# The Perfect Storm:
# Hurricanes, Insurance and Regulation

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Abstract

The risk and cost of natural disasters, their effects on insurance markets and associated government policies yield an interesting and important story about the interplay of economics and politics. The intense hurricane seasons of 2004 and 2005 caused considerable instability in property insurance markets in coastal states with the greatest pressure in Florida and the Southeast. Insurers have substantially raised their rates and decreased their exposures. While no severe hurricanes have struck the US since 2005, market pressures remain strong given the high risk still facing coastal states. These developments have generated considerable concern and some controversy among various groups of stakeholders. Government responses have varied. In Florida, political pressures have prompted a wave of legislation and regulations to expand government underwriting and subsidization of hurricane risk and constrain insurers' rates and market adjustments. In this context, it is important to understand how property insurance markets have been changing and governments have been responding to increased catastrophe risk. This paper examines important market developments and evaluates associated government policies. We find interesting similarities and contrasts between Florida and other coastal states. We comment on how government policies are affecting the equilibration of insurance markets and offer opinions on actions that are helpful and those that are that are likely to have a negative impact on the supply of insurance and undermine the efficient management of catastrophe risk.

## I. Introduction

The risk and cost of natural disasters, their effects on insurance markets and associated government policies yield an interesting and important story about the interplay of economics and politics. It is a story that contains some familiar as well as peculiar elements to students of political economy. The high degree of uncertainty associated with disaster risk challenges insurers and its opaque nature enables politicians to shift risk more easily and obtain greater subsidies for those exposed to disasters. Also, the notion that natural disasters are "Acts of God" and beyond the control of their victims lubricates the sale of political schemes to socialize their costs. Such a story is now

unfolding with the increased threat of hurricanes striking the US and the response of insurance markets and government officials to this threat.

The intense hurricane seasons of 2004 and 2005 caused substantial instability in property insurance markets in coastal states with the greatest pressure in Florida and the Southeast. Other coastal states exposed to hurricanes also have experienced some market pressures and changes. The increased risk of hurricanes striking the US prompted significant changes in these same markets beginning in the early 1990s but the particularly intense hurricane activity during 2004-2005 has led to another wave of market adjustments. Both the loss shocks of the 2004-2005 storm seasons as well as the recognition that hurricane risk has risen to a new, higher level have been major drivers of the recent market adjustments. The fact that a severe hurricane has not struck the US since 2005 has been a welcome relief that has allowed insurers/reinsurers to replenish some of their lost capital but the risk of more hurricanes remains high and is still driving conditions in property insurance markets.

Understandably, recent developments have generated considerable concern and some controversy among various groups of stakeholders. In the face of increased risk and uncertainty, insurers are seeking to adjust their rates and exposures in to order to ensure their economic viability in the short and long term. Reinsurers are also making substantial adjustments – their prices increased as new capital flowed in to replace recent losses and to at least partially respond to the increased demand for catastrophe reinsurance. At present, it appears that affected property insurance and reinsurance markets have probably undergone the bulk of adjustments that were necessary but the situation is still

fluid.[1] Also, regulatory responses in states such as Florida may contribute to further market changes to the extent that they affect insurers' ability to sustain their operations.

Affected property owners became very unhappy about sharp premium hikes and the diminished availability of coverage.[2] Although the relatively benign storm seasons of 2006-2007 had been a welcome relief to insurers and others, it also has undermined public acceptance of insurers' rate increases and other actions, as well as strengthened political pressure on government officials to constrain insurers' actions and to ease conditions for consumers. This was reflected in a wave of legislative and regulatory actions in Florida in 2007 aimed at lowering the cost of insurance to coastal property owners. Some of these changes expanded the state's underwriting and subsidization of catastrophe risk and others sought to place tighter constraints on insurers.[3] Unfortunately, these measures are undermining private markets and the private financing of catastrophe risk as well as exposing insurance consumers and taxpayers to the cost of bailing out state schemes when more hurricanes occur. Hence, it is not surprising that coastal politicians are making a strong push for the federal government to underwrite a significant portion of hurricane risk.

This paper examines how insurance markets have changed and government policies have evolved. Our main focus is Florida where market pressures are strongest and regulatory-legislative responses are particularly significant. We also review developments in other coastal states that offer interesting and telling similarities as well

[1] Catastrophe reinsurance prices have recently stabilized and are beginning to fall.
[2] A series of articles in Florida newspapers document the growing displeasure of homeowners about the rising price and tighter availability of insurance.
[3] There have been legislative and regulatory measures in other high-risk states but nothing that approaches the scope and significance of the changes in Florida.

as contrasts to Florida. Finally, we discuss the most prominent proposals for greater federal financing of hurricane risk.

The next section of this paper reviews the environmental, economic and regulatory context for hurricane risk and property insurance. Section III examines the structure and performance of property insurance markets. Section IV describes and evaluates significant regulatory actions and other government policies. We conclude with a summary of our key observations and a discussion of further research.

## II. Hurricane Risk and Insurance Markets

To understand developments in property insurance markets in coastal states, one must understand the environmental, economic and regulatory circumstances in which these markets function. The environmental context comprises short-term and long-term weather patterns and cycles – principally the frequency and intensity of tropical storms and hurricanes striking different areas. The natural environment interacts with the important aspects of the economic environment – the growth and geographic distribution of commercial and residential property development. Together these factors heavily influence the property exposed to hurricanes and the demand for and supply of insurance. The governmental framework overlays and affects insurance markets in a number of ways and also influences the pattern of economic development and its vulnerability to hurricanes.

**A. Shifting Risk and Storms**

History and meteorological science document the cyclical nature of weather patterns and storm activity. The recorded history of storm activity is relatively short but still reflects its cyclical nature. Figure 1 plots the number of hurricanes striking the U.S. by decade from 1920-2004 and also distinguishes the number of more severe – Category 3-5 – hurricanes.[4] Hurricane frequency and intensity increased over the first three decades of this period and then fell during the next three decades. Storm activity intensified again starting in the late 1980s through the present.

It is important to distinguish between short-term and long-term weather patterns. The number and intensity of hurricanes can be relatively low during any given year in a long-term cycle of greater storm activity. This reflects the many factors affecting storm activity in any slice of time. This is illustrated by the very active storm seasons of 2004 and 2005 followed by a relatively "quiet" 2006 and greater storm activity in 2007 that spared the US. A detailed discussion of weather patterns is beyond the scope of this paper, but it is important to stress that short-term factors can affect the number, severity and paths of storms in any particular year but long-term cycles ultimately determine the nature and cost of hurricane risk.

The random nature of storm activity complicates insurers' efforts to supply insurance coverage under relatively stable terms. The ability to develop accurate estimates of the risk of hurricanes and the limits of catastrophe risk modeling (i.e., "parameter uncertainty") further affect insurers' approach to hurricane-prone insurance markets. It is not surprising that insurers appear to differ in their assessments of the level

[4] The reader should note that these are hurricanes that struck the US and do not include other hurricanes in the Atlantic and Gulf areas that did not strike the US. Hurricane intensity is measured on the Saffir-Simpson scale (see NOAA, 2006).

and nature of the hurricane risk they face in coastal areas, although there is a general consensus that the risk has increased.

**B. Economic Development**

The second important factor affecting hurricane risk is the pattern of economic development. During the active storm cycle in 1920-1950, coastal areas were less developed so storms striking these areas caused less property damage. During the next three decades there was considerable economic growth in these areas but storm activity had lessened and does not appear to have impeded growth. Hence, considerable development occurred when hurricane losses and insurance prices were relatively low. A myopic sense of security contributed to large movements of people and the associated property development that would be at risk when storm activity began increasing in the 1980s. It also appears that little attention was paid to hazard mitigation (e.g., building hurricane-resistant homes), which also has contributed to the catastrophe risk problem.[5]

A National Oceanic & Atmospheric Administration (NOAA) study estimated that 153 million people lived in coastal counties in 2003 – representing 53 percent of the population but only 17 percent of the nation's land mass (NOAA, 2004).[6] From 1980 to 2003, 33 million people were added to the coastal population representing a 28 percent increase overall, but the pace of growth has been much higher along the southern Atlantic and Gulf coasts where hurricane risk is the greatest. The NOAA study predicted further strong population growth in Southeastern and Gulf coastal areas. Indeed, southern coastal development has continued since 2003 as revealed by Figure 2 which depicts the extent

[5] Goodnough, A. (2006), "As Hurricane Season Looms, State Aim to Scare", *The New York Times*, May 31.

[6] A county is categorized as coastal if at least 15 percent of its land area is located within a coastal watershed. Coastal counties include areas along the Great Lakes.

and pace of coastal population growth from 2001 to 2006. Florida experienced the most rapid growth – its coastal population increased by more than 11 percent just between 2000 and 2005. Table 1 further affirms this trend in comparing the value of residential property insured in Florida (homeowners insurance) by county between 1997 and 2006 (coastal counties are shown in bold type).

As can be seen from these figures and tables, Florida has a large amount of its population and residential property concentrated in several coastal areas that also face high hurricane risk. What is particularly interesting is that the pattern of rapid growth continued at least until 2006 when higher insurance prices may have begun to negatively affect development. Other states have large amounts of property exposed to hurricanes although they vary in terms of the level of hurricane risk (see Insurance Information Institute, 2007b). This pattern of economic development has contributed to the damages caused and the number of households affected by storms striking these areas as well as their need for insurance coverage.

Consequently, the pressure on property insurance markets rises because of economic development in areas subject to greater hurricane risk. Insurers and reinsurers are expected to expand the supply of insurance to meet greater demand but they increase their catastrophe risk if they add to their exposures in high-risk areas. This strains existing risk transfer and diversification mechanisms and tightens the availability of insurance coverage for those seeking it. Over time, insurance and capital markets can accommodate these conditions if allowed to make necessary adjustments but regulatory and other government policies can interfere with this process. Additional changes in weather cycles and hurricane risk could also interfere with market stabilization.

**C. Hurricane Risk**

Increased storm activity and rapid coastal development have combined to greatly increase the risk of economic losses from hurricanes. Property owners facing potential losses from hurricane, i.e., hurricane risk, have several options. They can retain the risk, avoid it, mitigate it or transfer it. Insurance can be an efficient means of transferring many risks. Risk pooling by insurers works well when loss exposures are statistically independent but catastrophe risk poses special challenges, i.e., the potential for a large number of exposures to suffer losses arising from one event or series events, such as hurricanes.

The problems posed by catastrophe risk can best be understood by looking at Figure 3 which depicts the probability of loss exceedance curve for Florida hurricane losses based on Risk Management Solutions (RMS) estimates. Insurers are concerned about several aspects of this distribution, including the expected or annual average loss, the breadth of the distribution (i.e., its variance), and its long right-hand tail which reflects the probability of very large disasters. All of these elements become important in underwriting, pricing and managing catastrophe risk.

Finally, the nature and level of natural disaster risk varies significantly throughout the US. Few areas are essentially immune to some perils, e.g., tornadoes, but the probability of severe damage from hurricanes and earthquakes differs greatly as one would expect and as shown in Figure 4.[7] Unfortunately, large segments of the US population live in high-risk areas but many people live in less risky areas. Hence, the cost

[7] We appreciate the permission of Risk Management Solutions, Inc. in the replication of this map and other information used in this article.

and availability of property insurance varies greatly across the country. On the positive side, insurers can geographically spread their exposures to diversify their risk but this does not permit them to charge less than an actuarially fair price to property owners in the high-risk areas. This is a reality that some public officials and their constituents fail to understand – geographic pooling of exposures and risk diversification does not mean that low-risk property owners should or can subsidize the cost of insurance for coastal property owners. Nonetheless, coastal politicians seek subsidies from non-coastal taxpayers to ease the burden on their constituents.

**D. Insured and Uninsured Losses**

While economic losses from hurricanes are highly variable, the record shows that catastrophe losses have increased substantially over the last 15 years, coincident with the increased frequency and intensity of storms and coastal development. Figure 5 plots insured catastrophe losses from 1985-2006 (Insurance Information Institute, 2007b). Although the losses shown arise from all perils, including earthquakes and terrorism, hurricanes account for the lion's share of the catastrophe losses over this period. Hurricane Katrina was by far the most costly storm causing more than $41 billion in insured losses alone and generating in excess of $100 billion in federal aid, in addition to other losses not reflected in these figures.

It should be noted that the losses shown in Figure 5 are insured losses and do not reflect uninsured or total economic losses. Uninsured and total economic losses are more difficult to determine but a rough rule of thumb is that insured losses tend to account for about 50 percent of total losses. While the retention of some losses by property owners is efficient, there is also the possibility that the distribution and burden of some uninsured

losses reduce social welfare. An examination of this issue is beyond the scope of this paper but it should be noted that the functioning of insurance markets affects the amount of uninsured losses which, in turn, can increase political and governmental pressure on insurance markets as well as demands for government disaster aid.

**E. Market and Government Responses**

The sections below discuss insurance market developments in greater detail but it is helpful here to provide a brief overview of what has been occurring. After the intense storm season of 2004, it became evident that insurers were reassessing their catastrophe risk in the Southeast and Gulf region and were beginning to make adjustments. These adjustments mainly took the form of regulatory filings for "modest" rate increases and also some reduction of many insurers' exposures in high risk areas. It is possible that some insurers began to tighten their supply of insurance toward the end of 2004 and the beginning of 2005 but more dramatic adjustments have occurred since this period.

The second wave of storms and high losses that occurred in 2005 appears to have greatly increased many insurers' concerns about the catastrophe risk they faced, the adequacy of their rate structures and the amount of their exposures. As insurers and reinsurers assessed their losses from the 2005 storms, their pricing and underwriting adjustments escalated. This was associated with a recalibration of catastrophe models to reflect increased storm activity and other changes. A number of insurers filed for fairly large rate increases and decreased their exposures in high-risk areas. Insurer responses have varied as some initiated stronger pullbacks while others retrenched to a more modest degree. A few insurers are positioned for and have sought to expand their business in these areas to take advantage of the higher prices and policies shed by other

insurers. Also, the magnitude of insurers' changes varies by state with Florida and Louisiana experiencing the greatest rate increases; other states have experienced less severe rate increases and insurer pullbacks.

Regulators' responses to insurers' actions have varied as well as evolved. It appears that the initial wave of rate increases filed in 2004 through early 2006 were approved for the most part although they were subject to some constraints (see Klein, 2007). However, most recently, further insurer rate hikes have been challenged and disapproved or reduced by regulators in Florida. Texas regulators have also begun to challenge rate increases Regulators in other coastal states have tended to approve a greater portion of insurers' filed rate increases but these increases have been lower than the those filed in Florida.

The strong displeasure of coastal property owners had a significant impact on the 2007 legislative and governor's elections in Florida – property insurance was identified as the most important issue to voters in a survey. Consequently, when the new legislature convened and the new governor took office, they embarked on a significant legislative agenda on insurance. They enacted a number of important changes that expanded the state's residual market mechanism - the Citizens Property Insurance Corporation (CPIC) - and the Florida Hurricane Catastrophe Fund (FHCF), as well as imposed additional constraints on insurers. All of these measures were intended to lower the cost of insurance but most were severely flawed and will have negative repercussions for the private supply of insurance and reinsurance, as well as impose significant financial costs on insurance buyers and taxpayers throughout the state.

## III. Changing Markets

### A. Entries, Exits and Market Concentration

The effects of increased hurricane losses and risk on the structure of the property insurance markets of coastal states are still developing and there is a lag in the data available to track market changes. Still, it is important to glean what we can from these data and offer observations on how insurers appear to be adjusting their market positions. We can examine data through 2006 and augment these data with anecdotal observations on insurers' actions in 2007. We begin by looking at shifts in the market positions of leading writers of homeowners insurance in Florida in Table 2.

Table 2 ranks the top 20 homeowners insurers (on a group basis) in Florida in 2006 and also shows their market rankings and shares for the years 1992, 1995, 2000 and 2006. We do not include the CPIC in this aspect of our analysis as it is a residual market mechanism and our interest here is in the voluntary market in which insurers compete and make decisions about how much insurance they are willing to supply. We can see from this table that there have been dramatic changes in the Florida market since 1992. The top two groups in 2006 – State Farm and Allstate – were also the top two groups in 1992. However, their combined market share dropped from 50.9 percent to 29.2 percent.

It is apparent that these two insurers have significantly reduced their "relative presence" in the Florida market (as measured by premiums). It is also interesting to note that while State Farm's market share actually has increased since 2000, Allstate's share declined from 11.2 percent to 7.8 percent. This appears to be consistent with Allstate's stated intention to substantially reduce its concentration of exposures in high-risk areas to

a level that it believes is more economically viable.[8] State Farm's trend may also change noting its recent underwriting decisions (see Grace and Klein, 2007). Other mid-tier insurers appear to have essentially maintained the same market shares over this period through 2006.

Another significant development has been the entry/expansion of some insurers as other companies have retrenched or withdrawn from the market. Ten of the top 20 groups in 2006 entered the market after 1995. This reflects several phenomena. Two important factors were the startup of several new insurers in Florida during the 1990s and entries by other established insurers. The retrenchment or exit of some insurers created opportunities for other insurers to fill the gap. Also, several of the large national groups established Florida subsidiaries that now underwrite all or most of their homeowners business in the state.

Entry into the Florida market carries risk, especially for insurers with large portions of their portfolios in the state. This was demonstrated by the rapid rise of the 3rd and 4th leading groups in 2005 – the Poe and Tower Hill groups. Poe was hit hard by the 2004 and 2005 storm seasons and is being liquidated by regulators. Tower Hill has been more diversified with business throughout the Southeast but it also has been stressed by the recent storm seasons. Two other Florida insurers were seized by regulators due to their insolvency/impairment resulting from the recent hurricanes. This illustrates the drawbacks of relying heavily on local or regional insurers to fill large gaps left by larger, national insurers. Smaller insurers can bolster their capacity with extensive use of reinsurance but this comes at a cost along with some retention of risk at a primary level that is unavoidable.

[8] See, for example, "Allstate Considers More Cancellations," Tampa Tribune, May 19, 2006.

The story of the Poe companies is a good illustration of the "go for broke" strategy that some insurers employ when they encounter financial difficulty. Poe insured more than 300,000 homes with most concentrated in the high-risk areas of Palm Beach, Broward and Miami-Dade counties. Despite major losses from the 2004 storms and declining capital, Poe aggressively added more policies in 2005, gambling that it would not incur more storm losses. Such gambling is encouraged by a regulatory system in which an insurer can shift its losses to the state (i.e., insurance consumers and taxpayers) through its insolvency guaranty association. An insurer's owners reap the potential upside of such gambles and stick the public with the potential downside. The downside scenario became fact when the Poe companies became insolvent after the 2005 storm season generating approximately $750 million in guaranty association assessments.[9] There is no evidence that Florida regulators attempted to constrain Poe's actions until 2006.

Several national and regional insurers entered or increased their market presence but their market shares were still relatively modest in 2006, i.e., less than 3 percent. This may reflect a more reasonable strategy of acquiring small, "digestible" shares of a large but risky market by more broadly diversified insurers.

The associated change in market concentration in Florida (and several other costal states) between 1992 and 2006 are shown in Table 3. The combined market share for the top 4 groups in Florida decreased steadily from 55.3 percent to 39.2 percent. The combined market shares for the top 8 and top 20 insurer groups also declined over this period but to a lesser degree as these measures reflect more insurers who have experienced smaller cuts in their market shares as well some insurers who have increased

[9] See "Insurance Failures Spawn New Levy on Florida Policies," Palm Beach Post, October 30, 2007.

their market shares. The changes track with the decline of the HHI from 1,440 in 1992 to 695.

The decline in market concentration and the relative changes for the market leaders versus the mid-tier insurers is consistent with what we would expect to see based on the greater risk and higher cost of retaining large amounts of high-risk exposures. Less concentration implies that there is a greater dispersion of exposures among carriers in Florida which could be viewed as a positive development in terms of greater diversification of risk. In markets subject to high levels of catastrophe risk, lower concentration levels may be a necessary condition to allow insurers to maintain their catastrophe exposure at manageable levels.

One caveat to the observation about market de-concentration in Florida is the movement of exposures from national carriers to smaller state or regional insurers that are not pooling risk across a wide base of countrywide exposures. There is a limit to how much these insurers can diversify risk even with the extensive use of reinsurance. Single-state companies within national groups can receive support from their affiliates in the event of large losses, but as we explain below, these national groups cannot engage in sustained cross-subsidies of their Florida insureds.

An important development that will affect the structure of the market is the legislature's changes to how Citizens functions. Citizens' rate structure has been lowered to be competitive with that of voluntary market insurers. Further, a property owner can obtain coverage from Citizen's if he or she receives a higher price quote from a voluntary market insurer. This will further inflate Citizens' ballooning size. If this trend continues, Citizens will likely swallow a predominant portion of the homeowners insurance market,

with an especially high concentration of exposures in risky coastal areas. The Florida government is well on its way to underwriting a substantial portion of catastrophe risk in the state through various devices with inadequate rates and financing that will ultimately generate substantial deficits that will burden other insurance buyers and taxpayers.

Market structure changes appear to be much less significant in other states. In the other states we examined, the data indicate the emergence of only 2-3 new insurers into their markets (since 2000) that are now among the top 20 writers (Grace and Klein, 2007). The relatively greater stability in these other state markets may reflect several factors. One is that insurers' plans to adjust their positions are not fully implemented and are not fully revealed by the 2006 data. Another factor may be that insurers see less of a need to reduce their writings in these states. Some of these states also appear to be taking a less restrictive approach to regulation than Florida (at least for the present) that may be helping insurers to retain a greater presence in these states. We should also note that the proportion of coastal exposures is considerably lower in these states than in Florida and, hence, coastal risk would be expected to have less of an effect on insurers' statewide market shares.

Table 3 also reveals that the other target states have experienced less significant changes in market concentration than Florida. In all but Florida, the top eight insurers have increased their combined share of the market between 1992 and 2006. However, the HHI has decreased for all of the states except New York. The increased market concentration in New York probably reflects the consolidation of homeowners insurers countrywide. New York, due to its relatively large market, still remains less concentrated than other states.

The changes in Louisiana, Mississippi, South Carolina and Texas are more difficult to interpret. The decline in their overall market concentration (as measured by the HHI) reflects a more even distribution of the market beyond the largest insurers. This could be due to the increasing competitiveness of smaller insurers and/or the decisions by mid-tier insurers (beyond the top eight) to decrease their exposures in these states.

**B. Insurer Exposure Patterns**

Insurers' statewide market shares (based on premiums) tell one part of the story on changes in the structure of states' homeowners insurance markets. Another important part of the story is the distribution of insurers' shares of exposures (the amount of insurance coverage) in different areas in a state. Hurricane risk varies significantly among these areas so this aspect of market structure is important in terms of how insurers are managing their catastrophe risk as well as the associated implications for homeowners.

Table 4 compares the company-level HHI (based on amount of insured homeowners property) by county between 1997Q1 and 2006Q4.[10] Tables 5 and 6 compare the market shares of the 10 leading insurers in Dade County between 1997 and 2006 at a company and group level. We see several important developments in these data. The first is decreased concentration in the higher risk counties (along the coasts). The second is that the leading insurers in the state have decreased their shares of exposures in the highest risk counties and shifted their remaining exposures to their single-state subsidiaries. We also observe that "new" insurers have moved in to underwrite a significant proportion of exposures in Dade County.

[10] We were able to obtain data on insurers' exposures by county by year/quarter for Florida from the Florida Office of Insurance Regulation (FLOIR). "Exposure" in these data refers to the "amount of coverage" which is based on the dwelling coverage limits on the policies that insurers write.

Another observation is that the start-up insurers that formed in the mid-1990s had been forced to write a large share of portfolios in high risk areas as they took policies out of the residual market mechanism (see Grace, Klein, and Liu, 2006). However, when the 3-year requirement on retaining these policies expired, the majority of these insurers dropped a significant portion of their high-risk exposures that returned to the residual market or were underwritten by other entrants like the Poe and Tower groups. This action by many of the startups is understandable because they probably realized that they were holding a "ticking time bomb" and could not continue to retain a number of high-risk policies without continuing to expose themselves to an excessive level of catastrophe risk. Unfortunately, for the new insurers that picked up a significant number of these exposures, the time bomb exploded in 2004 and 2005 and they suffered the inevitable consequences of high losses that caused Poe to become insolvent and Tower Hill to suffer financial stress.

This reinforces an important point. Florida cannot rely on small or geographically-concentrated insurers to underwrite a large number of homes in high-risk areas. A more sustainable approach is to encourage a large number of insurers to each write a "reasonable" number of homes in high risk areas, commensurate with the capacity and risk diversification of each company. Of course, saying this is easier than achieving it. At the same time, if regulators allow insurers to charge fully adequate, risk-based rates and make other reasonable adjustments in their underwriting and policy terms, more insurers should be more amenable to writing a manageable amount of high risk exposures. Unfortunately, recent legislative and regulatory policies in Florida make such

a development less likely and more realistic and economically-sound policies will be needed to restore a viable private insurance market.

**C. Prices**

The price of home insurance is of primary area interest and concern. A number of insurers have filed and implemented significant rate increases to reflect the higher degree of risk and cost of reinsurance. There are a number of ways to measure prices and price changes – no one measure reveals everything one would want to know but each provides some information. There are also different definitions of the price of insurance. Economists tend to use a "net price" measure for insurance which is the loading added to the expected loss or "pure premium." Here, we use a "full price" definition that includes the loss cost portion of the premium or rate charged. Consumers, regulators and others tend to focus on the full price rather than the net price.

Figure 6 provides some indication of the price increases faced by insureds which plots trends in average homeowners premiums in the six states between 2002 and the 1st quarter of 2007.[11] We calculated the average premium (total premiums divided by insured house-years) for each quarter in the series. We can see from this figure that Florida has experienced the greatest increase in the average premium - from $723 to $1,464 - among the six states. Louisiana experienced the second greatest increase in its average premium from $785 to $1,271.

Of course, this is not surprising given the changes in insurers' rate structures discussed above. From insurers' perspective, the significant price increases in Florida and

[11] The source of data for this figure is the PCIAA/ISO Fast Track Monitoring System that compiles data on premiums, exposures, and losses on a quarterly basis from a subset of insurers representing approximately 60 percent of the total market countrywide.

Louisiana are necessary to finance the higher risk of losses. From insureds' perspective, the increase is a matter of concern and an additional financial burden. It could compel some homeowners to opt for larger deductibles or other coverage adjustments to lessen the impact of higher rates.[12] It also increases political pressures on legislators and regulators to lower prices or at least prevent further increases.

An important caveat to the indications of these average premium trends is they reflect the weighted distribution of the premium increases on all policies in the underlying data. The change in the average premium not only reflects changes in insurers' rate structures; it also reflects changes in the amount of coverage and other policy terms. Further, in Florida and the other states, rates vary greatly between the lowest and highest risk areas and the average statewide premium encompasses all areas. We would expect premiums to be significantly higher in the coastal areas and that they have experienced a higher relative increase than interior areas within the state. States where coastal exposures represent a higher proportion of total statewide exposures, e.g., Florida, will have a higher statewide average premium, all other things equal.

Using different data, we calculated average premiums for homeowners HO-3 policies (premiums written divided by house-years) for each year and rating territory that are shown in Table 7 for Florida.[13] The territories are ranked in descending order of their average premium in 2005. We can see from this table that average premiums do vary significantly within Florida. The territory comprising Indian River, Martin and St. Lucie counties had the highest average premium in 2005 - $2,051 – and also experienced the second largest increase over the period – 130.4 percent. The lowest territory –

[12] Note, the average premium will reflect coverage adjustments as it based on the premiums that insureds actually pay.
[13] These data were provided by the Property Casualty Insurance Association of America (PCIAA).

Jacksonville – had a $509 average premium in 2005. In Grace and Klein (2007) we developed the same type of comparison for other states. The other states exhibit the same basic pattern – average premiums are considerably higher in coastal territories – but the relative magnitudes of the differences are smaller in these states and coastal territories have experienced smaller increases.

It should be noted that these average premium measures are affected by several factors including the amounts of insurance on homes and the terms of the policies covering those homes, as well as the rate structures of insurers. Hence, we cannot distinguish how much of the average premium increase is attributable to rate changes from these data. Still, it is reasonable to surmise that rate increases were a major factor causing the differences in average premium among territories as well as their increase over time. Also, these figures do not reflect the most recent market changes.

An alternative approach to measuring sub-state differences and changes in prices is to calculate an average rate per $1,000 of coverage. This approach is less affected by differences in the amount of insurance but still confounds other coverage terms with rates. We employed this approach with county-level data available for Florida and our calculations for the years 1997 and 2006 are reflected in Table 8. The results are quite striking and revealing as the county with the highest rate was Monroe with a rate of $34.46; the county with the lowest rate was Clay with a rate of $2.49. Monroe also experienced the greatest increase from its rate of $18.98 in 1997. This reflects the high level of risk in Monroe County which includes the Florida Keys. Also, the fact that the counties' rankings differ somewhat between the average premium figures and the rate per

$1,000 figures reveals that differences in the average amount of insurance can mask or offset differences in the price of insurance.

Still, at least one additional caveat should be noted. While the rate per $1,000 of coverage controls for the amount of insurance, we would expect this rate to decline with amount of insurance, all other things equal, because the fixed costs of writing and servicing a policy are spread over a larger amount of insurance. This likely accounts for some of the differences in counties' rates per $1,000. Hence, it is not a perfect measure of price differences and changes but we would expect it to be more heavily influenced by the price of insurance than the average premium measures.

One additional way to compare home insurance prices is to look at the premiums insurers would charge for a hypothetical home-policy in different areas within a state. Table 9 shows descriptive statistics for current premium comparisons for Florida with coastal counties shown in bold type. These premium comparisons are posted by the Florida Office of Insurance Regulation (FLOIR) on its website and apply to a hypothetical policy-home. Using the data from these comparisons, we computed the maximum, minimum, mean and median premium for each county.

Table 9 reveals significant price differences among insurers in each county – reflected by the difference between the minimum and maximum premium as well as significant differences among counties – reflected by the means and medians for each county. The highest median premium - $3,655 – is in Monroe County and the lowest premium - $801 – is in Duval County.

The great variation in premiums among companies in a given county warrants some discussion. There could be several reasons for the variation. One is that insurers'

rate structures vary. A second factor could be the possibility that some insurers have rates on file for every location in the state but may not be actively writing business in some locations, especially if their rate is far below what an insurer considers adequate. A third factor could be differences in the coverages among insurers as well as differences in their underwriting standards. There could be other reasons for the variation that are less obvious.

In sum, all of these price measure comparisons tell a similar story. The price of homeowners insurance is: 1) much higher in coastal areas than in non-coastal areas; and 2) the price of insurance has substantially increased, especially in the highest risk areas. Of course, this is no great surprise but our calculations reveal some of the magnitude of the differences and changes and help to explain why property owners in high-risk areas are unhappy about the rising cost of insurance and increasing their pressure on legislators and regulators to "ease their pain."

**D. Availability of Coverage**

The availability of insurance coverage also is an important performance outcome and an area of attention and concern to property owners, government officials and other stakeholders. "Availability" is a somewhat elusive thing to measure or quantify and can mean different things to different people. The preferred definition might be how easy or difficult it is for homeowners to obtain the coverage they want in the voluntary market from the insurers they prefer but acquiring information on this or even measuring availability so defined is difficult.

Hence, economists tend to use other insurance availability indicators such as the proportion of uninsured homes or the size of the residual market. However, there are

problems with and caveats to these measures. It is difficult to obtain data on the proportion or number of uninsured homes and the lack of insurance on a home may be at least partly a matter of choice on the part of the homeowner. Also, a home may have insurance, but the amount or breadth of coverage may be considerably less than what the homeowner would prefer.

Similarly, the number and proportion of homes/policies in the residual market are affected by a number of factors, of which insurers' willingness to supply insurance is only one. Finally, this measure can confound prices with the "availability" of coverage – some homeowners may be able to choose to obtain insurance in the residual market because it costs less than what they would be required to pay in the voluntary market. This last caveat has become more significant with the changes to Citizens in Florida to make it a cheaper source of insurance than the private market.

With these caveats and limitations in mind, we look at the relative size of the residual markets in Florida and other states over time to gain some perspective on availability. Understanding that this measure is affected by several factors, it is generally conceded that the supply or availability of insurance in the voluntary market is a major driver of the size of the residual market and is frequently used by economists as the best availability measure obtainable.

Figures 9 and 10 plot the size of the residual market in Florida over time for personal residential property based on the number of policies and the amount of exposure. The CPIC provides both full homeowners coverage for some properties and wind-only coverage for others and both are shown in the figures. We can see from the

figures that both parts of the Florida residual market for personal residential property have increased substantially over time.

Although several factors affect the size of the residual market, it is clear that the availability of coverage in Florida's voluntary market has tightened considerably. How this situation will evolve in the future will also depend on several factors, including risk assessment, changes in capacity, the supply of reinsurance, and regulatory actions. Residual markets in other states have grown to a much lesser degree (see Section IV). As with other statewide market outcome measures, this reflects the lower level of catastrophe risk as well as the lower proportion of coastal exposures in these states. This does not imply that the coastal areas in these states have an ample supply of coverage, but that the availability problems in these areas are having a much smaller impact on their respective statewide markets. We discuss residual market trends in greater detail in Section IV.

**E. Profitability**

Firms' profitability is an important market performance outcome. In an efficient, competitive market, long-run profits would be expected to provide firms a "fair" rate of return equal to their risk-adjusted cost of capital. If firms' profits are too low and they are unable to remedy the deficiency, it will encourage market exit or retrenchment that could have adverse effects on consumers. On the other hand, if firms sustain high profits over the long term, it would raise questions about the competitiveness of the market.[14]

[14] The term "long-run" can be ambiguous in the context of catastrophe risk. In homeowners insurance markets not subject to catastrophe risk, 5-10 years might be sufficient for insurers to balance out their profits and losses. However, in homeowners insurance markets subject to catastrophe risk, it may take much longer for profits and losses to balance out (presuming that rates were set at adequate levels). This makes it difficult to assess whether profits approximate a fair rate of return over the long run.

The problem in insurance markets, especially in lines like homeowners insurance, is that profits can be highly volatile from year to year. In other words, insurers can earn low or negative profits in some years and what appear to be high profits in other years. Still, over the long-run, average or cumulative profits would be expected to approximate a fair rate of return. This is close to being the case in homeowners insurance markets that are subject to "normal" weather-related perils, but hurricane-prone markets are subject to much greater volatility and much longer "return periods." Insurers might have been prepared to handle an occasional severe hurricane (e.g., a Hurricane Andrew level event every 10-20 years) but not the back-to-back multiple-event years experienced in 2004 and 2005.

Even the relatively frequent occurrence of more modest level hurricanes, e.g., $1-$10 billion in losses for each, can drive insurers' state and regional results deep into the "red" and keep them there for some time. This generates significant concern among insurance company owners (stockholders or member-owners for mutual companies) who do not expect the managers of these insurers to continue to subject their companies to such sustained losses in any segment of their business.

There are several different profit measures that are used in insurance, including loss ratios, underwriting ratios, operating ratios, profits on insurance transactions, and estimates of the return on equity. We focus on "profits on insurance transactions" (PIT), which is a measure published by the NAIC by line and by state. This PIT measure includes incurred losses, all expenses, investment income attributable to loss and premiums reserves (not surplus), and estimated federal taxes on the income earned (or tax

credits on negative income).[15] The resulting profit (loss) is divided by direct premiums earned to produce a profit rate.

Figure 8 plots insurers' annual PIT rates for homeowners insurance in Florida and all Southeast states combined for the period 1992-2005. As can be seen from this figure, insurers earned positive profits in most of the years during this period, but had losses (negative profits) in 1992, 1993, 2004, and 2005. In Florida, insurers generated negative profits of -172.8 percent in 2004 and -87.8 percent in 2005.[16] The negative profits during this period stemmed primarily from Hurricane Andrew and the hurricanes that struck the state in 2004 and 2005. The Southeast profits of -68.2 percent in 2005 also reflect losses from Hurricanes Katrina and Rita that caused significant damage in Texas, Louisiana, Mississippi and Alabama. Profit calculations for 2006 are not yet available. It is possible that 2006 profits may also be negative because of insurers' adjustment of estimates of losses incurred in 2005 – the adjustments would be reflected in 2006 reported financial results.

These results reflect the volatility in insurers' results caused by hurricanes discussed above. Also, as we noted, insurers expect income volatility in hurricane-prone areas but there are issues with respect to how much volatility they can "comfortably" accommodate as well as the impact of hurricane losses on their long-term profitability and firm value.

Figure 9 plots cumulative profits (losses) for homeowners insurance in Florida and the Southeast for the period 1992-2005 - each year represents accumulated profits and losses from previous years. We can see from this figure that insurers on the whole

[15] Readers should note that all of the data used in these profit calculations are based on statutory financial statements filed by insurers.
[16] Some of the losses arising from 2005 events are likely to be reflected in the 2006 results.

have remained under water over the entire period. Cumulative losses decreased over the period until 2004. If insurers had earned positive profits in Florida in 2004-2005, they would have dug themselves out of the hole created by Hurricane Andrew. Even with more modest losses, they could have looked forward to eventually generating positive profits for the entire period (barring more severe hurricanes), but the heavy storm seasons of 2004 and 2005 quashed any such hopes.

On a cumulative basis as of the end of 2005, insurers were $14.7 Billion in the red on their Florida's homeowners business (representing -41.0 percent of cumulate premiums earned). Hence, in 2006, insurers perceived that they were again deep in the hole with respect to their Florida and Southeast operations and it will require a sustained period of positive profits to dig themselves out of this hole an raise their long-run profits to adequate levels. If insurers earned positive profits in 2006, it would help to improve their long-term performance, but additional profitable years will be needed to pull long-term profits above the red line.[17] We would expect 2007 profits to be positive given the lack of hurricane losses which should further improve insurers' long-term cumulative results.

Of course, historical losses might be viewed as sunk costs and irrelevant to insurers' decisions regarding the future. However, if an insurer believes that this history will repeat itself, i.e., it is likely to continue to incur losses over the years ahead and is unlikely to ever earn a fair rate of return on a long-term basis, then it would be understandable that it would be reluctant to continue to maintain the same level of operations under current conditions.

[17] It is likely that some losses from the 2005 storm season will appear in the 2006 results due to the length of the claims adjustment process. The same pattern occurred after Hurricane Andrew when insurers sustained negative profits in 1992 and 1993.

Ultimately, insurers have to reach a position where they believe that they will generate reasonable profits over the long term and not put the solvency of their companies at significant risk or create cross-subsidies from their insureds in low-risk states to their insureds in high-risk states.[18] Until they reach that position, it is reasonable to expect that there will be further market changes. If, when and where a new equilibrium will be reached will depend on a number of factors, including actual loss experience, medium and long-term weather forecasts, risk assessments and the confidence in them, and regulatory and other government policies and actions. Unfortunately, the recent government actions in Florida are contributing to further destabilization of its market.

## IV. Politics, Policies and Regulation

The regulation of insurance companies and insurance markets plays a prominent role in the management of catastrophe risk. Each state exercises considerable authority over insurers' entry and exit, financial condition, rates, products, underwriting, claims settlement and other activities (Klein, 1995 and 2005). Regulatory constraints and mandates in these areas can have significant implications for how property insurance markets function and property owners' incentives to control their risk exposure. It is important to note that government policies and actions are not confined to regulation or insurance regulators per se. Legislatures, the courts, and governors often play a

[18] Given the competitiveness of home insurance markets in the various states, it would be difficult for insurers to sustain substantial cross-subsidies. The payers of such subsidies would be expected to seek out insurers with lower rates that were not engaging in cross subsidization.

significant role in insurance market intervention and this is clearly evident in case of catastrophe risk.

Although there are limits to regulators' power and that of the other branches of government, there is virtually no aspect of insurance markets and insurance company activities that they cannot attempt to control or at least influence. At the same time, prudent government officials will seek to confine their intervention to areas where they believe it is warranted and will facilitate the function of efficient markets. Ultimately, they cannot dictate market outcomes but their policies can either support more efficient insurance markets or create problems and distortions.

For the purpose of this paper, insurance regulatory responsibilities are divided into two primary categories: 1) financial regulation; and 2) market regulation. In theory, financial regulation seeks to protect policyholders by limiting the risk that insurers will not be able to meet their financial obligations because of financial distress or insolvency. Market regulation, in its idealized form, attempts to ensure fair and reasonable insurance prices, products and trade practices. Financial and market regulation are inextricably linked and must be coordinated to achieve their specific objectives. Regulation of rates and market practices affects insurers' financial performance and financial regulation constrains the prices and products insurers can reasonably offer. The balancing of market and financial regulatory objectives is especially relevant to catastrophe risk – less stringent solvency requirements can increase the supply of insurance but insurers "on the margin" can be exposed to greater default risk.

**A. Rate Regulation**

Rate regulatory systems and policies differ considerably among the states. Some attempt to impose binding constraints on rates while others rely on the market to determine rates. This is reflected in both the types of rate regulatory systems that states employ (see Table 10) as well as how these systems are implemented. In prior approval systems, the presumption is that rates are subject to greater control than in competitive rating systems. However, in practice, some prior approval states allow the market to determine prices and in some competitive rating systems regulators attempt to constrain prices. Hence, the degree of regulatory stringency – how much regulators seek to suppress overall rate levels or compress rate structures – varies greatly among states and cannot be inferred solely from their rating systems.

In turn, rate regulatory policy and actions can have significant effects on insurance markets. Suppression of overall rate levels or compression of geographical rate structures can compel insurers to tighten the supply of insurance which decreases the availability of coverage. Also, these policies can reduce insureds' incentives to optimally manage their risk from natural disasters. At the same time, economic and market forces can ultimately trump regulatory policies. Regulators cannot "force" market outcomes that are at odds with economic realities, e.g., low rates and widely available coverage in the face of very high risk, without government replacing private insurers as the principal source of insurance coverage.

We use the terms "rate suppression" and "rate compression" with somewhat different meanings. Suppression refers to regulators' attempts to constrain overall rate levels for all classes of insureds. Compression refers to the attempt to constrain rate differentials between different risk classes, e.g., high-risk and low-risk territories for

home insurance. Rate compression often results in rate suppression as regulators will typically lower the allowed rating factors for the highest-risk classes while requiring no changes in the underlying base rate or rating factors for the low-risk classes.[19] This ultimately lowers the overall rate level that an insurer can implement.[20]

A number of factors affect regulatory stringency, including but not limited to:

- The degree to which rate regulation is vulnerable to political manipulation. Prior approval systems tend to be more vulnerable to manipulation although competitive rating systems are not immune from political interference.

- The underlying risk of loss – higher risks and costs tend to put more pressure on legislators/regulators to constrain rates in response to political pressures. Also, regulators are more likely to disapprove large rate increases (higher than 5-10 percent) than small rate increases.

- "Philosophies" concerning regulation and the need to constrain insurers – some states exhibit prevailing philosophies that call for stricter regulation while others may be more willing to allow market forces to determine prices.

- Economic Leverage – the negative consequences of exit from a large market state are greater for an insurer than they are for exit from a small market state. Hence, regulators in large states may seek to extract greater concessions from insurers than regulators in small states.

- Regulator Selection – there is some evidence that elected regulators are more likely to engage in rate suppression and compression but studies suggest that this has only a small effect.

- Legislation – legislatures enact the laws and often approve regulatory rules and hence can substantially influence regulatory policies.

[19] In theory, insurers might seek to charge higher rates to low-risk insureds to partially or completely offset the effect of constraints on rates for high-risk insureds, but insurers rarely if ever employ this strategy because it would exacerbate adverse selection. In practice, it would be difficult if not impossible for insurers to charge rates for low-risk insureds that would exceed the costs of covering these insureds.

[20] Technically, the change in an insurer's overall rate level is calculated as the exposure-weighted average of the changes in the rates for each rate classification.

**1. Rate Regulation in Florida**

After Hurricane Andrew, Florida regulators resisted large rate increases in one swipe and only allowed insurers to gradually raise rates over the decade.[21] Initially, this policy worsened supply-availability problems because insurers were concerned about substantial rate inadequacy (Grace, Klein and Kleindorfer, 2004). Over time, as insurers were allowed to further increase rates, these concerns eased although it appears that insurers believed that there was still some compression of rates in the highest-risk areas. By the beginning of 2004, most insurers probably viewed their rates as being close to adequate except in the highest-risk areas and there was not substantial pressure to further increase rates. This began to change after the fourth major hurricane hit the US in 2004.

By 2006, many insurers began to file their first wave of significant rate increases in Florida. The magnitude of the rate increases filed varied among areas within the state based on insurers' estimates of the inadequacy of their existing rate structures. High-risk coastal areas received larger percentage increases than low-risk areas. It appears that the initial wave of rate increases were largely approved or allowed to go into effect by regulators. However, as some insurers began to file a second wave of rate increases in the latter part of 2006, they began to encounter greater regulatory resistance.

The disposition of rate filings submitted by State Farm in Florida through 2006 is summarized in Table 11. The overall rate level changes filed by State Farm from 1997-2006 ranged from 2.3 percent to 52.7 percent. Two of the filings were challenged by regulators but State Farm subsequently received its requested rate changes (with certain

[21] This might be labeled as the "sticker-shock" effect. In normal markets, rate increases less than 5 percent tend not to encounter significant resistance. In markets hit by a major hurricane, consumer and regulatory tolerance may even be somewhat greater. However, there is a limit to this tolerance even in markets that have been subject to significant hurricane losses.

conditions attached) in arbitration. The largest increase filed during this period – 52.7 percent - was approved by regulators and became effective as of August 15, 2006. It should be noted that, in several instances, State Farm filed for smaller increases than what was indicated by its actuarial analysis. This can happen for several reasons, including an insurer's desire to soften the impact on consumers and its expectations with respect to what regulators are more likely to approve.

State Farm's rate structure or rate relativities have also been subject to constraints, which constitutes "rate compression". From 2002, its filed rate increases were subject to an individual policy premium increase cap, typically 42.5 percent. In its filing effective August 15, 2006, the FLOIR agreed to remove the cap, in exchange for limiting the maximum average base premium increase for any given territory to 165 percent.

More recently in the latter half of 2006 and into 2007, further insurer rate hikes have been challenged and disapproved or reduced by Florida regulators. For example, in the latter half of 2006, rate filings by Allstate, Nationwide and USAA were challenged by regulators. The Allstate Group filed a 24.2 percent increase for Allstate Floridian and a 31.6 percent increase for Allstate Floridian Indemnity. The approved increases were ultimately reduced to 8.2 percent for Allstate Floridian and 8.8 percent for Allstate Floridian Indemnity.[22] Nationwide filed for 71.5 percent rate level increase that was disapproved and it appealed the disapproval to a Florida arbitration panel that ruled in favor of a 54 percent increase. USAA filed for a 40 percent increase but received only a 16.3 percent increase.

22 Earlier in 2006, Allstate Floridian received a rate increase of 16.3 percent and 24.4 percent for Allstate Floridian Indemnity.

More recently, in November 2007, the FLOIR issued a notice of intent to disapprove filings for homeowners rate increases of 43.4 percent for Allstate Floridian, 27.4 percent for Allstate Floridian Indemnity, 39.7 percent for Encompass Floridian, and 41.6 percent for Encompass Floridian Indemnity (all members of the Allstate group).[23] The FLOIR has taken a position that it will oppose any further rate increases by insurers. The Florida Governor has also prompted attorneys to file a class action lawsuit against property insurers for charging what he alleges to be excessive rates.[24]

On January 15, 2008, the Florida insurance commissioner – Kevin McCarty - announced that he intended to suspend Allstate's license to write new auto insurance policies in the state. McCarty stated that the suspension would remain in effect until Allstate complied with an FLOIR subpoena for information related to its reinsurance program for property insurance and communications with other organizations. Allstate has denied that it has failed comply with the FLOIR subpoena. The courts subsequently stayed Allstate's suspension but its dispute with the FLOIR continues as the legislature has compelled several insurers to defend their rates in public hearings.

A combination of growing consumer displeasure over previous rate increases as well as the lack of damaging hurricanes in 2006 has likely influenced regulators' and legislators' resistance to further rate hikes. The further hardening of regulatory policies was foretold in Florida's 2006 elections and was manifested in its early 2007 legislative session. In early 2007, Florida enacted legislation which sought to increase regulatory control over rates and roll back rates based on changes in the Florida Hurricane Catastrophe Fund (FHCF). The new legislation expanded the reinsurance coverage

[23] "Florida Regulator Denies Allstate Homeowners Increases," BestWire, November 16, 2007.
[24] "Fla. Gears Up to Sue P-C Insurers Over Rates," National Underwriter, December 19, 2007.

provided by the FHCF and insurers were required to reduce their rates to reflect this expansion of coverage which was priced below private reinsurance market rates. This requirement applies even if an insurer does not purchase reinsurance from the FHCF.

Depending upon their pre-2007 position, insurers have been filing either a rate decrease to comply with the 2007 legislative requirement or a combination of a rate increase (to correct existing rate inadequacies) and a rate decrease to comply with the 2007 legislation. Based on media reports and statements by the FLOIR, regulators are challenging rate increases for being unnecessary as well as the filed rate decreases for being too small relative to FLOIR estimates of how much insurers should be cutting their rates because of implied FHCF reinsurance cost decreases.[25] The disagreement between insurers and regulators regarding the rate decreases required by the 2007 legislation is one of the principal issues involved with the class action lawsuit mentioned above.

**2. Rate Regulation in Other States**

As a general observation, it appears that disputes between insurers and regulators over rates have tended to be less significant in coastal states other than Florida (see Klein, 2007). This may be largely due to the fact that insurers have filed for smaller increases in other states and previous rates in these states have been lower than in Florida. However, one has to be careful in making overly broad statements about the regulatory environments in these other states as each has its own particular story. For example, in Texas, regulators have challenged a number of recent rate filings by insurers, although it appears that the relative difference between what insurers have filed and what regulators

25 See, for example, "5 Florida Homeowners Insurance Companies Seek Rate Increases," South Florida Sun-Sentinel, June 29, 2007 and "Florida's McCarty Again Rejects Property Insurers' Rates," BestWire, August 14, 2007.

are willing to approve is smaller in Texas than in Florida. Louisiana has tended to approve insurers' rate filings for the most part as part of a strategy to minimize the disruption of the supply of insurance in coastal areas.

**3. Comments on Rate Regulatory Policies**

In sum, Florida has exhibited the greatest degree of regulatory stringency toward property insurance rates within the last year but its behavior is consistent with its economic and political situation. Rates in coastal areas of Florida were already high and consumer and voter tolerance in these areas has been strained by the most recent waves of rate increases. Property insurance rate regulation has tended to be more moderate in other states subject to hurricane risk, even after the 2004-2005 storm seasons. Risk and cost pressures have been lower in these states which decreases the tension between insurers' rate needs and what regulators are willing to approve. Also, even in other states subject to relatively large increases in 2005-2006, e.g., Louisiana, previous rate levels had been lower than in Florida (Grace and Klein, 2007). Finally, regulators in states with smaller markets have been able to exercise less leverage in seeking to extract rate concessions from insurers.

The situation for rate regulation in coastal states still remains fluid at the time of the writing of this paper. The fact that the US avoided damaging hurricanes in 2006 and 2007 could help to further stabilize state markets and reduce the occasion for insurer-regulatory disputes on rates. Although regulators appear to be more "accommodating" in states other than Florida, there also may be limits to their tolerance of higher rates.

## B. Regulation of Underwriting and Policy Terms

Regulation of underwriting and the policy terms that insurers can use have a significant impact on hurricane-prone insurance markets. The regulation of underwriting - e.g., the rules insurers use to select or reject applicants, insurer decisions to reduce the number of policies they renew or new policies they write, etc. - can be somewhat difficult to specify because of the complexity and opaque nature of this aspect of regulation. Some aspects of the regulation of policy terms, e.g., the maximum wind/hurricane deductibles that insurers are allowed to offer, are more readily discernable but other aspects may be obscured in the policy form approval process. Also, the regulation of these two areas can be intertwined. Regulators may allow insurers to offer a high wind deductible but may not allow them to mandate a high deductible as a condition for renewing an existing policy or writing a new one.

### 1. Regulation of Underwriting

The states regulate insurers' ability to use their discretion in accepting new insurance applications or renewing existing policies in different ways. At a minimum, regulators may prohibit the use of certain underwriting criteria but the regulation of underwriting can extend significantly beyond such minimum prohibitions. Regulators may constrain insurers' discretion by more broadly limiting the criteria they can use in underwriting or interfering with insurers' attempts to reduce their portfolios of exposures to more manageable levels. While there has been some regulatory resistance to insurers' decisions to reduce their exposures there is generally little that regulators can do to prevent such reductions in the long term.

There are examples of statute or regulation-based underwriting restrictions. In Louisiana, insurers are prohibited from terminating policies that have been effect in for three or more years, except for "cause". In New York, insurers may not reduce their exposures by more than 2 percent per year. Most states also do not allow insurers to reject insurance applications solely on the basis of the age of a home. Additionally, the states are increasingly imposing constraints on insurers' ability to use credit scoring in underwriting auto or home insurance.

Regulators may seek to impede or challenge insurers' decisions to non-renew policies and not write new policies by requiring them to justify their decisions. The only real leverage that a state can employ is to try to force an insurer to exit all lines of insurance if it seeks to reduce its property insurance exposures. It is not clear that regulators would prevail in such an effort but they may threaten such action. This can result in a game that neither side desires to take to its ultimate limit but each must be prepared to do so in order to exercise bargaining power. The game often involves rate regulation as insurers may respond to rate filing disapprovals by tightening their underwriting and regulators may approve a rate increase conditional on an insurers' agreement to continue to write a certain number of high-risk insureds.

An issue that has recently arisen is whether an insurer can require a homeowner to buy his or her auto insurance from the insurer as a condition for being able to buy homeowners insurance. There have been some media reports of insurers employing this requirement but it is not clear whether it widespread nor whether this is something that regulators would allow. It is common for insurers to offer premium discounts to insureds

who buy their auto and home insurance from the same company but this is a different practice that states generally allow.

New York is one state that has recently barred insurers from non-renewing home insurance customers in coastal areas who are not willing to buy their auto and life insurance products as well. The New York action was prompted by complaints from consumers who received non-renewal notices from their insurers that cited this reason, among others, for the non-renewal. Several insurers indicated that they would stop the practice and renew the insureds that they had dropped. According to the insurance department, insurance tying requirements are prohibited by state law.[26]

Another aspect of underwriting is insurers' movement of some of their exposures into "standard" or "non-standard" as well as single-state companies within their groups. One of the factors prompting this development is that "standard" and "non-standard" companies are allowed to have higher rate structures and many insurers prefer or are compelled to use this approach rather than expanding their rate structures within their main or "preferred" companies. Hence, it is a way in which an insurer can effectively raise rates for certain insureds without filing a rate increase. This is a tactic that regulators may seek to control by confining the criteria by which insurers are allowed to use in accepting or declining insureds for coverage in their preferred or lowest-rate companies.

The establishment single-state companies by national insurers is motivated by the desire to make the financial performance attributable to a state more transparent and obvious, rather than mixing it with the financial results from other states. Also, from a legal perspective, if a single-state company were to become insolvent, the parent group could let the company go and not attempt to bail it out with funds from other companies

[26] "N.Y. Stops Insurers From Tie-Ins for Coastal Customers," National Underwriter, August 27.

within the group. While this has not occurred to date, some insurer groups may wish to retain this option if the losses of a single-state company were large enough to significantly affect the financial condition of the group, especially if regulators in the state had constrained the company's rates or other efforts to manage its exposures.

In its recent legislation, Florida has sought to restrain the use of single-state companies and the "segmentation" of Florida losses from insurers' experience in other states. The legislation prohibits the further establishment of single-state insurers by national groups and requires insurer to sell homeowners insurance in Florida if they sell it in other states. These actions could discourage new insurers from entering the state and existing insurers from remaining in the state.

Louisiana has taken an interesting tack in the establishment of its "Insure Louisiana Incentive Program" in 2007 to attract more insurers to the state. The program sets aside $100 million in matching funds for insurance companies willing to enter the state and write new business. Qualifying companies will receive funds ranging from $2-$10 million and must meet specific solvency requirements and take 25 percent of their new policies from the LCPIC. To date, six insurers have applied for such grants.[27]

**2. Regulation of Policy Terms/Provisions**

Another area in which regulators may constrain insurers' preferences is policy terms, such as wind or hurricane deductibles. Insurers are allowed to offer up to 10 percent wind or hurricane deductibles in Florida for homes with dwelling coverage limits between $100,000-$500,000. There is no limit on hurricane deductibles for homes with dwelling limits in excess of $500,000. Maximum allowed wind/hurricane deductibles can

[27] "Six Insurers Seek Grants to Offer, Expand Coverage," Times-Picayune, November 7, 2007.

range up to 25 percent in other coastal states. Higher deductibles allow insurers to better manage their catastrophe risk exposure/losses and also allow some homeowners to further 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.

Another issue is insureds' ability to have wind coverage excluded from their policy or allowing insurers to offer wind/hurricane exclusions. Florida's 2007 legislation made this option more readily available to buyers of homeowners insurance.[28] While an insured could obtain significant premium savings by opting for a wind exclusion, it does place them in a position of retaining any wind losses they might suffer. Presumably, lenders would not allow someone with a home mortgage to opt for a wind exclusion, but it would be an option for homeowners without a mortgage.

**C. Other Areas of Market Regulation**

As noted above, other aspects of insurers' activities are regulated such as marketing and distribution, the servicing of policies, and claims adjustment. The regulation of claims adjustment can be especially relevant in the context of catastrophe risk. Following a disaster, regulators may pressure insurers to make more generous claims payments and pay claims more quickly. Disputes over "wind versus water" damages have been particularly contentious following the 2005 storms (and also arose to some extent in 2004) and have led to a number of lawsuits. The two main issues involve the enforcement of the standard flood exclusion in homeowners insurance policies and

28 A number of Florida homeowners obtain their wind coverage through the state residual market mechanism but this is a different action than forgoing wind coverage from any source. It is not known how many homeowners have chosen the latter course but it is likely that at least a few have and this number may be growing.

the determination of damages from wind versus flood in claims adjustment and settlement. Insurers have settled some of these lawsuits and federal appeals courts have upheld the flood exclusion, but some litigation continues.[29] The potential for regulators to pressure insurers on claims payments and litigation increases the uncertainty that insurers face in assessing and pricing catastrophe risk. This greater uncertainty can prompt insurers to further boost their rates or reduce the supply of insurance which can have negative repercussions for many insureds.

**D. Financial Regulation**

Regulators also are responsible for regulating insurers' solvency and financial condition, including their level of catastrophe risk. Regulators are placed in a position of balancing solvency requirements with their desire to lower the magnitude of rate increases and preserve the availability of insurance coverage. In markets subject to tight supply and high costs, regulators may sometimes tip the balance further in favor of improving "availability and affordability" given this is the greatest and most immediate concern to consumer-voters in high-risk areas.

This kind of regulatory tradeoff is especially relevant to Florida given the market pressures it has faced. Beginning in the mid-1990s, Florida allowed start-up insurers to write a large block of exposures in high-risk areas. In fact, many of these start-up insurers drew a significant amount of their initial capital from bonuses they received for taking policies out of the residual market. There were also some existing small regional insurers that entered or expanded their writings in the Florida market to absorb the exposures shed

[29] For example, a federal appeals court in Louisiana recently ruled in favor of insurers' contention that the exclusion of flood coverage was clear in their homeowners insurance contracts. See Wharton, et. al. (2007) for a more detailed discussion of claims litigation.

by other insurers. These insurers can purchase reinsurance to bolster their capacity but there are limits to how much they can reduce their risk from writing large concentrations of high-risk exposures. Even the most generous catastrophe reinsurance contracts still require the ceding insurers to retain a significant amount of risk at lower layers that can only be supported by surplus associated with a more diversified portfolio of exposures.

As we discussed above, most of the start-up insurers exited the market or diversified their exposures across the state. However, five of the insurers that retained substantial concentrations of high-risk exposures were placed into receivership after the storms. Three members of the Poe Group – Atlantic Preferred, Florida Preferred, and Southern Family – became insolvent and are in liquidation. Vanguard has also been placed into liquidation. Florida Select is under the control of state regulators but have not been placed into liquidation. Four additional insurers received substantial downgrades from A.M. Best (three of them members of the Tower Hill Group) but have not been formally seized by regulators.

Table 12 provides various pertinent data for the five insurers placed into receivership. For each company, Table 12 shows the amount of 2005 Florida homeowners direct premiums written and total exposures written by each company, as well as their exposures in Broward, Dade, Monroe and Palm Beach (BDPM) counties. The table also provides 2004 year-end company-wide financial information for each insurer – policyholders surplus (PHS), direct premiums written (DPW) and net premiums written (NPW) - and several ratios calculated from these data.

The picture presented by Table 12 is interesting and raises more questions than it answers. With the exception of Southern Family, the insurers appeared to have bought

large amounts of reinsurance – implied by net to direct premium ratios of less than 20 percent. Further, only Florida Preferred and Southern Family had NPW/Surplus ratios substantially above 100 percent. A "Florida Exposure Leverage Ratio" also is shown which is equal to a company's Florida's exposures multiplied by its NPW/DPW ratio and divided by its PHS. This last ratio ranged from 805 percent to 39,792 percent for the five insurers. These figures suggest that, for the most part, these insurers might have passed conventional regulatory standards. Still, despite the indication that they were heavily reinsured, these insurers were still bankrupted or severely distressed by 2004-2005 storm seasons. Pending further investigation, it appears that these companies were undone by their geographic concentration in Florida.

The fact that regulators have allowed insurers to write large concentrations of high-risk exposures raises questions about the adequacy of the companies' financial oversight. It should be noted that US regulatory capital requirements (both fixed and risk-based) do not consider catastrophe risk.[30] Further, there is no uniform policy or standard across the states that require insurers to rigorously assess and manage their catastrophe risk.[31] Some states may use their regulatory discretion to require certain insurers to perform catastrophe risk modeling but this would be a matter of choice and not mandated by law or regulator-issued rules.

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30 Insurers are subject to both state-determined fixed capital requirements and risk-based capital (RBC) requirements developed by the NAIC and adopted by the states. Insurers are required to meet the higher of the two requirements. Since most state fixed capital requirements are in the area of $1-$2 million, RBC requirements tend to be the binding constraint faced by most insurers. However, RBC requirements do not explicitly consider insurers' catastrophe risk. It also should be noted that insurers are subject to a number of other financial requirements and, in theory, are expected to maintain their default risk within certain reasonable boundaries. How the various states may actually enforce financial risk limits probably varies and is not readily transparent to non-regulators.

31 The NAIC has considered adding a catastrophe risk component to insurers' RBC requirement but proposals have been subject to substantial debate and there is no prospect for a resolution of the issues in the near future. Rating agencies do impose more rigorous catastrophe risk management requirements on insurers but smaller, single-state and new insurers are often not rated.

While new or smaller, regionally-concentrated insurers can provide some relief, their capacity tends to be limited and it questionable whether they are positioned to safely absorb large concentrations of high-risk exposures. A more prudent strategy would encourage more national, geographically-diversified insurers to each assume digestible shares of high-risk exposures at adequate rates. Unfortunately, policies in Florida are not encouraging this kind of development. Louisiana appears to be employing a safer two-prong strategy – encouraging existing insurers to stay and attracting new insurers both national and regional in scope. Louisiana will need to be careful in allowing smaller insurers in writing large concentrations of high-risk exposures if they wish to avoid to the kind of insolvency risk that Florida has encountered.

Developments concerning collateral requirements for non-US reinsurers warrant brief mention. The NAIC has been involved in intensive discussions concerning adjusting these collateral requirements according to the financial strength and regulation of non-US reinsurers (see Klein and Wang, 2007). Unfortunately, strong differences of opinion among primary insurers, US reinsurers, non-US reinsurers, and regulators have prolonged this discussion and it is not likely to be resolved in the near future. The benefits of a less-restrictive approach to setting collateral requirements could be greater access and a lower cost of catastrophe reinsurance which would aid the supply and price of primary coverage. Impatient with the slow progress at the NAIC, New York and Florida have issued their own proposals for relaxing collateral requirements for reinsurance purchased by insurers operating within their jurisdictions. Whether such individual state proposals will be implemented is unclear, but the issue is clearly important and will continue to receive significant attention in the efforts to enhance catastrophe risk financing.

## F. State Insurance Mechanisms

State insurance mechanisms play a prominent role in the underwriting, pricing and management of catastrophe risk. There are three types of state-run or state-sponsored insurance mechanisms: 1) residual market mechanisms; 2) state insurance or reinsurance funds; and 3) insolvency guaranty associations. The administration of all three types of mechanisms can have significant implications for the functioning of insurance markets and the management of catastrophe risk.

### 1. Residual Market Mechanisms

#### a. General Observations

Although residual market mechanisms may be headed by non-regulators, legislators and insurance regulators effectively control much of what these mechanisms are allowed to do in terms of setting rates and other actions. The principal property insurance mechanisms are FAIR Plans, state insurance companies, and windstorm/beach plans. FAIR Plans operate in 32 states and provide full coverage for residential properties that are "unable" to secure coverage in the voluntary market. Florida and Louisiana have "Citizens Property Insurance Corporations" that also provide full coverage or wind coverage for residential properties. Windstorm/beach plans exist in several coastal states and provide only wind coverage in certain designated high-risk coastal areas.

The administration and regulation of residual market facilities can have significant effects on property insurance markets and vice versa. The important aspects of residual market administration include rates, eligibility requirements, available coverages and coverage provisions. Suppressing or compressing residual market rate structures,

lenient eligibility requirements, and generous coverage terms can cause significant problems. In turn, suppressing or compressing insurers' rates can tighten the supply of insurance in the voluntary market and force more properties into the residual market.

One problem is the excessive growth of a facility's exposures. It is not uncommon for these facilities to insure 1-2 percent of the residential properties in a state. At this level, the facilities are small enough so that they do not impose a large burden on the voluntary market or create other problems. In this scenario, residual market mechanisms truly play the role of a "market of last resort." They provide coverage to a small portion of properties that are unable to secure coverage in the voluntary market and compensate for availability problems in coastal areas that are small in proportion to their respective states.

However, when residual market mechanisms are substantially larger than this, they can impose a significant burden on the voluntary market and potentially lead to the infamous "downward spiral" in which they continue to grow and cause the voluntary market to implode. Residual markets can function as a temporary safety valve in the event of "supply shocks" but excessive regulatory constraints on the voluntary market and/or mismanagement of residual market mechanisms can create long-term problems. The danger of this scenario is higher in states where coastal, high-risk areas account for a larger portion of total statewide exposures.

If availability problems are caused by regulatory constraints on the voluntary market, then at least part of the facility's large book of exposures is artificially created. A second problem is that the residual market's insureds' incentives to lower their disaster risk can be diminished if they do not pay the full cost of the risk they incur. Thirdly, a

facility can experience financial shortfalls that are assessed back to voluntary market insurers and insureds. Large and growing residual market mechanisms may be unavoidable during periods of market instability and adjustment, but using them as a long-term source of coverage for a large number of properties can unnecessarily sustain problems in both the voluntary and residual markets.

The highly variable nature of catastrophe losses can enable regulators to suppress residual market rates but the effects of this policy can be delayed. The timing of voluntary market assessments will be tied with the timing of catastrophe losses. Hence, the assessments can come in chunks when hurricanes occur, which further contributes to the instability of property insurance markets subject to catastrophic loss shocks.

**b. Florida's Residual Market**

Florida's property insurance residual market mechanism, the Citizens Property Insurance Corporation (CPIC), has experienced significant growth in recent years but misdirected 2007 legislative changes are accelerating that growth. In concept, a residual mechanism should be an insurance source of last resort for property owners who cannot obtain insurance in the voluntary market. Florida's legislation substantially departs from this concept. The significant changes fall into three categories: 1) changes to the CPIC's ability to compete with the voluntary market; 2) changes in CPIC rates; and 3) changes in the CPIC's authority to make "emergency assessments" to cover funding shortfalls.

A number of legislative changes were made to expand the coverage offered by the CPIC and allow it to compete with the voluntary market (see Milliman, 2007). Importantly, consumers are allowed to purchase a policy from the CPIC if a comparable policy would cost 15 percent more in the voluntary market. Further, the legislation rolled

back CPIC rate increases that were to become effective at the beginning of 2007. Also, the legislation allows the CPIC to decrease rates further in 2007 and precludes it from raising rates until 2008. Finally, the CPIC assessment base was expanded from just property lines of insurance to include all lines of business except workers' compensation, medical malpractice, accident and health, the national flood insurance program, and the federal crop insurance program. Combined, these legislative changes will further increase the size of the CPIC, undermine its "self-funding" based on the premiums it collects, and increase the size and scope of its assessments on other insurance buyers to cover its funding shortfalls.

Figures 9 and 10 plot the growth of the residual market in Florida over time for personal residential property. We can see from these figures that both parts of Florida residual market for personal residential property have increased substantially over this period. For full-coverage policies, the number of policies and the amount of exposures skyrocketed after Hurricane Andrew and then fell from 1995 through 2000 as the start-up insurers took policies out of the facility and pressure on the voluntary market eased. This trend reversed in 2001 when the start-up companies shed policies (after their 3-year requirement ended), followed by the storm seasons of 2004-2005 that reasserted greater pressure on the voluntary market.

As of October 31, 2007, the CPIC had 944,719 personal residential policies and 427,586 "high-risk" (i.e., wind-only) policies.[32] The CPIC also 14,224 commercial residential and wind only policies. Its exposures (i.e., amount of insurance in force) as of March 31, 2007 (the latest date for which these data are available) were $156.4 billion for personal residential policies, $192.1 billion for high-risk policies, and $85.8 billion for

[32] Information obtained from CPIC's website at http://www.citizensfla.com.

commercial policies. All of these figures are the highest recorded for Florida residual market policies and exposures. Figure 11 also reveals that CPIC's market share (based on premiums) increased from 11.5 percent to 18.3 percent from 2002 to 2006. Its relative market share is presumably much higher at the time of the writing of this paper – the Insurance Information Institute estimates that the CPIC's market share exceeded 21 percent by late 2007.

In October 2007, the FLOIR announced that four insurers agreed to take 173,000 policies out of the CPIC. The four companies are American Integrity ($5 million surplus), First Home ($7.7 million surplus), Landmark One (new company) and Argus Fire and Casualty ($9 million surplus).[33] This could slow or reverse the CPIC's growth depending on other factors. Unfortunately, it continues the trend of increasing reliance on smaller, less geographically-diversified insurers.

A question related to the size of the residual market is how its share of property exposures differs in various parts of the state. We would expect that availability would be tighter and the residual market relatively larger in the highest risk areas. This is demonstrated in Table 13 which shows CPIC policies and exposures for personal residential and high-risk policies for Dade, Broward, Palm Beach and Monroe (DBPM) counties (combined) and the remainder of the state for 2003 (December 31) and 2007 (March 31).

We can see from this table that the number of policies and amount of exposures insured by CPIC in its personal-residential account increased significantly from 2003 to 2006 in the DBPM counties but decreased relative to the CPIC's total policies and exposures. The same is the case for high-risk policies and exposures. Still, these counties

33 "Florida to Move 173,000 Policies Out of Citizens," National Underwriter, October 29, 2007.

continue to account for a large share of the policies insured by the CPIC. Other coastal counties likely account for most of the remainder of the CPIC's policies and exposures and have contributed to its growth.

This leads to several observations and comments. One would expect a certain increase in the number of policies and the amount of insurance or exposures due to the construction of more homes as well as increases in policy limits. However, the CPIC's growth is exceeding that of the voluntary market indicating that it is writing a growing share of all property exposures in the state. Based on the most recent data, it appears that the 2007 legislative changes to the CPIC (perhaps coupled with tightening constraints on private insurers) are accelerating the CPIC's growth. Between the end of 2006 and October 31, 2007, the CPIC's personal residential policies increased from 743,592 to 944,719 – a 27 percent increase in just nine months. During this same period, its high risk policies increased from 403,509 to 427,586.

What is most striking is CPIC's growth in other areas of the state beyond the DBPM counties (see Grace, Klein and Liu, 2006). It appears that prior to the recent storm seasons other coastal areas were not as great of a concern to insurers as southern Florida. This perception appears to have changed significantly after 2003. Hence, other coastal areas experienced a greater change in terms of insurers' adjustment of their exposures – an adjustment that Dade, Broward, Palm Beach and Monroe had already experienced prior to 2004. This probably reflects insurers' recognition that the other coastal areas faced a much higher level of hurricane risk than what they had previously assumed. Of course, the vulnerability of other coastal areas was demonstrated by the path of several hurricanes in 2004 and Hurricanes Katrina and Rita in 2005. Hence, these other coastal

areas apparently suffered a greater decrease in the availability of coverage than southern Florida. Another likely factor contributing to the CPIC's growth, especially outside the southern part of the state, is its transformation into a competitive source of insurance.

As a result of its substantial claims obligations arising from the 2004-2005 storm seasons, the CPIC incurred large funding shortfalls of $1.6 billion for 2004 and over $2 billion in 2005. The 2004 shortfall resulted in a 6.8 percent surcharge on all homeowners premiums in the state. The Florida legislature appropriated $715 million in 2006 to reduce the CPIC assessments needed to cover its 2005 deficit. The remainder of the deficit will be collected over a 10-year period in "emergency assessments" on premiums written statewide that will be passed on as surcharges to policyholders. As noted above, most lines written by property-casualty insurers are now subject to assessments. The premium surcharge in 2007 is 2.5 percent and surcharges in subsequent years are expected to be approximately 1.5 percent.

**c. Residual Mechanisms in Other States**

The landscape for residual markets in other target states has been shifting in recent years although not to the degree that has occurred in Florida. It is important to note certain structural changes that occurred in Texas and Louisiana. Texas has had a wind pool for a long time but it only recently created a FAIR Plan in 2003. Louisiana combined its FAIR Plan and wind pool in 2004 in a new entity titled the Louisiana Citizens Property Insurance Corporation (LCPIC) that is structurally similar to Florida's CPIC. Table 14 provides data on the number of habitational policies and total exposures for all state FAIR plans for 1992 and 2003-2005 (Atlantic and Gulf Coast states are

highlighted in bold type). Table 15 provides comparable information for state wind pools. Figure 12 plots the market share of four state wind pools based on premiums.

The data indicate that growth in residual market mechanisms has been largely confined to Southeastern and Gulf Coast states. The Texas wind pool essentially doubled from 1992 to 2003 and then appears to have remained essentially at that level through 2005 and then increased to 140,375 policies in 2006. The pool has remained a relatively small but growing portion of the total state market, increasing from 1.08 percent in 2003 to 1.63 percent in 2006. The pre-2003 growth was likely due to coastal development in Texas along with the general tightening of the supply of property insurance in coastal areas. Its more recent growth is likely the result of insurer retrenchment following the 2005 storm season, which could be boosted by regulatory resistance to rate increases.

Louisiana has experienced fairly significant growth in its FAIR Plan policies from 1992 to 2003 but then it essentially leveled off through 2005 in the area of 134,000 policies and just under $15 billion in exposures. The LCPIC did increase its market share from 3.53 percent in 2001 to 8.57 percent in 2004. Based on more recent data obtained from LCPIC's website, it reported a total of 129,203 policies and $21.3 billion in exposures as of March 31, 2007. This further suggests that the LCPIC's growth has stopped and at least slightly reversed.

Losses arising from Hurricane Katrina caused a $1 billion shortfall in LCPIC funding. This has required the LCPIC to borrow funds to pay all of its claims obligations. The borrowed funds are being repaid through special assessments on the premiums written on property insurance policies statewide. This assessment was 15 percent in 2006

and is scheduled to shrink to something in the range of 4-5 percent until the debt is fully repaid.

The Governor and Insurance Commissioner in Louisiana have indicated there desire to reduce the size of the LCPIC, a desire shared by some legislators. This is reflected in the Insure Louisiana Incentive Program discussed above. Also, the Louisiana Commissioner – James Donelon – has sought to employ regulatory policies that minimize insurers' inclination to drop coastal policies to the extent it is possible to do so. However, the Louisiana Legislature did enact provisions in its 2007 session that could impede these efforts. One such provision eliminated the LCPIC's 10 percent "supremacy" surcharge in Louisiana's 11 coastal parishes, making it more competitive with the voluntary market.

The South Carolina Wind and Hail Underwriting Association (SCWHUA), the official name of its "wind pool" has continued to grow over time due to increased coastal development and increasing hurricane risk. It wrote 27,802 policies and $11.2 billion exposures in 2006. Still, its market share remained low ranging from 0.34 percent to 0.62 percent over the 2001-2006 period. This reflects the fact that the size of South Carolina's coastal market is relatively small in relation the total state market.

The South Carolina Department of Insurance has reported increasing problems with the availability of property insurance in coastal areas (SCDOI, 2007). As noted above, this is a fairly localized problem for South Carolina as coastal properties represent a relatively small portion of the total property exposures in the state. Still, coastal availability problems prompted the state to expand the areas covered by the wind pool effective June 1, 2007 and revamp the pool's rating structure to accommodate the changes.

**2. State Insurance Funds**

Two states – California and Florida – have special insurance funds designed to bolster the supply of catastrophe coverage. The California Earthquake Authority (CEA) provides earthquake coverage at a primary level to property owners in California. The Florida Hurricane Catastrophe Fund (FHCF) provides catastrophe reinsurance to primary insurers underwriting property coverage in the state. Both mechanisms were created in response to major "crises" in the supply of insurance that occurred after severe disasters. The CEA was established following the Northridge Earthquake and the FHCF was established after Hurricane Andrew.

A discussion of the arguments for and against state insurance/reinsurance funds is beyond the scope of this paper, but the different perspectives can be summarized briefly. Proponents of the FHCF contend that it helps to fill a gap in private reinsurance capacity and also provides reinsurance at a lower cost. Indeed, the FHCF was established with the support of major insurers in the state. It should be noted that the FHCF can accumulate tax-favored reserves (an option not currently available to US insurers and reinsurers) and can also access credit supported by local bonding authority. This inherently reduces its costs relative to private reinsurers but also invites political manipulation of its rate structure.

Opponents of mechanisms like the FHCF question the need to augment private reinsurance, raise concerns about crowding out private reinsurance, and cite the potential for financial shortfalls that can lead to assessments on insurers/consumers and/or taxpayers depending on how the mechanism is designed. Indeed, the FHCF did need assistance to cover its losses from the 2004-2005 hurricane seasons and insurers have

grave concerns about 2007 legislative changes to the FHCF that increases the amount of coverage that it provides.

Under its Mandatory Coverage Program, the FHCF will reimburse a fixed percentage of a participating insurer's losses from each "covered event" in excess of a per event retention and subject to a maximum aggregate limit for all events. The fixed percentage can be 45 percent, 75 percent or 90 percent at the option of the insurer. The event retentions and limits vary by insurer according to a formula based on FHCF premiums. There is also an Optional Coverage Below Mandatory Program that provides more limited coverage to certain eligible companies. The cost of FHCF coverage to a participating insurer is based on its estimated share of the FHCF's expected losses and expenses.

An important provision limits the Fund's obligation to pay losses to the sum of its assets and borrowing capacity. This was initially set at $11 billion, increased to $15 billion in 2004 and increased to $27 billion in 2007 for a "temporary" period of three years. If the FHCF losses exceed its total funding capacity, each insurer would be reimbursed on a pro-rata basis from the funds available according to its share of the premiums paid into the fund for that contract year.

The FHCF is funded by premiums paid by participating insurers and investment income on invested reserves. It also can borrow funds up to a specified limit and impose emergency assessments on all property-casualty insurance premiums in the state if necessary to repay debt. The emergency assessments apply to all property-casualty lines of business except workers' compensation, accident and health, medical malpractice and national flood insurance premiums. These assessments are limited to 6 percent for one

single contract year but can rise to 10 percent depending on "unused assessments" in prior contract years.

The 2004 and 2005 storm seasons required the FHCF to make payments to insurer which tapped and reduced its financial reserves. As of December 31, 2006, it had paid $3.678 billion for losses arising from the 2004 hurricanes and $3.6 billion for losses arising from the 2005 hurricanes. The ultimate estimated payment obligations for these two years are $3.95 billion for 2004 and $4.5 billion for 2005 (based on its audited financial statement for year-end June 30, 2007). These loss payouts led to a funding shortfall that prompted it to issue $1.35 billion in revenue bonds to cover the shortfall and $2.8 billion in pre-event notes to provide liquidity for the 2006 storm season (FHCF, 2007). The bonds will be repaid from a 1 percent emergency assessment for six years on all policies renewed after January 1, 2007.

The FHCF's financial structure (as of November 2007) is summarized in Table 16. The FHCF has a "post-season" claims paying capacity of $25.2 billion but most of this is bonding authority – it currently has a projected calendar-year ending fund balance of $2.1 billion. With the coverage expansions provided in the 2007 Florida legislation, there are concerns that significant hurricane losses could lead to more emergency assessments on all applicable insurance premiums written in the state.[34]

**3. Guaranty Associations**

All states have an insolvency guaranty association that is intended to cover the claims obligations of insolvent insurers; there are separate guaranty associations for

34 Information on the FHCF was obtained from its website at http://www.sbafla.com/fhcf and its latest financial report (FHCF, 2007).

property-casualty insurance and life-health insurance. A state's guaranty association (GA) is important because it could experience severe stress if one more insurers with substantial claims obligations became insolvent because of a catastrophe. Many state GAs face some catastrophe risk but Florida's experience is particularly noteworthy.

The Florida Guaranty Association's (FIGA) funding capacity is supported by assessments on property-casualty insurance premiums in the state that are limited to 2 percent annually. Hurricane Andrew resulted in 11 insolvencies and the corresponding demands on the guaranty fund exceeded its capacity. The guaranty association was forced to fully exercise its 2 percent assessment authority and the legislature authorized it to assess an additional 2 percent to repay funds borrowed to cover its capacity shortfall. The association ultimately paid off its debts in 1997.

FIGA has now been covering the claims obligations of the Poe Group insurers and Vanguard. This has prompted FIGA to exercise its full 2 percent assessment authority to cover its costs for these claims obligations; another 2 percent emergency surcharge was approved in October 2007.[35] In its most recent statements, FIGA reported that it is responsible for handling approximately 43,000 Poe claims with a total cost of $750 million. Both figures were FIGA records and exceeded the number and cost of claims arising from the Hurricane Andrew insolvencies. FIGA has not yet published any information on claims obligations for Vanguard which was placed into liquidation on March 27, 2007.

The experience from Hurricane Andrew and the 2004-2005 storm seasons reflects the guaranty association's vulnerability to catastrophes and the potential pass-through of

[35] The emergency surcharge is expected to be implemented in March 2008 and last for 15 months and raise $315 million to handle additional costs from the Poe and Vanguard insolvencies. See "Insurance Failures Spawn New Levy on Florida Policies," Palm Beach Post, October 30, 2007.

insolvent insurers' obligations and risk to other insurers, insurance consumers, taxpayers and others. This risk is increased by the financial vulnerability of "small" Florida insurers with large concentrations of exposures in the state that are not offset by geographic diversification in other parts of the country.

Hence, insurers with significant premium writings in the state, even in lower risk areas and lines of business, retain a secondary exposure to catastrophe losses through their potential obligations to the guaranty association. Furthermore, there is the potential for externalizing some losses to other states, as each state guaranty association is responsible for covering the claims obligations of an insolvent insurer in its jurisdiction, even if the insurer is domiciled in another state. The ultimate burden of insolvency costs, of which guaranty assessments are only a part, are shared by various stakeholders.[36] These issues involving catastrophe risk, guaranty associations and insolvency costs are not confined to Florida but apply to any state where catastrophe losses could cause insurers to fail.

**G. Proposals for Federal Catastrophe Programs**

Proposals for expanding the federal role in financing the risk of natural disasters have been circulating since the early 1990s but this notion gained considerable traction after 2005. Currently, there are several federal programs that underwrite the risk of natural and unnatural perils including terrorism reinsurance, flood insurance and crop insurance. The federal government also has provided large sums of disaster assistance

36 Guaranty associations only cover a portion of an insolvent insurer's unpaid financial obligations. Typically, personal lines insureds and claimants are covered for claims for up to $300,000. Others with claims against an insolvent insurers, e.g., suppliers, lenders, etc., stand in a long line to attempt to recover a fraction of what they are owed. Most states, including Florida, allow insurers to surcharge policyholders to recover guaranty association payments. Some portion of insolvency costs filter through to the broader public through tax deductions taken by others with unpaid losses.

that is not attached to any insurance/reinsurance program. Some of the new proposals would significantly increase the federal role through some form of insurance, reinsurance or lending program to help finance the costs of natural disasters. Other proposals would provide more favorable tax treatment of catastrophe risk financing.

Advocates of government insurance/reinsurance programs offer a number of arguments to support their positions. Fundamentally, they argue that the risks posed by hurricanes and earthquakes are beyond the capacity of private markets and state governments to manage. Hence, they promise that a greater federal role can significantly expand the supply and lower the costs of property insurance coverage. Critics of these proposals contend that there is not a gap in private financing of catastrophe risk (for an appropriate price) and that a federal catastrophe program would encourage under-pricing of risk, taxpayer-funded subsidies, and increased moral hazard and crowd out private financing.

It is important to identify both concepts and proposals as a given proposal can contain one or more concepts. A GAO report (GAO, 2007) evaluated seven different "options" (that we term "concepts"), including:

- All-Perils Homeowners Insurance Policy
- Federal Reinsurance for State Catastrophe Funds
- Federal Lending to State Catastrophe Funds
- Insurance Company Reserving
- Homeowners Catastrophe Savings Accounts
- Favorable Tax Treatment for Catastrophe Bonds

- Property Tax Assessment for Private Insurance with Federal Deductible Payment

We discuss these concepts briefly below in the context of specific legislative proposals without attempting to resolve the fierce debates about their relative merits.

**1. All-Perils Homeowners Insurance**

The notion of all-perils homeowners insurance that would include flood, wind and earthquake perils is attractive to some because it would eliminate coverage gaps and potentially diminish the need to distinguish wind and flood losses in settling hurricane claims. It is presumed that the federal government would mandate that all homeowners purchase such a policy although it is not clear how such a mandate could be fully enforced. If such a mandate was successful, it would diminish adverse selection problems.

However, there are several potential problems with this concept. One is that some homeowners may not prefer an all-perils policy and would oppose the idea of paying for coverage they did not want. Such homeowners may not be persuaded by assurances that they would pay only risk-based premiums for the all the coverages included in their policy. Also, proponents of this option recognize that low-income homeowners may need to be subsidized to help them pay for the higher cost of all-perils coverage.

Rep. Gene Taylor (D-Mississippi) has advocated extending the federal flood insurance program to include the wind peril. Taylor's proposal was encompassed in flood insurance legislation passed in the House but it did not survive in the Senate version of the legislation. Such a program might be attractive to coastal homeowners that face both

wind and flood losses arising from hurricanes. However, it would probably not be attractive to homeowners facing significant risk from only one of these perils, especially if there was an attempt to impose cross-subsidies within program. The other concern is that such a program would substantially increase federal taxpayer subsidies of the flood insurance program. This has probably been one of the major stumbling blocks in achieving wider support within the Congress.

**2. Federal Catastrophe Reinsurance**

The concept of federal catastrophe reinsurance has garnered the most attention and is embodied in proposed legislation entitled the Homeowners' Defense Fund Act (HDFA) of 2007. Sen. Chris Dodd (D-Conn.) introduced the legislation in the Senate in November 2007. The House passed similar legislation (H.R. 3355) but it has languished in the Senate. The HDFA would cover both wind and earthquake perils. The presumption is that private markets and state mechanisms would cover lower layers of catastrophe risk and federal coverage would assume higher risk layers. Other provisions would provide loans to state catastrophe funds (discussed below) and promise risk-based prices or premiums for federal reinsurance and measures to encourage greater effort to mitigate natural disaster hazards.

As noted above, advocates of the HDFA argue that it fills a gap in the supply of private financing for catastrophe risk and that the federal government is in a better position to handle the high degree of uncertainty and inter-temporal volatility associated with natural disasters. Of course, such a program would not be subject to the taxation of any reserves it accumulated and would not attempt to recover any cost of capital associated with the program unlike private firms and investors that finance catastrophe

risk. This would give it an inherent cost advantage over private reinsurance even if it charged risk-based premiums. Opponents are concerned that such a program would under-price the risk that it covered (with the problems caused by under-pricing) and would discourage private financing of catastrophe risk. Government insurance/reinsurance programs do invite political manipulation of pricing structures, especially in the presence of the considerable parameter uncertainty surrounding catastrophe modeling and risk estimates.

**3. Federal Lending to State Catastrophe Funds**

The third option would establish a federal mechanism to provide to loan funds state catastrophe funds at market prices. This option is incorporated into the HDFA and has been proposed separately in other legislation. The primary advantages of such an approach would be to provide additional liquidity to state funds following a catastrophe and, in theory, would require such funds and their respective governments to repay such loans. However, as with "equity-based" risk financing schemes, it is not clear that there is a lack of private credit financing available to state catastrophe funds. Further, if state funds had to repay their loans, they will run into the same problems that have plagued Florida. Coastal states might hope that the cost of borrowing from the federal government will be less than that of private sources. Indeed, the GAO raised the concern that political pressure would force the terms and conditions of federal loans to be more favorable than in private credit markets. It also noted that federal lending could impose credit risk on federal taxpayers.

**4. Other Options**

The other options identified by the GAO would involve some form of change in federal tax laws that would favor private catastrophe risk financing. The idea of tax-favored catastrophe reserves has been discussed since the early 1990s and many economists (including the authors) favor such a policy (see, for example, Harrington and Niehaus, 2001). Under current US tax rules, any additional funds that insurers earn and set aside for future catastrophes are taxed as income along with any interest earned and accumulated on such funds. Changing this policy would lower the cost of pre-funding catastrophe losses which should enhance the supply of private insurance and lower its costs. However, it is questionable whether tax-favored catastrophe reserves alone would provide the assistance that coastal states desire. Opponents of such a policy also might raise concerns that it would favor one area of economic activity over another and would reduce federal tax revenues.

The catastrophe reserve option is somewhat related to favorable tax treatment of catastrophe bonds. However, an analysis by Klein and Wang (2007) reveals that US taxes have not been a major impediment to the issuance of catastrophe bonds by US insurers. These insurers have been allowed to use off-shore vehicles to issue cat bonds and escape the additional tax cost of using on-shore vehicles. Hence, while such an option might be commendable in principle, it is unlikely to have much of an effect on the supply of insurance.

Homeowner Catastrophe Saving Accounts (HCSAs) would permit individuals to establish tax-deferred reserves for losses from natural disasters. Taxpayers also would be allowed to use tax-deferred funds to purchase catastrophe insurance. Potential advantages noted by the GAO include increased homeowner incentives to purchase adequate

insurance coverage as well as greater mitigation investments. We should also note that current law allows taxpayers to deduct catastrophes losses exceeding 10 percent of their income in computing their tax liability. As with other tax proposals, HCSAs would effectively lower the cost of funding catastrophe losses but the amount of savings is unlikely to satisfy coastal property owners and may not induce the desired behavioral responses.

The Property Tax Assessment option could be the most unusual and controversial of all the federal options. Property taxes would include an assessment to pay the premiums of all-perils property insurance that would be underwritten by private insurers. The federal government would be responsible for covering losses that would fall within the deductibles for insurance. Taxpayers could also deduct the amount of these assessments in computing their federal tax liability. While such a policy would increase homeowner participation in catastrophe insurance, its compulsory nature could encounter significant opposition. Also, it could still lead to disputes between insurers and government officials on the proper pricing of the insurance that would be provided. Additionally, there would be negative effects on federal tax revenues and additional tax costs to cover insurance deductibles.

## V. Conclusions and Further Research

Our analysis of developments in the Florida and other state homeowners insurance markets confirm and measure the significant changes that are occurring as a result of increased hurricane risk. There has been substantial market restructuring in

Florida, with leading insurers decreasing their shares of the market and other insurers retrenching or exiting from the market, especially in the highest risk areas. Other insurers are maintaining their relative market positions and some have entered or expanded their business. Overall, market concentration has decreased significantly at statewide and sub-state levels. However, small single-state and regional insurers continue to absorb a dangerous level of high-risk exposures in the state – a phenomenon that could lead to more insurer insolvencies and guaranty association assessments paid by insurance consumers and taxpayers. Further, recent legislative and regulatory actions are having a negative effect on Florida's property insurance markets. There have been some changes in the structures of the other state markets we examined, but these changes have been considerably less significant than what has occurred in Florida.

The price of property insurance also has increased significantly, particularly in the highest risk areas with Florida experiencing the greatest increases. At the same time, the availability of coverage has tightened considerably in Florida, reflected in the growing number of policies and amount of exposures insured in the residual market mechanism. One interesting finding is that the greatest price increases and tightening of availability have occurred in coastal areas other than southern Florida. This suggests that insurers saw a greater need to make larger adjustments in these other coastal areas which had not previously experienced the magnitude of the rate increases and residual market shifts that had occurred in southern Florida prior to 2004. The other states are also experiencing availability problems in coastal areas but these areas represent a smaller proportion of their respective statewide markets.

Finally, it is apparent that insurers suffered substantial losses (negative profits) in 2004 and 2005 due to the hurricanes that hit Florida and other Gulf states in these years. Prior to 2004, insurers were about to raise their cumulative profits (since Hurricane Andrew) to a positive level, but the 2004-2005 storms drove them deeper into the red on a cumulative basis. This has contributed to insurers' price and underwriting adjustments and concerns about the economic feasibility of writing home insurance in Florida and other high-risk areas under the prices and terms of coverage that proceeded these storm seasons. If these states continue to avoid damaging hurricanes as they did in 2006-2007, it will allow insurers to improve their long-run profitability and ease market pressures. On the other hand, when more hurricanes strike the US, they will worsen insurers' financial results and could prompt further market adjustments.

Market changes have been met by wide range of governmental reactions. Florida faces the greatest risk and pressure and its regulatory policies have interfered with market forces to the greatest extent among the coastal states. Other states have tended to be more permissive in terms of allowing market adjustments but there is a risk that some may tighten their regulation if market conditions do not improve. Florida's actions will significantly worsen conditions in its property insurance markets and expose most insurance consumers and taxpayers to significant risk and assessments when the state is struck by more hurricanes. Hopefully, other states will not follow Florida's course and it will reevaluate the economic soundness of its current policies. Unfortunately, such a reevaluation may not occur until the state's voters experience more negative consequences of those policies.

Several interesting options and proposals for a greater federal role in financing hurricane risk have surfaced. While these proposals could potentially alleviate some of current problems in property insurance markets, there is no "free lunch" in financing catastrophe risk. The less costly proposals might provide some benefits but it is unlikely that they will produce the savings that coastal property owners desire. It is difficult to envision a scheme that would substantially lower the cost of catastrophe insurance without large taxpayer subsidies and the problems that they would create. Hence, the debate and controversy surrounding these proposals is understandable and their prospects will be greatly affected by the interplay of economic and political interests at the national level.

The story of catastrophe risk and insurance regulation continues to be written. Every state facing hurricane risk exposure will continue to deal with some level of market pressure. Those states that seek to and are successful in supporting private insurance markets and other beneficial policies (e.g., mitigation) may avoid major market dislocations and ultimately see their markets stabilize and provide a reasonable supply of catastrophe insurance coverage. However, the situation remains fluid both in terms of the market conditions and government actions.

Clearly, there is a need to continue to monitor and enhance our understanding of property insurance markets affected by catastrophe risk. Greater insights into the dynamics of these markets will help to identify economically-sound strategies that might have the most beneficial effects for both insurers and property owners. In future research, we intend to examine the factors that affect insurers' market responses in greater depth with more rigorous methods. Future research will also benefit from new data that will

continue to track the evolution of property insurance markets and how they respond to changes in their natural, economic and regulatory environments.

Continued research also will be important in terms of enhancing our understanding of the drivers and effects of government policies and how public action can support rather than undermine the efficient management of catastrophe risk. This research will include assessing the effects of different regulatory policies on market conditions and alternative approached to facilitate the financing of catastrophe risk.

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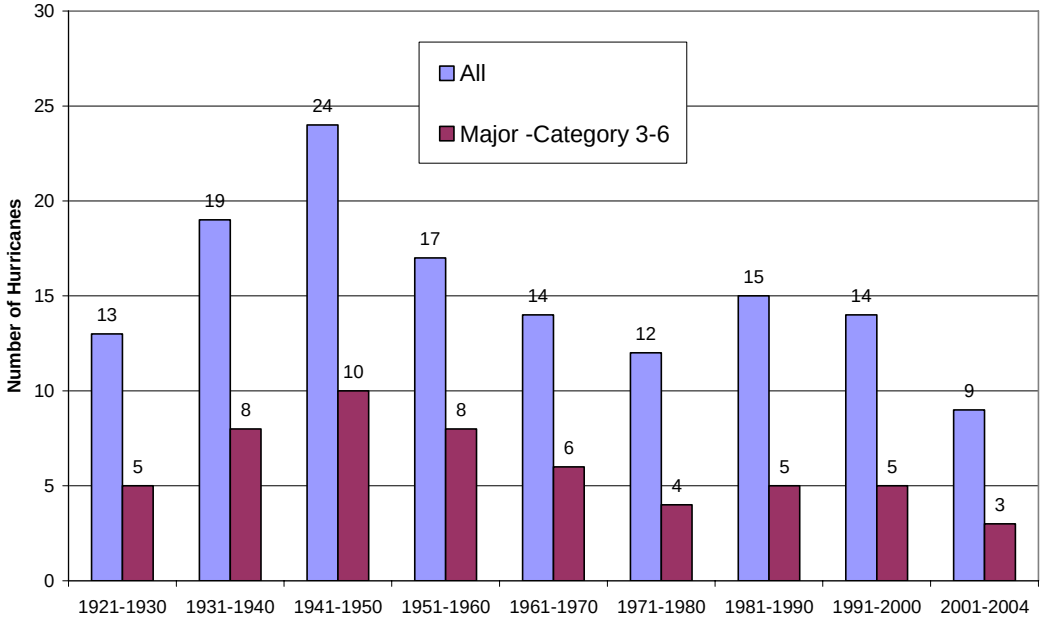
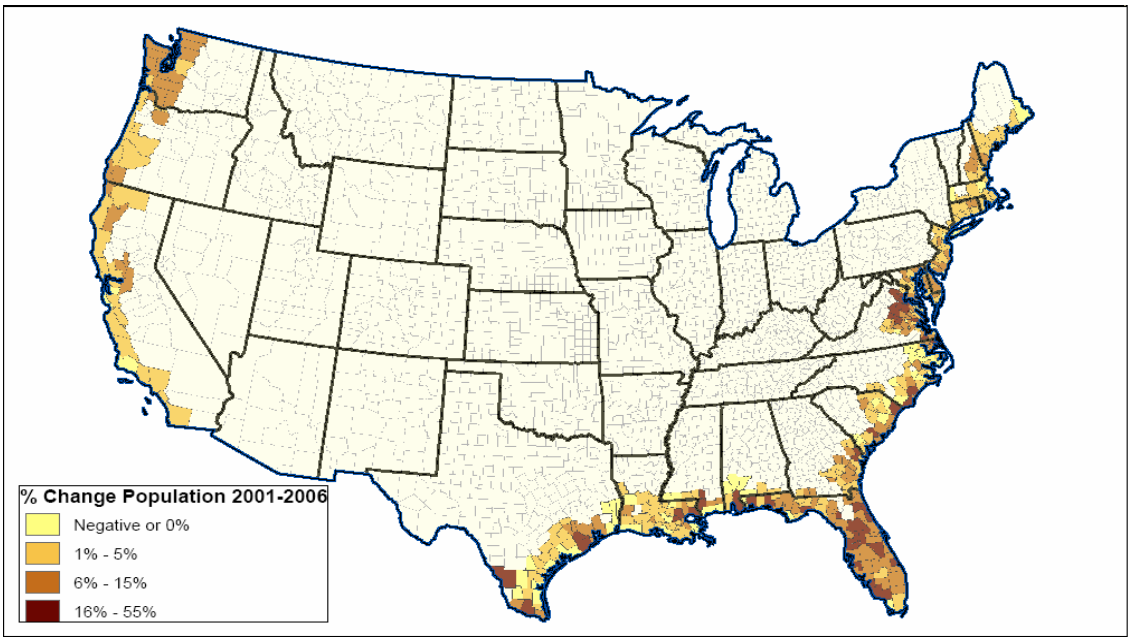
**Figure 1**
**U.S. Hurricane Strikes By Decade**
**1921-2004**




Source: NOAA

**Figure 2**
**U.S. Coastal Population Change: 2001-2006**



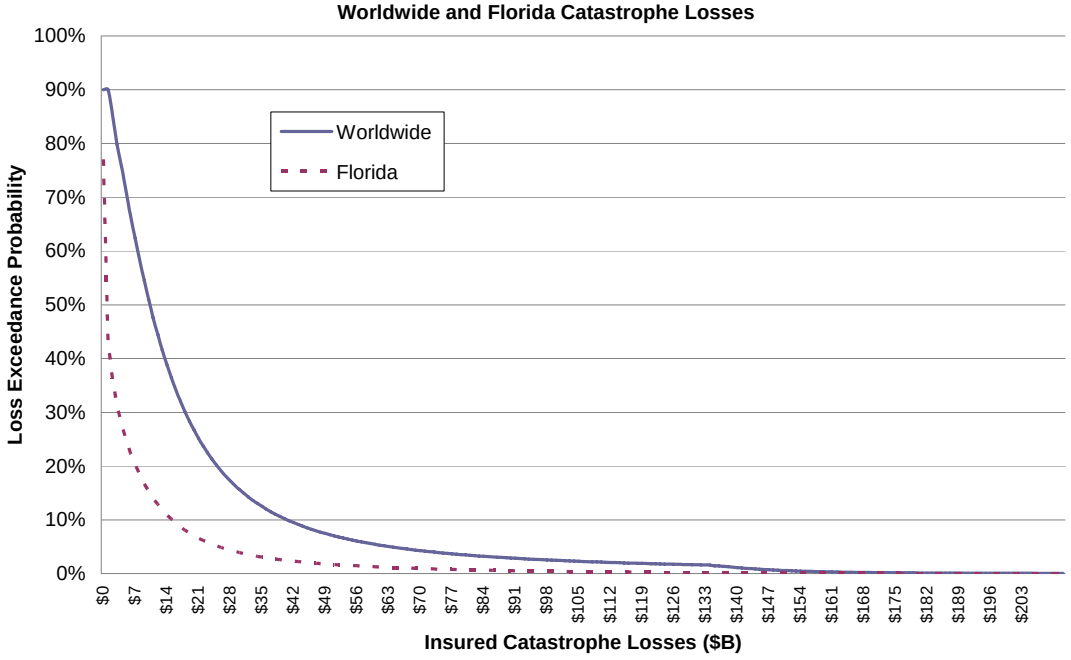

Source: NOAA

**Table 1**
**Amount of Homeowners Insurance by County in Florida ($)**
**(sorted by 2006 exposures; coastal counties in bold type)**

| County | 1997Q1 | 2006Q4 | % Change | County | 1997Q1 | 2006Q4 | % Change |
|---|---|---|---|---|---|---|---|
| **Palm Beach** | **51,245,380,993** | **104,575,595,689** | **104.1%** | Highlands | 2,842,623,519 | 7,014,306,066 | 146.8% |
| **Broward** | **48,506,531,343** | **97,046,135,471** | **100.1%** | Sumter | 676,336,864 | 5,846,633,928 | **764.5%** |
| **Hillsborough** | **28,687,742,939** | **91,418,883,897** | **218.7%** | **Nassau** | **1,689,121,905** | **5,666,621,695** | 235.5% |
| Orange | 31,086,359,611 | 88,619,427,973 | 185.1% | **Walton** | **993,853,165** | **3,380,999,692** | **240.2%** |
| **Dade** | **46,083,110,440** | **75,813,139,399** | **64.5%** | Putnam | 1,260,044,465 | 2,943,889,359 | 133.6% |
| **Pinellas** | **30,300,055,866** | **63,846,010,364** | **110.7%** | Columbia | 1,038,090,200 | 2,731,830,731 | 163.2% |
| **Duval** | **23,993,888,069** | **62,246,214,867** | **159.4%** | Jackson | 818,792,047 | 1,915,142,783 | 133.9% |
| **Lee** | **16,770,033,307** | **55,449,223,694** | **230.6%** | Gadsden | 724,595,314 | 1,771,135,930 | 144.4% |
| **Brevard** | **18,042,019,710** | **46,789,295,563** | **159.3%** | Okeechobee | 618,691,411 | 1,551,586,074 | 150.8% |
| Seminole | 16,343,276,080 | 40,075,051,034 | 145.2% | **Levy** | **536,122,975** | **1,365,004,424** | **154.6%** |
| Polk | 13,943,798,107 | 37,496,992,869 | **168.9%** | Desoto | 545,207,944 | 1,344,256,595 | 146.6% |
| **Volusia** | **16,119,690,076** | **37,484,546,839** | **132.5%** | **Wakulla** | **342,414,765** | **1,333,483,359** | 289.4% |
| **Collier** | **9,685,396,136** | 34,613,471,965 | 257.4% | Suwannee | 479,320,656 | 1,327,448,083 | **176.9%** |
| **Sarasota** | **12,985,343,432** | **33,839,991,837** | **160.6%** | Hendry | 552,103,390 | 1,298,113,815 | 135.1% |
| **Pasco** | **11,207,665,171** | **32,536,197,100** | **190.3%** | Baker | 344,038,491 | 1,034,596,252 | 200.7% |
| Lake | 6,849,790,715 | 29,136,331,560 | 325.4% | Bradford | 401,238,563 | 994,473,881 | 147.9% |
| **Manatee** | **7,317,090,348** | **29,111,023,042** | **297.8%** | Washington | 301,192,328 | 883,393,947 | 193.3% |
| Marion | 6,916,004,022 | 22,866,307,391 | **230.6%** | Hardee | 411,758,342 | 851,709,944 | **106.8%** |
| **St. Johns** | **5,353,057,175** | **21,209,240,259** | 296.2% | **Taylor** | **353,407,062** | **789,249,257** | 123.3% |
| **St. Lucie** | **6,488,112,894** | **20,486,010,125** | **215.7%** | Jefferson | 241,693,330 | 715,315,856 | 196.0% |
| Osceola | 4,919,815,917 | 20,023,478,959 | 307.0% | Madison | 251,478,675 | 583,569,814 | **132.1%** |
| Leon | 8,210,621,080 | 19,804,812,784 | 141.2% | Holmes | 259,897,310 | 580,519,510 | 123.4% |
| **Charlotte** | **7,010,149,343** | **18,405,131,801** | **162.5%** | **Monroe** | **659,240,219** | **557,868,915** | **-15.4%** |
| **Escambia** | **8,036,033,925** | **17,555,307,578** | **118.5%** | **Gulf** | **274,339,803** | **541,735,442** | 97.5% |
| Clay | 4,970,256,028 | 16,017,639,091 | **222.3%** | Gilchrist | 179,516,875 | 529,318,637 | 194.9% |
| **Martin** | **7,386,738,707** | **15,857,205,874** | 114.7% | **Franklin** | **221,914,912** | **499,121,111** | **124.9%** |
| **Okaloosa** | **5,284,301,711** | **15,252,672,021** | **188.6%** | Calhoun | 194,390,617 | 402,605,805 | 107.1% |
| Alachua | 5,992,695,083 | 14,634,222,355 | 144.2% | **Dixie** | **138,434,014** | **376,745,849** | **172.1%** |
| **Hernando** | **5,319,503,642** | **14,323,322,305** | **169.3%** | Union | 118,025,607 | 310,284,870 | 162.9% |
| **Citrus** | **4,466,681,782** | **13,024,749,189** | **191.6%** | Glades | 120,138,766 | 300,046,166 | 149.7% |
| **Indian River** | **5,020,738,479** | **12,116,487,359** | **141.3%** | Hamilton | 117,330,933 | 290,115,130 | 147.3% |
| **Santa Rosa** | **4,397,084,908** | **11,947,417,473** | **171.7%** | Liberty | 83,140,981 | 194,091,021 | 133.4% |
| **Bay** | **4,297,799,042** | **10,375,952,451** | **141.4%** | Lafayette | 81,805,922 | 186,735,814 | 128.3% |
| **Flagler** | **2,331,552,997** | **9,619,343,917** | **312.6%** | TOTAL | 503,438,620,448 | 1,283,728,783,850 | 155.0% |

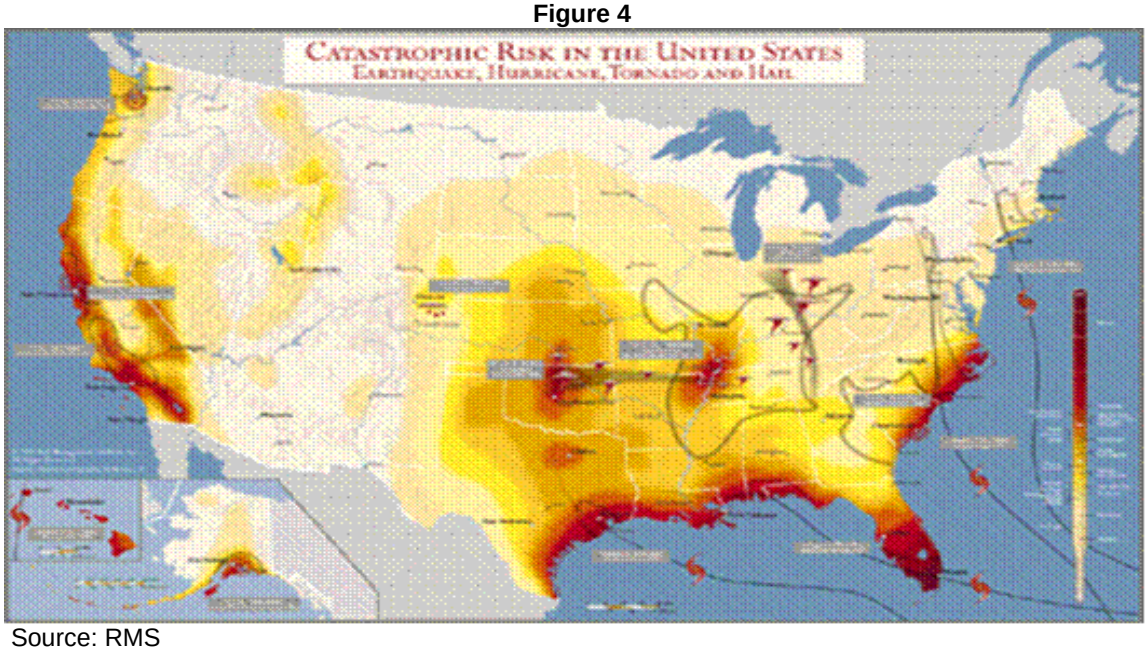
Source: FLOIR; authors' calculations.

**Figure 3**
**Aggregate Loss Exceedance Probability Curves**
**Worldwide and Florida Catastrophe Losses**



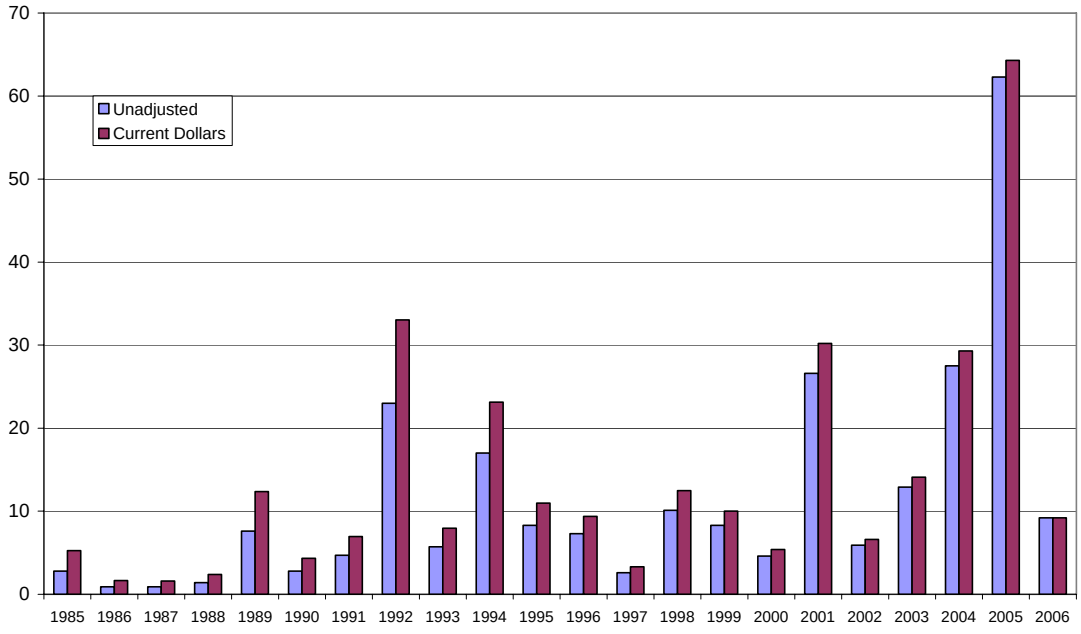

Source of Data: Swiss Re and Risk Management Solutions, Inc.

**Figure 4**




Source: RMS

**Figure 5**
**Insured Losses for US Catastrophes ($B)**
**1985-2006**




Source: Insurance Information Institute

| Table 2<br>Changes in Leading Insurers' Market Share<br>Florida - 1992, 2000, 2005-2006 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2006 | | | 2005 | | | 2000 | | | 1992 | | |
| Name | R | DPW | MS | R | DPW | MS | R | DPW | MS | R | DPW | MS |
| State Farm Group | 1 | 1,444,281,352 | 21.4% | 1 | 1,175,850,317 | 20.7% | 1 | 583,296,400 | 20.1% | 1 | 653,427,313 | 30.5% |
| Allstate Ins Group | 2 | 524,702,881 | 7.8% | 2 | 495,663,212 | 8.7% | 3 | 325,641,465 | 11.2% | 2 | 436,329,616 | 20.4% |
| Tower Hill Ins Group | 3 | 342,029,077 | 5.1% | 4 | 285,914,090 | 5.0% | | | | | | |
| Universal Prop & Cas Ins | 4 | 338,419,633 | 5.0% | 8 | 159,161,458 | 2.8% | 26 | 25,611,814 | 0.9% | | | |
| USAA Group | 5 | 316,536,807 | 4.7% | 6 | 253,944,356 | 4.5% | 4 | 152,088,271 | 5.2% | 3 | 95,171,018 | 4.4% |
| Nationwide Corporation | 6 | 297,439,102 | 4.4% | 5 | 274,919,617 | 4.8% | 5 | 144,675,744 | 5.0% | 5 | 88,595,495 | 4.1% |
| Liberty Mutual Group | 7 | 221,726,692 | 3.3% | 7 | 172,197,758 | 3.0% | 10 | 51,714,570 | 1.8% | 12 | 32,534,992 | 1.5% |
| ARX Holding Corp Group | 8 | 216,582,227 | 3.2% | 13 | 116,834,632 | 2.1% | 25 | 27,120,693 | 0.9% | | | |
| Universal Insurance Group | 9 | 186,151,076 | 5.0% | 18 | 81,510,111 | 1.4% | | | | | | |
| American International Group | 10 | 161,500,150 | 2.4% | 11 | 119,271,708 | 2.1% | 15 | 38,442,829 | 1.3% | 53 | 3,771,785 | 0.2% |
| Chubb & Son Inc | 11 | 155,699,694 | 2.3% | 10 | 124,290,363 | 2.2% | 8 | 68,324,921 | 2.4% | 6 | 62,874,910 | 2.9% |
| St Johns Ins Co Inc | 12 | 146,404,816 | 2.2% | 25 | 64,285,117 | 1.1% | | | | | | |
| United Prop & Cas Ins Co. | 13 | 138,913,586 | 2.1% | 16 | 104,987,215 | 1.8% | 36 | 14,473,319 | 0.5% | | | |
| Hartford Fire & Casualty Group | 14 | 136,457,181 | 2.0% | 12 | 117,479,131 | 2.1% | 7 | 76,738,521 | 2.6% | 9 | 49,288,247 | 2.3% |
| St Paul Travelers Group | 15 | 131,197,512 | 1.9% | 9 | 124,905,507 | 2.2% | 6 | 92,445,712 | 3.2% | 4 | 89,664,452 | 4.2% |
| Gulfstream Prop & Cas Ins Co | 16 | 118,088,454 | 1.7% | 17 | 93,418,769 | 1.6% | | | | | | |
| 21st Century Holding Group | 17 | 115,574,807 | 1.7% | 20 | 77,513,454 | 1.4% | | | | | | |
| Florida Peninsula Ins Co | 18 | 114,706,859 | 1.7% | 42 | 20,290,645 | 0.4% | | | | | | |
| GeoVera Holdings Inc Group | 19 | 110,034,616 | 1.6% | 14 | 111,695,287 | 2.0% | | | | | | |
| First Protective Ins Co | 20 | 89,864,708 | 1.3% | 32 | 37,847,420 | 0.7% | 43 | 10,928,140 | 0.4% | | | |
| Source: NAIC Financial Database; authors' calculations. | | | | | | | | | | | | |

**Table 3**
**Market Concentration in Selected States**
**Homeowners Insurance: 1992 and 2004**

| State | 1992 | | 2006 | |
|---|---|---|---|---|
| | CR8 | HHI | CR8 | HHI |
| Florida | 70.9% | 1,440 | 54.5% | 695 |
| Louisiana | 76.7% | 1,991 | 79.4% | 1,721 |
| Mississippi | 83.8% | 1,923 | 84.0% | 1,597 |
| New York | 56.0% | 653 | 72.6% | 914 |
| South Carolina | 76.5% | 1,506 | 77.7% | 1,159 |
| Texas | 78.2% | 1,977 | 80.4% | 1,423 |

Source: NAIC Financial Database, authors' calculations.

**Table 4**
**FL Homeowners Exposure Company Level HHIs by County in 1997Q1 & 2006Q4**
**Counties Ranked in Descending Order of HHI**

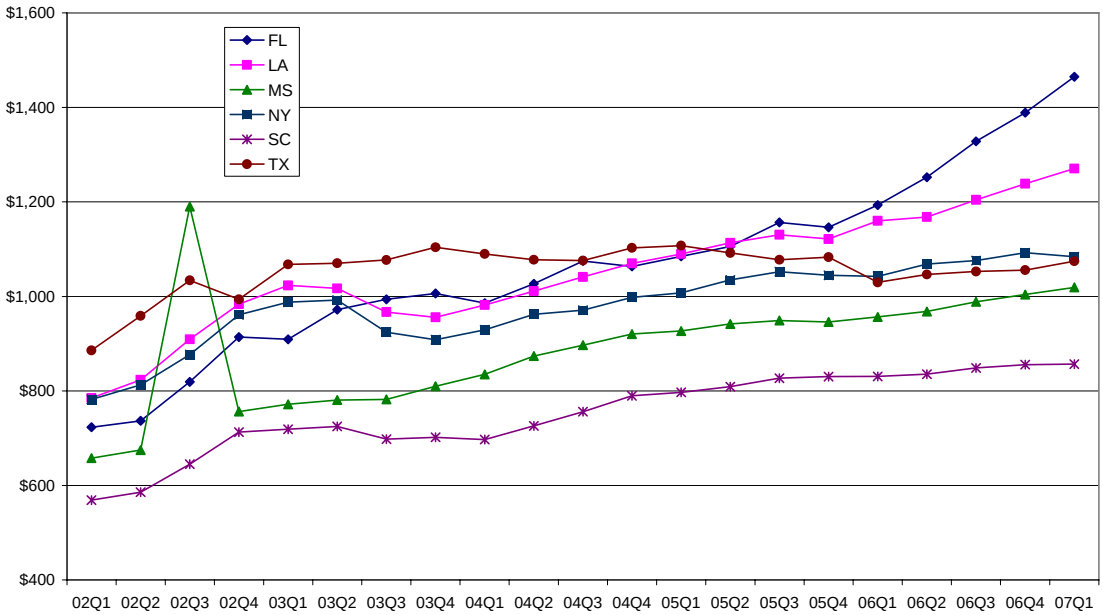
| 1997 | | | | | | 2006 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rank | County | HHI | Rank | County | HHI | Rank | County | HHI | Rank | County | HHI |
| 1 | Taylor | 2,903 | 35 | Hernando | 1,439 | 1 | Taylor | 3,044 | 35 | Pinellas | 1,159 |
| 2 | Hendry | 2,459 | 36 | Lake | 1,419 | 2 | Desoto | 2,870 | 36 | Dade | 1,151 |
| 3 | Dade | 2,373 | 37 | Flagler | 1,409 | 3 | Monroe | 2,474 | 37 | Okaloosa | 1,149 |
| 4 | Broward | 2,358 | 38 | Pasco | 1,370 | 4 | Hendry | 2,368 | 38 | Gilchrist | 1,125 |
| 5 | Brevard | 2,221 | 39 | Bradford | 1,346 | 5 | Glades | 2,301 | 39 | Lake | 1,106 |
| 6 | Desoto | 2,197 | 40 | St. Johns | 1,341 | 6 | Hardee | 2,250 | 40 | Washington | 1,093 |
| 7 | Volusia | 2,113 | 41 | Alachua | 1,340 | 7 | Baker | 2,183 | 41 | Pasco | 1,087 |
| 8 | Osceola | 2,102 | 42 | Sarasota | 1,327 | 8 | Jefferson | 2,133 | 42 | Alachua | 1,022 |
| 9 | Polk | 1,995 | 43 | Leon | 1,319 | 9 | Putnam | 1,986 | 43 | Hamilton | 1,021 |
| 10 | Okeechobee | 1,966 | 44 | Putnam | 1,278 | 10 | Okeechobee | 1,828 | 44 | Orange | 1,006 |
| 11 | Glades | 1,920 | 45 | Jefferson | 1,251 | 11 | Bradford | 1,817 | 45 | Santa Rosa | 1,000 |
| 12 | Palm Beach | 1,848 | 46 | Calhoun | 1,240 | 12 | Volusia | 1,758 | 46 | Osceola | 996 |
| 13 | Monroe | 1,836 | 47 | Bay | 1,225 | 13 | Hernando | 1,711 | 47 | Citrus | 990 |
| 14 | Dixie | 1,793 | 48 | Hamilton | 1,185 | 14 | Columbia | 1,640 | 48 | Lee | 932 |
| 15 | Charlotte | 1,791 | 49 | Union | 1,148 | 15 | Duval | 1,592 | 49 | Sarasota | 913 |
| 16 | Escambia | 1,754 | 50 | Nassau | 1,138 | 16 | Jackson | 1,582 | 50 | Marion | 903 |
| 17 | Highlands | 1,701 | 51 | Madison | 1,121 | 17 | Lafayette | 1,548 | 51 | Levy | 895 |
| 18 | Pinellas | 1,670 | 52 | Levy | 1,093 | 18 | Polk | 1,511 | 52 | Gadsden | 870 |
| 19 | Seminole | 1,664 | 53 | Washington | 1,093 | 19 | Dixie | 1,480 | 53 | Walton | 868 |
| 20 | St. Lucie | 1,660 | 54 | Jackson | 1,083 | 20 | St. Johns | 1,463 | 54 | Franklin | 857 |
| 21 | Hardee | 1,655 | 55 | Suwannee | 1,074 | 21 | Clay | 1,458 | 55 | Indian River | 853 |
| 22 | Santa Rosa | 1,622 | 56 | Manatee | 1,054 | 22 | Calhoun | 1,454 | 56 | Flagler | 790 |
| 23 | Columbia | 1,619 | 57 | Walton | 1,032 | 23 | Sumter | 1,454 | 57 | Holmes | 784 |
| 24 | Lee | 1,619 | 58 | Marion | 1,030 | 24 | Broward | 1,434 | 58 | Gulf | 773 |
| 25 | Okaloosa | 1,615 | 59 | Holmes | 1,022 | 25 | Madison | 1,387 | 59 | Nassau | 772 |
| 26 | Duval | 1,605 | 60 | Sumter | 1,022 | 26 | Suwannee | 1,342 | 60 | Hillsborough | 745 |
| 27 | Orange | 1,588 | 61 | Martin | 973 | 27 | Leon | 1,285 | 61 | Collier | 744 |
| 28 | Clay | 1,578 | 62 | Liberty | 964 | 28 | Highlands | 1,269 | 62 | St. Lucie | 743 |
| 29 | Baker | 1,553 | 63 | Gilchrist | 866 | 29 | Union | 1,266 | 63 | Manatee | 720 |
| 30 | Citrus | 1,541 | 64 | Gulf | 853 | 30 | Escambia | 1,262 | 64 | Bay | 717 |
| 31 | Lafayette | 1,535 | 65 | Franklin | 778 | 31 | Brevard | 1,235 | 65 | Martin | 703 |
| 32 | Indian River | 1,526 | 66 | Gadsden | 738 | 32 | Liberty | 1,231 | 66 | Palm Beach | 684 |
| 33 | Collier | 1,496 | 67 | Wakulla | 730 | 33 | Seminole | 1,231 | 67 | Wakulla | 599 |
| 34 | Hillsborough | 1,493 | | Total | 1,594 | 34 | Charlotte | 1,174 | | Total | 892 |

Source: data from FLOIR; authors' calculations

| Table 5 | | | | |
|---|---|---|---|---|
| **Leading Insurance Companies in Dade County: 1997Q1 & 2006Q4** | | | | |
| | 1997 | | 2006 | |
| Rank | Company | Mkt. Share | Company | Mkt. Share |
| 1 | State Farm Fire & Casualty | 38.0% | Citizens Property Ins. Corp. | 24.5% |
| 2 | Florida Residential Property JUA | 29.5% | State Farm Florida Ins. Co. | 19.8% |
| 3 | Allstate Ins. Co. | 4.1% | United Property & Casualty Ins. Co. | 5.7% |
| 4 | Liberty Mutual Fire Ins. Co. | 3.1% | Liberty Mutual Fire Ins. Co. | 5.6% |
| 5 | Allstate Floridian Ins. Co. | 2.3% | Gulfstream Property & Casualty Ins. Co. | 5.6% |
| 6 | Metropolitan Property & Casualty Ins. Co. | 2.0% | Universal Property & Casualty Ins. Co. | 3.7% |
| 7 | United Services Automobile Assoc. | 1.7% | Federated National Ins. Co. | 3.4% |
| 8 | LM Property & Casualty Ins. Co. | 1.7% | Coral Ins. Co. | 2.4% |
| 9 | USAA Casualty Ins. Co. | 1.6% | Universal Ins.Co. of North America | 1.9% |
| 10 | Hartford Insurance Co. Midwest | 1.6% | First Liberty Ins. Corp. | 1.7% |
| | Top Ten | 85.6% | Top Ten | 74.5% |
| Source of Data: FLOIR; Authors' calculations. | | | | |

| Table 6 | | | | |
|---|---|---|---|---|
| **Leading Insurance Groups in Dade County: 1997Q1 & 2006Q4** | | | | |
| | 1997 | | 2006 | |
| Rank | Company | Mkt. Share | Company | Mkt. Share |
| 1 | State Farm Group | 38.0% | Citizens Property Ins. Corp. | 24.5% |
| 2 | FL Residential P&C JUA | 29.5% | State Farm Group | 19.8% |
| 3 | Allstate Insurance Group | 6.6% | Liberty Mutual Insurance Companies | 7.4% |
| 4 | Liberty Mutual Insurance Companies | 4.8% | United Property & Casualty Ins. Co. | 5.7% |
| 5 | USAA Group | 3.3% | Gulfstream Property & Casualty Ins. Co. | 5.6% |
| 6 | St. Paul Travelers Group | 3.0% | Universal Property & Casualty Ins. Co. | 3.7% |
| 7 | Hartford Insurance Group | 2.1% | Tower Hill Group | 3.4% |
| 8 | MetLife Auto & Home Group | 2.0% | Federated National Ins. Co. | 3.4% |
| 9 | Chubb Group of Insurance Companies | 1.8% | Coral Ins. Co. | 2.4% |
| 10 | Bankers Insurance Group | 1.4% | USAA Group | 2.2% |
| | Top Ten | 92.7% | Top Ten | 78.2% |
| Source of Data: FLOIR; Authors' calculations. | | | | |

**Figure 6**
**Average Homeowners Premium Trends: 2002Q1-2007Q1**




Source: PCIAA/ISO Fast Track Monitoring System; authors' calculations.

| Table 7 | | | | | |
|---|---|---|---|---|---|
| **Homeowners (HO3) Average Premiums in Florida: 2001-2005** | | | | | |
| **Territory** | **2001** | **2002** | **2003** | **2004** | **2005** |
| Indian River/Martin/St. Lucie | $890 | $1,042 | $1,311 | $1,674 | $2,051 |
| Miami | $1,059 | $1,207 | $1,444 | $1,653 | $1,799 |
| Palm Beach County | $923 | $1,054 | $1,261 | $1,461 | $1,643 |
| Miami Beach | $856 | $754 | $881 | $1,404 | $1,589 |
| Broward County | $985 | $1,043 | $1,171 | $1,320 | $1,491 |
| Broward/Palm Beach | $715 | $828 | $958 | $1,170 | $1,373 |
| Dade County II | $1,104 | $1,088 | $1,137 | $1,258 | $1,366 |
| Martin County | $886 | $1,021 | $1,133 | $1,213 | $1,364 |
| Fort Lauderdale/Hollywood | $802 | $838 | $920 | $1,023 | $1,146 |
| Tampa | $631 | $683 | $773 | $916 | $1,108 |
| Hillsborough/Pinellas | $558 | $625 | $715 | $850 | $1,047 |
| Bay "et al" I | $634 | $725 | $821 | $912 | $1,039 |
| Key West | $351 | $216 | $290 | $844 | $1,016 |
| Hialeah | $1,091 | $1,117 | $979 | $935 | $984 |
| St. Petersburg | $473 | $554 | $655 | $776 | $976 |
| Pinellas County | $470 | $451 | $517 | $729 | $881 |
| Bay "et al" II | $516 | $593 | $654 | $709 | $807 |
| Escambia County | $510 | $607 | $664 | $693 | $787 |
| Polk County | $533 | $610 | $680 | $704 | $776 |
| Orange | $540 | $570 | $609 | $670 | $769 |
| Dade County I | $944 | $832 | $887 | $1,003 | $756 |
| Monroe County | $379 | $228 | $290 | $664 | $689 |
| Osceola/Seminole | $561 | $578 | $564 | $567 | $640 |
| Brevard/Volusia | $455 | $498 | $522 | $545 | $616 |
| Duval County II | $425 | $451 | $465 | $507 | $612 |
| Duval County I | $453 | $482 | $519 | $530 | $544 |
| Alachua "et al" | $511 | $511 | $477 | $469 | $523 |
| Jacksonville | $446 | $468 | $469 | $465 | $509 |
| Mean | $668 | $703 | $777 | $917 | $1,032 |
| Median | $560 | $618 | $697 | $847 | $980 |
| Source of Data: PCIAA; authors' calculations | | | | | |

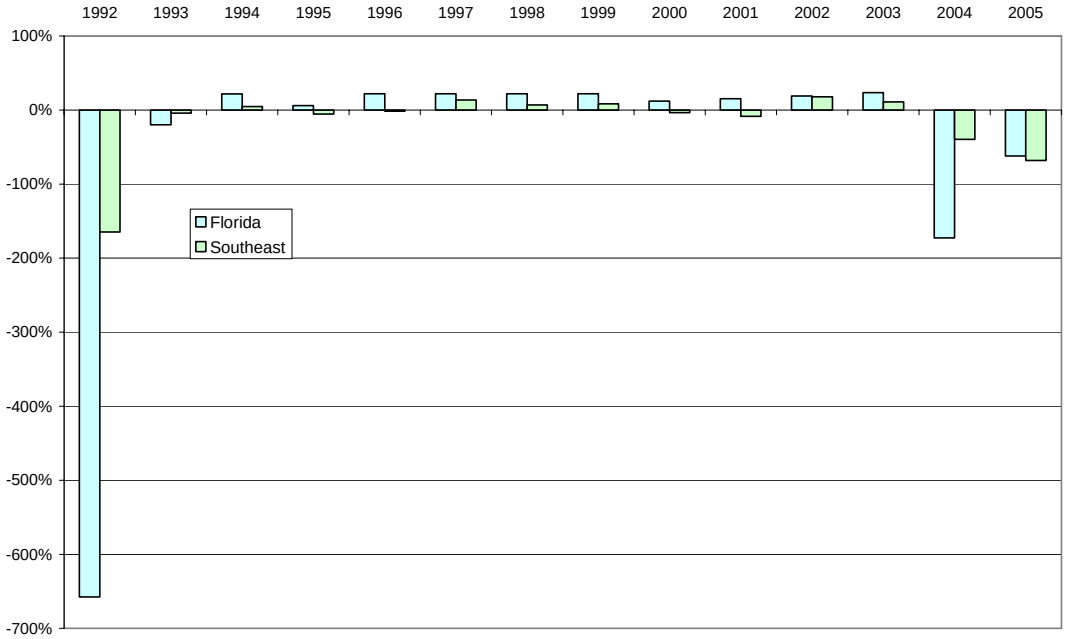
| Table 8 | | | | | |
|---|---|---|---|---|---|
| **FL Homeowners Insurance Rates per $1,000 by County** | | | | | |
| **County** | **1997Q1** | **2006Q4** | **County** | **1997Q1** | **2006Q4** |
| Monroe | $18.98 | $34.46 | Volusia | $2.77 | $3.89 |
| Dade | $7.23 | $11.81 | Highlands | $3.24 | $3.86 |
| Franklin | $6.42 | $9.21 | Lafayette | $4.36 | $3.85 |
| Broward | $5.35 | $8.09 | Washington | $3.81 | $3.79 |
| Gulf | $4.90 | $7.93 | Madison | $4.04 | $3.74 |
| Palm Beach | $4.45 | $7.27 | Hamilton | $4.14 | $3.74 |
| Walton | $4.47 | $6.66 | Gilchrist | $3.89 | $3.71 |
| Martin | $3.66 | $6.36 | Calhoun | $3.80 | $3.69 |
| Indian River | $3.80 | $6.11 | Citrus | $2.98 | $3.68 |
| Pinellas | $3.25 | $6.09 | Liberty | $4.15 | $3.66 |
| Pasco | $3.07 | $5.79 | Gadsden | $3.61 | $3.66 |
| Escambia | $3.68 | $5.57 | Polk | $3.00 | $3.65 |
| Bay | $3.64 | $5.54 | Suwannee | $3.91 | $3.55 |
| St. Lucie | $3.95 | $5.54 | Jackson | $3.64 | $3.48 |
| Collier | $3.88 | $5.36 | Union | $3.78 | $3.48 |
| Charlotte | $3.16 | $5.07 | Putnam | $3.60 | $3.46 |
| Lee | $3.34 | $5.01 | Bradford | $3.41 | $3.34 |
| Dixie | $4.70 | $4.96 | Nassau | $3.38 | $3.34 |
| Hernando | $2.84 | $4.95 | Jefferson | $3.86 | $3.30 |
| Okaloosa | $3.90 | $4.94 | Flagler | $2.76 | $3.15 |
| Sarasota | $3.30 | $4.87 | Osceola | $2.67 | $3.12 |
| Santa Rosa | $3.06 | $4.86 | Seminole | $2.53 | $3.12 |
| Brevard | $3.15 | $4.86 | Marion | $2.98 | $3.08 |
| Glades | $3.96 | $4.76 | Orange | $2.66 | $3.07 |
| Okeechobee | $3.54 | $4.63 | Columbia | $3.35 | $3.07 |
| Hendry | $3.42 | $4.51 | Baker | $3.49 | $3.02 |
| Holmes | $3.89 | $4.51 | St. Johns | $2.71 | $2.99 |
| Wakulla | $4.26 | $4.43 | Alachua | $2.61 | $2.96 |
| Hillsborough | $3.44 | $4.41 | Sumter | $3.36 | $2.86 |
| Manatee | $3.37 | $4.31 | Duval | $2.76 | $2.85 |
| Hardee | $3.87 | $4.23 | Lake | $2.83 | $2.83 |
| Levy | $3.93 | $4.22 | Leon | $2.42 | $2.51 |
| Desoto | $3.55 | $4.15 | Clay | $2.55 | $2.49 |
| Taylor | $3.76 | $4.14 | Total | $3.87 | $5.22 |
| Source: data from FLOIR; authors' calculations | | | | | |

**Table 9**
**Homeowners' Premium Comparisons in Florida**

| County | Max | Min | Mean | Median | County | Max | Min | Mean | Median |
|---|---|---|---|---|---|---|---|---|---|
| **Monroe** | $13,973 | $1,780 | $4,531 | $3,658 | Holmes | $1,709 | $720 | $1,122 | $1,079 |
| **Dade** | $7,600 | $1,949 | $3,609 | $3,380 | Gilchrist | $1,617 | $854 | $1,181 | $1,071 |
| **Broward** | $7,545 | $1,731 | $3,182 | $3,043 | Lafayette | $1,763 | $845 | $1,197 | $1,071 |
| Hendry | $8,391 | $1,562 | $3,012 | $2,805 | Gadsden | $1,716 | $720 | $1,109 | $1,066 |
| **St. Lucie** | $5,425 | $1,365 | $2,537 | $2,390 | Madison | $1,743 | $757 | $1,163 | $1,054 |
| **Collier** | $6,279 | $1,385 | $2,455 | $2,320 | Desoto | $1,626 | $735 | $1,114 | $1,038 |
| **Palm Beach** | $6,279 | $1,385 | $2,455 | $2,320 | **Wakulla** | $1,983 | $807 | $1,140 | $1,036 |
| Okeechobee | $5,728 | $1,212 | $2,397 | $2,299 | Suwannee | $1,532 | $739 | $1,049 | $1,030 |
| Osceola | $6,342 | $1,284 | $2,479 | $2,236 | Jefferson | $1,511 | $621 | $1,014 | $1,022 |
| **Pasco** | $4,223 | $1,351 | $2,005 | $1,882 | **Walton** | $1,511 | $697 | $1,007 | $1,021 |
| Glades | $4,651 | $1,220 | $1,990 | $1,853 | **Gulf** | $1,511 | $697 | $988 | $1,019 |
| **Sarasota** | $4,000 | $1,075 | $1,890 | $1,827 | Hamilton | $1,842 | $664 | $1,090 | $1,019 |
| **Hernando** | $4,201 | $1,124 | $1,900 | $1,818 | **Bay** | $1,511 | $697 | $982 | $1,009 |
| Liberty | $5,176 | $1,224 | $2,093 | $1,786 | Putnam | $1,569 | $758 | $1,069 | $1,009 |
| **Indian River** | $4,835 | $1,128 | $1,931 | $1,785 | Clay | $1,429 | $760 | $1,004 | $999 |
| **Santa Rosa** | $5,176 | $1,105 | $1,944 | $1,757 | **Dixie** | $1,340 | $684 | $982 | $980 |
| **Escambia** | $5,176 | $1,107 | $1,954 | $1,748 | Polk | $1,527 | $772 | $1,036 | $980 |
| **Martin** | $3,873 | $1,027 | $1,843 | $1,714 | **Taylor** | $1,667 | $649 | $1,034 | $968 |
| Orange | $3,755 | $1,030 | $1,721 | $1,611 | Baker | $1,529 | $684 | $975 | $967 |
| Washington | $5,176 | $987 | $1,833 | $1,602 | **Levy** | $1,533 | $673 | $1,025 | $967 |
| Calhoun | $5,176 | $1,002 | $1,871 | $1,583 | Marion | $1,459 | $683 | $990 | $961 |
| **Pinellas** | $2,313 | $940 | $1,601 | $1,535 | Columbia | $1,234 | $709 | $958 | $958 |
| **Brevard** | $4,671 | $1,047 | $1,678 | $1,532 | Seminole | $1,638 | $661 | $995 | $956 |
| **Okaloosa** | $5,176 | $974 | $1,839 | $1,505 | Lake | $1,650 | $733 | $1,025 | $944 |
| **Volusia** | $1,918 | $863 | $1,391 | $1,474 | Union | $1,529 | $724 | $982 | $923 |
| **Hillsborough** | $1,778 | $889 | $1,279 | $1,304 | **Nassau** | $1,191 | $693 | $920 | $918 |
| **Charlotte** | $2,022 | $934 | $1,352 | $1,296 | **Citrus** | $1,466 | $625 | $924 | $910 |
| **Lee** | $2,022 | $934 | $1,358 | $1,296 | Sumter | $1,680 | $625 | $933 | $900 |
| **Flagler** | $2,200 | $968 | $1,321 | $1,290 | Alachua | $1,364 | $586 | $877 | $888 |
| Leon | $3,869 | $845 | $1,519 | $1,276 | Bradford | $1,370 | $556 | $880 | $858 |
| Highlands | $1,723 | $921 | $1,310 | $1,263 | **St. Johns** | $1,340 | $555 | $850 | $854 |
| Hardee | $1,691 | $780 | $1,201 | $1,156 | **Franklin** | $1,293 | $627 | $846 | $833 |
| **Manatee** | $1,626 | $764 | $1,173 | $1,123 | **Duval** | $1,293 | $555 | $837 | $801 |
| Jackson | $1,535 | $720 | $1,075 | $1,083 | Mean | $3,078 | $918 | $1,508 | $1,413 |

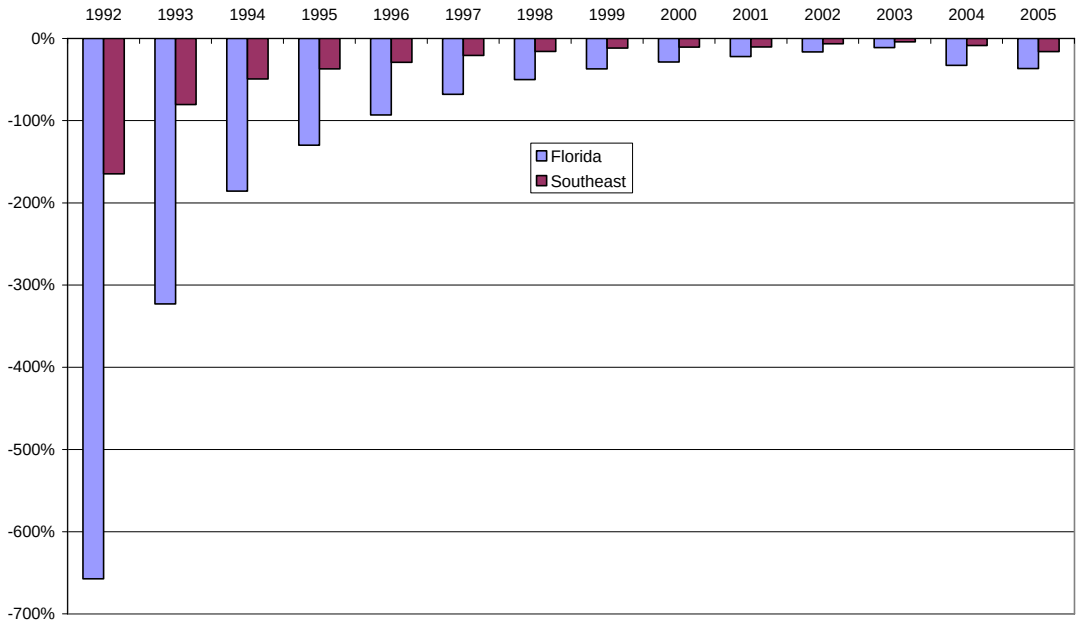
Source: FLOIR

**Figure 7**
**Average Annual Profits on Homeowners Insurance Transactions: 1992-2005**




Source: NAIC Report on Profitability by Line by State

**Figure 8**
**Cumulative Profits on Homeowners Insurance Transactions**
**Percent of Direct Premiums Earned**




Source: NAIC Report on Profitability by Line by State

**Table 10**

**State Rate Regulatory Systems for Homeowners Insurance**

| State | System | Commissioner Selection | State | System | Commissioner Selection |
|---|---|---|---|---|---|
| Alabama | Prior Approval | Appointed | Montana | File & Use | Elected |
| Alaska | Flex Rating | Appointed | Nebraska | File & Use | Appointed |
| Arizona | Use & File | Appointed | Nevada | Prior Approval | Appointed |
| Arkansas | File & Use | Appointed | New Hampshire | File & Use | Appointed |
| California | Prior Approval | Elected | New Jersey | Prior Approval | Appointed |
| Colorado | File & Use | Appointed | New Mexico | Prior Approval | Appointed |
| Connecticut | File & Use | Appointed | New York | File & Use | Appointed |
| Delaware | File & Use | Elected | North Carolina | Prior Approval | Elected |
| District of Columbia | File & Use | Appointed | North Dakota | Prior Approval | Elected |
| Florida | File & Use | Appointed | Ohio | File & Use | Appointed |
| Georgia | File & Use | Elected | Oklahoma | Use & File | Elected |
| Hawaii | Prior Approval | Appointed | Oregon | File & Use | Appointed |
| Idaho | Use & File | Appointed | Pennsylvania | Prior Approval | Appointed |
| Illinois | Use & File | Appointed | Rhode Island | Flex Rating | Appointed |
| Indiana | File & Use | Appointed | South Carolina | Flex Rating | Appointed |
| Iowa | Use & File | Appointed | South Dakota | File & Use | Appointed |
| Kansas | File & Use | Elected | Tennessee | Prior Approval | Appointed |
| Kentucky | Flex Rating | Appointed | Texas | File & Use | Appointed |
| Louisiana | Flex Rating | Appointed | Utah | Use & File | Appointed |
| Maine | File & Use | Appointed | Vermont | Use & File | Appointed |
| Maryland | File & Use | Appointed | Virginia | File & Use | Appointed |
| Massachusetts | File & Use | Appointed | Washington | Prior Approval | Elected |
| Michigan | File & Use | Appointed | West Virginia | Prior Approval | Appointed |
| Minnesota | File & Use | Appointed | Wisconsin | Use & File | Appointed |
| Mississippi | Prior Approval | Elected | Wyoming | No File | Appointed |
| Missouri | Use & File | Appointed | Source: NAIC, PCIAA | | |

**Table 11**
**State Farm Florida Insurance Company**
**Florida Homeowners Rate History: 1997-2006**

| New Business Effective Date | Indicated | Filed For | Received |
|---|---|---|---|
| 8/15/1997 | 42.6% | 24.1% | 24.1%* |
| 1/1/2001 | 15.6% | 7.0% | 6.5% |
| 11/1/2001 | 14.5% | 14.3% | 14.3% |
| 5/15/2002 | 26.9% | 22.3% | Disapproved** |
| 11/15/2003 | 6.9% | 6.9% | 6.9% |
| 9/15/2004 | 2.3% | 2.3% | 1.7% |
| 2/15/2005 | 11.1% | 5.0% | 5%*** |
| 2/1/2006 | 8.6% | 8.6% | 8.6% |
| 8/15/2006 | 52.7% | 52.7% | 52.7% |

* Awarded at arbitration. Following consent order stipulated that State Farm file no other rate increases for at least two years.

**Full 22.3% awarded at arbitration subject to several conditions with a cap of 42.5% on individual rate increases through second year.

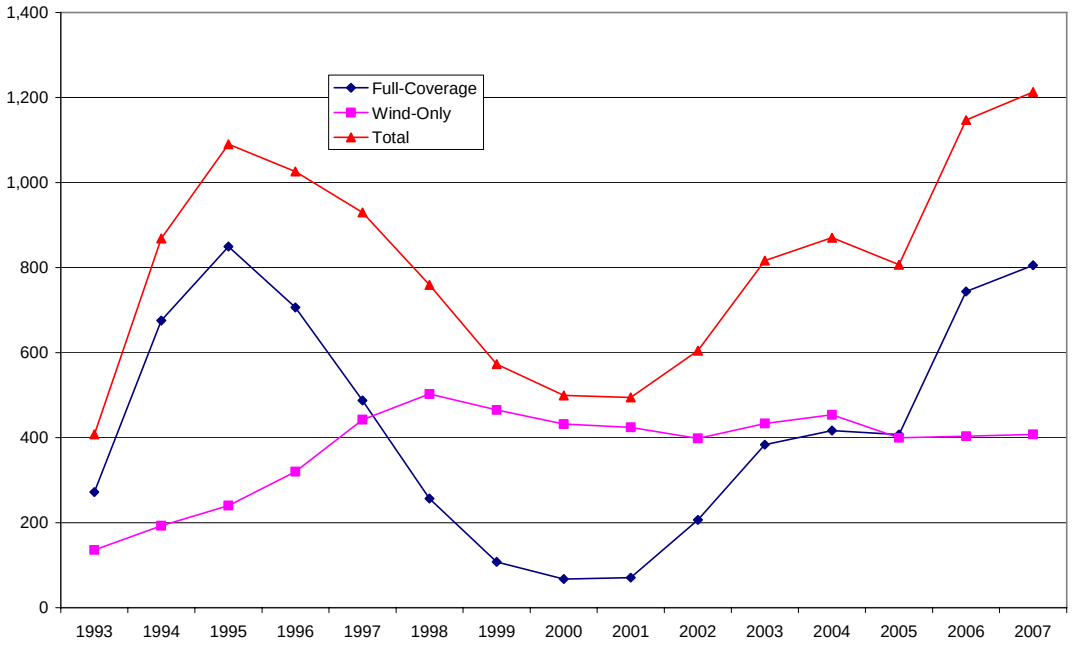
***FLOIR specifically requested that company file for no more than a 5% increase.

**Table 12**

**Financial Exposure of Insurers Subject to Regulatory Action**

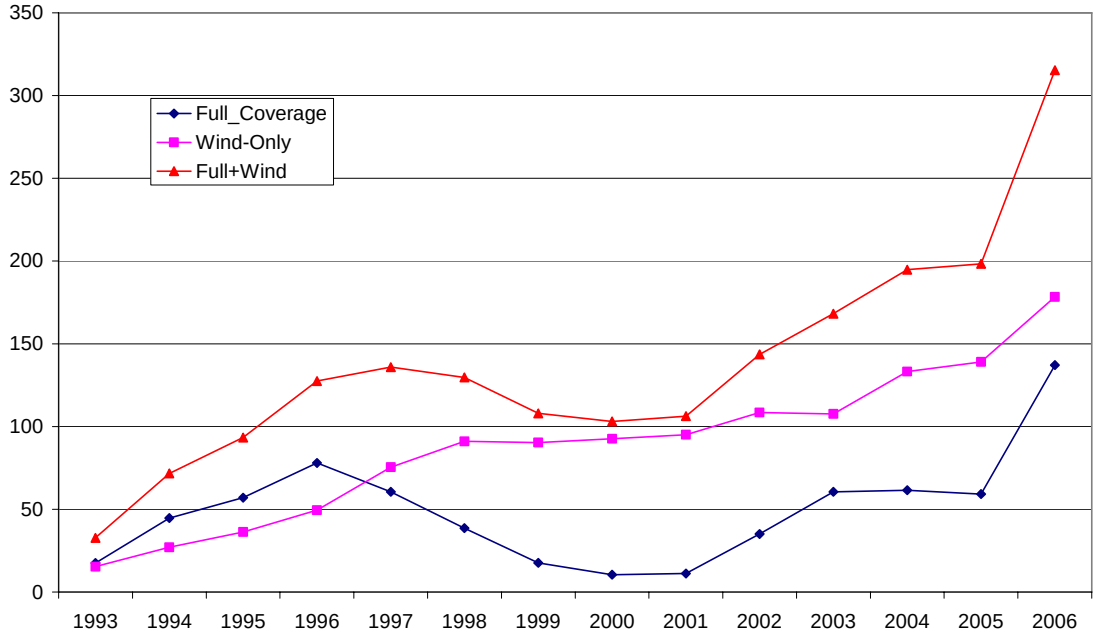
| | Florida Homeowners Insurance Business 2005 | | | | Company Financials 2004 | | | | | FL Exposure |
|---|---|---|---|---|---|---|---|---|---|---|
| Company | Premiums | Total Exposures | BDPM Exposures | BDPM% | PHS | DPW | NPW | NPW/DPW | NPW/Surplus | Lev. Ratio |
| Atlantic Preferred | 197,126,519 | 20,368,527,648 | 17,856,258,559 | 87.7% | 23,958,000 | 153,563,000 | 26,540,000 | 17.3% | 110.8% | 14693% |
| Florida Preferred | 173,427,646 | 17,607,325,866 | 12,418,583,332 | 70.5% | 6,694,000 | 116,267,000 | 17,589,000 | 15.1% | 262.8% | 39792% |
| Southern Family | 31,876,092 | 4,316,777,020 | 131,007,444 | 3.0% | 18,771,000 | 178,214,000 | 79,423,000 | 44.6% | 423.1% | 10249% |
| Florida Select | 60,164,596 | 7,203,519,060 | 980,211,064 | 13.6% | 17,801,000 | 77,399,000 | 1,539,000 | 2.0% | 8.6% | 805% |
| Vanguard | 73,489,860 | 12,823,755,723 | 2,372,341,593 | 18.5% | 7,151,000 | 62,952,000 | 9,569,000 | 15.2% | 133.8% | 27259% |
| Data Sources: FLOIR, A.M. Best | | | | | | | | | | |

**Figure 9**
**Florida Residual Market Full + Wind Policies (000's)**



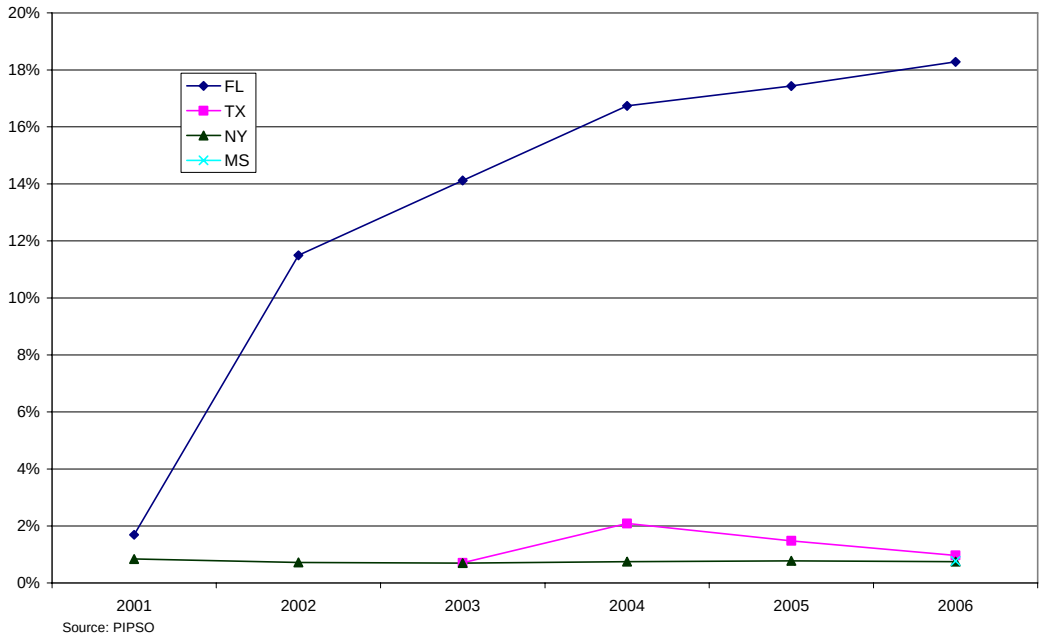

Source: FRPCJUA &

**Figure 10**
**Florida Residual Market Full + Wind Exposures ($B)**




Source: FRPCJUA & CPIC

**Figure 11**
**FAIR Plan Penetration (% of Total Statewide Premiums)**




Source: PIPSO

| Table 13<br>Citizens Property Insurance Corporation<br>Personal Residential and High-Risk Statistics: 2003 & 2006 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | As of March 31, 2007 | | | | As of December 31, 2003 | | | |
| | Policies | % Total | Exposures | % Total | Policies | % Total | Exposures | % Total |
| Personal-Residential Total | | | | | | | | |
| Dade, Broward, Palm Beach, & Monroe | 337,210 | 41.9% | 78,161,152,996 | 50.0% | 239,461 | 62.5% | 40,635,887,869 | 80.3% |
| Rest of State | 468,117 | 58.1% | 78,219,827,093 | 50.0% | 143,819 | 37.5% | 19,390,910,445 | 38.3% |
| Total | 805,327 | 100.0% | 156,380,980,089 | 100.0% | 383,280 | 100.0% | 50,586,798,314 | 100.0% |
| High-Risk: Wind Only | | | | | | | | |
| Dade, Broward, Palm Beach, & Monroe | 247,122 | 60.6% | 113,798,891,286 | 59.2% | 276,067 | 63.7% | 68,286,388,540 | 63.5% |
| Rest of State | 160,559 | 39.4% | 78,335,073,455 | 40.8% | 156,989 | 36.3% | 39,328,420,045 | 36.5% |
| Total | 407,681 | 100.0% | 192,133,964,741 | 100.0% | 433,056 | 100.0% | 107,614,808,585 | 100.0% |
| Source: CPIC | | | | | | | | |

**Table 14**

**State FAIR Plans: Habitational Policies & Exposures**

**1992, 2003-2006**

| | 2006 | | | | 2005 | | | | 2004 | | | | 2003 | | | | 1992 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Policies | | Exposures ($000s) | | Policies | | Exposures ($000s) | | Policies | | Exposures ($000s) | | Policies | | Exposures ($000s) | | | Exposures |
| State | Number | % Chg. | Amount | % Chg. | Number | % Chg. | Amount | % Chg. | Number | % Chg. | Amount | % Chg. | Number | % Chg. | Amount | % Chg. | Policies | ($000s) |
| California | 193,615 | -3.7% | 50,577,001 | 3.9% | 201,043 | 3.1% | 48,663,725 | 8.2% | 195,084 | 3.0% | 44,971,851 | 11.3% | 189,486 | 63.7% | 40,423,805 | 114.3% | 115,767 | 18,866,588 |
| Connecticut | 4,682 | -7.1% | 768,728 | 1.7% | 5,040 | 5.6% | 756,193 | 11.9% | 4,771 | 29.0% | 675,542 | NA | 3,698 | -38.2% | 489,282 | NA | 5,985 | 754,943 |
| **Delaware** | **2,963** | **-10.2%** | **295,795** | **-3.7%** | **3,299** | **-4.6%** | **307,108** | **40.8%** | **3,457** | **29.4%** | **218,044** | **9.6%** | **2,671** | **43.3%** | **199,015** | **159.5%** | **1,864** | **76,679** |
| **Florida*** | **1,409,587** | **246.0%** | **408,837,779** | **589.9%** | **407,387** | **-2.2%** | **59,263,424** | **-3.8%** | **416,529** | **8.7%** | **61,621,665** | **1.7%** | **383,280** | **160.2%** | **60,566,798** | **562.8%** | **147,315** | **9,137,395** |
| **Georgia** | **28,167** | **-4.5%** | **3,114,897** | **17.2%** | **29,491** | **-3.4%** | **2,656,721** | **1.8%** | **30,518** | **4.6%** | **2,610,404** | **0.2%** | **29,165** | **160.8%** | **2,605,112** | **291.0%** | **11,181** | **666,322** |
| Illinois | 9,970 | -19.8% | 769,000 | -16.9% | 12,426 | -18.9% | 925,872 | -17.8% | 15,318 | 1.7% | 1,126,547 | 5.7% | 15,068 | -6.2% | 1,065,549 | 69.1% | 16,069 | 630,297 |
| Indiana | 3,633 | -21.6% | 300,953 | -11.3% | 4,631 | -23.4% | 339,389 | -35.6% | 6,048 | 23.5% | 526,669 | 38.5% | 4,898 | 60.2% | 380,278 | 324.1% | 3,058 | 89,662 |
| Iowa | 1,425 | -10.2% | 97,079 | -11.8% | 1,586 | 0.2% | 110,028 | -7.7% | 1,583 | 12.8% | 119,265 | -0.1% | 1,403 | 29.5% | 119,403 | 335.6% | 1,083 | 27,414 |
| Kansas | 9,659 | 29.8% | 416,676 | 27.5% | 7,443 | 8.4% | 326,883 | 12.6% | 6,868 | 30.8% | 290,214 | 19.2% | 5,252 | -1.0% | 243,511 | 90.2% | 5,303 | 128,062 |
| Kentucky | 14,040 | -6.3% | 141,533 | -4.7% | 14,985 | 5.7% | 148,488 | -1.3% | 14,178 | 16.6% | 150,500 | 20.1% | 12,163 | -67.9% | 125,332 | -49.8% | 37,857 | 249,756 |
| **Louisiana*** | | | | | **134,169** | **-1.0%** | **14,895,780** | **4.5%** | **135,457** | **14.3%** | **14,260,817** | **45.2%** | **118,514** | **2753.0%** | **9,819,994** | **5604.9%** | **4,154** | **172,132** |
| Massachusetts | 216,074 | 12.6% | 68,607,352 | 27.1% | 191,828 | 24.2% | 53,958,244 | 37.8% | 154,438 | 34.1% | 39,162,807 | 46.5% | 115,185 | 124.1% | 26,725,429 | 442.1% | 51,403 | 4,929,965 |
| Michigan | 73,952 | -17.8% | 10,186,674 | -18.3% | 89,938 | -13.4% | 12,473,849 | -23.7% | 103,895 | -1.6% | 16,350,703 | NA | 105,610 | -42.1% | 18,493,317 | -18.2% | 182,287 | 22,611,624 |
| Minnesota | 8,600 | -14.4% | 1,839,520 | -15.2% | 10,042 | -22.5% | 2,169,793 | -22.2% | 12,964 | NA | 2,790,157 | NA | 14,712 | NA | 1,316,637 | NA | 4,104 | 152,970 |
| **Mississippi** | **12,080** | **NA** | **661,360** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Missouri | 8,928 | -8.4% | 421,162 | -8.2% | 9,748 | -5.4% | 458,939 | -5.2% | 10,302 | 3.6% | 484,165 | 10.9% | 9,945 | -51.5% | 436,721 | 16.1% | 20,520 | 376,084 |
| **New Jersey** | **41,974** | **-11.5%** | **5,440,130** | **-7.6%** | **47,402** | **-8.2%** | **5,887,162** | **-2.9%** | **51,661** | **-1.4%** | **6,065,014** | **4.6%** | **52,405** | **4.8%** | **5,796,676** | **56.9%** | **49,981** | **3,694,897** |
| New Mexico | 12,687 | 3.0% | 671,920 | 2.2% | 12,319 | -2.1% | 657,182 | 0.4% | 12,579 | 5.8% | 654,556 | 19.1% | 11,894 | -1.0% | 549,451 | -45.6% | 12,014 | 1,010,068 |
| **New York** | **60,797** | **-1.1%** | **12,927,080** | **7.5%** | **61,504** | **-6.8%** | **12,021,650** | **7.8%** | **66,025** | **0.6%** | **11,148,869** | **10.2%** | **65,603** | **0.0%** | **10,119,750** | **86.8%** | **65,617** | **5,417,273** |
| Ohio | 59,983 | -13.4% | 11,309,456 | -15.9% | 69,233 | -9.2% | 13,440,019 | -8.6% | 76,284 | 10.4% | 14,711,595 | 10.0% | 69,088 | 327.9% | 13,374,287 | 4551.7% | 16,145 | 287,511 |
| Oregon | 4,225 | -13.7% | 322,196 | -13.7% | 4,893 | -10.8% | 373,247 | -12.1% | 5,487 | -5.2% | 424,494 | -3.5% | 5,785 | -17.8% | 439,967 | 49.9% | 7,034 | 293,527 |
| Pennsylvania | 37,386 | -9.0% | 2,079,026 | -5.0% | 41,061 | -8.2% | 2,189,147 | -1.8% | 44,706 | -1.6% | 2,228,806 | 8.7% | 45,443 | -39.1% | 2,050,500 | -19.0% | 74,657 | 2,530,159 |
| **Rhode Island** | **21,708** | **1.1%** | **4,728,942** | **349.2%** | **21,475** | **15.3%** | **1,052,631** | **31.2%** | **18,625** | **42.5%** | **802,452** | **55.6%** | **13,067** | **103.1%** | **515,815** | **18.3%** | **6,433** | **435,878** |
| **Texas** | **109,461** | **-9.5%** | **13,320,285** | **-5.8%** | **120,913** | **-33.6%** | **14,133,423** | **-37.9%** | **182,124** | **51.1%** | **22,771,896** | **91.8%** | **120,536** | **NA** | **11,871,417** | **NA** | **NA** | **NA** |
| **Virginia** | **37,058** | **-0.6%** | **3,944,094** | **4.5%** | **37,274** | **5.9%** | **3,774,646** | **3.8%** | **35,188** | **21.4%** | **3,636,751** | **30.3%** | **28,984** | **105.6%** | **2,790,798** | **428.4%** | **14,098** | **528,169** |
| Washington | 90 | -17.4% | 33,346 | -9.5% | 109 | -12.8% | 36,845 | -17.1% | 125 | -15.5% | 44,444 | -11.6% | 148 | -79.1% | 50,291 | -23.0% | 709 | 65,288 |
| West Virginia | 1,364 | -10.1% | 50,392 | -13.8% | 1,517 | -3.3% | 58,432 | 22.9% | 1,568 | 18.8% | 47,541 | 10.2% | 1,320 | -16.1% | 43,129 | 22.9% | 1,574 | 35,102 |
| Wisconsin | 5,191 | -19.7% | NA | NA | 6,463 | -9.9% | NA | NA | 7,172 | 20.4% | NA | NA | 5,959 | 12.2% | NA | NA | 5,313 | NA |
| Total | 2,389,299 | 54.4% | 601,859,916 | 139.7% | 1,547,219 | -4.1% | 251,078,820 | 1.3% | 1,612,954 | 12.7% | 247,895,768 | 17.7% | 1,431,282 | 66.1% | 210,612,264 | 187.8% | 861,525 | 73,167,765 |

* Florida figures reflect all policies for 2006; full-coverage policies for previous years. Louisiana figures include both "FAIR Plan" policies and "Coastal" policies.

Source: Insurance Information Institute, CPIC, and LCPIC

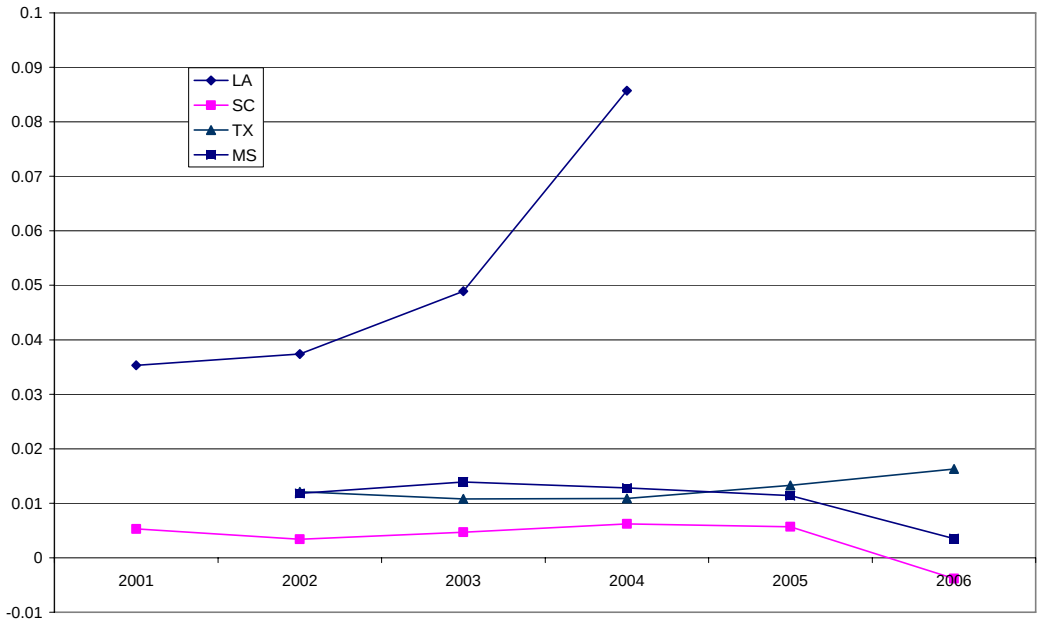
**Table 15**

**State Wind/Beach Pools**

**1992, 2003-2006**

| | 2006 | | | | 2005 | | | | 2004 | | | | 2003 | | | | 1992 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Policies | | Exposures ($000s) | | Policies | | Exposures ($000s) | | Policies | | Exposures ($000s) | | Policies | | Exposures ($000s) | | | Exposures |
| State | Number | % Chg. | Amount | % Chg. | Number | % Chg. | Amount | % Chg. | Number | % Chg. | Amount | % Chg. | Number | % Chg. | Amount | % Chg. | Policies | ($000s) |
| Alabama | NA | NA | NA | NA | NA | NA | NA | NA | 3,121 | 1.8% | 317,691 | -6.5% | 3,065 | 5.5% | 339,858 | 80.3% | 2,904 | 188,513 |
| Florida | NA | NA | NA | NA | 399,418 | -12.0% | 139,106,408 | 4.4% | 453,756 | 4.8% | 133,189,592 | 23.8% | 433,056 | 609.1% | 107,614,809 | 1336.3% | 61,074 | 7,492,298 |
| Louisiana | NA | NA | NA | NA | NA | NA | NA | NA | 9,377 | 5.6% | 1,290,585 | 167.8% | 8,881 | 27.2% | 481,890 | 163.1% | 6,984 | 183,159 |
| Mississippi | 28,880 | 96.3% | 5,369,509 | 186.7% | 14,710 | NA | 1,872,999 | NA | 14,814 | 14.3% | 1,631,848 | 77.8% | 12,955 | 164.9% | 917,935 | 198.7% | 4,891 | 307,315 |
| South Carolina | 27,082 | 28.2% | 11,179,099 | 70.0% | 21,131 | 4.2% | 6,576,213 | 9.6% | 20,285 | 14.1% | 6,002,519 | 50.3% | 17,776 | 114.0% | 3,993,548 | 211.9% | 8,306 | 1,280,331 |
| Texas | 140,375 | 32.0% | 38,313,022 | 64.6% | 106,350 | NA | 23,279,429 | NA | 100,299 | NA | 20,796,686 | NA | 106,273 | 105.8% | 11,972,502 | 119.4% | 51,638 | 5,455,790 |
| Total | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 582,006 | 328.6% | 125,320,542 | 740.7% | 135,797 | 14,907,406 |
| Source: Insurance Information Institute, PIPSO | | | | | | | | | | | | | | | | | | |

**Figure 12**
**Wind/Beach Plan Penetration (% of Total Statewide Premiums)**




Source: PIPSO

| Table 16 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Estimated FHCF Claims Paying Capacity ($B) | | | | | | | |
| | Bonding Capacity | | | | Projected | Initial Season | Post-Season |
| | May | | October | | CY-End Fund | Claims Paying | Claims Paying |
| Year | Initial | Post | Initial | Post | Balance | Capacity | Capacity |
| 1994 | 2.0 | | | | 0.3 | 2.3 | |
| 1995 | 4.0 | | | | 0.9 | 4.9 | |
| 1996 | 5.0 | | 5.0 | | 1.4 | 6.4 | |
| 1997 | 5.5 | | 6.0 | | 2.0 | 8.0 | |
| 1998 | 8.5 | | 8.5 | | 2.5 | 11.0 | |
| 1999 | 8.7 | | 7.9 | | 3.1 | 11.0 | 4.4 |
| 2000 | 7.4 | 4.5 | 7.3 | | 3.7 | 11.0 | 5.9 |
| 2001 | 6.7 | 7.1 | 6.7 | 7.5 | 4.3 | 11.0 | 7.9 |
| 2002 | 6.1 | 9.2 | 6.1 | 10.3 | 4.9 | 11.0 | 10.8 |
| 2003 | 5.5 | 10.5 | 5.5 | 10.5 | 5.5 | 11.0 | 11.0 |
| 2004 | 8.9 | 15.0 | 8.9 | 14.4 | 6.1 | 15.0 | 15.0 |
| 2005 | 12.1 | 14.3 | 12.0 | 14.2 | 3.1 | 15.0 | 15.0 |
| 2006 | 14.0 | 14.0 | 14.0 | 13.8 | 1.0 | 15.0 | 15.0 |
| 2007 | 26.0 | 26.1 | 25.8 | 25.2 | 2.1 | 27.8 | 26.4 |
| Source: FHCF | | | | | | | |