

AN ECONOMIC ASSESSMENT OF THE HOMEOWNERS' DEFENSE ACT OF 2009

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ABOUT THIS STUDY

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Executive Summary

- In this paper, we present an economic assessment of The Homeowners' Defense Act of 2009 (HDA-2009), proposed legislation that would establish a public-private partnership to deal with the financial costs of major natural catastrophes. In particular, we examine the market failures and inefficiencies that plague the current system of federal natural disaster relief and discuss the ways in which HDA-2009 represents, relative to existing and alternative methods, a more efficient and effective plan for dealing with the inevitable future occurrence of such events.
- The passage of HDA-2009 is especially timely as a buffer against yet another potentially significant shock to the already fragile housing and lending sectors, and the U.S. economy more generally. Upon implementation, HDA-2009 would tend to reduce the threat of insurer insolvency and thereby enhance the industry's ability to pay claims associated with a major catastrophe and strengthen incentives to continue to provide coverage following the occurrence of a major catastrophe. HDA-2009 should provide a measure of stability to the catastrophic insurance industry, and in so doing also alleviate the shock to the U.S. economy that a major natural catastrophe might otherwise produce.
- History has established that the United States is susceptible to major catastrophic events that result in enormous financial losses. The future occurrence of such events makes imperative a system of catastrophe preparedness and relief that is economically sound and that is organized to marshal more efficiently the resources and capabilities of private and public entities, including, importantly, the federal government.
- A significant gap exists between the ability of the private insurance and reinsurance sectors to deal with the financial consequences of major natural catastrophes and the protection that is required. State plans have helped to bridge that gap in some areas, but they too are not fully equipped to deal effectively with the financial losses that can result from a major natural catastrophe.
- The federal government already effectively acts as the insurer of last resort against major catastrophes, but its role is aptly characterized as ad hoc and unnecessarily inefficient. The Homeowners' Defense Act of 2009 provides a more effective framework for the federal government to serve as the final layer of protection against financial losses from major catastrophic events. Private insurance faces a problem of timing risk, *i.e.*, the risk that a catastrophic event will occur prior to the accumulation of sufficient funds to pay losses. As a result, the private insurance industry must either (i) accumulate substantial amounts of capital in advance of a catastrophic event – which may be infeasible economically or simply not possible due to a lack of available capital in sufficient amounts, or (ii) incur significant post-event funding uncertainty, which may jeopardize the viability of an insurer as a going concern. The federal government is well-

positioned to handle timing risk because of its ability to provide sufficient capital on a contingent, post-event basis.

- The Homeowners' Defense Act of 2009 envisions an integrated public-private partnership that simultaneously facilitates the risk participation of the private sector and expands the availability and sustainability of the catastrophic insurance system. The approach would add capacity, increase stability, and lower costs overall. From an economic perspective, such an alliance of public and private resources best approaches – relative to available alternatives – the optimal solution in terms of addressing the inefficiencies that plague the present system of federal disaster relief.
- An integrated public-private partnership has the potential to expand greatly the available coverage for catastrophic events to more consumers at lower prices, while providing more stability to the insurance and reinsurance sectors. According to one estimate based upon an earlier version of HDA-2009 (H.R. 3355), direct reductions in homeowners' insurance premiums could exceed \$11 billion annually, in part by encouraging greater use of reinsurance by state catastrophe plans.
- The current system of ad hoc federal government intervention relies upon taxpayer-funded bailouts to finance relief efforts. These bailouts tend to distort the incentives of residential property owners and create a moral hazard problem, *i.e.*, property owners in areas highly susceptible to major natural disasters (or those considering a move to such an area) have a level of risk aversion that does not completely capture the risk of financial injury to which they are (or will be) exposed.
- HDA-2009 helps to address the problem of moral hazard by creating more potent incentives for residential property owners to undertake catastrophe loss mitigation efforts. Under this legislation, states choose whether to opt in. Thus, states not susceptible to major natural catastrophes presumably would elect not to participate. For those states that opt-in, requirements relating to the development and enforcement of land use plans, the operation of loss mitigation programs, and the establishment of insurance rate structures that better reflect mitigation efforts would provide stronger incentives for residential property owners to account more appropriately for catastrophic risk.
- A number of arguments have been advanced to suggest that extant resources and mechanisms plausibly are sufficient to address the challenges of funding insured losses from major natural catastrophes. In this paper, we examine two of the most common such arguments:
 - The private insurance industry has at its disposal more than \$400 billion in capital, and it has been suggested that these funds could cover future losses resulting from large-scale catastrophes. However, upon inspection, it becomes clear that the vast majority of these funds are, in fact, already set aside to cover

other kinds of losses, and thus not available to cover the financial losses resulting from a major natural disaster.

- Alternatively, financial instruments such as catastrophe bonds and insurance derivatives represent potentially useful risk transfer mechanisms, but they are more appropriately viewed as supplements to reinsurance, rather than far-reaching solutions to the inadequacies of the current system.

I. Policy Choices and the Financial Costs of Major Catastrophes

Major catastrophic events can carry enormous costs, especially when they strike in developed and densely populated areas. These costs include injuries and loss of life, physical destruction of homes and businesses, and lives upset and forever altered. No system of private insurance or government programs can eliminate these costs, but an integrated public-private partnership should be able to help limit these losses and provide much needed assistance, financial and otherwise, to those who have sustained losses.

All too often the political system in the United States fails to deal effectively with problems that have not yet materialized, but will occur with near (or absolute) certainty in the future. The financial costs of major natural catastrophes properly belong in this category.¹ Rather than react in a haphazard manner to the inevitable next major catastrophe, public policy should move to create a national system for dealing with the financial costs of natural catastrophes that is rooted in preparedness and prevention, but also offers the prospect of more affordable and complete insurance coverage for those affected.

As of year-end 2008, the ten most financially costly natural catastrophes (as distinguished from man-made catastrophes, such as episodes of terrorism) in the United States, valued in inflation-adjusted dollars, had all occurred since 1989.² Moreover, of those ten, all but three occurred in 2004 or more recently.³ Valued in 2008 dollars, insured losses reached \$24.5 billion for Hurricane Andrew (1992), \$20.3 billion for the Northridge earthquake (1994),

¹ President Barack Obama's proposed budget for FY 2010 allocates funds specifically for the possible occurrence of a natural disaster at some point over the next decade. (*See, e.g.*, Testimony of Peter R. Orszag, Director of the Office of Management and Budget, Before the Committee on Ways and Means, U.S. House, March 4, 2009.) However, while budgetary planning for future natural disasters is a step in the right direction, it only addresses the issue of fiscal prudence and planning. It does not address, as does HDA-2009, the various inefficiencies that plague the current system of major catastrophe preparedness and relief.

² "Natural catastrophes and made-made disasters in 2008: North America and Asia suffer heavy losses," Swiss Re, February 2009 at p. 37 (Table 8).

³ Id.

more than \$70 billion for Hurricane Katrina (2005), and \$20 billion for Hurricane Ike (2008).⁴ This trend is perhaps not surprising given the pace and scope of development in the United States, including the significant concentration of homes and businesses in metropolitan and coastal areas, as well as the significant appreciation in property values over recent decades.⁵

Natural catastrophes, and even so-called “mega-catastrophes,” will inevitably occur in the future as well. For example, the U.S. Geological Survey estimates a 62 percent probability that an earthquake with a magnitude greater than 6.7 will strike the San Francisco Bay Area faults before the year 2032.⁶ If an event such as the California earthquake of 1906 or the Great Hurricane of 1938, were it to happen today, the financial losses would be enormous. For example, the California earthquake of 1906, were it to occur today, would generate insured losses in excess of \$100 billion according to reports from the Insurance Information Institute (citing to estimates prepared by AIR Worldwide Corporation). Coastal areas susceptible to hurricanes, as well as areas known for significant seismic activity, could, with the occurrence of a major natural disaster, sustain tens, or even hundreds, of billions of dollars in property losses.⁷

It is therefore imperative that U.S. policymakers evaluate the current state of catastrophe preparedness and relief and weigh the relative merits of alternative solutions.

⁴ Id.

⁵ There are at least two socio-economic factors that directly affect the magnitude of financial losses resulting from a major catastrophe: the scope of development (urbanization) and the economic value of property in harm’s way. (See Kunreuther, Howard, “Reducing Losses from Catastrophic Risks Through Long-Term Insurance and Mitigation,” The Wharton School Working Paper # 2008-06-10, June 2008 (“Kunreuther (June 2008)”) at p. 4.)

⁶ See, e.g., “Earthquake insurance in the Bay Area is expensive, risky business,” *San Francisco Chronicle*, October 21, 2007.

⁷ Litan, Robert E., “Sharing and Reducing the Financial Risks of Future ‘Mega-Catastrophes’,” The Brookings Institution Issues in Economic Policy, March 2006 (“Litan (March 2006)”) at p. 13 (Table 2). Of course, property losses exceed insured losses, for reasons including an absence of coverage in some cases and the fact that insurance typically covers the replacement cost of a dwelling and its contents, as opposed to their market values. Nevertheless, property losses reaching tens of billions of dollars likely translate to insured losses that could imperil the solvency of private insurers and ultimately require federal government intervention.

There are fundamental underlying reasons why private insurance, which is well-suited to dealing with the financial costs of commonplace and widespread risks like automobile accidents or property theft, falls short in attempting to deal with risks of unpredictable size and timing, such as those arising from major natural catastrophes. A well-functioning combination of private and public institutions to address these financial risks is important for a number of reasons. Enabling people to return to their homes and businesses is an important step in the recovery effort following a natural catastrophe. In addition, a well-designed system of catastrophe management will provide better incentives for mitigating and protecting against the financial risks of natural catastrophes before they occur. Moreover, a system that better marshals the resources of the private and public sectors could reduce the chance that enormous financial losses generated by a natural catastrophe will compromise the affordability and availability of coverage for homeowners or cripple insurance companies, or even that the intertwined U.S. system of finance and insurance suffers yet another shock.

At present, the federal government serves as the de facto insurer of last resort for the financial costs of large-scale natural disasters. But this approach could be much improved by a more formal and economically sound integrated approach that facilitates the ability of state catastrophe funds to raise capital, expands the availability of reinsurance for state funds, and promotes preparedness and loss mitigation in disaster-prone areas. In this paper, we focus on the Homeowners' Defense Act of 2009 (HDA-2009), which is proposed legislation that would establish a public-private partnership to deal with the financial costs of major natural catastrophes. We discuss the ways in which HDA-2009 represents, relative to existing and alternative methods, a more effective plan for dealing with the inevitable future occurrence of such events.⁸

⁸ Unless otherwise noted, our discussion of HDA-2009 is in reference to H.R. 2555 introduced by Rep. Ron Klein (D-FL). (See http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h2555ih.txt.pdf.)

II. Current System of Insurance for Major Natural Catastrophes

A. Introduction

Coverage for losses stemming from major catastrophes is available through several layers of insurance provided by the private and public sectors. However, the current system is sub-optimal from an economic perspective. In this section, we identify underlying reasons why existing private and public insurance deals so ineffectively with the costs of major natural catastrophes.

B. Private Insurance

In areas highly susceptible to major natural disasters, property owners can often purchase private insurance that covers losses to structures and contents. In some cases, a primary insurer will utilize reinsurance to transfer some portion of its covered risk to another insurer or group of insurers. The use of reinsurance and other risk transfer mechanisms is commonplace when the covered risk pertains to catastrophic events, such as earthquakes, that present the possibility of substantial covered losses. Reinsurance in some cases is written on an “excess of loss” basis, which obligates the reinsurer to pay for losses above a defined threshold. In other cases, a “quota share” basis is employed that defines the share of losses to be paid by the insurer and the reinsurer.

To understand why private insurance markets fail to respond effectively to the risks of major catastrophes, a brief discussion of the economics underlying the private insurance industry, including the reinsurance industry, is in order. The basic function of insurance is to transfer a portion of the risk of a loss from one entity (the insured) to another (the insurer), in exchange for the payment of a premium to the insurer. The business model underlying the provision of insurance involves two elements. First, an insurer can pool together a large number of policy-holders, with statistical confidence that only a predictable share of them will qualify to receive payouts of various amounts in a given year. Second, consumers and businesses tend to be “risk averse” in the terminology of economists, which means that they would rather make a series of regular payments over time, rather than face the risk of a financial hardship if the

undesired outcome occurs.⁹ In lines of business such as automobile insurance where risks are independent and each individual risk is relatively small, an insurer with a large population of policyholders can charge a premium close to the average expected value of the loss.¹⁰ However, when insurers face a situation where the covered outcome is likely either to impact many people all at once, or no one at all, and further where the potential losses of this event are large and unpredictable, insurers will react to this uncertainty either by charging higher premiums, or perhaps with a decision to limit or withdraw coverage.

This discussion suggests that market forces compel insurers to charge premiums that are linked to the underlying risks of policyholder claims. The level of premiums reflects several elements: the likelihood of an occurrence of a covered event; the magnitude of expected financial losses resulting from that event; and most important for current purposes, a “risk load.” The risk load is intended to account for the degree of uncertainty associated with the expected loss, as well as the exposure of substantial sums of capital to possible exhaustion in the aftermath of a single major catastrophic event. As it becomes more difficult to predict the occurrence and severity of a covered event, the risk load will increase. Catastrophic coverage offered by private insurers and reinsurers is rendered expensive in large part because of the incorporation of a risk load into their rates.

⁹ More specifically, by “risk averse,” we mean the willingness to pay an amount greater than the expected value of losses in exchange for transferring the risk to another party. Because of consumers’ tendency to be risk averse, the insurer should be able to offer coverage at a premium less than the “value” the insured attaches to retaining full risk exposure. In addition, the spreading of risk through diversification further enables the insurer to offer coverage at a premium below the “value” the insured attaches to the retention of full exposure to risk.

¹⁰ The basic statistical concept at work here is known as the “law of large numbers,” which states that the sample mean approaches equality with the population mean as the sample size increases. To illustrate with a simple example, take the flip of a coin. There is an equal probability of 50 percent that a flip will yield heads or tails. Let’s say that ten flips of the coin produces seven instances of heads and three instances of tails. This outcome does not mean that the calculated probability is wrong. It merely reflects the fact that with a small sample size, in this case ten flips, actual results can vary substantially from the results one would predict given the probabilities. However, if one were to flip a coin one million times, the law of large numbers states that the actual outcome in percentage terms would be very close to the predicted outcome.

In some circumstances, the risk load will also account for timing risk, or the probability that a covered event will occur before premiums sufficient to cover the loss have been collected. Timing risk is of little consequence when it comes to covered events such as an automobile accident where probability distributions are reasonably stationary and historical data provide a predictable basis for estimating claims in a future period. However, in the case of major catastrophic events, timing risk is a material concern and can lead insurers and reinsurers to withdraw the provision of coverage, or to offer coverage with significant limits and/or at high prices that lead many property owners to forego protection. The amount of capital required to protect against, for example, a large-scale event that is expected to occur only once in 100 years is quite substantial, which means that the risk load charged by an insurance company is likewise extremely large relative to expected losses.

Overall, several factors greatly compromise the ability of private insurance markets to offer sufficient protection against major catastrophes. When risks are highly correlated, as they are for catastrophic events (*e.g.*, a hurricane potentially impacts thousands of property owners in the affected region), opportunities for risk diversification through pooling tend to be more limited. In addition, the occurrence and severity of catastrophic events are relatively difficult to predict across an insured population, relative to other insured events such as automobile accidents or workers' compensation claims. Both characteristics place significant upward pressure on the rates private insurers must charge to manage effectively the threat of insolvency. In turn, these higher rates and/or limitations on coverage will often have a material dampening effect on the demand for catastrophic coverage.

Reinsurance can play a significant role in helping primary insurers cope with catastrophic events. In particular, reinsurance helps primary insurers underwrite large risks by sharing liability in cases where claims would otherwise overwhelm the primary insurer's resources. In addition, reinsurers are able to diversify across perils and locations—for example, diversifying across the risks of Japanese earthquakes, European winter storms, and Atlantic hurricanes—while primary insurers generally do not sell policies in all of these markets and thus

cannot diversify in this way. Hence, a natural question to ask is why reinsurance is not able to deal effectively with major catastrophic events.

It is important to recognize that reinsurance is fundamentally insurance for insurers. As such, it is subject to some of the same difficulties that constrain the ability of primary insurance to deal effectively with unpredictable, major catastrophic events.¹¹

In the wake of a mega-catastrophe, or multiple smaller catastrophes, a disconcerting sequence often unfolds. Following a major catastrophe, reinsurance capacity often diminishes. One reason is that reinsurers' capital has been depleted through large payouts, and rebuilding that capital takes time. In addition to the depletion of capital reserves following a catastrophic event, it appears that the supply of coverage constricts for another reason: natural disaster models tend not to account fully for upward trends in natural catastrophe exposure until an actual event that makes the trend evident. Because insurers base a portion of the premiums they charge on such models, the incorporation of revised frequency and loss estimates can lead to significant increases in premiums following a major catastrophe. But just as reinsurers are limiting the availability of future coverage for natural catastrophes, demand for such coverage usually increases in the aftermath of a catastrophe. The simultaneous retraction in supply and growth in demand leads to significant increases in reinsurance pricing. This sequence of events has been observed in the aftermath of large-scale natural disasters, such as Hurricane Andrew in 1992 and the 1994 earthquake in Northridge, California. Both events led reinsurers to examine and adjust their estimates regarding the likelihood of future mega-catastrophes, and the corresponding magnitude of financial losses, and ultimately to restrict the availability of insurance for such events by increasing prices and limiting the scope of coverage. This same pattern emerged following the 2004 and 2005 hurricane seasons.

¹¹ One constraint that does not apply to reinsurers is regulation – homeowners' rates typically are highly regulated in catastrophe-prone jurisdictions whereas reinsurance rates are not. Of course, because primary insurers pass through at least some of the costs of reinsurance in their rates, regulation of primary insurers has an indirect effect on reinsurance rates.

There may seem to be a straightforward solution to this problem: Have insurers and reinsurers hold greater amounts of capital so they will be in a more secure position in terms of meeting obligations resulting from the occurrence of a mega-catastrophe. However, holding extra capital is not without costs. In fact, it simply does not appear feasible for private insurers to hold sufficient levels of capital to minimize satisfactorily the probability of insolvency surrounding the occurrence of mega-catastrophes. To put this point in another way, the cost of holding capital may elevate the price of catastrophic insurance to levels above which potential buyers of that insurance are willing to pay. As we discuss later, this is particularly the case with securities instruments, such as catastrophe bonds, where lenders are exposed to the substantial uncertainty and potential enormous losses associated with the covered event – a major catastrophe. Confronted with substantial uncertainty and the possible loss of their capital, purchasers of such instruments naturally demand a relatively high expected return.¹² Or stated differently, such capital is expensive for insurers and reinsurers to raise, and in turn, can increase substantially the price of premiums, indeed to a level at which many property owners are unwilling to pay.¹³

C. State-sponsored Catastrophe Plans

The instability in the supply and price of insurance coverage for major catastrophic events has led to intervention by state governments in those areas most susceptible to such events. In this section, we focus on the two state plans that have long operational histories, the

¹² For the most extreme events, the reinsurance premium can be up to ten times higher than the expected loss. See “Managing Large-Scale Risks in a New Era of Catastrophes,” Wharton Risk Management and Decision Processes Center, March 2008, at p. vii.

¹³ From a practical standpoint, reinsurance is a pool of capital available to be rented by insurers on a year-to-year basis. This capital is highly mobile and will be directed towards investments that yield the highest expected returns, either in the insurance sector or elsewhere. Under these conditions, it has proven impossible for insurers and state funds to accumulate the substantial reserves of risk capital required to cover potential losses resulting from a major catastrophe at a cost that allows for the provision of affordable coverage to the insurance policyholder. A clear example can be found in California (discussed below), where the California Earthquake Authority relies heavily on private reinsurance and passes the cost on to policyholders. The result has been a widespread perception that earthquake coverage in California is too expensive relative to the underlying risks, and

(footnote continued ...)

California Earthquake Authority and the Florida Hurricane Catastrophe Fund. Each plan has achieved some success in bridging the coverage gaps between the protection available from private insurance and the loss exposures of property owners. However, each plan would be much more effective if a federal layer of coverage were available to serve as a backstop in the event of a major catastrophe that depleted the state plan's resources.

The California Earthquake Authority

The California Earthquake Authority (CEA) was established in 1996, in the aftermath of the Northridge earthquake of 1994. It is a privately financed, publicly managed organization established to assist California residents in protecting themselves against losses resulting from earthquakes. CEA earthquake policies are sold through the 17 insurance companies that participate in the organization. As of year-end 2007, the CEA had in excess of 775,000 policyholders across the state of California.¹⁴

The CEA was created because California insurers became unwilling to provide mandatory offers of earthquake coverage and stopped underwriting new business in the state. Insofar as an objective of the CEA was to restore the homeowners' insurance market and preserve the availability of earthquake coverage to California homeowners, the program initially achieved some reasonable level of success – in 1996, roughly one-third of California homeowners carried earthquake insurance. However, by 2008, that figure had dropped all the way to 12 percent. Reasons provided for the decline include the high cost of premiums, which typically double a homeowner's annual property coverage expenditures, along with high

(... footnote continued)

a covered percentage of population that has declined nearly to single digits, down from a high of 36 percent in the period immediately following the Northridge earthquake of 1994.

¹⁴ "The California Earthquake Authority," Insurance Information Institute, July 2008.

deductibles and limitations on coverage for ancillary structures and loss of use, and the relatively weak incentives participating companies have to market CEA policies.¹⁵

From the low take-up rates for earthquake insurance in California, one might be tempted to ask why a national system is desirable. To place the experience in California into the proper context, it is important to understand the market failures at work. For the CEA and non-participating private insurers in California, actuarially sound premiums would need to reflect timing risk, *i.e.*, the risk that a catastrophic event will trigger a loss of capital that exceeds accumulated reserves. The CEA and other state catastrophe plans are not insulated from timing risk, and thus need to account for it by raising premiums, restricting the terms of coverage, or some combination of the two. Indeed, the observed reluctance of California homeowners to purchase earthquake coverage might also be attributable in part to concerns that a major earthquake could threaten the solvency of the insuring firm (or the CEA), and thus its ability to satisfy its claims payment obligations.¹⁶ The federal government could greatly alleviate this problem because of its unique ability to deal with timing risk. Specifically, because the federal government has ready access to capital, it would not incur significant costs associated with the capital required to protect against a major catastrophic event, resulting in substantially lower rates for reinsurance relative to the private market. Thus, it would be erroneous to dismiss the merits of a national plan based upon a conclusion that the operation of the CEA has not led to widespread earthquake coverage in California. Indeed, we believe the opposite conclusion is warranted, namely that the presence of a national backstop would fortify the operation of the CEA and lead to lower priced and/or more comprehensive (*e.g.*, lower deductibles) earthquake coverage in the state.

¹⁵ The weak incentives have been attributed to an insufficient level of commission a participating insurer earns upon the sale of a CEA policy, as well as the fact that participating company exposure to contingent assessments is a function of its share of CEA premiums. See Zanjani, George, "Public versus Private Underwriting of Catastrophe Risk: Lessons from the California Earthquake Authority," in Risking House and Home: Disasters, Cities, Public Policy, John M. Quigley and Larry A Rosenthal, eds., Berkeley: Berkeley Public Policy Press (2008).

The Florida Hurricane Catastrophe Fund

The Florida Hurricane Catastrophe Fund (FHCF) is a tax-exempt trust fund that provides reinsurance to insurers that write residential policies in the state.¹⁷ FHCF was established in November 1993 following the occurrence of Hurricane Andrew in 1992. The stated objective of the FHCF is to safeguard and develop the state's ability to maintain insurance capacity in Florida by providing additional capacity in the state over and above that available through the private sector in its role as the primary catastrophic hurricane risk bearer.¹⁸ The high levels of catastrophic hurricane risk faced by Florida make it difficult for private insurers in the state to provide hurricane insurance profitably. Both in terms of average annual loss and probable maximum loss, Florida's hurricane risk is greater than all other coastal states from Texas to Maine combined. Thus, the factors discussed earlier that limit private insurers' willingness to absorb catastrophic risk are magnified in the Florida insurance environment.

Insurers that offer residential property coverage in the state of Florida are required to participate in the FHCF's reinsurance program. The reinsurance coverage available through FHCF is substantially less expensive relative to private reinsurance, due to lower operating costs and administrative costs, the fund's tax-exempt status, and the absence of risk loads in the organization's premiums.¹⁹ As of June 30, 2007, 202 insurers participated in FHCF; nearly 85 percent of participating insurers elected to purchase the most comprehensive (90 percent) coverage option.²⁰ The FHCF has functioned well – after the storm seasons of 2004 and 2005,

(... footnote continued)

¹⁶ For a general discussion of this phenomenon, *see, e.g.*, Lewis, Christopher M. and Kevin C. Murdock, "Alternative Means of Redistributing Catastrophic Risk in a National Risk-Management System," Ch. 2 in The Financing of Catastrophe Risk, Kenneth A. Froot, ed., The University of Chicago Press (1999) ("Lewis and Murdock (1999)")

¹⁷ "Status of the Florida Hurricane Catastrophe Fund," Issue Brief 2009-301, Florida Senate Committee on Banking and Insurance, December 9, 2008 ("FHCF Status (2008)").

¹⁸ <http://www.sbafla.com/fhcf/AbouttheFHCF/tabid/278/Default.aspx>; Florida Hurricane Catastrophe Fund Fiscal Year 2006-2007 Annual Report ("FHCF 06-07 Annual Report").

¹⁹ FHCF 06-07 Annual Report.

²⁰ Id.

when eight separate hurricanes hit Florida, the FHCF paid out over \$9 billion, representing about 33 percent of all residential claims paid in the State.²¹

But while the FHCF has succeeded in its goal of increasing the affordability of residential property coverage in Florida, and more generally stabilizing the Florida residential property insurance market, the fund, by its own account, lacks the reimbursement capacity to meet its obligations. A December 2008 report prepared by the Florida Senate Committee on Banking and Insurance indicated that the FHCF's potential shortfall for 2009—that is, the difference between liquidity resources and potential obligations—could be as large as \$19 billion.²² Importantly, the shortfall does not indicate that the FHCF is a flawed mechanism. Rather, it illustrates that the limitations on funding catastrophic risk are sufficiently severe to overwhelm the capabilities of both the private sector and state programs, even in a state as large as Florida. The Florida experience thus highlights the importance of HDA-2009. HDA-2009 would provide the FHCF with an assured ability to meet its reimbursement obligations, thereby stabilizing the market for all private insurers that rely on FHCF as their primary reinsurer.

D. Residual Markets

It is generally the case in disaster-prone states that primary insurers have acted to reduce their exposure to major catastrophic events. Coincident with this trend, so-called residual markets have grown. In addition to the Citizens Property Insurance Corporation in Florida²³ and the CEA in California, governments in disaster-prone states including Louisiana,

²¹ Florida Hurricane Catastrophe Fund Advisory Council Meeting, June 9, 2008, at slide 4. (<http://www.sbafla.com/FHCF/LinkClick.aspx?fileticket=CY49VCsXwac%3D&tabid=295&mid1225>)

²² FHCF Status 2008. The FHCF relies on bonding authority as it builds up reserves to meet its obligations. The recognized potential shortfall is a product of the current economic environment and lack of available capital, combined with an expansion of the FHCF. The current situation highlights the vulnerability of state funds to exogenous events and the inherent limitations of their capital structures.

²³ The CPIC was created by the Florida Legislature in 2002 to provide property coverage to state residents without private insurance options. (See <https://www.citizensfla.com/>.)

Texas, and North Carolina all have instituted mechanisms that offer catastrophic event coverage to residential property owners.

However, these state-level systems lack sufficient capital to support the underlying risks, and moreover, are operating without a plan designed to attract the capital that might be needed to honor the obligations stipulated in their policies. In many cases, rates in residual markets are set at levels insufficient to support the program fully, thereby requiring assessments on insurers and their policyholders to cover any shortfalls between collected premiums and the funds required to pay claims. Moreover, state residual or shared markets (so-called markets of last resort) from the Massachusetts FAIR Plan to the Texas Windstorm Insurance Association (“TWIA”) have grown significantly. For example, according to the Texas Department of Insurance, TWIA has more than quadrupled its exposure since 2001, with its insured values rising from about \$13 billion in 2001 to over \$60 billion in 2008. These residual markets should probably be viewed as incapable of overcoming the problems faced by reinsuring catastrophic risks. Expanding the availability of affordable reinsurance coverage, together with mandating rates based upon expected losses, would potentially help to slow, and perhaps even reverse, the growth in residual markets.

E. Federal Disaster Relief

The inadequacy of state-level resources, combined with issues associated with the availability through state plans of affordable catastrophic event coverage, puts the spotlight squarely on the federal government’s role, and more specifically on whether its current role represents the optimal mechanism for addressing the limitations of state catastrophe plans (and the private sector). To take a specific example, consider California, where more than 85 percent of homeowners elect not to purchase earthquake coverage. When the next major earthquake strikes California, the question is not whether the federal government provides

some degree of assistance to these homeowners,²⁴ but rather how will it do so? As we demonstrate in this paper, under the current system, there does not seem to be a good answer to this question. Either homeowners potentially sustain substantial losses, to the significant detriment of the state's economy, or the federal government bails them out with taxpayer financing from the entire country. These decidedly undesirable choices perhaps make the most compelling case that market failures interfere with the ability of the current system of catastrophe insurance to deal effectively catastrophic risk. Indeed, if the private insurance sector were well-situated to manage such risk, one would not expect to see the significant level of impromptu federal government intervention that today follows the occurrence of a major catastrophe.

With respect to mega-catastrophes, the United States government has served, for all practical purposes, as an insurer of last resort, providing financial assistance (along with other forms of aid), to uninsured or under-insured property owners, as well as to the affected municipalities and states. The present system of disaster relief in the United States is, in our view, aptly described as ad hoc and substantially economically inefficient in several important respects.

First, while the U.S. government, through the provision of disaster relief in response to mega-catastrophes, serves as the final layer of insurance, there is no organized and carefully planned system that defines the government's roles and responsibilities.

Second, the system is reactive, as opposed to proactive insofar as the U.S. government has no mechanism to facilitate the ability of state plans to raise capital or to expand the availability of affordable and comprehensive reinsurance.

Third, the costs of disaster relief ultimately are borne by *all* taxpayers, and not just those property owners who are susceptible to potential losses resulting from a major natural

²⁴ After Hurricane Katrina, the federal government provided the region tens of billions of dollars of assistance, (footnote continued ...)

disaster. Consequently, taxpayers in areas of the country not exposed to natural disasters effectively subsidize a portion of the costs that properly are borne by taxpayers residing in areas of the country that are exposed to natural disasters. In addition to the obvious equity issues raised, this subsidization weakens the incentives of property owners in high-risk areas such as Florida and California to mitigate loss exposures, whether by steps like bracing water heaters or reinforcing roofs, or by deciding to locate in a lower-risk area.²⁵ The end result is that potential losses attributable to a natural disaster increase, because of increased development in high-risk areas combined with fewer efforts to safeguard properties from the rages of Mother Nature.

Finally, because of what is essentially a bailout system currently in place, states in disaster-prone regions of the country lack sufficiently potent incentives to undertake investments in preparedness and loss prevention, and to devise and enforce land use policies and building codes that reflect an area's exposure to major catastrophic events.

III. The Economic Merits of the Homeowners' Defense Act of 2009

A. Introduction

The Homeowners' Defense Act of 2009 replaces the current system of reactive federal government intervention with a model that confronts the inevitability of future major catastrophes and the fact that available layers of protection from state plans and private insurance could likely prove substantially inadequate.²⁶ In effect, HDA-2009 recognizes the

(... footnote continued)

including tax cuts for individuals and businesses in the region.

²⁵ This phenomenon has been referred to as a form of Samaritan's dilemma – the availability of *ex post* relief weakens the incentives to manage risk effectively *ex ante*. (See, e.g., Kunreuther, Howard, "Disaster Mitigation and Insurance: Learning from Katrina," *Annals of the American Academy*, March 2006, at p. 214.)

²⁶ HDA-2009 only addresses insured losses incurred by residential property owners. Thus, a degree of federal relief under the current system would remain, for example to repair and rebuild damaged infrastructure and to address property losses in excess of insured losses. This limitation notwithstanding, it would seem ill-advised to make the good the enemy of the best – that is, to dismiss the merits of HDA-2009 because it falls short of

(footnote continued ...)

federal government's current role as *de facto* insurer of last resort and replaces the government's ad hoc and reactionary system of intervention with a partnership between the public and private sectors that is more formal and well-defined. Furthermore, HDA-2009 would address inefficiencies that encumber the present system of federal disaster relief, and would promote investments in catastrophic loss prevention and mitigation, as well as land use and zoning plans that better reflect an area's exposure to natural disasters.

In this section, we discuss specific aspects of HDA-2009 that, from an economic perspective, lead us to conclude that the proposed legislation represents the best option available to address the inefficiencies in the current system. Where appropriate, we also introduce possible refinements to HDA-2009 that would augment the improvements the Act should deliver *vis-à-vis* the status quo. As a preface for this discussion, consider a high-level summary of the key provisions of HDA-2009:

- The Act facilitates the ability of state-sponsored insurance funds to bundle voluntarily their catastrophic risk with one another through a National Catastrophe Risk Consortium (the "Consortium").
- With the approval of participating states, the Consortium can issue financial instruments linked to the catastrophe risks insured or reinsured through its members.
- It provides a federal guarantee of state funds' bond obligations, thereby supporting the capacity of state plans to issue bonds and address timing risk.
- It establishes a standard attachment point for a national catastrophe fund layer of protection.
- It creates the Federal Natural Catastrophe Reinsurance Fund, which will collect premiums from the sale of contracts for reinsurance coverage.
- Under the Act, premiums for reinsurance are based upon expected losses plus a modest expense load.

(... footnote continued)

completely overhauling the current system of federal relief. Moreover, as discussed below, certain provisions of HDA-2009 should provide an incentive for homeowners and participating states to invest more heavily in loss mitigation and disaster preparedness, which would help to reduce the need for federal disaster relief.

- It requires participating states to provide coverage under their insurance and reinsurance programs at rates that are actuarially sound.
- It requires participating states to adopt and enforce loss prevention and mitigation measures, to establish an insurance rate structure that accounts more appropriately for investments in mitigation, and to encourage the development of comprehensive land use and zoning plans that reflect the state's exposure to natural catastrophes.

B. A Proactive National Insurance Program

HDA-2009 stands in stark contrast to the current system of federal catastrophe protection, which only springs into action once a major catastrophe has struck, and consequently must rely upon taxpayer-funded bailouts.

A key characteristic of the proactive approach espoused in HDA-2009 is that it prepares for future catastrophes by collecting premiums *ex ante* and using retained capital to honor reinsurance contracts. In this respect, the approach should be viewed as self-supporting over the long term and thereby capable of attenuating the economic shocks that a major natural catastrophe might otherwise induce. The self-supporting nature of the HDA-2009 approach is aided by its non-profit enterprise status, which means that capital can accumulate more rapidly relative to for-profit insurers who are not permitted to set aside premiums in reserve accounts on a pre-tax basis.²⁷

A second key characteristic is the availability of federal guarantees on a state plan's debt obligations related to the financial costs of catastrophic events. Such guarantees should facilitate a state plan's ability to raise the capital required to satisfy claims obligations in the event a sufficiently severe natural catastrophe strikes. Moreover, the provision of guarantees

²⁷ Of course, the pertinent IRS code(s) could be revised to afford private insurers the ability to set aside collected premiums on a pre-tax basis. However, it is not clear that such a measure would materially improve their ability to maintain solvency in the aftermath of a major natural disaster. In particular, were private insurers permitted to accumulate capital reserves on a pre-tax basis, they might respond by reducing their use of reinsurance, perhaps even to the point that their ability to withstand financially the occurrence of a major catastrophe would not materially improve.

should also assist the states in replenishing capital reserves insofar as a catastrophic event leads to their substantial depletion.

C. Addressing the Moral Hazard Problem

Taxpayer-funded bailouts tend to skew the incentives of residential property owners and create what economists call a “moral hazard” problem. A moral hazard problem can arise when those exposed to risk do not fully internalize the expected losses associated with that risk and thus are less likely to take actions related to mitigation. In this case, property owners in disaster-prone areas (or those considering locating to a disaster-prone area) will tend to spend less on steps that would mitigate the costs of natural disasters, because they are implicitly relying on taxpayer-funded bailouts. The ultimate result is greater development in disaster-prone areas and underinvestment in loss mitigation efforts, which in combination significantly increase the potential financial losses a major natural catastrophe will generate.

HDA-2009 seeks to attenuate the moral hazard problem by conditioning a state’s participation on the adoption of mitigation programs and zoning and land use plans that better account for catastrophic risk, and the establishment of an insurance rate structure that incorporates mitigation measures and that better reflects expected losses. When property owners face a cost for catastrophe insurance coverage that more fully reflects the underlying risk, their incentives to invest in loss mitigation measures, and the incentives pertinent to a decision to re-locate in a disaster prone area, will not be as clouded by the distortions created by the current system of disaster relief. Another advantage of risk-based premiums is that insurers are able to offer discounts to property owners who elect to invest in loss mitigation measures. In the absence of risk-based premiums, insurers would have weaker, or perhaps no, economic incentives to offer such discounts.

The demonstrated inadequacy of property owners’ tendencies to undertake loss mitigation efforts highlights the effect that HDA-2009’s requirement for more efficiently priced premiums can have. For example, in a May 2006 survey of individuals residing along the Atlantic and Gulf Coasts, 83 percent of respondents reported that they had undertaken no

measures to fortify their homes. In the same survey, 68 percent of respondents indicated that they had no hurricane survival kit and 60 percent reported the lack of a family disaster plan.²⁸ Clearly, stronger incentives to invest in loss mitigation measures could pay significant dividends. Moreover, additional funding for loss mitigation programs and consumer education should deliver benefits that ultimately would lower exposure to financial losses resulting from a major natural disaster.

Implementation of HDA-2009 should also lead to premiums for catastrophic coverage that are lower than the costs of coverage that prevail currently. Consequently, opponents might contend that HDA-2009 would exacerbate the moral hazard problem. However, this line of argument fails to override the merits of HDA-2009, including its tendency to mitigate the moral hazard problem present under the current system. First, while the overall cost of catastrophic coverage should decline under HDA-2009, actuarially sound premiums in disaster-prone areas will still substantially exceed analogous rates prevailing in areas not susceptible to major natural disasters. In other words, differentials in premiums will provide an incentive to locate in non-disaster-prone areas.²⁹ Second, attenuation of the moral hazard problem is also abetted by provisions in HDA-2009 that mandate state adoption of loss prevention and mitigation programs, as well as the enforcement of building codes and land use plans that account for a state's exposure to natural catastrophes.

D. Consumer Savings

Milliman, Inc., a firm specializing in actuarial and economic analysis, has estimated the possible savings to consumers that likely would result from the implementation of an earlier version of HDA-2009. Milliman concluded that consumers, in the aggregate, could experience

²⁸ See Kunreuther (June 2008) at p. 8.

²⁹ Concerns regarding moral hazard would not support the artificial inflation of the costs associated with residing in disaster-prone areas. If sound public policy supports limitations on development in such areas, that objective is better pursued through land-use regulation and policy.

direct reductions in their homeowners' insurance premiums in excess of \$11 billion annually.³⁰ Even given the inevitable imprecision of such estimates, the general magnitude of savings is likely to be significant. Further indirect savings would arise through retrofitting and other loss mitigation efforts on the part of residential property owners, and through implementation by participating states of improved land use policies and stricter building codes. Because participating states would be charged premiums based upon actuarial risk, they would have more potent incentives relative to the *status quo* to devise and implement measures intended to reduce potential loss exposures, including land use restrictions, building code upgrades, and programs to promote loss prevention by property owners.

Importantly, the Milliman estimates do depend critically upon two assumptions, namely that the national reinsurance program that is the focus of their study leads to the creation of additional state catastrophe plans and that it results in state funds' access to more affordable reinsurance coverage. In these two areas, possible refinements to H.R. 2555 could advance these beneficial outcomes.

First, to generate significant premium savings for consumers, and to encourage the purchase of national reinsurance protection by the state programs, the reinsurance provisions of HDA-2009 should provide greater flexibility on the attachment point, currently fixed at a one-in-200 year event. To put this figure in context, the FHCF caps out at a roughly one in 70-year event, which effectively means that FHCF would decline the reinsurance made available through HDA-2009 unless it first expanded its coverage.³¹ In addition, it would seem well-advised to adopt alternative means to fund the reinsurance program beyond the proposed upfront appropriation of the entire potential liability, because the likelihood of incurring this

³⁰ "Report on the Impacts on Consumers from Potential State & National Legislation Designed to Prepare and Protect Citizens from Natural Catastrophes," Milliman, Inc., May 14, 2007 ("Milliman (May 2007)").

³¹ In other words, the coverage available through the FHCF would be exhausted before the coverage available through HDA-2009 would be triggered. Hence, the reinsurance available through HDA-2009 would not provide the FHCF with any protection against potential future claims obligations, and as a result, the FHCF reasonably would not purchase the reinsurance.

magnitude of loss is exceedingly remote. Thus, as configured, the national reinsurance protection proposed in HDA-2009 could be improved to strengthen state plans' incentives to purchase such coverage for the benefit of residential property owners in their regions.

Second, there is a concern that the current version of HDA-2009 will not sufficiently induce the creation of new state catastrophe funds. To be sure, the debt guarantee provision extends support to the issuance of bonds by state programs that could prove beneficial in distressed market conditions. However, it seems prudent to consider incorporation of a liquidity loan option as was contained in the 2007 version of the bill, whereby the federal government would loan funds to a state that has suffered a catastrophe in cases where the proposed debt guarantee provision proved insufficient to afford access to the capital markets.³²

E. Opt-in Nature of Plan

Another key element of HDA-2009 from an economic perspective is that state participation is on an opt-in or voluntary basis. Each state is left to assess the magnitude of catastrophic risk confronted by its residential property owners, and whether the proposed national backstop would provide a useful final layer of catastrophic protection. Under this arrangement, states not susceptible to mega-catastrophes presumably would choose not to participate, and as a result, taxpayers in those states would no longer be required to subsidize certain federal disaster relief efforts. In addition, states retain an unfettered ability to assess and adopt alternative forms of coverage for catastrophic losses. For example, were CAT bonds, insurance derivatives, or some other financial instrument to become a more attractive layer of coverage for a particular state, nothing in HDA-2009 prevents that state from utilizing one of these instruments. Indeed, the Consortium created by HDA-2009 may facilitate a state's use of these options. In that sense, implementation of HDA-2009 should not likely have the effect of crowding out the kinds of private market alternatives discussed in the next section.

³² Ideally, the liquidity loan and debt guarantee provisions would operate in tandem with the national reinsurance program, with each covering a defined layer of loss.

IV. Alternative Approaches

Perhaps driven by Hurricane Katrina and other recent catastrophic events, many articles have examined the merits of revamping the current system of federal disaster relief. In this section we briefly discuss several such alternatives that have received a significant level of attention. In our view, these alternative approaches would fall short of the anticipated consumer benefits and economic efficiencies available through implementation of HDA-2009.

A. Private Insurance Industry Capital Reserves

One suggestion begins by noting that the private insurance industry has at its disposal more than \$400 billion in capital, which could in theory be used to cover future losses resulting from large-scale catastrophes. But this figure represents capital available to pay for all categories of loss that might arise across all U.S. geographies, and to satisfy pertinent state regulatory requirements.³³ Moreover, the aggregate or total capital amounts for the insurance industry are of no real value for gauging the industry's ability to cover future losses resulting from mega-catastrophes. One must consider that (i) none of the capital held by insurers that do not write property insurance is available; (ii) multi-line companies generally set up separate affiliates to write property insurance, and as a result, the capital held by their non-property companies is not subject to claims associated with property damage; and (iii) property insurers in many cases establish separate affiliates to operate in high-risk states. In such cases, capital held by operations in other states is not subject to claims in the high-risk states (although when insurers have established separate affiliates in disaster-prone states, it is not uncommon for the parent company to provide capital to the affiliate if needed to pay claims).³⁴ Finally, it is worth

³³ As a rough approximation of the portion of total capital available to pay homeowners' policy claims, consider that of the \$436 billion in net premiums written in the U.S. in 2004, only \$49 billion, or roughly 11%, were accounted for by homeowners' multi-peril policies. (Litan (March 2006) at p. 15, Table 3.)

³⁴ See, e.g., Litan (March 2006).

noting reports that the occurrence of natural catastrophes, most recently Hurricane Ike in 2008, has had the effect of reducing the insurance industry's capital reserves.³⁵

B. Securities Markets

Catastrophe Bonds

Catastrophe bonds (CAT bonds) are part of a broader group of investment vehicles typically referred to as insurance-linked securities (ILS). These securities are instruments through which insurance risk is transferred in a capital markets contract. ILS, and in particular CAT bonds, have been employed most often by insurance companies to acquire from the capital markets additional protection for low-probability, high-exposure catastrophic events.³⁶ In a typical CAT bond issuance, a defined set of risks are transferred from the issuer (sponsor) to investors through a fully collateralized special purpose vehicle (SPV). The principal of the floating interest rate bonds issued by the SPV is used to pay losses if defined trigger conditions are satisfied. As this description would suggest, CAT bonds are typically utilized by insurers as an alternative to mainstream catastrophe reinsurance. That is, instead of purchasing reinsurance against the risk of catastrophic loss, a primary insurer might set up a CAT bond in which the insurer would make payments to those who purchase the bond, but would only be released from the repayment of principal if a specified catastrophe occurred that resulted in losses that satisfied the defined threshold.³⁷

CAT bonds were first developed in the mid-1990s as insurers and reinsurers investigated new methods to offset the risks associated with major catastrophic events.³⁸ Over the ensuing decade, the CAT bond market developed slowly, but according to GC Securities, record-

³⁵ See, e.g., "Catastrophes Cost U.S. Insurers \$25.2 Billion in 2008 (Update2)," January 20, 2009, Bloomberg.com.

³⁶ "A Balanced Discussion on Insurance-linked Securities," PartnerRe, March 2008 ("PartnerRe (2008)").

³⁷ Id.

³⁸ "Event-Linked Bonds: Competing Against A Catastrophe," Investopedia, August 20, 2008 (<http://www.investopedia.com/articles/bonds/08/event-linked-bonds.asp>).

breaking activity levels in 2005 and 2006 demonstrated that CAT bonds had emerged as an accepted tool within the portfolio of risk transfer mechanisms available to insurers and reinsurers.³⁹ However, new issuances of CAT bonds declined by roughly 17 percent in the 12 months ending June 30, 2008, a result that was not unexpected given the lack of major catastrophic events in 2006 and 2007.⁴⁰ In part, the declining trend was driven by previously unforeseen flaws in the traditional CAT bond structures, which had relied heavily on third-party guarantees on investments returns and market values of the invested CAT bond proceeds. Following the implosion of these derivatives markets in 2008, we have witnessed the occurrence of CAT bond defaults without the triggering of a catastrophic event.⁴¹ These developments sent shockwaves through the CAT bond market, as both sponsors and investors reevaluated their thinking with regard to this product.

Moving into 2009, it appears that these factors, as well as increasing prices for CAT bonds, have served to limit their appeal as an alternative to reinsurance. For example, in March of this year, Hannover Re reported a doubling in CAT bond prices during the period following the collapse of Lehman Brothers and an unwillingness to renew its CAT bonds under current market conditions.⁴²

Even assuming that the CAT bond market resumes a positive growth trajectory, such instruments do not represent a superior approach *vis-à-vis* the public-private partnership

³⁹ "The Catastrophe Bond Market at Year-End 2007, The Market Goes Mainstream," GC Securities, 2008 ("GC Securities (2008)").

⁴⁰ "Insurance-linked Securities 2008, Innovation and Investor Demand Set the Stage for Continued Growth," Aon Benfield ("Aon Benfield (2008)"). *See also* "Catastrophe Bonds Fall Most Since 2005 as Ike Looms (Update1)," September 12, 2008, Bloomberg.com (Reporting that CAT bond issuances had fallen 47% relative to the prior year period.).

⁴¹ Two catastrophe bonds used Lehman Brothers as a guarantor of the return on the asset portfolio backing the bonds. Due to underperformance of the portfolio and the inability of Lehman to meet its obligations as guarantor, one catastrophe bond failed to make a scheduled interest payment and the second failed to make full payment of outstanding principal due at maturity. *See*, "Second Lehman-backed cat bond in default," May 14, 2009 (<http://www.businessinsurance.com/apps/pbcs.dll/article?AID=9999200016210>).

⁴² "Hannover Says Cat Bonds Are Too Costly After Lehman (Update1)," March 12, 2009, Bloomberg.com.

proposed in HDA-2009. First, the CAT bond market at year-end 2007, before the 2008 decline, accounted for not much more than 10 percent of total catastrophe limits outstanding in the United States (as compared to 82 percent for traditional reinsurance).⁴³ As demonstrated above, reinsurance clearly is unable to provide adequate protection against losses associated with major catastrophic events. Thus, it is hard to make the argument that CAT bonds can fill the void, even if one assumes continued growth in the CAT bond market.

Second, while CAT bonds have the potential to increase the capital reserves available to address the financial losses generated by a major catastrophe, they do not materially (if at all) improve the affordability of catastrophe coverage for homeowners. Moreover, unlike certain provisions contained within HDA-2009, CAT bonds do not provide funding for loss prevention and mitigation.

Finally, CAT bonds are not commodities; indeed, each offering is unique. In general, the less commodity-like a security, the less liquid the market for that security. In this way, the uniqueness of CAT bond offerings creates frictions in the CAT bond market that will tend to limit its growth.

In short, CAT bonds hold promise as one element of a comprehensive solution to managing catastrophic risk. However, one should resist the proposition that they can approach a more complete solution along the lines of HDA-2009.

Catastrophe Options and Futures

Catastrophe options and futures were first introduced in 1992 by the Chicago Board of Trade. These instruments, which provided a novel method by which to manage major catastrophic risk, were linked to specific regions of the United States. Demand was largely nonexistent initially, due to a lack of historical reference to underlie the pricing of these

⁴³ GC Securities (2008). *See also* Aon Benfield (2008) (While as of June 30, 2008 there was over \$15 billion of catastrophe bonds on-risk, this represented “only a small fraction of total catastrophe protection purchased (footnote continued ...)

contracts. With changes to certain contract terms, trading volume increased to greater than nine million contracts in 1997, but then reduced to negligible levels subsequently. The CBOT eventually discontinued trading of catastrophe insurance derivative contracts.⁴⁴

In the past couple of years, catastrophe options and futures have been revived to some extent with the creation of three exchange-traded derivative platforms. For example, the Insurance Futures Exchange (IFEX) launched Event Linked Futures, or ELFs. ELFs are contracts under which full payment is triggered once losses reach a pre-defined level. According to an Aon Benfield report from 2008, IFEX offered U.S. Tropical Wind First and Second Event contracts with trigger levels of between \$10 billion and \$50 billion, in \$10 billion increments, over a calendar-year period. However, at this point, trading volumes remain insignificant. A primary reason appears to be the fact that the available insurance derivatives fail to eliminate sufficiently basis risk, or the risk that the financial recovery from the hedging instrument will fail to provide full compensation for actual catastrophic event losses. The available set of nine regional contracts offers greater diversification opportunities than does a single national contract, but again, the level of basis risk characterizing the contracts appears to be too rich for the appetite of many insurers.⁴⁵

V. Concluding Remarks

The Homeowners' Defense Act of 2009 would establish an integrated public-private partnership that incorporates the risk participation of the private insurance industry and augments the scope of protection and sustainability of the catastrophic insurance system. From an economic perspective, this alliance of public and private resources best approaches – relative to available alternatives – the optimal solution in terms of curing the inefficiencies that

(... footnote continued)

worldwide.”).

⁴⁴ Aon Benfield (2008).

⁴⁵ Id.

plague the present system of federal disaster relief. It does so by proactively addressing the inevitable future occurrence of major catastrophic events through the creation of a national backstop that would provide a layer of protection that private insurance and state catastrophe plans are inherently unable to offer. As such, it would protect private insurers from insolvency, add stability to the reinsurance industry, and expand available coverage for catastrophic events to more consumers at lower prices.

In addition to addressing the capital constraints that hamstring private insurance and state insurance plans, HDA-2009 directly confronts the inadequacy of extant marketplace incentives to invest in loss prevention and mitigation measures. First, HDA-2009 eliminates reliance on the current system of taxpayer-funded bailouts that mute the incentives of residential property owners in disaster-prone areas to undertake steps to better protect their properties against a major catastrophic event. Second, the incentives of residential property owners to invest in loss mitigation efforts are further strengthened because HDA-2009 sets premiums based upon actuarial risk. Third, these actuarially sound premiums provide participating states with more potent incentives to develop and enforce land use restrictions and building code requirements that are linked to catastrophic risk. And finally, HDA-2009 contains a specific provision to fund consumer education, and loss prevention and mitigation.

Given the recent financial crisis, the deep economic downturn, and the dramatic increase in the federal budget deficit (and debt), the next major catastrophe could place even greater strains on the federal budget and U.S. economy. This concern will remain even when the U.S. economy emerges from its current doldrums and resumes a more normal rate of growth. The U.S. government likely will operate under significant budget deficits for years to come, leaving the federal government's fiscal position exposed to shocks of the sort that could arise if a major catastrophic event were to occur without a sound national plan in place.⁴⁶

⁴⁶ Economists have noted the potential deleterious effects on long-run U.S. economic performance resulting from market perceptions that the U.S. is ill-prepared to manage the risk of future economic shocks. (See, e.g., Rubin, Robert E., Peter R. Orszag and Allen Sinai, "Sustained Budget Deficits: Longer-Run U.S. Economic Performance and

(footnote continued ...)

HDA-2009 provides a mechanism for funds to be collected and to accumulate in advance of a natural catastrophe. Combined with improved loss prevention and mitigation measures and more stable state-sponsored plans, the proposed legislation should attenuate the potential shock to the U.S. economy that a major natural catastrophe could induce. Taken together, the provisions of HDA-2009 represent a material improvement over the current system of catastrophe insurance and management and a clear path forward in natural catastrophe preparedness and protection.

(... footnote continued)

the Risk of Financial and Fiscal Disarray,” presented at the AEA-NAEFA Joint Session, Allied Social Science Associations Annual Meetings, January 4, 2004.) In general, shocks to the U.S. budget and U.S. economy can lead to an erosion in foreign investor confidence that would cause a shift away from U.S. dollar-denominated assets and thereby place downward pressure on the U.S. dollar and upward pressure on domestic interest rates. There is no way to predict with reasonable certainty the “tipping point” at which investor confidence wanes to generate such an outcome, but the possibility of the outcome, in and of itself, argues forcefully for measures such as HDA-2009 that could greatly alleviate one potential source of shocks to the U.S. budget – the financial losses that would result from the occurrence of a major catastrophic event.