as 70,000 homes damaged by Hurricane Katrina in Louisiana, Mississippi, and Alabama were outside of the SFHAs.[62] Yet, news reports of such damage tend to infer, erroneously, that homes outside of SFHAs were somehow ineligible for coverage. According to the Associated Press, "Many homes outside areas traditionally vulnerable to floods - *and therefore not insured against Katrina's massive flood surge* - were destroyed."(emphasis added)[63]

As FEMA updates its maps of floodplains (FIRMs), many communities – and subdivisions – oscillate between the 100-year SFHAs, where flood insurance is mandatory, and 500-year risk zones (0.2 percent annual chance of flooding; 5.2 percent chance of flooding over a 30-year mortgage) where no mandatory purchase requirements currently exist.[64] Because these FIRMs – and the risk estimates derived from them – are necessarily imprecise, and floodplains are constantly changing, the practical difference between living in a "floodplain" and outside of one is not nearly as significant as many property owners seem to believe.[65]

Mention must also be made of the fact that the homes of many New Orleans residents, like Linda Gibson's, were located outside of the SFHA – despite the fact that they were well below sea level – because the NFIP exempts certain high-risk communities from mandatory purchase requirements if they are protected from flooding by a levee.[66] Since FEMA certified the levees protecting New Orleans as providing protection from the 1-percent annual chance of a flood, it did not require residents located immediately behind the levee to purchase flood insurance, although these residents were, in fact, *eligible* to purchase flood coverage at their discretion.[67]

[59] *The Dallas Morning News*, "Rebuilding New Orleans: the Insurance Game," November 13, 2005.
[60] See: http://www.floodsmart.gov/floodsmart/pages/index.jsp.
[61] See: http://www.floodsmart.gov/floodsmart/pages/index.jsp.
[62] *The Dallas Morning News*.
[63] AP, "Mississippi Republican Seeks to Boost Hurricane Relief," December 5, 2005.
[64] See, for example, *The Frederick News-Post*, "Property Owners Need Flood Insurance," November 27, 2005.
[65] "The floodplain is like a bathtub, you put a bunch of buildings in the floodplain and the water level goes up. It's just like somebody sitting down in a bathtub." Robert Hunter quoted in *The New York Times*, "Federal Flood Insurance Program Is Itself Under Water," January 6, 2006.
[66] See: http://www.fema.gov/fhm/fq_pol.shtm#fldpolpgm76.
[67] New Orleans participates in the NFIP. Studies have found that the existence of levees discourages residents protected by them from participating in the NFIP. Mark J. Browne, Professor of Business, University of Wisconsin, in testimony before the Senate Banking Committee, October 18, 2005.

Low-Income Residents May Not Be Able to Afford Flood Insurance

Another possible explanation for low demand for flood insurance is that many residents of floodplains lack the financial resources to purchase coverage. Some analysts suggest that risk-based prices are too high for the lower-income residents of SFHAs to bear and contribute to low participation rates. As with any form of insurance, income and price are important determinants in the decision to buy coverage.[68] Although prices cannot be lowered without further compromising the NFIP's long-run solvency, the law already provides a means to assist low-income individuals. Participating communities are able to use federal Community Development Block Grants (CDBG) to provide grant assistance to allow low-income residents of SFHAs to purchase flood insurance.[69] It is unclear how many communities use their CDBG funds for this purpose, but it appears to be a ready-made solution to this problem.

The Decision to Forego Flood Insurance May Be Rational

Another possible explanation for the low demand for flood insurance may be that consumers rationally forego coverage because they expect to receive other forms of federal disaster assistance. It is important to recognize that flood insurance is only one piece of the disaster assistance and recovery *gestalt*. That is, flood insurance is only one of many sources of federal assistance available to individuals affected by floods, but it represents the only form of such assistance that requires payments *ex ante*.

FEMA estimates that more than 90 percent of all presidentially-declared disasters include flooding.[70] Since a Presidential declaration triggers the distribution of a wide range of federal aid to individuals and families under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (P.L. 93-288), potential flood victims may reasonably conclude that public relief programs partially insure them against financial loss.[71] The partial insurance, or limited liability, provided by disaster grants, low-interest loans, and other forms of aid may discourage at-risk property owners from purchasing flood coverage.[72]

As part of the Individuals and Households Program (IHP), FEMA may provide direct cash assistance to "homeowners to replace their home destroyed in the disaster *that is not covered by insurance*. The goal is to help the homeowners with the cost of replacing their destroyed home."(emphasis added)[73] Since one of the goals of the NFIP is "to reduce taxpayer-financed, *ad hoc* disaster assistance for property owners affected by floods," it is only logical that NFIP participants would be excluded from receiving additional rebuilding grants. But a likely consequence of this exclusion is that insurance becomes less attractive. The President of

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[68] Browne.
[69] CDBG program regulations at 24 CFR 570.202(b)(7)(iii) specifically allow the use of grant assistance for "flood insurance premiums for properties covered by the Flood Disaster Protection Act of 1973, pursuant to 24 CFR 570.605, in connection with rehabilitation and preservation activities. Limited income homeowners and small business owners without other financial assets may need such financial protection, if their property is located within the Special Flood Hazard Area. In the case of hardship cases, the responsible entity or the recipient agency (if other than a responsible entity) is encouraged to provide such subsidy.
[70] FEMA, "Flood Insurance Covers Disaster Losses," Release Number: 1364-25, 2001.
[71] Browne.
[72] Browne. It is worth noting that the NFIRA makes past recipients of federal disaster assistance ineligible for grants if they failed to purchase and maintain flood insurance.
[73] FEMA, "Applicants Guide to the Individuals and Household Program," August 2005.

the Center on Federal Financial Institutions (COFFI), Douglas Elliott, offered this explanation in testimony before the Senate Banking Committee:

> The National Flood Insurance Program (NFIP) indicates that every three dollars of flood insurance claims payments reduce the value of federal disaster aid by one dollar. Flipping this around, insurance purchasers forego aid worth one-third of their entire claims payment. They may also forego state, local, and charitable aid. On top of this, flood losses are generally tax-deductible, while flood insurance premiums are not. Thus, a purely rational homeowner has many reasons not to buy the insurance.[74]

Given the maximum grant of $26,200 available to rehabilitate property through FEMA, a homeowner is, in essence, just purchasing catastrophic coverage when electing to enroll in the NFIP.[75] And even then, the availability of Small Business Administration (SBA) low-interest loans of up to $200,000 for the repair or replacement of real estate, and $40,000 to repair or replace personal property, reduces the value of this catastrophic coverage.[76]

Principles of Flood Insurance Reform

Given the NFIP's woeful financial predicament, it has clearly failed as a stand-alone, self-sustaining government program. But even more importantly – as the $100 billion in *ad hoc* disaster assistance provided in the aftermath of the 2005 hurricane season makes clear – the NFIP has also failed to substantially reduce flood victims' dependence on, and expectations of, *ad hoc* supplemental appropriations.[77] Programmatic reforms aimed solely at bolstering the NFIP's "solvency" could erode its value as social insurance – and increase the taxpayer burden – if such reforms lead to more disaster assistance in the future.

As the only available mechanism to pre-fund future flood disaster payments and to provide affected property owners with a clear and orderly process through which they may be reimbursed for flood damages, the NFIP should not be abandoned. The challenge for Congress is to strengthen the program's finances while ensuring that such reforms do not erode its social insurance function, or induce risky commercial and residential development to a degree that increases our nation's overall economic vulnerability to flood risk.

Phase Out Explicit Subsidies

The first step Congress may wish to consider is to phase out completely the program's explicit actuarial subsidies. As earlier observed, these annual subsidies reduce premium income by $1.3 billion per year (according to CBO). At the same time, subsidized structures account for a disproportionate percentage of the program's payments. According to FEMA, only 1 percent of policies account for 30 percent of all paid claims, and 90 percent of the "repetitive loss

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[74] Elliott.

[75] IHP funds have a wide range of eligible uses beyond home repair, including temporary housing, funds for mortgage or rental payments, counseling services, unemployment assistance, and medical assistance. There is a statutory matching requirement that states contribute 25 percent of funds. Grants may not exceed $26,200, per individual or household, adjusted annually to reflect consumer price changes.

[76] U.S. Small Business Administration, "Disaster Loans – Fact Sheet," available at: http://www.sba.gov/disaster_recov/fact_sheet-hurricanes_katrina-rita-LATX.pdf.

[77] U.S. Senate Republican Policy Committee, "Hurricane Disaster Relief & Recovery," February 17, 2006.

properties" are the subsidized (pre-FIRM) structures that receive subsidies of 60 percent to 65 percent off of their risk-based rates.[78] Available data on properties damaged by Hurricane Katrina suggest that roughly 122,000 of the 200,000 damage claims (61 percent) were for these pre-FIRM, subsidized properties.[79]

The "Flood Insurance Reform Act of 2004" (FIRA, P.L. 108-264) contained commonsense reforms to reduce the burden of these subsidized policies by increasing funding for repetitive loss pre-disaster mitigation and by directing FEMA to increase premium prices on those property owners who refuse a reasonable offer of mitigation. Unfortunately, given the events of 2005, Congress may need to take a more aggressive approach than the one provided by the 2004 Act. The fact is that few of the people who advocated subsidies in 1973 expected these properties to still exist over 30 years later.[80] Given the bankrupt state of the NFIP, it is not unreasonable to develop a timeframe to eliminate these subsidies in the near future. Since rates on pre-FIRM structures would have to increase by an average of 150 percent to reach risk-based levels, rates could be increased an average of 20 percent per year over five years.[81]

Focus Efforts on Growth in Policyholders and Annual Premium Income

Congress should also consider ways to eliminate ambiguities among consumers, increase program participation, and boost premium income. One way to accomplish all three would be to extend the mandatory purchase requirement beyond the current 100-year floodplain to the 500-year flood zone. Judging from news reports on the aftermath of Hurricane Katrina, current purchase requirements leave many consumers ill-informed about the flood peril they face (recall that homeowners in this 500-year zone are more likely to experience flood damage than fire damage over the life of their mortgage). Although much has been made of FEMA's inability to update FIRMs in a timely fashion – and of the effect outdated maps have on construction standards – little attention has been paid to the way *perfectly accurate* maps may misinform property owners and directly contribute to the level of the uninsured.

Nearly all stories following Hurricane Katrina used the word "floodplain" as a synonym for SHFAs, and many stories described a floodplain as "the area where federal officials thought flooding would occur," with no reference to the inherently uncertain probabilistic assessment or the fact that 25 percent of flood claims are filed by property owners located outside of high-risk zones.[82] Even worse, numerous stories suggested that owners of properties located outside of SHFAs were not only relieved of the mandatory purchase requirement, but actually ineligible for flood insurance![83] If reporters' confusion on the nature of flood risk is a reliable proxy for that of consumers, it is clear that current policy has resulted in a dangerous and costly ambiguity.

[78] Senate Report 108-262 – Flood Insurance Reform Act of 2004.
[79] Marron.
[80] Hunter.
[81] Marron.
[82] "Katrina aid falls short, Blanco says; Grant to give $6.2 billion for Louisiana Areas," USA Today, January 26, 2006.
[83] See, for example: "How helpful are new flood zones?" *Christian Science Monitor*, November 15, 2005. "Gulf Victims Deluged by Bad Advice," *The Baltimore Sun*, September 25, 2005. Eugene Robinson, "Whose New Orleans Will Live?" *The Washington Post*, January 10, 2006

In response to this apparent misunderstanding, the State of Mississippi elected to use its share of the $11.5 billion in CDBG funds contained in the FY 2006 Defense Appropriations Act (P.L. 109-148) to compensate affected under-insured or uninsured homeowners who resided outside of the 100-year floodplain.[84] Similarly, on February 15th, the Administration requested $4.2 billion in new CDBG funding to allow the state of Louisiana to similarly compensate its under-insured or uninsured property owners.[85] This is precisely the type of federal expenditure that the NFIP was designed to pre-fund. Yet, if consumers are not sufficiently aware of their flood risks and obligations, future *ad hoc* disaster assistance will continue to be the norm.

As the NFIP Actuarial Review explains, it is "sound public policy to maximize the number of people who have flood insurance, so as to lessen the reliance on disaster assistance in the future."[86] Requiring property owners in the 500-year floodplain to purchase flood insurance at current risk-based rates would represent an important reaffirmation of this goal. As FEMA explains, at these risk-based rates, property owners in lower-risk flood zones can insure their home and all its contents against flooding "for less than it costs to insure [their] car."[87]

Grant the NFIP More Flexibility to Increase Rates

In recent years, the NFIP's annual increase in aggregate premium income has largely come from increases in the average amount of insurance per policy, which has increased by 24 percent over the past four years,[88] and been driven by the construction of beach-front vacation properties.[89] Unfortunately, this growth in insurance per policy increases the program's risk concentration, which increases the program's implicit subsidies and long-term borrowing needs.[90] Instead of generating more income through more coverage, the NFIP needs to generate more premium income for every dollar of coverage. Simply put, the NFIP needs more flexibility to increase its insurance rates, as well as a mandate from Congress to set rates at a level sufficient to generate loss reserves.

One proposal Congress may want to consider is allowing the annual increase in premiums that the NFIP may charge to go up by as much as 25 percent (compared to the current cap of 10 percent).[91] This would allow the NFIP to boost rates in the aftermath of a catastrophic loss year in a manner more akin to private insurers.[92] This could generate hundreds of millions in additional annual premium income without increasing the concentration of risk. Consumers who anticipate auto insurance rates to rise after an accident (implicating the insurance) will understand the reason for the increase.

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[84] Statement by Federal Coordinator Donald E. Powell Before the United States Senate Homeland Security and Governmental Affairs Committee Field Hearing, Gulfport, MS, January 19, 2006.
[85] *The New York Times*, "More U.S. Aid Will Be Sought for Louisiana," February 16, 2006.
[86] Hayes and Sabade.
[87] FEMA, Release Number: 1364-25.
[88] Hayes and Sabade.
[89] Paul Gessing, Director of Government Affairs, National Taxpayers Union, in testimony before the Senate Banking Committee, February 2, 2006.
[90] Hayes and Sabade. "Although the growth in policyholders has slowed during recent years, average amounts of insurance continue to increase, which increases the potential dollar amounts borrowed [from the Treasury], even if those amounts are small relative to overall premium volume."
[91] Hayes and Sabade.
[92] Jardine Lloyd Thompson, "Insurance Market Overview," February 2005.

Congress should also consider creating a new ratings subgroup for coastal properties. While coastal flood zones are delineated on rate maps to reflect the risk of storm surge, there is no consideration of the added risk presented by coastal erosion.[93] Current prices not only fail to account for erosion risk, but actually facilitate high-price development of these flood-prone areas.

According to a recent study, only 21.1 percent of coastal properties are used as a primary residence; the others are used as second homes or rentals.[94] The purchase price of homes in the average coastal community is roughly 42 percent higher than the national average sales price of new homes sold in the United States, and the average annual income of coastal property owners is well over twice the national average.[95] It is difficult to see how implicit subsidies for the vacation homes of high-net-worth individuals fit into the NFIP's social insurance structure. Moreover, the NFIP's willingness to write policies on *new* properties in areas where extensive flood damage is a virtual certainty is undoubtedly adding to the nation's total economic vulnerability to flood risk.

Congress should allow the NFIP to create a separate pricing category for coastal properties, similar to the non-admitted market in many states' property and casualty insurance markets, where the NFIP would be free to dramatically increase rates on these properties or refuse to insure yet-to-be constructed coastal properties altogether. The Coastal Barrier Resource System Act currently prohibits flood insurance from being written on any *new* coastal structures in covered areas and could be extended to apply to currently undeveloped ocean- and gulf-front properties.[96] By removing implicit subsidies on imprudent development, such action would reaffirm the program's initial goal of reducing the total amount of property flood damage.

Investigate New Ways to Increase Compliance

If Congress chooses to increase premium prices and coverage requirements – a decision perfectly in line with the social insurance rationale that underpins the program – some consideration must be given to how best to enforce the new requirements. As prices rise, some current policyholders may drop coverage, while those in the 500-year floodplain may look for ways to evade the new requirements. Although most research has found that few policyholders would drop coverage in the face of steady and sustained premium price increases,[97] it is clear

[93] Kriesel and Landry.
[94] Warren Kriesel and Craig Landry, "Participation in the National Flood Insurance Program: An Empirical Analysis for Coastal Properties," *The Journal of Risk and Insurance*, Vol. 71, No. 3, 2004.
[95] Both figure are based on a comparison between survey data in Kriesel and Landry and that provided by the Census Bureau. For average housing sale prices, see "Median and Average Sales Prices of New Homes Sold in United States," available at: http://www.census.gov/const/uspriceann.pdf. For average household income, see: Historical Income Tables – Households, available at: http://www.census.gov/hhes/www/income/histinc/h03ar.html.
[96] Information available at: http://www.fws.gov/habitatconservation/coastal_barrier.htm.
[97] Most studies have found that flood insurance demand is price inelastic. CBO found that a 10-percent increase in price would lead to about a 1-percent decrease in the number of policies and a 10-percent decrease in the dollar value of coverage. Kriesel and Landry found that in coastal communities, a 10- percent increase in price would lead to about a 2.9 percent decrease in the number of policies and a 2.5 percent decrease in the dollar value of coverage.

that many property owners in high flood-risk areas elect to forego coverage no matter how low the price.[98]

Although the extent to which lenders currently enforce mandatory purchase requirements on borrowers is unclear, Acting Director David Maurstad recommended increasing the penalties for federally-regulated lending institutions that fail to comply with their mandatory purchase responsibilities.[99] Such a step may be reasonable given its incentive for more aggressive monitoring, and its potential to benefit those lenders who already employ the best practices (by raising their rivals' costs).

In addition, Congress may consider involving builders in the mandatory purchase requirements. For example, it could require that the builders of new structures in the expanded (500-year) flood zone obtain coverage on behalf of buyers. Requiring builders of new homes to purchase a 5-year or 10-year policy would reduce the difficulties lenders and loan servicers face monitoring compliance, allow premiums to flow into the program more swiftly, and help to condition the development of land in higher-risk areas.[100]

Conclusion

The magnitude of the flood damages caused by the hurricanes of 2005 may have been improbable, but the bankruptcy of the NFIP was not. The NFIP insures too much property for flood damage than is prudent relative to its annual premium income, and, at the same time, it fails to insure enough properties to adequately pre-fund flood disaster assistance expenditures. For the NFIP to remain in operation on a sustainable, long-term basis and reduce taxpayer risk, Congress must increase premium income per dollar of coverage to reduce the program's unfunded liabilities, and must increase the number of policyholders to better pre-fund future flood disaster assistance payments. This policy course would reaffirm the program's original social insurance function and adapt its rate structure to contemporary budgetary realities.

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[98] Kriesel and Landry. "if FEMA lowered prices, it is doubtful that property owners would respond by buying more policies. Indeed, NFIP was characterized by very low participation in the 1970s when policies were highly subsidized."
[99] Maurstad.
[100] Hunter.