

# Best Practices for Regulating Property Insurance Premiums and Managing Natural Catastrophe Risk in the United States

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## TABLE OF CONTENTS

<b>Introduction</b>	<b>2</b>
<b>The FIO Report: A Challenge to State Regulators</b>	<b>4</b>
<b>The Direct Effect of Catastrophic Events on Insurance Market Performance</b>	<b>5</b>
<b>Analysis of Regulatory Best Practices</b>	<b>8</b>
<i>Regulation of Rates and Underwriting</i>	9
<i>Residual Market Mechanisms</i>	12
<b>Empirical Analysis of Rate Regulation and Residual Markets</b>	<b>15</b>
<i>Analytical Approach and Sample</i>	16
<i>Regulation and Market Measures</i>	17
<i>Market Size Following Catastrophes</i>	19
<i>Catastrophes and Structural Competitiveness</i>	20
<i>Capacity Following Catastrophes:</i>	
<i>Capital and Reinsurance</i>	21
<i>Changes in Premium Volume</i>	23
<i>Underwriting Performance Post-Catastrophe</i>	25
<b>Other Regulatory Policies</b>	<b>25</b>
<i>Policy Provisions</i>	26
<i>Claim Settlement</i>	28
<b>Mitigation Efforts</b>	<b>28</b>
<b>Summary and Review</b>	<b>29</b>
<b>References</b>	<b>32</b>

## INTRODUCTION

The Federal Insurance Office's (FIO) report "How to Modernize and Improve the System of Insurance Regulation in the United States" (FIO, 2013) has generated much discussion among insurance practitioners and policymakers since its release in December 2013. The report considers a wide range of insurance regulatory issues with primary emphasis on the extent of federal government involvement that is desirable and/or necessary for improving the current state-based regulatory system. Several parts of this report bear, directly or indirectly, on how state regulators can continue to ensure a viable private market for insurance against natural catastrophic events. Specifically, the report includes recommendations that urge state regulators to identify "best practices" with regard to both rate regulation and natural catastrophe loss mitigation. With respect to the former, the explicit objective is to identify rate-related regulation that fosters competitive markets for personal lines insurance consumers and, consequently, increases capacity. With regard to natural catastrophes, the objective is less clear but might include identifying regulations that encourage loss mitigation (e.g., allowing premiums to reflect mitigation activities) and the adoption of mitigation measures (e.g., building codes).

Natural catastrophes have devastating effects on homeowners and property insurers. According to the Insurance Research Council (IRC), the average claim payment for all homeowners insurance claims countrywide rose 228 percent between 1997 and 2013 (IRC, 2015). While this is partly due to the increasing severity of natural catastrophes, the growing size and complexity of homes results in higher losses when any claim-causing event occurs. In addition, population growth in coastal areas subject to tropical storms and hurricanes has contributed to higher catastrophe losses, and projections by the National Oceanic and Atmospheric Administration (NOAA) indicate that the number of people living in coastal areas will continue to grow for the foreseeable future (NOAA, 2013).<sup>1</sup> Efforts to mitigate against damages are insufficient in many areas and evidence of the effectiveness of incentives to undertake mitigation activities is mixed.

To maintain profitability, insurers adapt to catastrophic events and increased estimates of catastrophe risk by reducing coverage, raising insurance rates, and, more generally, changing their underwriting and investment strategies. Homeowners respond to these events and the consequent actions of insurers in a variety of ways as well. For example, those with insufficient coverage may seek additional insurance while others may choose to reduce or drop coverage (if they have this option) as the cost of coverage becomes more difficult for them to afford.<sup>2</sup> Such responses suggest that for a period of time following a catastrophic event, the supply of and demand for coverage will be in flux.

Using a large dataset on homeowners and commercial property insurance coverage by state, firm, and year for the period 1984-2013, this study assesses changes in the structure and performance of the U.S. homeowners insurance market following natural catastrophic events. This long period of time, characterized by an increasing number of catastrophic events, facilitates exploration of best regulatory practices, i.e., activities that keep the private market operating as smoothly as possible, ensuring the availability of coverage and the financial solvency of insurers. While the primary emphasis of this paper is on factors that may influence the

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<sup>1</sup> NOAA projects that between 2013 and 2020 the number of people living in coastal areas will grow by 11 million to a total of 134 million (NOAA, 2013).

<sup>2</sup> Buying or maintaining homeowners insurance is generally a condition for acquiring or maintaining a mortgage on a home. Homeowners without a mortgage are not subject to this requirement and could choose to go without insurance.



supply of private insurance coverage for catastrophes, such as rate regulation and residual markets, other exogenous factors, such as population growth, property development, and building code changes, are also considered. Our analysis also uses state-specific experiences in the regulation of certain aspects of insurers' market practices as well as efforts to promote mitigation to provide further insights on best regulatory practices in these areas.



*... certain regulatory environments may be more successful than others in maintaining a viable property insurance market and minimizing the disruptions resulting from a catastrophic event.*



This paper examines state property insurance markets over the past 30 years in an effort to identify state regulatory best practices that ensure availability of coverage, the capacity to bear catastrophic risks, and competitive rates. Some would contend that a regulatory best practice is one that ensures coverage is affordable for all consumers. In general, rates are not likely to be excessive if the market for coverage is competitive, but this may or may not be the case for property coverage in areas subject to very high levels of catastrophe risk.<sup>3</sup> Moreover, regulations that artificially suppress rates conflict with the regulatory goal of limiting insurers' risk of becoming insolvent. While it is understandable that regulators will seek to keep the cost of insurance affordable, they are also faced with the challenge of ensuring that insurance coverage is available. Insurers will be reluctant to provide coverage if they are not allowed to charge rates that are commensurate with the risks they bear. Hence, there can be a tension between the objectives of promoting affordability and availability.

The next section provides a brief review of the recommendations from the FIO report that address catastrophic risks. This is followed by a discussion of the direct impact of catastrophic events on the structure and performance of insurance markets. The discussion emphasizes that catastrophic events have a differential effect on insurers and proposes that the effectiveness of state regulatory practices should be evaluated based on how they affect the market as a whole, not how they influence any particular insurer(s). This is followed by a discussion and empirical analysis of the relationship between two more easily identified state regulatory practices – rate regulation and the use of residual markets – and the consequential (post-catastrophe) changes in six measures of market structure and performance. The analysis suggests that the occurrence of a catastrophic natural disaster has significant effects on state property insurance markets and, in particular, on homeowners insurance markets, thereby affecting the availability of coverage and the continuing ability of insurers to bear risk. Thus, certain regulatory environments may be more successful than others in maintaining a viable property insurance market and minimizing the disruptions resulting from a catastrophic event. We then discuss two other areas of regulation – policy provisions and claims settlement practices – and explore the impact of these regulations on insurance markets using specific state case studies. This is followed by a short discussion of mitigation standards and incentives and a summary and review of our findings.

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<sup>3</sup> We discuss the issue of whether homeowners insurance markets subject to a high level of catastrophe risk can be competitive below.

## THE FIO REPORT: A CHALLENGE TO STATE REGULATORS

The Federal Insurance Office's (FIO) 2013 report considers a wide range of insurance regulatory issues with primary emphasis on the extent of federal government involvement that is desirable and/or necessary for improving the current state-based regulatory system. While the report recommends direct federal involvement in only a few areas (e.g., federal standards and oversight for mortgage insurers), the bulk of the report suggests ways in which the state-based system should be reformed. It recognizes that the states continue to serve local needs and that their unique regulatory experiences can be lessons for others. However, it notes that there is clearly room for improvement and calls on regulators to develop "best practices" in several areas, particularly rate regulation and natural catastrophe loss mitigation. With regard to rate regulation, the report states that, generally, the objective should be to foster competition in the personal insurance lines, thereby increasing availability. Best practices in catastrophe loss mitigation could include encouraging the adoption of specific mitigation measures (e.g., building codes).

The FIO report notes that "rate regulation processes and protocols are fertile areas for experimentation by the states" (p. 55). As alternative approaches to rate oversight are enacted by some states, either on a permanent or pilot basis, other states can evaluate insurance market performance in these jurisdictions to identify best practices. States that are successful in achieving an objective of enhancing competition and increasing capacity can become models for other states.

Interestingly, the report does not explicitly acknowledge that best practices in regard to rate regulation could also be among the best practices for promoting optimal managing of and insuring against natural catastrophe risk. Rather, the section on catastrophes focuses mainly on residual markets and mitigation.<sup>4</sup> The report recognizes the variation across affected states in building codes and other post-event activities that have consequences for a smoothly functioning property insurance market. It thus recommends that states "should identify, adopt, and implement best practices for construction standards, including building codes, to mitigate losses from natural catastrophes" (p. 61).

The report also addresses controversies surrounding government-run insurance and reinsurance programs. Premium increases following catastrophic events affect the affordability and accessibility of coverage and have often led to government intervention. For example, following Hurricane Andrew in 1992 and after the Northridge earthquake in 1994 when insurers raised premiums and reduced the supply of coverage, states responded with public insurance alternatives, which now range from residual market mechanisms to a variety of reinsurance and other post-event funding mechanisms. Interestingly, the report stops short of suggesting that best practices for managing catastrophe risk might include reforms to downsize or scale back these mechanisms.

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<sup>4</sup> The report briefly addresses risk classification, though not in a broad sense. In particular, the emphasis in the report is on the use of credit scoring and, to a lesser extent, the use of personal information for insurance pricing. The FIO recommends in this section that "states should develop standards for the appropriate use of data for the pricing of personal lines insurance." As it pertains to the pricing of catastrophe insurance, variation across markets may yield important insights into the relationship between underwriting criteria and market structure and performance measures.



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## THE DIRECT EFFECT OF CATASTROPHIC EVENTS ON INSURANCE MARKET PERFORMANCE

The effect of catastrophes on an insurer's underwriting performance can be measured by an insurer's loss ratio, calculated by dividing the insurer's total losses incurred by the premiums earned for property coverage. This commonly used measure captures the extent to which premiums collected are sufficient for paying the incurred claims. A loss ratio greater than one indicates an underwriting loss, although underwriting profitability, more generally, would also consider the insurer's loss adjustment expenses, other administrative expenses associated with the underwriting process, and investment income earned on reserves for unearned premiums and unpaid losses.

The total losses incurred for a state, relative to the premiums that were "earned" for that year, provides a good indication of the average weighted effect of the event on the state market, as all insurers are not equally affected. Variation in loss ratios across insurers will show some that may have had better underwriting standards and others that had the good fortune to avoid or be less adversely affected by the event, perhaps because they did not write (or did not write very much) coverage in the affected area. As we look at some of the major events during the past 30 years, it is clear that there is great variation in the performance of firms operating in a catastrophe-affected state.

Table 1 presents a sample of state-year observations in which the value of total per capita insured homeowners property damages due to catastrophes was significantly higher than previous years.<sup>5</sup> As the table shows, loss ratios corresponding to these events indicate a significant aggregate underwriting loss. However, it is clear that these events do not affect insurers equally. The median performance is always better than the state weighted average, while the 10 percent of insurers with the worst underwriting performance (the 90<sup>th</sup> percentile of the loss ratio distribution) report loss ratios as high as 1.5 to 2 times the state average.

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<sup>5</sup> The core database used for the empirical analysis consists of the state-level homeowners and commercial property insurance operations for all U.S. insurers from 1984 to 2013. Data on the direct premiums earned, losses incurred, capital, and reinsurance amounts are compiled from insurers' annual statutory accounting statements filed with the National Association of Insurance Commissioners.

**TABLE 1: SAMPLE OF CATASTROPHIC EVENTS AND THEIR IMPACT ON THE STATE HOMEOWNERS INSURANCE MARKET**

STATE	YEAR	PROPERTY LOSSES PER CAPITA	STATE LOSS RATIO (WEIGHTED AVG.)	STATE MEDIAN LOSS RATIO	90 <sup>TH</sup> PERCENTILE LOSS RATIO
ALABAMA	2011	881.78	1.811	1.389	3.305
CALIFORNIA	1994	934.48	0.746	0.625	1.671
COLORADO	1990	255.58	1.921	1.383	2.503
FLORIDA	1992	59.38	3.127	1.956	4.982
FLORIDA	2004	1291.25	2.861	2.472	4.908
IOWA	2001	32.47	1.603	1.456	3.005
KANSAS	1992	69.35	2.561	2.181	3.983
LOUISIANA	2005	12806.97	4.421	3.156	5.667
MINNESOTA	1998	226.50	2.888	2.370	3.849
MISSOURI	2001	236.48	1.801	1.394	2.711
MISSISSIPPI	2005	9500.72	4.292	3.213	4.908
NORTH DAKOTA	2001	622.78	2.931	2.111	4.154
OKLAHOMA	1999	438.62	1.834	1.001	1.926
SOUTH CAROLINA	1989	1748.55	4.251	3.033	5.306
TENNESSEE	2011	312.84	2.134	1.750	3.341

Table 2 provides comparable data for the commercial property insurance market for the same sample of events.

**TABLE 2: SAMPLE OF CATASTROPHIC EVENTS AND THEIR IMPACT ON THE STATE HOMEOWNERS INSURANCE MARKET**

STATE	YEAR	PROPERTY LOSSES PER CAPITA	STATE LOSS RATIO (WEIGHTED AVG.)	STATE MEDIAN LOSS RATIO	90 <sup>TH</sup> PERCENTILE LOSS RATIO
ALABAMA	2011	881.78	2.520	0.967	2.098
CALIFORNIA	1994	934.48	0.850	0.543	0.906
COLORADO	1990	255.58	0.936	0.581	1.045
FLORIDA	1992	59.38	2.946	1.617	3.510
FLORIDA	2004	1291.25	2.221	1.521	2.975
IOWA	2001	32.47	1.129	0.749	1.330
KANSAS	1992	69.35	1.334	0.876	1.749
LOUISIANA	2005	12806.97	5.451	2.649	5.849
MINNESOTA	1998	226.50	1.497	0.878	1.497
MISSOURI	2001	236.48	0.888	0.707	1.154
MISSISSIPPI	2005	9500.72	4.269	2.267	4.506
NORTH DAKOTA	2001	622.78	1.370	0.811	1.568
OKLAHOMA	1999	438.62	1.306	0.711	1.243
SOUTH CAROLINA	1989	1748.55	4.088	2.850	4.711
TENNESSEE	2011	312.84	1.451	0.824	1.643



Following all but three of the events in this sample, the state loss ratio for commercial property insurance is lower than the aggregate loss ratio for homeowners insurers. The median and 90<sup>th</sup> percentile performance figures indicate that, in most cases, insurers writing commercial property coverage fare better following catastrophic events than their counterparts in homeowners insurance. According to Born and Klimaszewski-Blettner (2013), there are several reasons to expect this. First, insurers have more flexibility in designing coverage for commercial properties, which are also more likely to have certain mitigation features. More importantly, these insurers are less likely than homeowners insurers to be constrained by strict rate regulation, such that the rates charged may be more accurate for the risks that are borne by a commercial property insurer. Underwriting, policy forms, and contract terms are more intensely regulated for homeowners insurance than for commercial property insurance. Regulators assert this is justified because individuals and households are less sophisticated in purchasing insurance than commercial insurance buyers, who may work with an experienced broker and is therefore a more “professional” insurance consumer. However, rate regulation that constrains insurers from setting adequate rates may actually exacerbate losses, as consumers have less incentive to manage risk when rates cannot increase, e.g., there is no penalty for not mitigating (Harrington and Danzon, 2001).



*... rate regulation that constrains insurers from setting adequate rates may actually exacerbate losses...*



When states are affected to the degree shown by the examples in Tables 1 and 2, insurers operating in the state are likely to reconsider their decision to participate in the market. Their reevaluation may result in changing rates, changing the nature and extent of their exposure in the state, exiting the state, or making no changes with respect to their pricing, underwriting, or other aspects of their operations. The reaction presumably depends on whether: (1) the insurer perceives that the catastrophic event warrants any changes, i.e., if it indicates a significant change in risk; (2) the catastrophic event had a significant effect on reducing the insurer’s capacity to bear risk (i.e., its capital or the cost/availability of reinsurance); and (3) the insurer is not constrained in some way (e.g., through regulation) from responding.<sup>6</sup> In addition, an insurer may consider how its responses with respect to homeowners insurance in a particular state affect its ability to sell other personal lines of insurance, e.g., personal auto and umbrella insurance, in that state.<sup>7</sup> Further, an insurer’s ability to pool exposures across multiple states may affect how it responds to a catastrophic event in a particular state, noting that insurers are not in a position to perpetually subsidize their operations in one state with revenues they earn from operations in other states and lines of insurance.<sup>8</sup>

<sup>6</sup> Examples of previous treatments of the insurance of catastrophic risks include special issues of the Journal of Risk and Insurance (December 1996) and the Geneva Papers on Risk and Insurance (April 1997). See, e.g., Grace et al, (2004), Angbazo and Narayanan, (1996), Gollier, (1997), and Kleffner and Doherty, (1996).

<sup>7</sup> Typically, many insurers will seek to market multiple products to the same consumer because of the economies of scope associated with this strategy. If an insurer stops offering homeowners insurance, this will likely compromise its ability to sell other types of insurance to consumers who had been purchasing their homeowners coverage from the insurer.

<sup>8</sup> Some critics of how insurers have responded to catastrophic risk seem to confuse the pooling of exposures across states with their cross-subsidization. Efficient and economically sustainable pooling requires that each member of the pool pay a premium commensurate with his or her level of risk. An insurer cannot charge higher than actuarially indicated rates to some insureds to compensate for its charging lower than actuarially indicated rates to other insureds as this would expose it to adverse selection.

The data shown in Tables 1 and 2 suggest alternative ways to show whether a natural catastrophic event disrupts or destabilizes a state insurance market. A measure that captures the aggregate effect on a state would reflect the impairment of the state's economy. However, since we are concerned with the subsequent responses by property insurers, this type of measure would be less informative than a measure that captures the distribution of the catastrophic losses across insurers in the market. Thus, the following analysis of insurer responses defines an “economically” catastrophic year as one in which one-half of the homeowners insurers operating in the state report a loss ratio of 1.25 or greater or 25 percent of the insurers in the state report an underwriting loss of 1.5 or greater. Under this definition, there are 50 state-year observations involving economically catastrophic events over the time period 1984-2013.<sup>9</sup> These are shown in Table 3.

While other state-year observations exhibit extreme amounts of insured property losses, these 50 events undoubtedly correspond to a disrupted and unstable state market for property insurance. Some outcomes of this instability include reduced availability of coverage, search costs of consumers who need to find a new source of coverage, and the inability of insurers to obtain adequate reinsurance for subsequent years. Also, as noted earlier, an evaluation of regulatory practices should generally focus on how such practices affect the market as a whole, not specific insurers.

## ANALYSIS OF REGULATORY BEST PRACTICES

As noted above, a bad underwriting year, especially following a catastrophic event (or a series of catastrophic events), will motivate insurers operating in the state to reevaluate their participation. To the extent that a large proportion of the insurers are negatively

affected by the year's event(s), the state regulator is also more likely to respond in some way. Some regulatory responses to such economically catastrophic years are immediate and short term in nature, such as freezing rates or requiring insurers to renew coverage. Other actions can change the state regulatory environment for the longer term, e.g., modifying the process for approving rate changes, creating a state reinsurance pool, or creating a residual market mechanism. Regulatory responses to economically catastrophic events are successful – and therefore may be considered best practices – if they are associated with minimal changes over time to the structure, conduct, and performance of the insurance market.

**TABLE 3. EVENTS CORRESPONDING TO ECONOMICALLY CATASTROPHIC YEARS**

STATE	YEAR	EVENT(S)
AL	2004	HURRICANE IVAN
AL	2011	TORNADO OUTBREAK
AR	1996	WIND, TORNADOES, WILDFIRE
AR	2008	TROPICAL STORM IKE, HURRICANE GUSTAV
AZ	2010	FLOODING, SEVERE STORMS, WIND, HAIL, TORNADO
CO	1990	SEVERE STORMS
CO	1991	WINTER WEATHER
CO	2009	LIGHTNING, AVALANCHE
FL	1992	HURRICANE ANDREW
FL	2004	HURRICANE CHARLEY
FL	2005	HURRICANES KATRINA, WILMA
GA	2009	HAIL, FLOODING
HI	1992	HURRICANE INIKI
IA	2001	UPPER MISSISSIPPI RIVER SPRING FLOOD
IA	2011	TORNADO, MISSISSIPPI RIVER FLOODING
IN	1996	BLIZZARD, FLOODING
IN	2006	SEVERE STORMS, FLOODING
KS	1991	SEVERE STORMS, TORNADO
KS	1992	WICHITA HAIL STORM
KS	2011	SEVERE STORMS, TORNADO, HAIL, FLOODING
KY	1996	WINTER WEATHER

<sup>9</sup> Other possible candidates for defining an economically significant catastrophe include the state aggregate loss ratio (total losses incurred divided by total premiums earned) or the ratio of insured property losses to total state income. The measure used here is arbitrary but captures the essence of an underwriting year in which a majority of insurers are affected. In such a year, heightened media attention and regulatory scrutiny would be expected.



This section provides an assessment of four areas of regulation in the context of maintaining a smooth functioning homeowners insurance market following a catastrophic event. The first two areas – rate regulation and residual market mechanisms – are discussed in detail and then analyzed empirically. Our discussion of rate regulation also includes a review of regulatory policies and actions concerning insurers’ underwriting decisions that are closely linked to their pricing. The second two areas – policy provisions and claim settlement practices – are then discussed using specific state case studies. We offer our opinions on those regulatory policies and practices that are likely to result in more favorable market outcomes and those that are likely to result in less favorable outcomes. The opinions we express here are informed primarily by economic principles, prior research including state case studies, anecdotal observations, and discussions with regulators and insurers, and are consistent with the results of our empirical analysis.

### ***Regulation of Rates and Underwriting***

Our empirical analysis below suggests that states with prior approval systems (i.e., “non-competitive rating systems”) are more likely to constrain insurers’ rates. It’s important to note, however, that a state’s rate regulatory system does not indicate everything that is relevant to how rates are actually regulated in that state. For example, a state that requires prior

approval of insurers’ rates before they can be implemented may or may not impose binding constraints on those rates. Further, the severity of the constraints imposed, if any, can vary among different states with prior approval systems. We also observe that states with “competitive rating systems” (e.g., file and use, use and file, etc.) may or may not seek to impose constraints on insurers’ rates. Additionally, we note that regulators are more likely to disapprove or temper insurers’ filings for rate increases when a market is subject to considerable upward cost pressure and insurers are seeking to substantially raise their rates.

TABLE 3. EVENTS CORRESPONDING TO ECONOMICALLY CATASTROPHIC YEARS (CONTINUED)		
STATE	YEAR	EVENT(S)
LA	1992	HURRICANE ANDREW
LA	2005	HURRICANES KATRINA, RITA
LA	2008	TROPICAL STORMS
MN	1998	TORNADO, FLOODING
MN	1999	TORNADO/FLOODING
MN	2001	WIND
MN	2008	FLOODING
MO	2001	HAIL, TORNADO
MO	2006	TORNADOES
MO	2011	SEVERE STORMS, TORNADOES, FLOODING
MS	1985	WINTER WEATHER
MS	2005	HURRICANES KATRINA, DENNIS, IVAN
MT	1991	WINTER WEATHER, WIND
MT	2010	FLOODING
NC	1989	HURRICANE HUGO
NC	1996	HURRICANE FRAN
ND	1995	HAIL, SEVERE WEATHER
ND	1997	FLOODING
ND	2001	WINTER WEATHER
NE	1996	TORNADO
NE	2001	FLOODING, TORNADO
NJ	2012	HURRICANE SANDY
OK	2010	FLOODING
SC	1989	HURRICANE HUGO
SD	1993	GREAT FLOOD OF 1993
SD	2001	FLOODING, TORNADOES
TN	2011	TORNADOES, WINDS, FLOODING
TX	2008	HURRICANE IKE
VA	2003	SEVERE WINTER STORM

A state's attempt to constrain or interfere with the prices that insurers would otherwise set can be manifested in two ways that are not mutually exclusive. One of these ways is to impose a ceiling on insurers' overall rate levels, i.e., a uniform "haircut" is enforced on the rates (or rate increases) for all classifications; we refer to this practice as "rate suppression." Alternatively, or in conjunction with rate suppression, a state may seek to cap the differences between the rates that can be charged for different classifications or impose tighter constraints on the rates for high-risk classifications than low-risk classifications; we refer to this practice as "rate compression." Rate compression typically results in overall rate inadequacy as it is difficult for insurers to offset inadequate rates for high-risk insureds by charging excessive rates for low-risk insureds. A good illustration of this practice is the imposition of severe regulatory haircuts on the rates that insurers are allowed to charge homeowners in coastal areas that are exposed to significant hurricane risk. When regulators cause rates to be inadequate this will reduce the supply of insurance, all other things equal. Insurers will be reluctant to voluntarily provide insurance for homes for which they are not allowed to charge an adequate premium. Insurers may tolerate a small degree of rate inadequacy but severe regulatory constraints on prices would be expected to result in significant distortions in the supply of insurance. This can force a substantial number of homes into residual market mechanisms (RMM). It also contributes to moral hazard in that inadequate rates reduce insureds' incentives to reduce their exposure to losses, e.g., invest in hazard mitigation, which results in higher risk and losses, all other things equal.

Excessive delays in getting rate changes approved can also contribute to market inefficiency. Under a prior approval system, regulators are typically subject to a "deemer provision," i.e., rate changes filed by insurers are deemed approved if they are not disapproved within a 30- to 60-day period. Under a competitive rating system, regulators typically have a limited amount of time (e.g., 30 days) to inform an insurer that the rates that it filed are disapproved. However, under both systems, regulators can delay an insurer's implementation of a rate change by informing it that its filing is incomplete, lacks adequate support, etc. Regulators sometimes use this tactic rather than disapproving a rate filing, which requires them to state the grounds for disapproval. Even if a rate increase filed by an insurer is ultimately approved, the delay in receiving approval can lead to inadequate rates until the new rates can be implemented. Also, it is not uncommon for an insurer and a regulator to engage in a protracted bargaining process over a rate filing that results in a considerable delay as well as approved rates that are significantly below what the insurer initially filed.

In a competitive insurance market, the least amount of regulatory interference with insurers' pricing is generally preferable as this will encourage insurers to supply as much coverage as feasibly possible, all other things equal. Our empirical results, discussed below, confirm that states with prior approval systems tend to have less favorable market outcomes than states with competitive rating systems. Hence, it is our opinion that a competitive rating system constitutes a best practice with respect to the type of rate regulatory system a state employs. Further, a competitive rating system should be administered as such, i.e., a state with a competitive rating system should not seek to impose binding constraints on insurers' prices in competitive markets.<sup>10</sup> We observe that homeowners insurance markets are generally competitive based on the standards and metrics that economists commonly use to determine whether a market is competitive in terms of its structure and performance.

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<sup>10</sup> The economic reasoning underlying this argument is that in a competitive market insurers would be unable to charge excessive rates (i.e., rates that exceed the cost of supplying insurance). Any insurer that attempted to charge excessive rates would be undercut by and lose business to other insurers that would offer coverage at lower rates that would still cover the costs of offering such coverage. If regulators were to impose binding constraints on rates in a competitive market, they would be trying to force insurers to supply insurance at prices that would not allow the insurers to cover their full costs.



Regulators might contend that insurance markets that are subject to a high level of catastrophe risk are not competitive and, hence, require greater regulatory oversight. We acknowledge that such markets may not appear to be as competitive as low-risk markets in that some insurers may be reluctant to insure high-risk homes. However, it is possible that even owners of high-risk properties that meet basic insurability conditions have at least a few insurers competing for their business. Only homes that are deemed uninsurable by private insurers must obtain coverage through an RMM – this is not a problem that can be remedied by mandating that private insurers provide coverage for these properties. Consequently, we challenge the inference that high-risk markets require or benefit from regulatory constraints on insurers’ pricing and/or mandatory offer requirements. Indeed, regulatory interference in such markets tends to worsen rather than improve market outcomes. Insurers will be more inclined to provide coverage for homes with a high exposure to catastrophe losses if they are allowed to charge what they perceive to be adequate premiums for such homes, understanding that these premiums may seem excessive to their owners.

Insurers’ underwriting practices are closely tied to their pricing structures. Some companies employ relatively flexible rate structures, which allow them to accommodate homes that vary widely in terms of their risk level. Other companies’ rate structures are geared toward a more limited group of homes with more similar risk characteristics, e.g., low risk, medium risk, or high risk. In either case, properly managed insurers will seek to match price with risk so that their total revenues will be sufficient to cover the risk they assume. “Responsible” insurers will also seek to manage their overall exposure to catastrophe losses to ensure that they will have sufficient capacity to meet their obligations to their policyholders even in the event of a severe hurricane.<sup>11</sup>

Regulatory interference with insurers’ underwriting practices has varied among the states with a material exposure to catastrophe losses. It is common for states to impose short-term moratoriums (e.g., 60-90 days) on policy cancellations and non-renewals after a hurricane. Such moratoriums should not present significant problems for insurers as long as they are short term. More problematic are attempts by regulators, such as in Florida, to prevent insurers from reducing their concentrations of exposures in high-risk coastal areas. Even for large national insurers this can be a matter of significant concern as there are limits to how much catastrophe reinsurance they can buy as well as the amount of risk they can securitize through catastrophe bonds. Consequently, in our opinion, regulators should not prohibit or seek to prevent insurers from employing reasonable underwriting standards in determining the homes they will insure and their overall exposure to catastrophe losses.

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<sup>11</sup> Most insurers manage their financial and other risk exposures in such a way as to limit their probability of default to a very low level. A small minority of insurers follow a different strategy in which they pursue higher profits in exchange for assuming excessive risk and a much higher likelihood of default.

## ***Residual Market Mechanisms***

There are three principle types of property insurance RMMs. Fair Access to Insurance Requirements (FAIR) Plans provide full coverage in some or all areas of a state. The original focus of FAIR Plans was on providing property coverage to urban areas where voluntary market coverage was less available due to higher risks associated with fire and theft. Today, FAIR Plans are increasingly servicing properties exposed to various weather-related perils as insurers seek to limit their exposure to these risks. Currently, there are 33 FAIR Plans in operation in the United States.

Beach/Windstorm Plans (also called wind pools), a second type of mechanism, generally provide windstorm and hail coverage to properties in designated coastal areas that are subject to a high risk of windstorm damage. Beach/Windstorm Plans are designed to address the particular property insurance availability problems in certain coastal areas, although some may also cover other perils, such as fire. Currently, there are five Beach/Windstorm Plans – the plans in Mississippi, South Carolina, and Texas offer wind/hail coverage only while the plans in Alabama and North Carolina also offer coverage for fire.

A third type of mechanism combines the first two types of plans and essentially functions as a state-run insurance company. There are only two such mechanisms in the U.S. – the Florida Citizens Property Insurance Corporation (FCPIC) and the Louisiana Citizens Property Insurance Corporation (LCPIC). Each comprises something equivalent to a FAIR Plan and a Coastal Plan (Louisiana) or Beach/Wind Plan (Florida). The FCPIC provides full coverage and wind-hail coverage. Both plans in the LCPIC provide full coverage. In many states, the three types of property RMMs are targeted toward residential properties, but some also provide coverage for commercial properties. The availability of residential property insurance coverage is generally the greatest problem and concern, but the supply of insurance coverage for certain commercial properties may also be constrained in some areas.

While these mechanisms may serve as short-term safety valves in the event of disruptions in the supply of private insurance, they are generally not intended to serve as long-term sources of coverage for a substantial portion of a state's property exposures.<sup>12</sup> For this reason, most states seek to properly structure and manage these mechanisms and minimize their size, i.e., retaining or moving as many exposures in or to voluntary markets as possible. Beyond efforts to maximize the supply of voluntary insurance, measures aimed at keeping policies out of the residual market include maintaining residual market rates above voluntary market rates and imposing stringent rules with respect to who is allowed to obtain insurance from the residual market.<sup>13</sup> Efforts to move policies out of the residual market include "take-out" incentives for private insurers and programs designed to match residual market policyholders with private insurers that are willing to cover them.

Proper administration of RMMs also is important. To that end, a well-managed RMM will charge adequate rates to cover the loss exposures that it insures and will also purchase adequate reinsurance to diversify its exposure to catastrophic losses. Historically, some RMMs failed to employ such measures and, consequently, incurred substantial deficits when they incurred high hurricane

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<sup>12</sup> Even in times when there is an ample supply of insurance in the voluntary market, there may be some properties that meet minimum insurability conditions but are unable to secure voluntary market coverage. Hence, it is common for these mechanisms to insure a relatively small number of exposures for extended periods.

<sup>13</sup> An example of such a rule is the requirement that a homeowner applying for insurance coverage from an RMM must show one or more declinations from voluntary market insurers.



losses. In such instances, insurers are charged assessments to pay for the deficits, most of which are allowed to be passed on to their policyholders. At the very least, these assessments constitute a cross subsidy between voluntary market insureds and RMM insureds. The amount of assessments that insurers are not allowed to pass on to their policyholders must be funded out of their premiums and surplus. This can further chill insurers' willingness to write business on a voluntary basis and increase the size of the residual market, all other things equal.

Florida and Louisiana offer interesting and contrasting case studies of how they have approached their voluntary markets vis-à-vis their RMMs. Florida has been subject to significant market pressure since Hurricane Andrew in 1992, which rose to a much higher level with the 2004-2005 storm seasons. The number of policies in Florida's RMMs spiked precipitously following Hurricane Andrew to 1.403 million in 1996 and then fell to 383,756 by 2001. In 2002, with the creation of the FCPIC, the number of residual market policies in Florida rose to 685,058 and ultimately increased to an unprecedented level of 1.483 million as of November 2011. Florida's regulatory constraints on private insurers as well as certain actions it took with respect to how the FCPIC was administered contributed significantly to the growth in its residual market. These actions included allowing homeowners to purchase a FCPIC policy if a comparable policy would cost 15 percent more or higher in the voluntary market and rolling back FCPIC rates.

In 2009, the Florida Legislature began contemplating changes to how the FCPIC was administered to reduce its size to a more sustainable level. Its rates were subsequently increased and an aggressive depopulation effort was initiated, among other measures. As of September 30, 2015, the FCPIC's policy count had fallen to just under 574,067. However, it should be noted that certain aspects of its depopulation initiative have been controversial. Specifically, single-state startup companies have been allowed to select policies they wish to take out of the FCPIC, and the owners of these policies are required to file a form with the FCPIC in order to avoid being placed with the company that has selected them. Concerns have been raised that some of the take-out companies will lack sufficient capacity to meet their claims obligations when one or more hurricanes strike the state.<sup>14</sup>

Louisiana has followed a somewhat different tack with respect to its efforts to preserve its voluntary market as well as its management of its RMMs. Like other states along the Southeast Atlantic and Gulf coasts, Louisiana experienced increased pressure on its property insurance market following Hurricane Andrew. While its regulatory policies, especially prior to 2008, could not be described as completely benign from an insurer perspective, they were considerably less restrictive than Florida's. Following Hurricanes Katrina and Rita in 2005, market pressures further increased in Louisiana. Beginning in 2008, Louisiana moved from a 10 percent flex rating system with approval authority vested in an insurance rating commission to a modified prior approval system with approval authority vested in the Louisiana Department of Insurance (LDOI). A review of insurers' rate filings in Louisiana by Klein (2009b) over the period 2005-2008 indicates that most insurers' filings for rate increases were approved in full. This is consistent with discussions with LDOI personnel that indicated the department's strategy has been to minimize disruptions in the voluntary market.

This strategy also has carried over to Louisiana's management of its RMMs. In this respect, it has sought to maintain a residual market rate structure that is non-competitive with the voluntary market and has also pursued a vigorous depopulation program. As a consequence, the absolute and relative size of the state's RMMs has been considerably less than what otherwise would likely be the

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<sup>14</sup> "Homeowners Battle Push by Citizens Property Insurance to Drop Them," Tampa Bay Times, November 7, 2014.

case. The total policy count in Louisiana's RMMs grew from approximately 11,000 in 1992 to a high of approximately 178,000 in 2008. As of May 2015, the LCPIIC policy count had fallen to 86,645 (LDOI, 2015).

Both states have also made strong efforts to encourage new insurers to enter their property insurance markets. In 2007, Louisiana initiated its Insure Louisiana Incentive Program to attract more insurers to the state. The program set aside \$100 million in matching funds for insurance companies willing to enter the state and write new business. Qualifying companies received funds ranging from \$2 million to \$10 million and were required to meet specific solvency requirements and take 25 percent of their new policies from the LCPIIC. According to a recent report issued by the LDOI, 22 new insurance companies have entered the state's property insurance market since 2005 (LDOI, 2015). Five companies received grants under Louisiana's incentive program – four of these companies write homeowners insurance and the fifth writes commercial property insurance.

In 2006, Florida also established a \$250 million incentive program that it used in its residual market depopulation efforts. Florida provided a matching surplus note to insurers qualifying for the program. It appears that for each note, the Florida Office of Insurance Regulation (FLOIR) negotiated the amount of policies that an insurer would remove from the FCPIIC and possibly other matters. A Florida surplus note could be higher than a Louisiana grant – at least one company received a \$25 million surplus note. The notes were funded from the FCPIIC's surplus or reserves. Ultimately, 13 insurers participated in the program and qualified for loans totaling \$247.5 million.

We are not in a position to offer an opinion on whether the benefits of these programs have exceeded their costs, but we can offer some observations as well as suggest some of the questions that might be addressed in an evaluation of their cost effectiveness. Generally, it would be preferable to rely on a favorable regulatory environment and the opportunity to make a fair profit as sufficient inducements to attract new insurers into a market. That said, it is also understandable that some insurance companies would be reluctant to enter the homeowners insurance markets in Florida and Louisiana following the 2004-2005 storm seasons given concerns they may have had with respect to the likelihood and severity of more hurricanes. Hence, it is understandable that both states turned to providing some financial assistance to encourage insurers to enter their homeowners insurance markets to increase the supply and sources of coverage.

A proper cost-benefit analysis of these programs would evaluate what these states gained in terms of expanding the supply of insurance coverage relative to the costs of their programs. Clearly, both programs had provisions that tied the amount of assistance a new insurer would receive to the number of policies it would issue and the number of insureds it would take out of each state's RMM. The fundamental question that should be addressed in an evaluation of these programs is whether Louisiana and Florida negotiated good deals in terms of the grants/surplus notes they awarded in return for the cost and amount of insurance their recipients provided. Addressing this fundamental issue raises the question of what the participating insurers would have done or not done, in the absence of any financial assistance. Also, in assessing the benefits of these programs, it would be important to estimate their long-term effects on the cost and supply of homeowners insurance.



We also note that different approaches of the two programs would need to be considered. In the case of Louisiana, outright grants represented an investment by the state and, hence, it would be desirable to estimate the return on that investment. In the case of Florida, surplus notes were provided, which have been paid back. Consequently, for Florida's program, the pertinent questions would include the implicit opportunity cost of the surplus notes and the cost of risk associated with these notes.



*After an insurer has entered a market, it, like all other insurers, should be subject to appropriate financial supervision to ensure that it has adequate reinsurance in place and does not assume more exposures than it can safely handle.*



There are also issues with respect to the licensing and financial regulation of new entrants into a state's homeowners insurance market, regardless of whether they have received any state financial assistance. Generally, in the licensing process, a state's regulators impose various requirements for a company to be licensed to ensure that it is financially sound and meets other regulatory standards. In their desire to expand the supply of homeowners insurance, regulators in catastrophe-prone states need to be cautious with respect to the companies they allow to enter their market. Among other things, regulators need to ensure that the new entrants meet certain safety and soundness requirements, e.g., they should have adequate capital and competent management. After an insurer has entered a market, it, like all other insurers, should be subject to appropriate financial supervision to ensure that it has adequate reinsurance in place and does not assume more exposures than it can safely handle. Such supervision should also apply to other aspects of an insurer's financial structure and operations to ensure that it will be able to meet their claims obligations if they are subject to catastrophic losses.<sup>15</sup>

## **EMPIRICAL ANALYSIS OF RATE REGULATION AND RESIDUAL MARKETS**

In the analysis below, our first two highlighted regulatory practices – rate regulation and residual markets – are assessed in relation to six market measures: (1) the number of private insurers operating in the state; (2) the level of competition among these insurers; (3) the capital supporting property risks in the state; (4) the reinsurance available to support insurers' underwriting risk; (5) the volume of coverage (i.e., total premiums earned);<sup>16</sup> and (6) the median loss ratio of insurers operating in the state (a measure of underwriting profitability). These relationships are evaluated in the next sections.

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<sup>15</sup> Before, during, and after the 2004-2005 storm seasons, questions were raised regarding the adequacy of the financial regulation of "startup companies" in Florida; these questions became more salient when the Poe companies became insolvent (see, for example, Grace and Klein, 2009). It appears that Florida regulators have since tightened their regulation of startup companies. Nonetheless, some concerns remain as to whether all of the startup companies, particularly those that have assumed substantial coastal risk exposures, will be able to meet their claims obligations when more hurricanes strike the state.

<sup>16</sup> Changes in the total volume of premium are comprised of changes in price and changes in quantity (exposures), and, therefore, complicate the analysis. This is addressed further in a subsequent section.

By comparing the supply decisions that insurers make in personal lines and commercial lines following major natural disasters, Born and Klimaszewski-Blettner (2013) demonstrate empirically that “certain regulatory responses may unintentionally impede insurers’ willingness to provide coverage against natural disasters,” especially in the more heavily regulated personal lines. “Prior approval of rates and regulatory rules like policy cancellation bans discourage insurers from offering insurance in certain lines of business and deter them from developing effective strategies for dealing with changing risk exposures,” they write, adding that there is “statistically significant proof for the expected ‘crowding out’ of private insurers by residual markets.” Born and Klimaszewski-Blettner suggest that regulation should place “more emphasis on the [solvency] monitoring function than on rate approvals and post-disaster regulatory responses that can have unintended consequences of reducing availability of coverage.”

The ensuing analysis considers the respective roles of rate regulation and residual markets as they pertain to stabilizing a state’s insurance market. Variation across states in the use of these regulatory tools, especially as they follow economically catastrophic events, may help yield insights into the “best practices” for regulation. While the analysis here considers changes in each of the six measures, individually, following a catastrophic event, the results should not be considered separately. Rather, the results should be considered in concert, recognizing that there may be tradeoffs or spillover effects that suggest a negative outcome on one dimension was partially offset by a positive outcome on another and vice versa.

## ***Analytical Approach and Sample***

Changes to state property insurance markets are analyzed using 30 years of data on property/casualty insurer operations from the National Association of Insurance Commissioners (NAIC). Key measures evaluated below include changes over a two- and three-year period<sup>17</sup> in the number of firms operating in a state; the Herfindahl-Hirschman Index (HHI) of market concentration; capital (i.e., surplus available to pay claims); the state reinsurance ratio; total premiums earned; and the median state loss ratio.<sup>18</sup> The analysis considers three primary factors that affect these market measures: catastrophic events, strict (prior approval) rate regulation, and the size of a state’s residual market. Because markets also evolve for reasons other than catastrophic events and regulatory changes, the analysis includes changes in state demographics – population and property development – and controls for macroeconomic effects through the use of a time trend variable.

The sample includes all property insurers operating in the U.S. over a 30-year period. The number of insurers offering property insurance coverage varies significantly over time. Figure 1 shows the total number of insurers that reported participation in the homeowners market, the commercial property market, or both for the sample period of 1984-2013.<sup>19</sup> The figure shows a dramatic increase in the number of firms operating in the commercial market but a decline in insurers that also write homeowners insurance. The number of insurers that reported writing only homeowners insurance coverage increased from 246 in 1984 to 458 in 2013.

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<sup>17</sup> This two-year period is long enough to allow affected insurers time to evaluate their operations but also short enough to avoid the need to control for subsequent catastrophic events or changes in regulations.

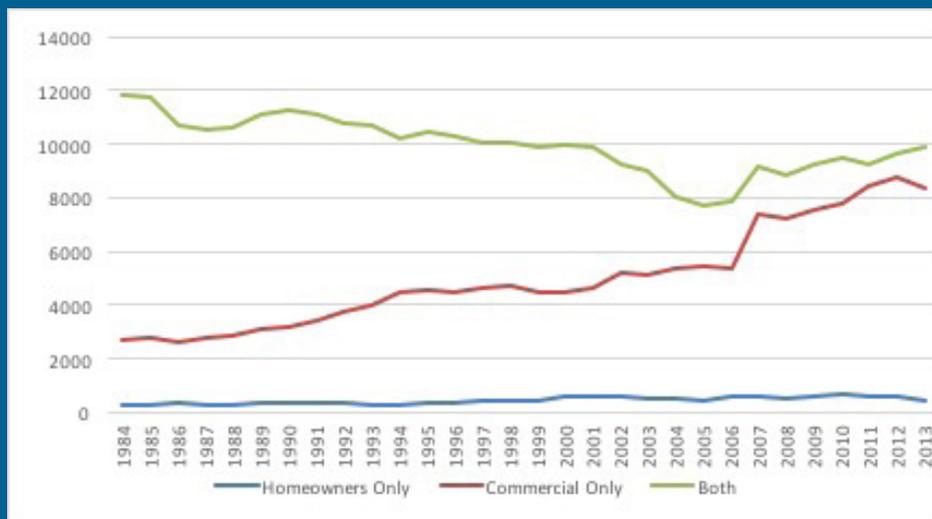
<sup>18</sup> The analysis was also conducted on a sample that excluded Florida. The results were consistent with those reported here.

<sup>19</sup> Source: NAIC. Insurers included in this table and all further analysis wrote at least \$1 million in premiums each year. Commercial property insurers include all insurers operating in fire, allied lines, and commercial multiple peril.

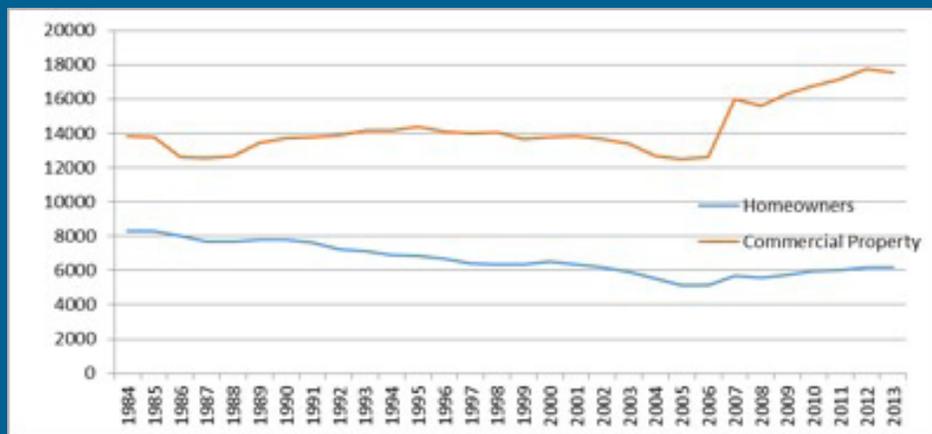


For the following analysis, insurer participation and performance are captured at the state level in what is hereafter referred to as an insurer “unit,” i.e., an insurer that operates in 20 states is captured in the analysis as 20 different units. Figure 2 shows the total number of insurance units that reported participating in writing homeowners or commercial property insurance in the U.S. The data indicate that over the sample period the number of homeowners units has declined by about 2,000, while the number of commercial property units has increased by roughly 4,000. The average number of states in which homeowners insurers reported business declined from nearly 7.94 states per insurer in 1984 to 3.43 in 2013. The number of single-state carriers increased from 452 in 1984 to 509 in 1990 but subsequently decreased to 406 in 2013.

**FIGURE 1: NUMBER OF INSURERS OPERATING IN THE U.S. PROPERTY INSURANCE MARKET**



**FIGURE 2: AGGREGATE NUMBER OF PROPERTY INSURER UNITS**



## Regulation and Market Measures

The market for property insurance is affected by the state regulatory environment in many ways. While many states have adopted similar approaches to regulating forms and the licensing of agents, rate filing requirements, in particular, have significant impact on the ability of the insurer to adjust rates, either by restricting the size of such adjustments or delaying their approval and/or implementation. Insurers operating in a true competitive rating environment have more flexibility than those that must file and wait for approval. Arguments for strict regulation are generally motivated by a desire to provide affordable insurance, while supporters of more competitive rating systems suggest strict regulation is subject to political influence and argue that rate regulation “artificially depresses prices, forcing insurers out of otherwise important markets and distorts the real cost of insurance” (Federal Insurance Office, 2013).<sup>20</sup>

<sup>20</sup> Regulators who attempt to constrain insurers’ rates may contend that such attempts should not have an adverse effect on the supply, i.e., availability, of insurance, but economic reasoning and empirical evidence suggest the contrary.

After experiencing natural catastrophic events, some states established state-sponsored residual market mechanisms (RMM). These mechanisms, commonly known as FAIR plans, “beach plans,” “windstorm associations” or Citizens-type corporations, in theory, are designed to provide coverage for high-risk property owners who cannot obtain insurance from the private insurance market.<sup>21</sup> Since private insurers are generally required to participate, to some extent, in state residual markets, they can influence the insurer’s decision to offer coverage in the state. If an insurer does offer coverage, it will typically be assessed to cover the residual market’s deficits.<sup>22</sup>

Several states have imposed exit restrictions and policy cancellation bans following a catastrophe. By design, these measures force insurers to maintain their participation in the state market even if they would otherwise desire to reduce exposure or exit altogether. The use of these measures, and the perception that they could be used again in the aftermath of future catastrophes, must be considered when assessing the role of rate regulation and residual markets, as they may exacerbate the potential negative consequences of regulatory practices on insurers’ post-catastrophe decisions.<sup>23</sup>

The respective roles of rate regulation and residual markets in ensuring the availability of coverage are assessed below through analysis of the six market measures described above. This assessment considers how strict rate regulation and the existence of a residual market influence the market, generally, over time, as well as, specifically, following an economically catastrophic event. As such, the analysis yields insight on the market dimensions (e.g., competitiveness, capacity) in which these regulatory responses are most influential and whether the influence is positive or negative on each dimension. The results of the analysis are summarized in the following sections, with each market dimension analyzed separately. This is followed by an overall assessment and recommendations for considering best practices as encouraged by the FIO report.



*Several states have imposed exit restrictions and policy cancellation bans following a catastrophe. By design, these measures force insurers to maintain their participation in the state market even if they would otherwise desire to reduce exposure or exit altogether.*



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<sup>21</sup> In theory, an RMM should serve as a “market of last resort,” i.e., no other source of coverage is available to its insureds. In practice, under certain conditions, some RMMs may be structured and managed in such a way that they provide an alternative source of coverage even to consumers who could buy insurance in the voluntary market.

<sup>22</sup> RMMs are rarely self-sufficient. Where the rates charged to high-risk policyholders are too low to support the program’s operation, insurers are generally assessed to make up the difference.

<sup>23</sup> In an evaluation of the Florida property insurance market, Medders et al (2014) note that “a focus on price-reducing legislation and regulation has led to increased solvency constraints and negative first-order effects on private industry capacity. Such legislation and regulatory actions impacting Florida’s property insurance market create significant uncertainty for private insurers and add to the cost of doing business in Florida” (p. 199).



## ***Market Size Following Catastrophes***

One easily assessed measure of the subsequent impact of catastrophic events on the state insurance market is the change in the number of firms operating in the state. If a catastrophe was fully anticipated by insurers in a competitive and unregulated market, they would not necessarily be prompted to revise their assessments of the risks of writing future homeowners insurance coverage in the state, and we would not expect there to be a substantial effect on exit (or entry). The catastrophic event would function as a fixed cost, so that if it was optimal to write insurance coverage in the state prior to the event, then it will continue to be profitable to do so. Because the risks were fully anticipated, the premiums will have been set in a manner so that in the long run, the insurer will earn a sufficient profit to make writing coverage desirable.

Major catastrophic events may generate losses that either bankrupt an insurer or lead it to exit the state if it did not fully anticipate a catastrophe, and therefore did not charge adequate premiums, or if it did not have adequate capital or reinsurance arrangements. The insurer may experience simple bad luck or have erred in judgment when accepting and pricing the risk. Fundamentally, a catastrophe can have two principal effects on insurers. One effect is the loss shock that requires affected insurers to replace lost capital. The second effect is that a catastrophic event can prompt insurers to significantly increase their estimates of the risk of such events occurring in the future causing them to reassess their underwriting, pricing, and reinsurance arrangements.<sup>24</sup> Ultimately, each affected insurer must determine whether it is viable for it to remain in the market and if it chooses to stay, how it will adjust its portfolio of exposures and pricing in order to earn a fair profit over the long run.

Born and Klimaszewski-Blettner (2013) find that following an unexpected catastrophic event certain insurers are more likely than others to reduce their exposure or even exit a state insurance market. In their analysis, they note specific firm characteristics associated with these behaviors. For example, firms with a high level of total national homeowners premiums earned are more likely to exit the state following a catastrophe. Further, insurers with a large level of state homeowners premiums earned are less likely to leave the state following a catastrophe. These are the firms that have substantial investment in property insurance either at the state level or as a share of their overall business.

### ***Results of the analysis of state market size over the time period 1984-2013 indicate:***

- While the number of insurers varies substantially over time, changes in the number of insurers in a state are not significantly related to catastrophic events.
- Strict rate regulation is associated with a reduction in the number of homeowners insurers, relative to the number of commercial property insurers operating in the state over time. This relationship does not change following a catastrophic event.

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<sup>24</sup> These two effects can be interconnected in several ways. For example, an insurer that has suffered a substantial loss in capital due to a catastrophic event will have reduced capacity to continue underwriting the same amount of loss exposures, and its concerns about its capacity will be greater if it also believes the that likelihood and severity of such events is higher than it had previously assumed. Also, insurers that have suffered significant capital losses will have a greater need for reinsurance until that capital can be replenished, all other things equal.

- The number of commercial property insurers in the state increases with the size of the residual market, while the number of homeowners insurers is negatively related to the size of the residual market. The effect is slightly larger in years following catastrophes, but the effect is not statistically significant. The relationship suggests that insurers may leave states with a growing residual market because they are concerned about having to meet future assessments.

A persistent decrease in the number of homeowners insurers is cause for regulatory concern, as it affects consumers' access to coverage. In maintaining the size of the homeowners market, regulators may want to look to the commercial market, where the number of insurers continues to grow, for indications of best practices with regard to rate regulation and operating a residual market mechanism.

### ***Catastrophes and Structural Competitiveness***

Changes in the number of insurers operating in a state can have important consequences for the structural competitiveness of a market. Throughout the sample period, no states had fewer than 27 insurers participating in the homeowners market or 97 insurers participating in the commercial property market in any given year. Average market shares were 0.8 percent and 0.4 percent for the homeowners and commercial property markets, respectively. The HHI, a measure of market concentration, averaged 880 for the homeowners market and 240 for the commercial property market. A relatively low value of the HHI, which ranges from 0 to 10,000, indicates a competitive market.<sup>25</sup> By these indicators, both markets are very structurally competitive across all states. In only one state, Delaware, did any one insurer write more than 50 percent of the commercial property business.<sup>26</sup>

Compared to the previous analysis of changes in market size, analysis of changes in structural competition captures not only changes in participation, but also changes in the distribution of the business across insurers operating in the market. Thus, if one large insurer exits, the effect on market size is small, but the effect on structural competition is much greater.

*The analysis of factors affecting the competitiveness of the property insurance market indicates the following:*

- In general, property insurance markets do not become significantly more, or less, structurally competitive after a catastrophic event.
- In states with prior approval rate regulation, a catastrophe is associated with an 18 percent increase in structural competitiveness, as measured by the HHI. The effect is smaller among homeowners insurers than among commercial insurers and likely reflects the reduction in the number of homeowners insurers identified previously. Furthermore, the increase in structural competitiveness in the homeowners market reflects the exit or decreased market share of some larger insurers in a state.

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<sup>25</sup> According to horizontal merger guidelines promulgated by the U.S. Department of Justice and the Federal Trade Commission, markets with HHI values under 1,500 are considered to be "un-concentrated;" a merger that would not cause a market's HHI to exceed 1,500 would generally not raise any concerns from an antitrust perspective.

<sup>26</sup> The number of firms in a market and its level of concentration are two indicators of its structural competitiveness. The ease of or barriers to entry into and exit out of a market are also important. According to the theory of contestable markets, even a highly concentrated market may still be structurally competitive if entry and exit barriers are relatively low (Baumol et. al., 1982). In such a market, the threat of entry by new competitors exerts "competitive discipline" on the firms in the market.



The size of the residual market is negatively related to the structural competitiveness of the homeowners market, in general. This result may indicate that homeowners insurers leave states with growing residual markets, perhaps because they are concerned about future assessments. The occurrence of a catastrophic event does not significantly alter this relationship. Compared to the results of the previous analysis, the results here are mixed. Factors that drive an increase in structural competitiveness are generally desirable as they increase pressure on insurers to remain competitive in terms of their pricing and other aspects of their market conduct and performance. However, large increases in competitiveness may be due to the exit of one or more large, well-capitalized insurers, in which case competitiveness comes at the expense of reduced capacity leading to potential solvency concerns.<sup>27</sup> More generally, while strict rate regulation and the residual market share are associated with mostly positive changes to the structural competitiveness of a market, regulators should examine the corresponding effects of these changes in terms of the number of insurers operating in the market and the capitalization of these insurers, which are discussed in the next section.

### ***Capacity Following Catastrophes: Capital and Reinsurance***

Another indicator of stability in the market is the market capacity for bearing risk. One measure of market capacity is the total capital of the insurers operating in the state. More capital indicates a greater ability to withstand larger than expected losses, but insurers face a variety of costs to holding capital. These include taxes that must be paid on undistributed reserves, the opportunity cost of not putting the capital to use (investing it) elsewhere, and the possibility of becoming a takeover target.<sup>28</sup>

Cummins et al (2002) evaluate the capacity of the U.S. market for bearing risk and suggest a natural definition of industry capacity is “the amount of industry resources that are deliverable conditional on an industry loss of a given size” (p.557). Thus, an evaluation of changes in market capacity following catastrophic events should also consider insurers’ use of reinsurance, which allows insurers to increase capacity for bearing risk. While we would expect insurers to reevaluate their reinsurance arrangements following a catastrophe, Froot and O’Connell (1999) find that supply shocks are more important than demand shocks in explaining the effect of losses on reinsurance prices and quantities. Consequently, while holding excess capital and obtaining reinsurance may be considered substitute approaches to ensuring capacity, capital reductions along with a reduction in the availability of reinsurance can have a devastating effect on the availability of property coverage.

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<sup>27</sup> It is important to bear in mind that the HHI measures market concentration. While it is true that market concentration is generally associated with the structural competitiveness of a market (that is, markets are generally considered to be less competitive when shares of the market are disproportionately concentrated among a few dominant players and more competitive when market shares are evenly distributed among multiple players), one must be careful in evaluating the health of an insurance market strictly in terms of the HHI. If an insurance market becomes more “structurally competitive” because one or more large, well-capitalized insurers have exited the market, this is not necessarily a positive development for insurance buyers. Specifically, the exit of one or more well-capitalized insurers would be expected to reduce the overall capacity of the insurers in a market that could potentially result in greater market instability when future catastrophes occur. It also can be argued that insurance markets that appear to be dominated by one or two large insurers may still be very competitive if these insurers attained and maintain their position by being highly efficient and offering attractive prices and products.

<sup>28</sup> For further discussion of the costs of holding capital, see Korczyk (2005).

Since insurers report capital (i.e., surplus available to pay claims) at the company level, one can only estimate the amount of capital that is available to support catastrophic losses in any given state. For many insurers, the reported amounts support their operations in all states in which they do business. For example, if they experience catastrophes in more than one state, capital will be allocated across affected states. Some companies, on the other hand, have created separate “pups” that operate as a legally separate entity in the state. When the pup is affected by a catastrophe, only the capital within the pup is at risk.<sup>29</sup>

The capital held by the property insurers operating in a state varies significantly over time. Over the entire sample period, some states saw an increase of more than 200 percent, while others experienced much smaller increases and no states saw a reduction. If insurers had not changed their risk exposures over this period, then overall capacity for bearing property risks may have increased. But risk exposures change and this capital is also supporting other lines of business and, as mentioned previously, business in other states. Nonetheless, a significant reduction in the capital available to support the property risks in a state might indicate further instability of the state market and subsequent availability problems.

Consider a change in capital that occurs in the years following an economically catastrophic event. In the short term, a significant reduction would reflect the higher-than-expected losses due to the catastrophic event. A reduction in total capital that persists over a longer period of time might indicate that larger, well-capitalized insurers have chosen to exit the market.

*Analysis of the state total capital indicates the following:*

- All else equal, changes over time in state total capital are not significantly related to catastrophic events. This holds across the different types of insurers and states with different regulatory systems.
- In prior approval states, the homeowners insurance market exhibits a significant 3.2 percent average decline in capital over a two-year period (and 4.5 percent average decline over a three-year period) relative to commercial property insurers.
- A larger residual market is associated with a significant reduction in capital across homeowners insurers. This finding is consistent with the reduction in the number of firms in states with a growing residual market.

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<sup>29</sup> It should be noted that some of the larger insurer groups have employed the strategy of establishing pup companies in high-risk states for at least two reasons. One reason is that the effects of regulation and market conditions in the state are more evident in the financial data of the pup than in the financial data of a company with operations in a large number of states. A second reason is that, under extreme conditions and the incurrence of severe catastrophe losses by the pup, its parent company is not obligated to bail out the pup. That said, the parent company may still choose to provide a capital infusion to the pup. Our point here is that the use of pup companies affiliated with large national insurers is preferable to either the complete withdrawal of large national insurers (i.e., they have no affiliated insurers in a state) or their replacement by small, regional, or single-state insurers with much less capacity.



As with the amount of capital, one can only estimate the amount of reinsurance coverage that is available to support catastrophic losses in a state because reported reinsurance amounts support insurer operations in all states in which they do business. Insurers' reported reinsurance assumed and reinsurance ceded amounts are used to create a state-level reinsurance measure, defined as the ratio of reinsurance ceded divided by the sum of reinsurance assumed and direct premiums written. From 1996 to 2013, the average state reinsurance ratio for all property insurers increased from about 1 percent to more than 8 percent. The state average reinsurance ratio for commercial insurers is roughly four times higher than that for homeowners insurers (12 percent and 3 percent, respectively in 2013).

*Analysis of the state reinsurance ratio indicates the following:*

- The state reinsurance ratio is generally higher in states with prior approval rate regulation. As expected, the state reinsurance ratio for homeowners insurers is significantly lower than the ratio for commercial property insurers.
- The residual market share is, on average, positively related to the state reinsurance ratio. However, the effect of the residual market share on the reinsurance ratio is negative for the homeowners insurance market following a catastrophe.

When these results are considered in conjunction with those above regarding changes in capital, the homeowners market, and particularly in states with strict rate regulation and/or a sizable residual market, has experienced a significant reduction in the amount of insurance industry resources available to support catastrophic losses. Again, regulators might look to the more stable capitalization in the commercial property market for best practices to maintain a well-capitalized homeowners insurance market.

### ***Changes in Premium Volume***

Born and Klimaszewski-Blettner (2013) show that, following a catastrophic event, insurers are more likely to reduce their exposure or even exit a state insurance market than they would be in any other year. Another possible response is that the insurer may revise its underwriting criteria and modify its rate structure. For it to be profitable for the insurer to write coverage in the state, it will consequently have to charge more for insurance in the other years in which there are no catastrophes than it would if there were not the threat of catastrophic risks. Thus, one would expect to observe rate increases in states following a catastrophic event. However, rate changes may be subject to regulatory oversight, which limits the insurer's ability to charge actuarially indicated rates. In some states, insurers must obtain prior approval before changing their homeowners insurance rates. We expect that a more restrictive state regulatory regime would hinder an insurer's ability to recover financially following a catastrophic event.<sup>30</sup>

In the available data, total premiums are a combination of the price of insurance and the number of policies. Changes in state total premiums following a catastrophic event may indicate that the price of coverage has changed, the number of policies written has changed, or both have occurred. One might expect a catastrophic event to prompt firms to raise premiums in subsequent years,

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<sup>30</sup> For a general discussion of the effects of rate regulation on property/casualty insurers, see Born (2001).

if allowed to do so. On the other hand, events may be associated with a change in the quantity of insurance written because: (1) insurers reduce their exposure in the state (e.g., they tighten their underwriting standards or exit); or (2) the demand for coverage changes. With regard to the latter, demand for coverage may increase if consumers perceive the event as an increase in expected future property losses. This effect may be counteracted by a reduction in demand due to an increase in the price of coverage.<sup>31</sup>



*... compared to commercial insurers, homeowners insurers are more likely to reduce their business following sizable catastrophe losses but less likely to reduce their business after having experienced an unexpected number of relatively minor catastrophic events.*



Born and Klimaszewski-Blettner (2013) evaluate changes in premiums written by homeowners and commercial property insurers to assess the relationship between catastrophic losses and insurer participation in the state market. Controlling for other insurer-specific characteristics, such as the insurer's scope of business, size, and market share, they find that, compared to commercial insurers, homeowners insurers are more likely to reduce their business following sizable catastrophe losses but less likely to reduce their business after having experienced an unexpected number of relatively minor catastrophic events. The results suggest that homeowners insurers' withdrawals from a state market are driven by the impact of catastrophic losses on their capacity for bearing risk (and also changes in the insurers' expectations with respect to the severity of catastrophic events in the future) and are less an outcome of the unexpected frequency of events. The differential reaction to unexpected frequency versus unexpected severity may be explained by the more severe impact of large catastrophes on insurers' performance and expectations regarding the severity of future events than the impact that results simply from an increase in the number of events (independent of their size). It might also result from regulatory constraints that limit the insurer's ability to respond (e.g., to obtain approval to increase rates). Indeed, the results indicate that insurers operating in prior approval rate regulation regimes are more likely to exit or reduce their exposure in a state following an unexpected catastrophic event.

*Analysis of state total premiums earned captures the net result of these individual insurer responses.*

*The results indicate the following:*

- A catastrophic event is associated with a significant increase in total homeowners premiums, relative to commercial property premiums.
- Strict rate regulation is generally associated with a small decrease in homeowners earned premiums following a catastrophic event.

<sup>31</sup> See Aseervatham et. al. (2014). The authors evaluate the relationship between catastrophic events and the demand for property insurance coverage by comparing reactions in affected states with the reactions in neighboring states. They find that total premiums written in homeowners insurance increase significantly while total premiums written in commercial property insurance are not significantly affected. The authors conclude that behavioral approaches are needed to explain this result, as it cannot be explained simply by a change in the insurers' capacity to bear risk.



- An increase in the size of the residual market is associated with an increase in homeowners premiums earned. If the growing residual market contains exposures that were previously insured in the private market, this finding suggests that such growth leads to an increase in prices for homeowners insurance coverage.

The increase in homeowners premiums following catastrophes is consistent with the findings of Born and Klimaszewski-Blettner (2013), who also find that catastrophic events result in an increase in the total amount of coverage in the homeowners market, relative to the commercial market. While their results, and those here, cannot distinguish between increases in the amount of coverage and increases in the price of coverage, Aseervatham et al (2014) provide evidence that the increase is only partly due to an increase in the price of coverage, i.e., both the quantity of coverage and the price exhibit an increase following an event.

### ***Underwriting Performance Post-Catastrophe***

Insurer underwriting performance is variable by nature, but significant catastrophic events have been shown previously to have major effects on post-catastrophe operations. While an economically significant catastrophic event, by definition, is evident in larger than usual loss ratios in the catastrophe year, regulators should be concerned if underwriting performance does not recover to a profitable level quickly. State median loss ratios are used here to evaluate whether the regulatory environment is relevant in the recovery of a property insurance market's profitability. The regulator might be concerned if underwriting profitability is persistently lower following a catastrophic event, as this suggests premiums may not be adequate. Analysis of state median loss ratios indicates that two- and three-year changes in the underwriting profitability of homeowners and commercial property markets are unrelated to rate regulation or catastrophic events.

The analysis reveals only one significant finding: the share of premiums in the residual market share is positively related to homeowners insurers' loss ratios. Larger residual markets could be having a negative effect on market profitability for at least two reasons. One is that if a RMM is charging inadequate rates and accounts for a significant share of the total market, this in itself could increase insurers' loss ratios.<sup>32</sup> A second reason is that inadequate rates in a residual market could undermine insurers' efforts to charge adequate rates for voluntary market insureds.<sup>33</sup> This further supports our opinion that regulators should seek ways to reduce the size of the residual market through the measures we have discussed earlier, including setting residual market rates that are not competitive with rates in the voluntary market.

## **OTHER REGULATORY POLICIES**

We turn now to two other areas of regulation that have had significant impact on state insurance markets following catastrophic events: policy provisions and claim settlement practices. The various mechanisms and subsequent outcomes are assessed using specific state experiences. As discussed earlier, the regulatory policies and practices in a given state including the administration of its residual market mechanism (RMM), in interaction with certain underlying conditions, affect the outcomes in its homeowners

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<sup>32</sup> We would expect that this would be case in states where the RMM uses an assigned risk approach. Where this approach is used, the loss ratios of voluntary market insurers would reflect the inadequate rates they would be forced to charge for residual market insureds.

<sup>33</sup> We would expect that this effect would be more pronounced in states where the RMM does not enforce strict eligibility requirements.

insurance market. Additionally, as noted in our discussion, other regulatory policies and practices can affect market outcomes beyond the type of rate regulatory system a state employs and the structure and management of its RMM(s).

## ***Policy Provisions***

The specific provisions of homeowners insurance policies and their regulation also warrant some discussion. Insurers began introducing higher deductibles for homeowners insurance following Hurricane Andrew. The most significant development was the introduction of specific or “named” wind or hurricane deductibles that were higher than the deductibles for other perils. Wind/hurricane deductibles can be stated in dollar amounts but the more common approach is to set them as a percentage of the Coverage A (dwelling) limit on a homeowners multi-peril policy. Initially, insurers’ wind/hurricane deductibles were set at 1 percent or 2 percent of the dwelling limit. More recently insurers have mandated or offered higher optional percentage wind/hurricane deductibles that range from 1 percent to 5 percent, usually with options to buy back broader coverage for an additional premium.<sup>34</sup> Some states allow insurers to offer higher optional wind/hurricane deductibles that can range from 5 percent to 15 percent.

Depending on a state’s law, an insurer may impose a mandatory wind/hurricane deductible or a mandatory standard deductible on policyholders in higher risk areas of a state. Higher deductibles allow insurers to better manage their catastrophe risk exposure and losses and also allow some homeowners to lower their premiums by accepting higher deductibles. Of course, higher deductibles require insureds to retain more risk but for many this may be preferable to paying substantially higher premiums or being forced into the residual market. The trigger for the application of hurricane deductibles to a loss is generally the declaration of a named storm by the National Weather Service.

State laws and regulations vary with respect to the size of the wind/hurricane deductibles that insurers are either allowed to offer or require as a condition for providing coverage (Insurance Information Institute, 2015). Although it is understandable that very large optional or mandatory deductibles could be problematic in terms of exposing homeowners to a high amount of retained losses, states need to be careful to not limit these deductibles to such a low level that it would significantly undermine the supply of insurance and/or require homeowners to pay significantly higher premiums because they are not allowed to opt for higher deductibles than those permitted by law.

It also should be noted that these deductibles are typically applied for each “occurrence” of covered losses. Hence, if an insured has losses from two hurricanes within the policy period, the deductible will apply again to their losses from the second hurricane. This became a matter of some concern in Florida in 2004 when some homeowners were struck by more than one hurricane during that year. Florida law now prohibits insurers from imposing more than one hurricane deductible in a given calendar year.

The concern about per-occurrence deductibles is understandable because the losses retained by an insured can mount if they are hit by more than one hurricane during the period of their policy. At the same time, per-occurrence deductibles greatly aid insurers in managing their catastrophe risk and helping them reduce their rate-level needs. Requiring insurers to apply deductibles on an

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<sup>34</sup> Currently, 19 states and the District of Columbia allow the use of hurricane deductibles.



“aggregate” basis (rather than per-occurrence) would be expected to have a negative effect on the supply of insurance and increase rate pressures. Hence, in our opinion, such a requirement is inconsistent with regulatory “best practices.”

Insurers’ inclusion of anti-concurrent causation (ACC) clauses in their homeowners policies has been an issue in a number of states. Under an ACC clause, if damages to a home are caused by a covered peril, e.g., wind, and an excluded peril such as flood, then none of the damages may be covered under the policy. Insurers can apply an ACC clause in two different ways. Under its most strict application, if damages to a home are caused by a covered and an excluded peril, then none of the damages are covered. Under a less strict application, damages caused by the covered peril will be reimbursed if they can be distinguished from losses caused by excluded peril. Based on the latter approach, if it is possible to identify damages caused by a covered peril then, in theory, those damages should be covered and the damages that are attributed to the excluded peril would not be covered. However, for a given claim, it may be difficult to separate the damages caused by covered and excluded perils. In such a situation, the insured carries the burden of proof in segregating the damages caused by the covered peril.

Insurers’ application of ACC provisions became a matter of significant debate and litigation following Hurricane Katrina when many homes suffered losses from both wind and flooding. These provisions also led to considerable consternation following Superstorm Sandy for which damages caused by flooding were much greater than the damages caused by wind. While the courts have generally upheld insurers’ application of their ACC clauses, there have been legislative attempts, albeit unsuccessful to date, to prohibit their use.<sup>35</sup> Nonetheless, at the very least, litigation to overturn insurers’ use of ACC provisions in their policies creates uncertainty with respect to what their claims obligations will be following an event with substantial losses arising from a non-covered peril. Insurers base their pricing on the provisions of their policies, and when there is uncertainty about whether these provisions will be upheld, insurers would be expected to respond by increasing their prices and/or insuring fewer homes where coverage disputes may arise.<sup>36</sup>

Outright legislative prohibition of the use of ACC provisions, while appearing to be beneficial to policyholders, would necessarily increase the cost of their coverage and could also reduce the availability of coverage. There is no ideal solution for this issue. Including the flood peril in homeowners insurance policies might seem to be a good way to help solve this problem to some but we question whether this is realistic.<sup>37</sup> Alternatively, much stronger efforts could be made to increase the purchase of flood insurance by homeowners in high- and moderate-risk areas. Such efforts could encompass both voluntary and coercive measures. The latter would likely encounter significant political resistance but still warrants consideration given the alternatives.

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<sup>35</sup> To date, the courts in only four states – California, North Dakota, Washington, and West Virginia – have refused to uphold ACC clauses.

<sup>36</sup> The actions of the Mississippi attorney general to force companies to settle their customers’ property insurance claims despite the flood exclusion ultimately resulted in State Farm’s decision to withdraw from the state.

<sup>37</sup> We would expect that any proposal to automatically include flood risk as a covered peril in standard homeowners insurance policies would face strong resistance from the insurance industry and potentially many homeowners who would object to the associated increase in the cost of their homeowners insurance coverage.

## ***Claim Settlement***

Legislative and regulatory intervention in the settlement of claims following a major catastrophic event can also create problems for insurers. Regulators do have a responsibility to intervene and protect policyholders when an insurance company steps over the line and fails to pay claims it is legally obligated to pay under the terms of its insurance contracts. In certain circumstances, regulators also can play a constructive role in helping policyholders and insurers resolve common issues that arise in settling claims.

It is important to point out that the conditions under which insurers adjust and settle claims following a catastrophic event present special challenges and regulators need to give due consideration to this. The sheer volume of claims can severely strain insurers' resources in the claim settlement process. Many insurers use special "cat teams" where they bring in claims personnel from other areas where they operate, and they may also employ additional adjusters on a contractual basis. Insurers may also attempt to provide partial payments to their policyholders on an expedited basis pending a full review of their claims. Despite these kinds of measures, claims settlements following a catastrophe may take considerably longer to complete than what would be the case under normal conditions. Consequently, it becomes problematic when regulators pressure insurers to settle claims more quickly than is reasonably possible under adverse conditions or pay higher amounts than are warranted under their policies.

One example of such unwarranted regulatory interference with claims settlement is what occurred in Florida following the hurricanes that struck the state in 2004. Florida requires insurers to report data on their handling of hurricane claims and subjects insurers to claims audits. While these measures may not explicitly require insurers to pay claims more quickly or offer higher settlements, they can be used to apply implicit pressure.<sup>38</sup> The Florida Office of Insurance Regulation (FLOIR) also performs targeted market conduct examinations of insurers' handling of hurricane claims that can result in sanctions if regulators determine that an insurer has failed to adjust and settle claims in an appropriate manner. For example, the FLOIR accused Nationwide of underpaying 2004 hurricane claims and forced the company to review how it handled these claims.<sup>39</sup> The Florida governor also set deadlines for insurers' settlements of 2004 hurricane claims.<sup>40</sup> Regulators need to be careful in how they regulate insurers' claim settlement following catastrophic events. Specifically, regulators should focus their efforts on preventing or sanctioning what constitutes truly unfair practices rather than attempting to force outcomes that are unreasonable given the conditions under which insurers are operating and a proper interpretation of their policy provisions.

## **MITIGATION EFFORTS**

States have undertaken a variety of efforts to reduce the damages associated with natural disasters. The most common approach over the last 30 years involves updates to building codes, typically enacted following catastrophic events. A study by the Insurance Institute for Business and Home Safety (IBHS) of losses following Hurricane Charley found that claim frequency was reduced by 60 percent for homes constructed under reformed, post-Hurricane Andrew building codes containing more stringent wind

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<sup>38</sup> These requirements are specified in Rule 69O-142.015 Standardized Requirements Applicable to Insurers After Hurricanes or Natural Disasters issued on June 12, 2007.

<sup>39</sup> "Nationwide Agrees to Review Hurricane Claims in Florida," Columbus Dispatch, October 15, 2005.

<sup>40</sup> "Deadline is Set for Insurers to Settle Storm Claims," Palm Beach Post, October 27, 2004.



requirements.<sup>41</sup> Efforts in this area continue, with codes not only addressing structural issues, but also safety. Following Superstorm Sandy, one code change in New York requires residential buildings five stories or higher to install faucets in common areas to ensure residents have access to water. While some uniformity in codes exists across the country, these codes are enforced locally, leading to significant variation across states and even within states.

A 2011 report by the IBHS indicates large variation across states in the application and enforcement of building codes.<sup>42</sup> The report provides a rating for 18 coastal states that considers the state's residential building code, the universality of its application across the state's local-level enforcement, and the licensing and education of code officials and contractors. The report concludes that "a number of states fall well short of providing their citizens with the basic protections that have long been associated with a robust building code regulatory system." Regulators should consider that optimal mitigation requires stronger efforts to enforce building codes uniformly and increase the professional requirements for code officials and contractors.

There are other measures that state authorities can employ to encourage better mitigation. One such measure is the development of programs to inform homeowners of what they can do to make their homes more resistant to losses and the benefits of such efforts. Another measure would be to provide income and property tax credits for investments in hazard mitigation. Also, as discussed earlier, allowing insurers to charge adequate rates provides proper incentives for homeowners to mitigate their homes. The design and implementation of an effective and efficient set of mitigation policies and measures are topics that would benefit from further research.



*Regulators should consider that optimal mitigation requires stronger efforts to enforce building codes uniformly and increase the professional requirements for code officials and contractors.*



## SUMMARY AND REVIEW

Recognizing that insurers react to catastrophic events in a variety of ways, this report evaluates several aspects of regulatory policies that can significantly influence homeowners insurance markets. Individual firm experiences and characteristics are not explored, but rather we examine the features of state regulatory environments that mitigate or exacerbate the adverse economic consequences of natural catastrophes as they impact the functioning of the property insurance market. Four specific areas of regulation are considered. For the first two – the regulation of rates/underwriting and the administration of residual market mechanisms – we conduct an empirical analysis of how regulatory policies and practices in these areas affect six measures of market structure, conduct, and performance: the number of property insurers, the Herfindahl-Hirschman Index of structural competition, total insurer financial capital, reinsurance

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<sup>41</sup> Insurance Institute for Business and Home Safety, "Hurricane Charley: Nature's Force v. Structural Strength," (2004).

<sup>42</sup> Insurance Institute for Business and Home Safety, "Rating the States: Atlantic and Gulf Coast States," (December 2011).

ratio,<sup>43</sup> total property insurance premiums earned, and the state median loss ratio. The second two areas are the regulation of policy provisions and claim settlement practices and are explored by considering specific state experiences. We also discuss government policies and measures to promote hazard mitigation.

The empirical analysis shows that a prior approval regulation regime is generally associated with poorer market outcomes. It is important to note, however, that this rate filing regime, by name alone, does not necessarily capture the specifics of this form of regulation. In particular, there may be substantial variation across states in the specific manner in which a prior approval rate filing regulation is implemented. Further, states that are categorized as more competitive (e.g., file and use) may exhibit some prior-approval-like characteristics in implementation. The larger point is that when regulators attempt to solve post-catastrophe availability and affordability issues by suppressing rates, imposing exit restrictions, or requiring policy renewals, they may exacerbate these problems in the long run.

Larger residual markets are also associated with poorer market outcomes. The existing beach plans and wind pools that were established in the wake of catastrophic events deserve further scrutiny, especially those that retain a large market share in the state, as they seem to be driving homeowners insurers out of states. The expansion of Fair Access to Insurance Requirements Plans to properties subject to significant catastrophe risk and the creation of state residual market insurers (i.e., the Florida Citizens Property Insurance Corporation and the Louisiana Citizens Property Insurance Corporation) also create the potential for adverse effects on property insurance markets. In essence, when these mechanisms are designed and administered properly as true markets of last resort, they are likely to have only minor adverse effects, if any, on property insurance markets. It is when these mechanisms are designed and administered to achieve questionable objectives (e.g., the supply of “inexpensive” insurance coverage) that severe problems can occur.

We emphasize that the results from the empirical analysis of market measures should be considered in concert, recognizing that there may be tradeoffs or spillover effects that suggest an improvement in one dimension may be associated with negative implications for another. For example, an increase in structural competitiveness may come at the cost of a reduction in the number of large, well-capitalized firms.

Finally, the different reactions to catastrophic events by the homeowners and commercial property insurance markets provide strong evidence of the consequences of efforts to ensure affordability at the cost of rate adequacy. Compared to the homeowners insurance market, the commercial market appears to experience less significant disruptions on all six market dimensions analyzed here. Other elements of insurance regulation that have been applied almost exclusively in the homeowners market – such as coverage mandates and restrictions on non-renewal of policies in the homeowners market – should be reevaluated in light of these results. More freedom in underwriting allows for more accurate risk adjustment. But this can, of course, complicate goals for achieving more universal coverage for property risks. A subsidization scheme may be necessary to help those insureds in high-risk areas that cannot afford the price of coverage and cannot be expected to move or invest in other loss control mechanisms. This approach seems preferable to attempts to enforce artificially low and thus indirectly subsidized premiums for all homeowners in high-risk areas, as it would allow

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<sup>43</sup> The reinsurance ratio is defined as the ratio of reinsurance ceded divided by the sum of reinsurance assumed and direct premiums written.



market forces to continue to work. However, it is important that a subsidization scheme include appropriate incentives for mitigating against future losses.

Regulators should also employ “best practices” with respect to their oversight of insurance policy provisions and insurers’ claim practices. We agree that these areas do warrant regulatory oversight but such oversight needs to focus on protecting consumers against truly unfair treatment rather than imposing restrictions and mandates on insurers that might appear to favor consumers but are not in their best interest. In that vein, regulators need to be careful in restricting the terms of insurance policies, such as the size and application of deductibles. Legislative prohibitions on anti-concurrent causation clauses are also problematic. Further, regulators should create reasonable standards with respect to how insurers settle claims following catastrophic events. Finally, efforts to promote better loss mitigation should be part of a coordinated strategy to achieve the best possible outcomes in homeowners insurance markets. While the analysis reflected in this paper provides valuable insights on how regulatory practices can promote desirable market outcomes, further research on various dimensions of the regulation of insurance markets subject to catastrophic risks would provide the basis for more specific recommendations on regulatory best practices.

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