# Mother Nature on the Rampage: Implications for Insurance Markets

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Abstract

The severe hurricane seasons of 2004 and 2005 and the resulting losses are prompting insurers to reassess their risk and business strategies in Southeastern states. This paper examines recent trends in the affected homeowners insurance markets, analyzes factors affecting insurers' adjustments in these markets, and discusses how these markets are likely to further change in response to the reassessment of hurricane risk and regulatory reactions and related policy and regulatory issues. We conduct an econometric analysis of insurers' relative shares of homeowners insurance exposures in Florida statewide and by county over the period 1996-2005. Our analysis indicates several factors that appear to be associated with changes in insurers' changes in insurers' share of exposures. Among these factors we find that publicly traded stock insurers and mutual insurers have tended to increase their presence in the Florida market, although publicly traded insurers have retrenched from the highest-risk areas. Overall, this analysis and our examination of other market data suggest that significant market restructuring has occurred and is likely to continue as some insurers with large numbers of exposures will retrench and other insurers step in to fill the gap. The price of insurance also will increase significantly in high-risk areas, although the magnitude and pace of rate hikes will depend on insurers' risk assessments and regulatory approvals. The supply of insurance and market restructuring will be affected greatly by insurers' reassessments of hurricane risk, the supply and cost of reinsurance, and regulatory policies.

## Introduction

The increased risk of hurricanes striking the United States has received considerable attention since the early 1990s, but the particularly intense hurricane activity during the last two years is raising market and public concerns to new levels. Following Hurricane Andrew in 1992, there were substantial adjustments in property insurance markets in Florida and other hurricane-prone states. Insurers more carefully managed their exposures to catastrophe losses and increased their rates in at-risk areas over time to the extent permitted by regulators. It appeared that by 2004 insurance markets had stabilized to a large degree and would remain relatively stable. However, the four major hurricanes that struck the Gulf Coast region in 2004 began to destabilize insurance markets and the tragic storm season of 2005 led by Hurricane Katrina further exacerbated market problems. The 2005 season has been the most intense on record, with 27 named storms — 14 of which were designated as hurricanes (Insurance Information Institute, 2005b).

Several factors appear to be contributing to market instability, but most important is insurers' and reinsurers' perceptions that the risk of severe hurricanes is significantly higher than that perceived before 2004 and that more "bad years" are in store. This is causing many insurers to seriously question their ability to continue underwriting property insurance in the Southeast as they have been. Some insurers are seeking to significantly decrease their exposures, calling for substantial rate increases and pressing for government measures to support the market. However, other insurers appear to be taking a more moderate position and some are even signaling a desire to increase their presence in the Southeast. Meanwhile, legislators and regulators in the affected areas are

pushing for a national catastrophe reinsurance program augmented by state catastrophe funds and other measures (NAIC, 2005).

The situation is fluid and evolving as insurers and reinsurers reassess their catastrophe exposures and price structures, weather scientists analyze and predict future storm activity, catastrophe modelers revise their assumptions, and public and government actions continue to play out. This paper reflects an initial attempt to examine how insurance markets have been affected by and are responding to higher losses and shifting perceptions of the underlying risk. Our examination is somewhat constrained by the lag between market changes and corresponding data, as well as by the fact that market changes are continuing to unfold. Still, we hope to offer insights into market conditions and how they are likely to further develop. Understanding how insurance markets are changing and the underlying economic factors driving the changes are essential to informing the associated public debate on government policy and insurance mechanisms.

We have focused on the insurance market in the Southeast region of the country, recognizing that hurricane risk also extends further north along the Atlantic coast. We focus in particular on market restructuring in Florida and factors associated with this restructuring. Although recent hurricane activity has expanded insurers' attention to other Gulf region states, Florida remains a primary concern because of its high vulnerability and extensive development. Also, more data are readily available for Florida than for other states that permit more extensive analysis.

Our paper begins with a discussion of the factors that might be expected to influence insurers' appetite for writing more or less business in hurricane-prone areas. This is followed by a review of increasing hurricane losses in the Southeast and the reassessment

of catastrophe risk in the region. We then examine trends in the structure and performance of homeowners insurance markets through 2005. This is followed by an econometric analysis of factors associated with changes in insurers' relative shares of homeowners insurance exposures in Florida on a statewide basis and in high and low-risk areas of the state. In particular, we are interested in discerning the characteristics of insurers that appear to affecting their growth or retrenchment in the Florida market. As some insurers withdraw or retrench from the market, other insurers appear to be willing to enter the or expand their presence. Overall, while this behavior may help to maintain the supply of insurance, it does have consequences for the distribution of exposures among different types of insurers with corresponding implications for consumers. We conclude with a discussion of what our analysis suggests for how insurance markets subject to hurricane risk are likely to evolve and related issues and implications for public policy.

**Supply of Insurance in Hurricane-Prone Areas**

An insurer's willingness to supply homeowners insurance in a particular market subject to hurricanes (at a state or sub-state level) would be expected to be influenced by a number of factors. Generally speaking, some insurers specialize in writing personal lines coverage (primarily auto and home insurance) while other write a broader array of property-casualty lines, including both personal and commercial insurance. Normally, nationally prominent personal lines insurers would be expected to serve large markets even in hurricane-prone areas if they can charge what they consider to be an adequate price, make a fair profit, and effectively manage their exposure to catastrophe losses to minimize their probability of ruin or substantial impairment. Some national multi-line

insurers also may offer homeowners insurance in these markets as a complement to their commercial lines business. Finally, there are regional and single-state personal lines and multi-line insurers that find profitable niches to serve in homeowners insurance markets in their areas of operation. Tables 2-5 indicates that all three types of insurers appear in homeowners insurance markets in Florida and other Southeastern states.

Several factors may explain the ability of these different insurer types to survive and even prosper in these markets under the right conditions. One factor is that many insurers may specialize or serve particular market niches where they have a comparative advantage. The large national personal lines insures, such as State Farm, Allstate and Nationwide, benefit from strong "brand recognition" and perhaps some economies of scale and scope that place them among the market leaders in most states. National multi-line insurers may also benefit from some brand recognition and relationships with agents that sell and consumers that buy commercial insurance. Market-specific knowledge and relationships may help regional and single-state insurers to carve out niches where they can effectively compete against other insurers.

Other forms of specialization occur that enable a number of insurers to remain viable in a particular market. One of these forms is the division between "preferred" (low-risk), "standard" (medium-risk) and "non-standard" (high-risk) insureds. Historically, different companies have served these groups with corresponding rate structures that reflect their relative risk levels.[1] Some of the larger national insurers have moved to more flexible rate structures that accommodate a broader range of risk levels within a given company, but other insurers have maintained the separate company approach to underwriting and

1 Within a group of affiliated insurance companies, it is common to have companies with different underwriting standards and rating structures to accommodate preferred, standard and non-standard markets.

pricing. Other areas of specialization include the type of distribution system used (independent agent, exclusive agent and direct response) and types or groups of consumers (e.g., high-income households – Chubb, military personnel – USAA, and rural households – Farm Bureau companies).

Some national insurer groups also have established single-state subsidiaries to segregate their business in particular states from their other business. This device is used to deal with special state regulatory requirements or high-risk states where overly tight regulatory restrictions on rates and other areas is of concern to insurers, such as in Florida. The segregation of business into a single-state company makes profits and losses arising from operations in a particular state more apparent. It can also help the parent group maintain a good financial strength rating. There is the option of "abandoning" a single-state subsidiary if it were to incur a large deficit from a severe catastrophe. The management of the parent companies probably view such an action as a last resort in a worse case scenario that would be prompted in part by excessive regulatory restrictions.

This discussion brings us to the question of what factors would be expected to influence an insurer's decision to attempt to expand, maintain or decrease its homeowners insurance exposures in areas subject to hurricane risk. We hypothesize that several insurer characteristics and market conditions might influence such a decision.

**Reassessment of Risk** First and perhaps foremost, we would expect insurers' reassessments of the risk of catastrophe losses to be an important factor. If an insurer perceives that the risk of catastrophe losses has increased significantly, it might be inclined to reduce its exposures to brings its catastrophe risk back down to a level with which it is more comfortable. Other factors would interact with risk reassessment to

influence what a particular insurer would do. Such factors would include the ability to raise prices or modify coverage terms and the supply and cost of reinsurance or financial diversification instruments. Parameter uncertainty or diminished confidence in the accuracy of catastrophe modeling might also cause an insurer to be more cautious. The fact that insurers' assessments of catastrophe risk may vary implies that their notions of adequate prices and catastrophe management strategies also may vary, resulting in different insurer responses to changing conditions.

**Regulatory Environments** Insurers' perceptions of the regulatory environments in markets affected by hurricane risk could be an important consideration in their decisions about entering or exiting such markets and the extent of their exposures in these markets. If regulators allow insurers to charge what insurers perceive to be adequate prices and allow insurers to make other adjustments to manage their catastrophe exposure, e.g., increased windstorm deductibles, then insurers may take a more favorable view of a market. On the other hand, if regulators impose binding constraints on insurers prices and other actions, then some insurers may be inclined to retrench from the market. How regulators are expected to respond to insurers' reassessment of hurricane risk and filings for rate increases could be an important factor affecting some insurers' commitment to a market.

Other aspects of the regulatory, government and political environments in a market also could be important. These aspects include government enforcement of building codes and hazard mitigation and the operation of residual market mechanisms. Insurers could be less enthusiastic about having large amounts of exposures in jurisdictions where residual market mechanisms are administered in way that imposes a high risk of

substantial assessments on the voluntary market in the event of one or more severe hurricanes. The possibility of ex-ante or ex-post legislation or litigation that could expand insurers' claims obligations also could be viewed negatively. On the other hand, the existence of a state mechanism to provide low-cost catastrophe reinsurance, such as in Florida, could increase insurers' willingness to underwrite homeowners insurance.

**Large Loss Shocks** All other things being equal, a large loss shock to an insurer's surplus would be expected to at least temporarily reduce its capacity to underwrite risk. Capital can be replenished by issuing more stock (not an option for mutual companies) or debt but this comes at a cost and replenishing capital through future earnings takes time. Reinsurance also can be substituted for capital to restore capacity but this also has a cost. Price increases can help cover these costs but the extent to which an insurer can increase its prices will depend on regulatory approvals and competitors' prices.

**Concentration of Exposures** Insurers that already have large geographic concentrations of exposures in hurricane-prone areas relative to their overall portfolio of exposures would be expected to be less inclined to increase their share of exposures in high-risk areas. The greater the concentration of exposures, the greater is an insurer's vulnerability to geographically-correlated catastrophe losses. Insurers may have a "comfort level" or limit in terms of the amount of exposures in hurricane-prone areas they believe it is prudent for them to support. If they are near, at or above this level when their assessment of the probability of severe hurricanes increases, they would be expected to attempt to decrease their exposures. Vice versa, insurers with relatively low concentrations of exposures in high-risk areas may feel less of a need to decrease their exposures and may in fact be willing to increase their exposures by taking on business

shed by other carriers if they can do so profitability at an attractive price. Of course, what an insurer may consider to be an excessive concentration of exposures will depend on its overall size and distribution of exposures – larger, more geographically dispersed insurers can accommodate a higher amount of exposures in hurricane-prone areas than smaller and less geographically dispersed insurers.

**Profitability and Tolerance of Income Volatility** Beyond the problems created by "occasional" catastrophe losses, insurers also are concerned about profitability and income volatility. For-profit insurers need to earn profits that at least cover their cost of capital and not-for-profit insurers (i.e., mutuals and reciprocals) must rely on net income as a source of capital. By its nature, homeowners insurance can be a somewhat volatile line of insurance because of weather-related losses resulting in large swings in losses and net income from year to year. Homeowners insurers build a "catastrophe-load" into their premiums that, in theory, should generate sufficient extra income in "good years" to cover higher than average losses in "bad years." Insurers that fail to accomplish will be induced to make some adjustments by raising prices, reducing costs and/or restructuring their operations depending on the options available to them. Some insurers have exited homeowners insurance markets because they do not believe that they can be profitable in this line or perceive that their prospects are better in other lines of insurance.

Insurers also may vary in their tolerance of income volatility. All other things being equal, investors will expect to receive a higher return on investments in firms with more volatile earnings. Insurers may attempt to position themselves differently in terms of the risk profile they present to their owners and investors. Some insurers may attempt to maintain a lower risk profile and more stable earnings while other insurers may offer a

better return because they undertake higher-risk ventures that can result in higher earnings volatility. The recent upsurge in hurricane losses may present a significant problem to insurers that have sought to maintain a lower risk profile and for which homeowners insurance has been substantial portion of their business. Their stockholders, potential investors, and even creditors may take a dim view of two consecutive years of high losses from their Southeastern operations. This view may have been further dimmed by forecasts of continued severe storm activity for the next several years. Insurers in this position may feel strong pressures to reduce their homeowners exposures in hurricane-prone areas to reduce their losses and achieve more stable, positive earnings.

There may be further distinctions between stock companies that are publicly traded with widely diversified stockholders and stock companies that are not publicly traded with closely-held ownership. In theory, diversified stockholders should be less concerned about idiosyncratic risk specific to a firm which they can diversify through their broad portfolio of investments. At the same time, these stockholders will distinguish risk associated with random chance (i.e., a firm is lucky with some of its ventures and unlucky with others) from risk or sustained negative earnings due to a firm's continuing operations in ventures and markets where revenues fail to cover costs.

Owners of an insurer who are not widely diversified will be more affected by the idiosyncratic risk specific to the insurer as well as sustained negative earnings due to continuing high losses in areas afflicted by a string of catastrophes. The preferences of such owners will be influenced by their appetite for risk and their perceptions of the future prospects of the insurer they own. If they believe that there is a good chance that the insurer will be able to collect large premiums without suffering losses from a severe

storm, they may support continuing or even expanding the insurer's portfolio of exposures. On the other hand, if they believe that there is a high probability that the insurer will suffer more severe storm losses, then they may prefer that the insurer retrench from or abandon its position in hurricane-prone markets.

Mutual insurers may view their position differently depending on their corporate culture and objectives. The conventional theory is that mutual insurers should have a lower appetite for risk because they face a higher cost of capital, their managers favor longevity and the interests of their owner-policyholders lie in product value and their insurers' financial strength. At the same time, some mutual insurers may feel a commitment to continue to provide coverage to their policyholders, even in areas where the risk of catastrophe losses has increased, and they are not pressured to generate positive earnings every year to please investors. Of course, mutual insurers have obligations to all of their policyholders so it will be difficult for them to justify sustained cross-subsidies from policyholders in low-risk areas to policyholders in high-risk areas. Mutual insurers that are concentrated in the Southeast do not face this issue but they also cannot tap positive income generated from operations outside the Southeast.

**Economies of Scale and Scope and Complementary Products** The literature suggest that economies of scale are modest in property-casualty insurance and that there is a wide range of output levels at which insurers can operate at maximum efficiency. This suggests that scale economies may not be an important factor in insurers' market exposure decisions. This would help to explain why both small and large insurers appear to remain viable in homeowners insurance markets. However, it does not explain why two or three insurers typically write 50-60 percent of the homeowners insurance markets

in most states. This may have more to do the advantages of brand recognition, although the large insurers also may benefit from the large databases they are able to analyze to refine their price structures and underwriting policies.

Economies of scope may be more important to insurers, whether such economies are a matter of perception or reality. Generally speaking, many personal lines insurers seek to sell auto, home and umbrella liability insurance to the same households and offer substantial discounts (10-15 percent) for complementary purchases. Some of these insurers also desire to sell other insurance and financial products/services to the same households. The sale of products and services that are complementary to homeowners insurance would be expected to cause some insurers to be more reluctant to decrease their homeowners business and may prompt other insurers to attempt to expand their sale of homeowners insurance.

**Distribution Systems** Insurers that utilize independent agents may face a different problem than insurers that utilize exclusive agents but both types of insurers face a dilemma. Independent agent insurers need to keep their agents "happy" by continuing to offer a full array of products for their agents' customers. Agents may abandon an insurer who seeks to reduce their homeowners business. However, independent agent insurers have fewer sunk costs in establishing a distribution network so it is less costly for them to exit or enter a market, or expand or retrench the scope of their operations.

Exclusive agent insurers have greater sunk costs in their distribution network and also must enable their agents to maintain a sufficient volume of business to remain economically viable. Hence, exclusive agent insurers may encounter greater frictions or "sticking points" in adjusting their homeowners exposures. This may cause them to delay

exiting or retrenching from a market but ultimately they may take such actions if they perceive that they will continue to loose money in a particular market for the foreseeable future.

**Rating Agency Assessments** Several rating agencies rate the financial strength or claim-paying ability of insurance companies. Since the early 1990s, rating agencies have incorporated assessments of insurers' catastrophe risk management into their rating evaluations. If the rating agencies believe that an insurer has an excessive exposure to catastrophe losses, they may give the insurer a lower rating. This can present a substantial problem to insurers who rely on a good financial rating to enhance their desirability to consumers (and the agents who place business with them). If an insurer's rating is threatened by its high exposure to catastrophe losses, it may be pressured to decrease this exposure.

**Hurricane Risk and Losses**

There may be different opinions on how much hurricane risk has increased, but there is no ambiguity about the increased frequency and severity of hurricanes and the damage they have caused in recent years. Figure 1 plots insured losses from all catastrophes in the United States from the years 1985-2005. Some of these losses were caused by perils other than hurricanes, but most were caused by hurricanes. Table 1 lists the 10 most costly catastrophes that have struck the United States – eight of these were caused by hurricanes. The last two years have been particularly expensive, with estimated insured hurricane losses of $19.2 billion in 2004 and $45.2 billion in 2005 (Insurance Information

Institute, 2005b).[2] Weather scientists have issued analyses and opinions that we are in a multi-decade cycle of increased tropical storm activity that began in the 1990s. And, they have said, the intense storm activity in recent years could well be repeated in future years (NOAA, November 29, 2005; Washington Post, October 1, 2005).

The increase in hurricane and other catastrophe losses has several effects as discussed above. One effect is the "loss shock" to insurers' and reinsurers' capital. This reduces their capacity to underwrite risk, at least in the short term, and compels them to rebuild their capacity by raising prices and acquiring new capital. A second effect is high volatility in insurers' and reinsurers' net income, which is viewed negatively by equity investors and lenders. This volatility is reflected in estimated profits for homeowners insurance in Florida and the Southeast, as shown in Figure 2. Greater volatility translates into greater risk and a higher cost of capital, since capital providers demand a higher rate of return for incurring greater risk. As discussed in the previous section, insurers' tolerance of income volatility may depend, in part, on their organizational form and financial structure.

Even insurers that can tolerate significant income volatility may question whether they will ever come out ahead in their homeowners operations in Florida and other Southeast states. Figure 3 plots insurers cumulative profits (losses) for homeowners insurance in Florida and the Southeast states combined for the period 1992-2004 – each year represents accumulated profits and losses from previous years. We can see from this figure that insurers on the whole have remained "under water" over the entire period. Cumulative losses decreased over the period until 2004, when they moved further

2 This estimate for 2005 may be somewhat conservative, as it is based on insurance claims filed or expected according to initial insurer reports. As claims are ultimately adjusted and paid, the "final" reported costs of an event often prove to be higher than initial estimates.

"south." Obviously, the 2005 results will significantly worsen this position. 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), then it would be understandable if that insurer was reluctant to continue to maintain the same level of operations under current conditions.

A third effect of high hurricane losses, especially during the last two years, is their impact on insurers' confidence in their assessments of hurricane risk and associated price structures and exposure management. The recent experience probably affirms many insurers' belief that they face greater risk than previously assumed and that their prices have been inadequate. It also raises some insurers' concerns about their exposure to hurricane losses and prompts them to initiate or escalate plans to reduce this exposure. This would be expected to cause a tightening of the supply of property insurance in hurricane-prone areas, increasing pressure to raise prices and decreasing the availability of coverage. The availability of coverage may be restored over time with the entry of new insurers and the expansion of others but, even for these firms, prices must be allowed to rise to levels they consider to be adequate if they are to assume exposures shed by retrenching insurers.

How market conditions will evolve will be influenced greatly by insurers' and reinsurers' perception of hurricane risk and their confidence in their risk assessments. Catastrophe modeling firms play an important role in risk analysis and insurers' assessments of their specific risk exposures. Hence, revisions of catastrophe models will

have significant implications for the terms under which insurers will be willing to offer insurance in hurricane-prone markets.

The combination of recent hurricane activity and meteorologists' forecasts of intense tropical storm activity during the next several years is causing catastrophe modeling firms to acknowledge the need to revise their models to reflect increase hurricane risk. Risk modeling firms have signalled that their revised models will likely indicate the need for higher insurance rates and greater catastrophe exposure risk management by insurers (*National Underwriter*, November 21, 2005)[3]: The ultimate effects of revised catastrophe models will depend on how the indicated loss costs vary by area and line of insurance, as well as how insurers' utilize these indications.

The two dominant factors that have combined to increase risk of hurricane losses are worth noting. One factor is more intense storm activity that meteorologists predict will continue for some time. A second factor is the significant growth in population and economic development in coastal areas subject to hurricanes. The population in coastal counties ranging from Texas to North Carolina increased from 11 million in 1970 to 21 million in 2000 according to data from the U.S. Census Bureau. Figure 4 plots this growth for 16 of the most populous coastal counties in Florida. By implication, the value of property vulnerable to hurricane damage is substantially greater today than it was three decades ago.

3 Comments of risk modeling firms reported in the trade press are consistent with a recent RMS report that also discusses the implications of Hurricane Katrina for catastrophe modeling (see RMS, 2005).

**Insurance Market Effects**

**Market Structure.** The effects of increased hurricane losses and risk on the structure and performance of insurance markets are still unwinding, and there is an inherent lag between market changes and data on the changes. Nonetheless, we can draw some insights from market trends through 2004-2005. We begin by looking at shifts in the market positions of leading writers of homeowners insurance in Florida, Alabama, Louisiana and Mississippi, as shown in Tables 2-5. These are not the only states affected by hurricane risk, but these are the states that have been most affected by hurricanes during the last two years.

We must note that the amount of insurance that an insurers sells and its corresponding share of the total market reflects the interaction of demand and supply. Hence, we cannot infer that an insurer's sales and market share are determined solely by how much insurance the insurer is willing and desires to sell. At the same time, we believe that insurers' preferences and actions greatly influence their market positions. This is especially true for the nationally-prominent market leaders and in markets with a large residual market, such as Florida, from which an insurer can take out exposures.

Table 2 ranks the top 20 homeowners insurers (on a group basis) in Florida in 2004 and also shows their market rankings and market shares for the years 1992, 1995 and 2000 based on the amount of premiums they have written. We can see from this table that there have been dramatic changes in the Florida market since 1992. The top two groups in 2004 – State Farm and Allstate – were also the top two groups in 1992. However, their combined market share dropped from 50.9 percent to 33.5 percent. This suggests that these companies have significantly reduced their "relative presence" in the Florida market; however, we cannot infer exactly what has happened to their exposures (i.e.,

amounts of insurance written) from these data. In the next section of this paper, we examine changes in insurers' homeowners exposures in Florida in conjunction with our econometric analysis of factors that may influence insurers' retrenchment or expansion in Florida.

Another significant development revealed by data on insurers' market premiums has been the entry/expansion of some insurers as other companies have retrenched or withdrawn from the market. Only eight of the top 20 groups in 1992 remained in the top 20 in 2004. Ten of the top 20 groups in 2005 had no presence in the market in 1992. This reflects several phenomena. One important factor was the startup of several new insurers in Florida following Hurricane Andrew. These new companies were capitalized, at least in part, by payments they received from taking exposures out of Florida's residual market mechanism. They were required to hold these exposures for at least three years and some of these exposures returned to the residual market after the requisite three years. Still, the data suggest that the start-up insurers continued to grow and increase their market share, even though all but two had market shares of less than 2% in 2004.

Two well-known insurers – AIG and the Southern Farm Bureau - significantly increased their penetration of the homeowners insurance market. Two other insurers acquired the homeowners business of companies that pulled out of the market: St. Paul acquired Travelers from Citigroup and Liberty Mutual acquired Prudential's homeowners business.

Market structure changes in the other three Gulf region states have not been nearly as dramatic, but several observations are worth noting. State Farm has retained its market leading position in all three states and Allstate has remained among the top two or three

writers. The top two insurers have generally written about 50% of the market in each state, and this had not changed by 2004. Also, a state or regional insurer has played a prominent market role in each – Alfa Insurance Group in Alabama and the Farm Bureau companies in Louisiana and Mississippi. Finally, some national and regional carriers have significantly increased their relative presence in these states by moving into the top 20, replacing other insurers. This is something that has occurred in all four states and may reflect national or regional strategies of these insurers to expand their homeowners business. Of course, these data reflect market shifts prior to the 2004-2005 hurricane seasons and the experience of these seasons may prompt a number of insurers to shift course.

Market concentration is one indicator of the relative dispersion of exposures among insurers. The changes in market concentration, measured by the combined market share of the top 20 groups (CR20) and the H-Index, are mixed among the states as reflected in Table 6. The combined market share for the top 20 groups in Florida decreased from 85.2% to 82.6%. The change in the H-Index was more substantial, falling from 1,440 to 832. This suggests 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 the other states, concentration has increased among the top 20 insurer groups, but the H-Index has declined somewhat in Louisiana and Mississippi and increased in Alabama. This may reflect less pressure in these other states for market restructuring because of less insurer concern about hurricane exposure (at least prior to 2004), as well as the fact that smaller insurance markets can sustain fewer insurers, all other things

being equal. However, greater attention to the hurricane exposure of the other Gulf states could increase the pressure for market restructuring in these jurisdictions.

One caveat to the observation about the benefits of market de-concentration 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. At the same time, if the smaller state and regional insurers are making good use of reinsurance to spread their catastrophe exposure, then the positive objective of broader risk diversification could still be achieved.

The restructuring of insurance markets exposed to hurricane risk poses difficulties for homeowners. Some homeowners must find new carriers to underwrite their coverage, and others may be forced into residual market mechanisms, at least for a period of time. Insureds also are subject to price increases, especially in the highest-risk coastal areas. In addition, many insureds have been compelled to accept higher deductibles (1%-5% of their dwelling coverage limit) in order to obtain voluntary market coverage and keep their premiums more affordable.

**Price of Insurance.** Some indication of the price increases faced by insureds is provided by Figure 5, which plots trends in average homeowners premiums in Southeastern states between 1997 and 2005. The source of data for this figure is the NISS/ISO Fast Track Monitoring System that compiles information on premiums, exposures and losses on a quarterly basis from a subset of insurers representing about 60% of the total market countrywide. The average premium (total premiums divided by insured house-years) was calculated for the first quarter of each year of the series.

We can see from this figure that Louisiana and Texas have the highest average premium and have experienced the greatest rate of increase over the period, followed by Mississippi and Florida. The higher premiums and rate of increase in Louisiana and Texas may be due in part to other perils, such as mold contamination, rather than hurricane risk. The fact that Florida ranks only fourth in terms of the statewide average premium may reflect the moderating effect of exposures in the state that are less subject to hurricane losses, as well as regulatory constraints on rate increases. Still, it is interesting to note that the average premiums in all of the Gulf states exceed the countrywide average premium, while Georgia, North Carolina and South Carolina fall below the countrywide average.

Statewide average premiums obscure the price differences between lower-risk and higher-risk areas within these states. Figure 6 compares homeowners insurance premiums charged by State Farm for different counties in Florida for 2001 and 2005. These sample premiums were obtained from the Florida Department of Insurance's Web site for what it characterizes as an "average home" with a $75,000 dwelling coverage limit. The current premium for such a home would cost $1,914 in Monroe County, compared with $630 in Osceola County. In 2001, the comparable premiums would have been $1,480 and $490, respectively. Of course, the premiums for higher-value homes would be higher than these figures; however, the premium would not be expected to increase commensurately with coverage limits because of fixed costs. To provide some perspective, the premium charged by State Farm in 1992 for a home in Miami Beach with a $150,000 dwelling limit was $825 (see Grace, et al., 2003).

**Availability and Residual Markets.** The size and growth of residual market mechanisms in the Southeastern states provide an indication of the availability of insurance in the voluntary market. If a homeowner is unable to obtain coverage in the voluntary market, they are consigned to obtaining coverage in a state residual market mechanism. The types of mechanisms vary among these states and are summarized in Table 7. Alabama and South Carolina have "beach plans" that are confined to coastal areas. The other states have facilities that effectively cover their entire jurisdictions, either through separate or combined entities. Table 7 provides data on the number of policies, amount of exposure and percentage share of total market premiums as of June 2004 for the various state facilities.

The Florida and Louisiana residual markets have experienced the fastest growth and account for large shares of their total market premiums. As of June 2004, the Florida Citizens Property Insurance Corporation (FCPIC) insured 288,372 habitational policies, covered $190.8 billion in total exposures and accounted for 16.7% of the homeowners insurance premiums written in the state (PIPSO, 2004 and 2005). At this same time, the Louisiana Citizens Property Insurance Corporation (LCPIC) insured 48,181 habitational policies, covered $12.1 billion in total exposures and accounted for 8.6 percent of market premiums (Insurance Information Institute, 2005a and 2005b). Both facilities have experienced substantial additional growth since mid-2004 (Insurance Information Institute, 2005b; BestWire, November 22, 2005).

Large residual markets not only indicate insurance availability problems, but they can also impose a significant financial burden on the voluntary market in the event that they have insufficient funds to cover large losses from one or more disasters. The FCIPC

reported a deficit of $516 million in its high-risk, windstorm account due to losses from the 2004 hurricanes. This will result in an assessment of 6.8% on all homeowners insurance premiums in the state, which will be passed on to all policyholders. The FCIPC is also expected to incur a deficit of $1.1 billion due to losses caused by Hurricane Wilma, which could result in another market assessment of 11% (Insurance Information Institute, 2005a).

Both the Florida and Louisiana facilities will be raising rates for their own policyholders. The FCIPC will be instituting a 44% statewide average rate hike for its coastal high-risk account and 21% for its interior personal-lines account, but its rates for the highest-risk areas will rise considerably more (*BestWire*, December 16, 2005). The LCIPC will be assessing a 20% surcharge on its policyholders to cover deficits caused by Hurricane Katrina (Insurance Information Institute, 2005a).

**Econometric Analysis of Changes in Insurers' Shares of Exposures in Florida**

**Data** To further investigate factors affecting market changes in hurricane-prone areas we acquired data on insurers' homeowners exposures (amount of insurance) in Florida by county for the years 1996, 1998, 2001, 2004, and 2005. The amount of insurance is determined by the dwelling coverage limit on homeowners insurance policies in force for each insurer. These data allow us to examine insurers actual exposure to losses through 2005 and assess differences in insurers' relative shares of exposures in higher-risk versus low-risk areas in Florida.

**Overview of Changes in Insurers' Exposures in Florida** Table 8 shows the leading insurers' amount of homeowners exposures in the first quarter of 2005 and their shares of total market exposures for the five years in our data set. We focus on insurers at the group

level (unaffiliated single insurance companies are treated as a group of one) to avoid the "noise" created by shifts in exposures among companies within the same group. The pattern revealed in Table 8 is similar in some respects to that revealed in Table 2 (based on premiums) and different in other respects.

In Table 8, State Farm remains the leading insurer over the period 1996-2005 and the changes in its share of total exposures tracks fairly closely with the changes in its share of total premiums. In contrast, Allstate was the second largest insurer in terms of premiums in 2004 but only the 3rd largest insurer in 2004 and 4th largest insurer in 2005 based on exposures. The Citizens Property Insurance Corporation (CPIC) is the state residual market facility and it was the second largest insurers based on exposures in 2004 and 2005. Seven of the top 20 groups in 2005 experienced a decline in their shares of total market exposures from 1996 to 2005, including State Farm, Allstate and Nationwide. The other insurers experiencing market share declines were national multi-line insurers. The insurers that increased their shares of exposures include national insurers (e.g., USAA), regional insurers and single-state insurers, including several that were formed or entered the market after 1996.

It is also interesting to examine insurers' relative shares of exposures in the highest-risk and most densely populated counties – Broward, Dade, Monroe and Palm Beach – as shown in Table 9. The pattern shown in Table 9 differs somewhat from the pattern in Table 8. The CPIC insures the most exposures in these counties – 28.2%. State Farm is second with 15.1% but this is less than its 22.1% market share statewide. The Poe Financial Group is third with 11% market share compared with only a 4.2% market share statewide. Allstate drops to 12th in the high-risk counties with only a 1.7% market share.

Some of the other single-state and recent start-up insurers hold larger market shares in the high-risk counties than their market shares statewide.

**Results of Econometric Analysis** Table 10 lists and provides descriptive statistics for the variables used in our analysis and Tables 11-15 present our results. Essentially, we perform a cross-sectional analysis across insurer groups using OLS regressions of a standard set of explanatory variables on a dependent variable that measures insurers' changes in market shares over different time intervals. We used an insurer's share of total market exposures as our measure of retrenchment or expansion because an insurer that maintained the same number or even decreased the number of homes it insured could still have seen its total amount of exposure increase. This could occur because of increases in the replacement cost of a given home over time as well as increases in its dwelling coverage limit without an increase in its replacement cost. Insurers and agents have been encouraging homeowners to increase their coverage limits to match the replacement value of their homes to avoid an under-insurance problem which can have adverse consequences for both homeowners and insurers.

In Table 11 we show the regression results for a model with the dependent variable equal to an insurer's change in market share from 1996 to 2005. Coefficients for variables that are statistically significant up to the 10% level are highlighted in bold. Several interesting results emerge from this regression – some of which are consistent with our expectations and others that differ from what we expected to find. Independent agency companies tended to increase their market share suggesting that their lower sunk costs facilitated expansion. Both publicly traded companies and non-stock insurers

(mutuals and reciprocals) had significantly positive coefficients suggesting that these groups were more likely to increase their market shares over the period. By implication, the holdout group – non-public stock companies – were more likely to decrease their market shares. The positive coefficient for publicly traded companies runs counter to the hypothesis that these firms would reduce their relative share of exposures because of investor concerns about income volatility. Of course, within this group of companies, the majority could be seeking to expand their market share to take advantage of opportunities to collect high premiums with the hope that they will avoid large storm losses.

The Florida homeowners loss ratio variable was significantly negative while the all lines Florida loss ratio was positive. This suggests that lower Florida homeowners profits (indicated by a higher loss ratio) inclines an insurer to decrease its market share while higher profitability in all lines inclines an insurer to increase its market share.

The data do not provide a strong indication that insurers with relatively large concentrations of homeowners exposures in Florida or the Southeast were more likely to decrease their market share. While the associated variables tended to have negative coefficients, only the variable for the ratio of Florida homeowners premiums to total Florida premiums was statistically significant.

Other variables warrant a comment. A dummy variable for groups entering the market after 1992 was significantly negative, indicating that these groups have decreased rather than increased their market shares from 1996 to 2005. This is surprising because we would expect these insurers to be in more of growth posture. However, we should also note that start-up insurers that took policies out of the residual market dumped some of

these policies after their three-year commitment expired – this may help to explain the result we see.

An insurer's A.M. Best rating was negatively correlated with its change in market share, i.e., lower rated companies were more likely to increase their market share. This is consistent with our expectation that insurers that desired to maintain a good financial strength rating would be more likely to retrench than expand. The ratio of net premiums to total premiums variable was significantly negative – indicating that firms that retain (rather than reinsure) a higher proportion of their exposures were more apt to decrease their market share. Finally, the log of total assets variable was significantly negative indicating that larger insurers also were more likely to decrease their market share.

Tables 12 and 13 show regression results estimated for the same model with different dependent variables – insurer market share changes from 2001 to 2005 and 2004 to 2005 respectively. Generally, the results in Tables 12 and 13 are consistent with the results shown in Table 11 with a few exceptions. Neither the profitability variables nor the net premiums to total premiums were statistically significant in these latter regressions. The proportion of an insurer's Florida premiums to its total premiums was significantly positive in Table 12, indicating that insurers with greater concentrations of their business in Florida increased their market shares in the 2001-2005 time interval. One possible explanation of this particular result is that start-up companies that dumped high-risk exposures after their commitment expired subsequently picked up less-risk exposures to better balance their portfolios.

Tables 14 and 15 estimate the same basic model using insurers' market share changes from 1996 to 2005 in "high-risk" and "low-risk" counties as the dependent variables.

Table 14 shows the results for "high-risk" counties – the five counties with the highest "indicated loss costs" as estimated by Insurance Services Office (ISO). Only four explanatory variables in this regression were statistically significant. The dummy variable for insurers using independent agents was significantly negative indicating that these insurers' market shares in high-risk counties decreased. This implies that insurers with lower sunk costs in distribution systems more readily shed exposures in high-risk areas. The variable for publicly traded insurers was significantly negative in contrast with the positive sign for this variable in statewide market regressions. This suggests that publicly traded insurers were more likely to retrench in high-risk areas where the potential for catastrophe losses is greatest. The ratio of net premiums to total premiums variable was significantly negative consistent with our results in the statewide regressions. The ratio of net premiums to surplus (a measure of leverage) was significantly positive indicating that more highly leveraged insurers expanded their presence in high-risk areas. This may be due to insurers with lower amounts of capital picking up more of the exposures in the high-risk areas.

Table 15 estimates the same model for low-risk counties – the five counties with lowest indicated loss costs estimated by ISO. The publicly traded company variable and the net premiums to surplus variable were both statistically significant with the opposite signs they carried in the high-risk county regression. In addition, non-stock insurers also increased their market shares in low risk areas. The agency company variable was significantly negative in these results as it was in Table 14 – suggesting that agency insurers are losing or conceding business to direct writers in more "desirable" areas of the state. Interestingly, insurers that entered the Florida market after 1992 increased their

market shares in low risk counties. This suggests that market entrants may be targeting less risky areas and/or the startup insurers formed after 1992 have been able to expand their geographic scope beyond the high-risk areas. Insurers with a higher concentration of business in Florida also increased their market shares in low risk areas while insurers more heavily concentrated in the Southeast lost market share. Finally, insurers that use less reinsurance increased their presence in low risk areas.

In sum, the results of our initial analysis are mixed in terms of the relationships we expected to find. Some of the relationships we expected to see were supported by the data but other variables we tested were either not statistically significant or carried signs contrary to what we hypothesized. One implication of our results may be that insurers do not view all areas within a given state the same given that the risk of catastrophe losses varies significantly among these areas. Clearly, more work is needed to refine our data, variables and models to develop better tests of our hypotheses and a better understanding of the factors affecting insurers' exposures in hurricane-vulnerable areas. The reality may be more complex than what simplistic models can unveil.

**What Does the Future Hold?**

Market developments continue to unfold, but it is possible to engage in some reasonable conjecture about what we are likely to see. Based on past experience and the public statements and actions of some insurers, it is reasonable to expect that there will be further restructuring of homeowners insurance markets along the lines of what occurred after Hurricane Andrew and the years that followed. Several prominent insurers — including Allstate, Nationwide and Safeco — have recently announced intentions to reduce their exposures in hurricane-prone areas (*Wall Street Journal*, October 18, 2005;

*Wall Street Journal*, October 20, 2005; *USA Today*, October 25, 2005). Other insurers, such as Progressive, have expressed a desire to expand their homeowners business in areas where other insurers are retrenching (*BestWire*, November 10, 2005).

The shifting of business from insurers with high numbers of exposures to insurers with lower numbers of exposures would be consistent with the trends that have occurred since the early 1990s. The especially adverse experience of the last two years, combined with significantly revised estimates of hurricane risk, could accelerate these trends over the next two to three years. One difference might be greater changes in the other Gulf coast states that have experienced less restructuring than Florida during the last decade.

It is also likely that the price of homeowners insurance will rise in high-risk areas. Insurers had already filed and begun to implement rate hikes following the 2004 hurricane season, and indications are that further rate increases are in order (*Tampa Tribune*, November 10, 2005). The more difficult question to answer is how much, and how quickly, rates will rise. This will depend on a number of factors, including how regulators rule on rate filings.

Market restructuring and the magnitude and distribution of price increases are tied together. Price levels affect the attractiveness of the market to insurers, and insurers' pricing strategies may vary. We might also expect further changes in insurance coverage terms, such as the greater proliferation of large deductibles, as insurers seek to reduce their risk and insureds seek to moderate the impact of rate increases on the premiums they pay. If regulators do not restrict insurers' freedom in setting prices and coverage terms, this will tend to encourage more insurers to maintain their presence in affected markets, as well as attract greater entry or expansion by other insurers. Competition also

will play a role, as differing opinions on the risk of loss and different insurer characteristics will likely result in different insurer pricing and product strategies. A number of other factors will affect the supply of insurance and where the market equilibrium might settle. These factors include the supply and price of reinsurance and the full panoply of policy and regulatory actions.

**Regulatory and Policy Issues**

Policymakers and regulators face several challenges in trying to respond to the pressures created by recent catastrophes and the recognition of greater hurricane risk. For public policy, there are several key issues. First, to what extent should regulators allow insurers to raise rates, tighten coverage terms and adjust their exposures? Second, how should regulators and legislators manage residual market mechanisms with respect to their rate structures and eligibility rules? Third, should legislators expand or establish new government mechanisms to provide catastrophe reinsurance?[4]

If regulators do not limit insurers' rate increases, coverage changes and exposure adjustments, market forces will reconcile the demand for and supply of insurance, and a new market equilibrium will evolve more quickly. This will encourage more insurers to stay in the market, as well as make the market more attractive for entry and expansion. This will help restore the supply of insurance, increase the availability of coverage and reduce pressure on residual market mechanisms.

However, such a policy would have some downsides for consumers and would likely encounter significant political resistance; i.e., erosion of voter support of public officials

4 See Grace and Klein (2002) for a more extensive discussion of the advantages and disadvantages of different regulatory and policy options to deal with catastrophe risks.

and the opposition or withdrawal of support from special interest groups. Further, the market's adjustment will not necessarily be smooth or painless. Premiums could rise sharply for homeowners in the highest-risk areas. Some insureds may experience further reductions in coverage (e.g., higher deductibles), unless they are able and willing to pay a high price for broader coverage and are able to find an insurer willing to sell them such a policy. Also, it is likely that there would still be some short-term dislocations, as some homeowners will be compelled to find new insurers to underwrite them. Some might be temporarily consigned to residual market mechanisms while the voluntary market adjusts. Ultimately, consumers will need to shop earnestly to obtain coverage at the best possible price.

The administration of residual markets also will have an impact on the market. If regulators allow residual market rates rise to a level sufficient to prevent deficits and tighten eligibility rules, then the residual market will not impose downward pressure on voluntary market prices, and its growth and size will be limited. However, such a policy would compel more homeowners to purchase insurance in the voluntary market at a higher price, as well as increase the cost of insurance for homeowners who must still obtain coverage in the residual market.

Regulators and legislators have the difficult task of balancing these considerations, as well as facing political pressures to limit insurers' actions and make residual market mechanisms more hospitable. Based on the past experience following Hurricane Andrew, regulators are most likely to limit the magnitude of the rate increases they will approve at one time. In other words, they will allow incremental rate increases (over several years) to lessen the "sticker shock" of insureds and the associated political reactions. This will

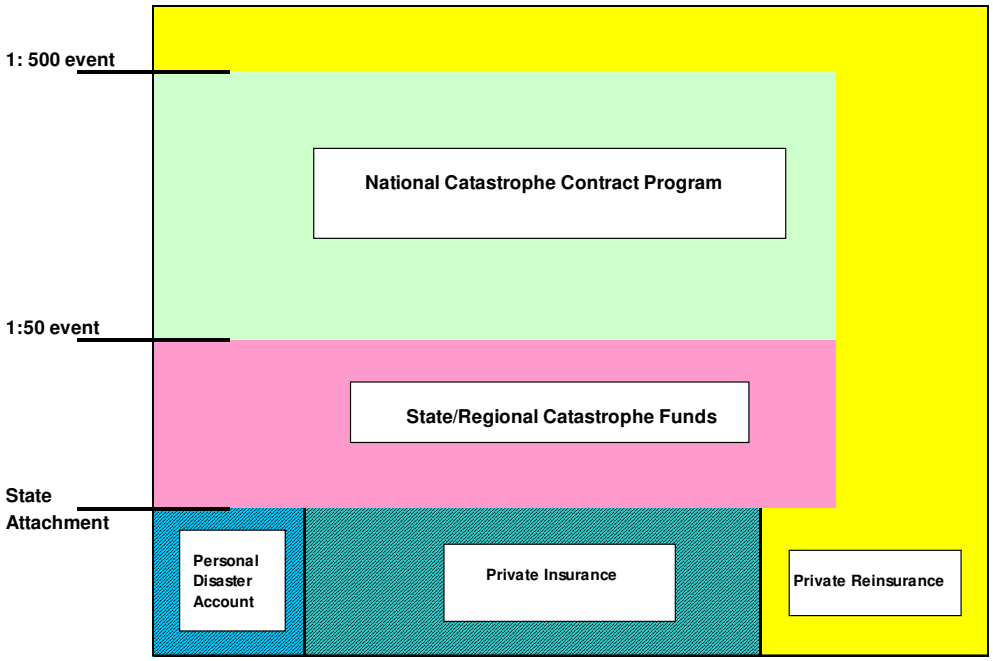
delay the market's equilibration and extend coverage availability problems and the growth of residual market mechanisms, but regulators may believe that this is an acceptable tradeoff.[5] Regulators also may believe, as a matter of principle, that rate increases should be limited in a given year to moderate their impact on consumers.

Therefore, regulators and legislators are motivated to explore other measures to expand the supply of insurance and reduce its cost. Some view the creation of state, regional and national catastrophe reinsurance mechanisms as the best way to achieve these objectives. Hence, it is not surprising that regulatory and other public officials in California, Florida, Louisiana and New York have called for the creation for a comprehensive national plan for managing and financing the risk of natural catastrophes (NAIC, 2005).

This plan contains a number of elements, including a "National Catastrophe Contract Program" that would cover losses from events that would exceed a "one-in-50-year" attachment point. A combination of private insurance/reinsurance markets and state/regional catastrophe funds would cover losses below this attachment point. Figure 7 displays a schematic diagram of the plan. Presumably, its supporters believe that it would bolster the supply of insurance in a way that would moderate the price increases and insurers' reduction of their hurricane exposures that would otherwise need to occur in the absence of such a program.

5 See Grace, et al. (2003) for a more detailed explanation of why regulators might implement such a strategy and insurers might be willing stay in the market if they believe rates will ultimately be allowed to rise to what they perceive to be adequate levels.

**Figure 7**
**National Catastrophe Plan Schematic Diagram**




Source: NAIC (2005)

The proposal articulates four guiding principles:

- A national program should promote personal responsibility among policyholders;
- A national program should support reasonable building codes, development plans and other mitigation tools;
- A national program should maximize the risk-bearing capacity of the private markets; and
- A national plan should provide quantifiable risk management to the federal government.

These principles seem admirable in concept, but remaining true to these principles will be challenging in the political environment that surrounds the design and management of any government program.[6] Groups with strong economic interests in a particular program lobby heavily for favorable treatment and legislators often seek to protect or favor the interests of their constituents. The assessment of hurricane risk and the pricing of federal reinsurance would likely be one of several areas of contention in the program's implementation.

The plan envisions three layers of risk-bearing capacity before the federal government would become "financially involved" in paying for losses resulting from catastrophes. An all-perils policy, containing no exclusions except for acts of war, would be mandated. This would be significant, in that such a policy would cover flood and earthquake perils that are currently excluded from homeowners policies. The policy would contain the typical $500 or $1,000 deductible for non-catastrophe losses, but would require a separate deductible for catastrophe losses based on a percentage of insured value that could range from 2% to10%. An insured could purchase an endorsement to "buy down" the catastrophe deductible to the non-catastrophe deductible. In addition to these provisions,

6 The federal flood and crop insurance programs provide good examples of the influence of political considerations on rates and coverages offered. Both programs have required infusions of taxpayer funds because of political pressures from federal legislators to keep rates low and offer coverage for exposures that fail to meet traditional standards of insurability. See Harrington (2000) for a discussion of the political economic aspects of both programs.

there would be premium discounts for effective loss-mitigation measures, tax credits for mitigation investments and tax-deferred catastrophe reserves for insurers.

In the second layer, private insurance/reinsurance markets and state/regional catastrophe funds would insure losses up to one-in-50-year events. Every state would be required to create either a state catastrophe fund or participate in a regional catastrophe fund (see below a discussion of public policy issues related to this approach). The states would be responsible for creating and managing the insurance capacity of their respective jurisdictions up to the costs expected for a combined one-in-50-year catastrophic loss level. The specific structures of financing mechanisms would be left to the discretion of the states. This would include the financing mechanism chosen, the definition of a qualifying catastrophic loss event, the trigger point for the state catastrophe fund, the amount of retention between private insurers and the state fund, and the participation by surplus lines companies and residual market mechanisms. The state fund would be required to ensure that premiums for the chosen level of participation are actuarially sound in the aggregate. State mitigation plans also would be encouraged.

In the third layer, a national catastrophe insurance mechanism would use the U.S. Department of the Treasury to provide reinsurance to state funds for insured losses arising from events exceeding the one-in-50-year benchmark up to one-in-500-year events. A National Catastrophe Insurance Commission would administer the federal reinsurance mechanism, set "actuarially sound" rates for the reinsurance contracts and ensure that the states comply with required elements of the overall program.

The proposal raises several important issues that warrant thorough study and consideration. The proposal will be subject to considerable debate as it is further vetted in

public forums and the legislative process. The plan would have to be approved by the U.S. Congress for the federal component to be implemented. Public officials and insurers have acknowledged that the proposal faces difficult prospects (*St. Petersburg Times*, November 17, 2005).[7] Some insurers, such as Allstate and State Farm, strongly support the plan, while others oppose it (*National Underwriter*, November 21, 2005; *BestWire*, December 12, 2005). The Consumer Federation of America (CFA) has stated that lawmakers should exercise caution in enacting such a plan and have outlined standards that should govern such a program (*National Underwriter*, November 15, 2005). Some economists also have expressed support for the concept (Litan, 2005).

Of course, the states could still move forward with developing state and regional catastrophe insurance funds even if a federal fund is not established. However, a limited amount of pooling and capacity can be generated by a single-state mechanism, and previous efforts to garner support for regional funds have failed. States with lower risk are concerned that they will be asked to bail out or subsidize states with higher risk. Also, the motivation to establish state and regional funds is diminished without a federal mechanism to cover losses above what the state and regional mechanisms could handle. Still, despite these problems and previous failures, interest and support for governmental catastrophe insurance mechanisms appears to be stronger and more widespread now than what existed following Hurricane Andrew.

In terms of fundamental goals, public policy should promote efficient management and financing of catastrophe risk. Further, we should rely to the maximum extent possible on private markets to manage and finance risk and resort to government intervention only

7 Previous efforts to pass legislation in Congress that would establish a federal catastrophe reinsurance program have failed (see Grace and Klein, 2002). While there has been strong support for such legislation in catastrophe-prone areas, this support does not extend to other areas of the country.

when markets fail and government remedies can significantly improve market outcomes. There is probably little disagreement over these basic goals – the disagreement is over whether a significant market failure exists and whether the government can fix it.

Advocates of the national plan believe the supply of reinsurance will be insufficient and too expensive to adequately cover the risk of large catastrophes. They also have expressed concerns about the uncertainty associated with assessing and pricing catastrophe risk, as well as the long time periods that may be needed to recover sufficient funds to pay for severe disasters. In their view, the federal government is better positioned to provide a stable, reliable and less expensive source of catastrophe reinsurance and financial diversification over time and geography. The plan's advocates also argue that a sound government reinsurance program with actuarially based pricing is preferable to federal post-disaster assistance for property owners who have inadequate insurance coverage.

Opponents of the national plan believe private reinsurance and financial markets can provide adequate and efficient financing of catastrophe risks if allowed to do so. They also have expressed concern that a government program would unfairly benefit from a taxpayer-funded subsidy and would crowd out private reinsurance and financial markets from covering catastrophe risks that they are capable of handling. They point to the federal National Flood Insurance Program as an example of a government insurance program that has had a number of problems and been heavily subsidized by taxpayer funds. Opponents also argue that, unlike terrorism risk, catastrophe risk can be reasonably measured and priced and, if regulators allow insurers to charge adequate rates, then the supply of insurance to catastrophe-prone areas will be adequate.

Previously, the authors have expressed support for favored tax treatment of mitigation investments and catastrophe reserves (see Grace and Klein, 2002). Mandating all-perils policies and establishing state and national catastrophe reinsurance funds are more controversial. Admittedly, the notion of all-perils policies that would seamlessly cover flood and earthquakes, as well as the other homeowners perils, is attractive. However, mandating the issuance of such a policy raises difficult questions. One question concerns the fairness and efficiency of compelling all homeowners to pay for flood and earthquake coverage, even if this coverage is "actuarially priced" and does not force any cross-subsidization. A second question concerns insurers' willingness to underwrite these perils. This may be an acceptable mandate to many insurers if it is accompanied by the government reinsurance provisions of the overall plan; however, without these provisions, insurers may be considerably less enthusiastic about underwriting all-perils policies.

The other major issue is whether private reinsurance and financial markets will fail to adequately and efficiently diversify catastrophe risk in the absence of government reinsurance. There are signs of new capital flowing into reinsurance markets, albeit in the anticipation of significant increases in the price of reinsurance. Also, several international reinsurers have announced plans to issue catastrophe bonds to further bolster their capacity. There is also the concern, noted above, that a federal program may "crowd out" private reinsurance and financial capital. Hence, the ultimate issue may not be the availability of capital but, rather, its cost to insurers and insureds.

We should note that one cost-advantage of government reinsurance would be removed if private mechanisms received more favorable tax treatment. Concerns that regulators

may not permit insurers to fully recover these costs in pricing insurance at the primary level (i.e., insurance policies sold to homeowners) may be contributing to some insurers' support for government reinsurance. Hence, the prospects for pricing freedom and rate adequacy may be important factors affecting how insurers view private versus government financing of catastrophe risk.

**Conclusions**

The increased risk of hurricanes striking the United States has received considerable attention since the early 1990s, but the particularly intense hurricane activity during the last two years is raising market and public concerns to new levels. Following Hurricane Andrew in 1992, there were substantial adjustments in property insurance markets in Florida and other hurricane-prone states. It appeared that by 2004 insurance markets had stabilized to a large degree and would remain relatively stable. However, the four major hurricanes that struck the Gulf Coast region in 2004 began to destabilize insurance markets, and the tragic storm season of 2005 has further exacerbated market problems.

Several factors appear to be contributing to market instability but, most important, is the belief that the risk of severe hurricanes is significantly higher than that perceived before 2004 and that more "bad years" are in store. This is causing many insurers to reconsider their homeowners business in high-risk areas. Some insurers are seeking to significantly decrease their exposures, calling for substantial rate increases and pressing for government measures to support the market. However, other insurers appear to be taking a more moderate position, and some are even signaling a desire to increase their presence in the Southeast. Meanwhile, legislators and regulators in the affected areas are

pushing for a national catastrophe reinsurance program augmented by state catastrophe funds and other measures to alleviate market pressures.

The situation is fluid and evolving, as insurers and reinsurers reassess their catastrophe exposures and price structures, catastrophe modelers revise their assumptions and public and government actions continue to play out. Our examination of past market trends and current market conditions suggests that significant market restructuring is likely to occur, as some insurers with large numbers of exposures will retrench and other insurers step in to fill the gap. The price of insurance also will increase significantly in high-risk areas, although the magnitude and pace of rate hikes will depend on insurers' risk assessments and regulatory approvals. Greater pricing freedom will allow insurance markets to reach a new equilibrium more quickly, but regulators will also have to contend with strong political resistance to large rate hikes.

The supply and price of reinsurance and related financial instruments will be an important factor affecting the supply and price of homeowners insurance. Understandably, some insurers and public officials are seeking assistance from the federal government in providing "less expensive" catastrophe reinsurance. However, their proposal raises a number of issues and faces difficult prospects in the U.S. Congress. Meanwhile, market forces will continue to push ahead and may ultimately outpace political deliberations in Washington.

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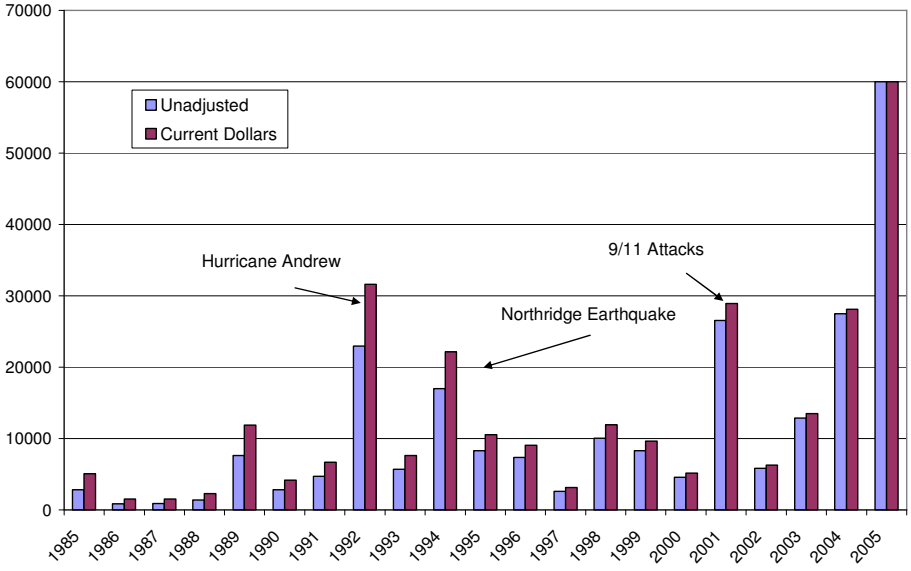
**Figure 1**
**Insured Losses for US Catastrophes ($M)**
**1985-2005**



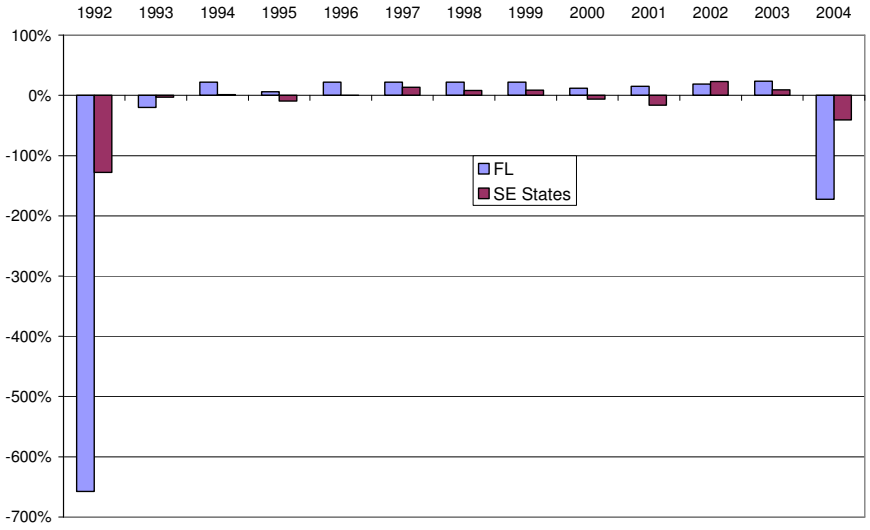

Source: Insurance Information Institute, authors' estimate for 2005.

**Table 1**
**The Ten Most Costly Catastrophes in the US**

| Rank | Date | Event | Insured Property Loss ($M) | |
|---|---|---|---|---|
| | | | Dollars When Occurred | In 2004 Dollars[1] |
| 1 | Aug. 2005 | Hurricane Katrina[2] | $34,400 | $34,400 |
| 2 | Aug. 1992 | Hurricane Andrew | $15,500 | $20,869 |
| 3 | Sep. 2001 | Terrorist Attacks | $18,800 | $20,035 |
| 4 | Jan. 1994 | Northridge Earthquake | $12,500 | $15,933 |
| 5 | Aug. 2004 | Hurricane Charley | $7,475 | $7,475 |
| 6 | Sep. 2004 | Hurricane Ivan | $7,110 | $7,110 |
| 7 | Sep. 1989 | Hurricane Hugo | $4,195 | $6,391 |
| 8 | Oct. 2005 | Hurricane Wilma[2] | $6,100 | $6,100 |
| 9 | Sep. 2005 | Hurricane Rita[2] | $4,700 | $4,700 |
| 10 | Sep. 2004 | Hurricane Frances | $4,595 | $4,595 |

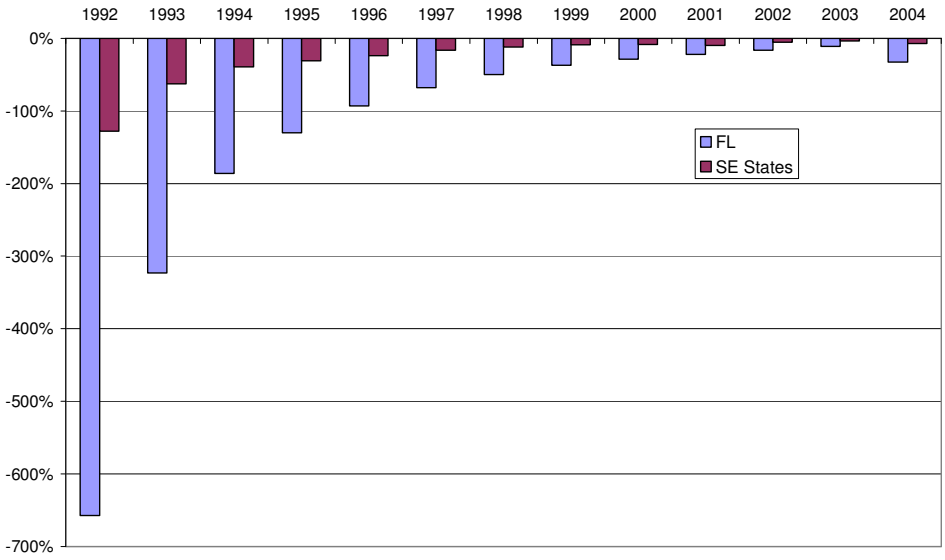
[1] Estimates as of November 2005.
[2] ISO preliminary estimates, expressed in 2005 dollars.
Source: Insurance Information Institute

**Figure 2**
**Homeowners Insurance - Profit Rates (% of Premiums Earned)**
**Florida and Southeast States: 1992-2004**



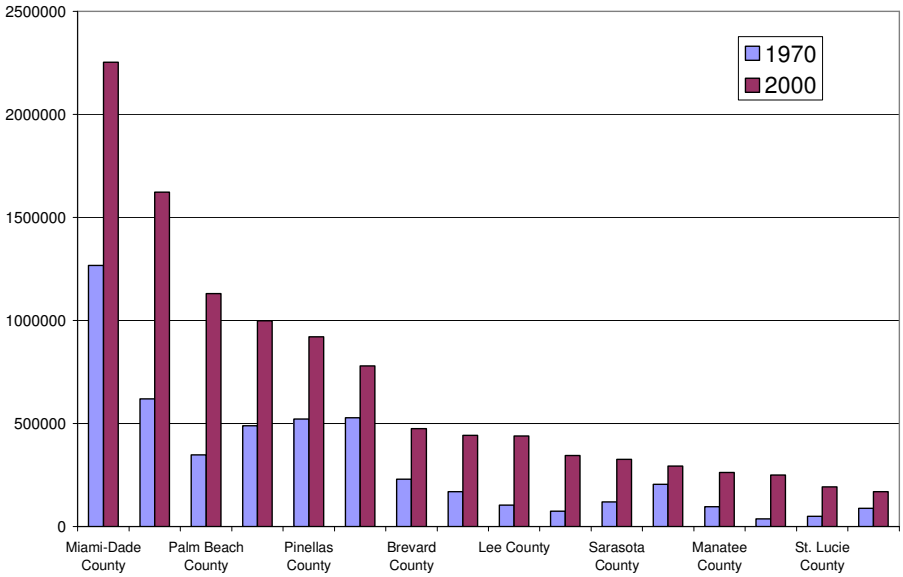

Source: NAIC Report on Profitability By Line By State, preliminary estimates for 2004.

**Figure 3**
**Homeowners Cumulative Profit Rates in Southeast: 1992-2004**




Source: NAIC Report on Profitability By Line By State, preliminary estimates for 2004.

**Figure 4**
**Population Growth in Selected Florida Coastal Counties**




Source: Bureau of Labor Statistics

**Table 2**

**Changes in Leading Insurers' Market Share**

**Florida - 1992, 1995, 2000, 2004**

| | 2004 | | | 2000 | | | 1995 | | | 1992 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Rank** | **DPW** | **MS(%)** | **Rank** | **DPW** | **MS(%)** | **Rank** | **DPW** | **MS(%)** | **Rank** | **DPW** | **MS(%)** |
| State Farm | 1 | 1,035,896,721 | 23.0 | 1 | 583,296,400 | 20.1 | 1 | 523,718,334 | 31.1 | 1 | 653,427,313 | 30.5 |
| Allstate | 2 | 471,615,723 | 10.5 | 3 | 325,641,465 | 11.2 | 2 | 293,679,212 | 17.4 | 2 | 436,329,616 | 20.4 |
| Poe Financial Grp | 3 | 282,091,649 | 6.3 | 16 | 38,322,429 | 1.3 | | | | | | |
| USSA | 4 | 231,417,105 | 5.1 | 4 | 152,088,271 | 5.2 | 4 | 91,130,417 | 5.4 | 3 | 95,171,018 | 4.4 |
| Nationwide | 5 | 230,023,636 | 5.1 | 5 | 144,675,744 | 5.0 | 5 | 80,912,210 | 4.8 | 5 | 88,595,495 | 4.1 |
| Tower Hill Ins Grp | 6 | 178,900,548 | 4.0 | | | | | | | | | |
| St Paul Travelers Grp | 7 | 171,131,033 | 3.8 | 6 | 92,445,712 | 3.2 | 3 | 115,474,673 | 6.9 | 4 | 89,664,452 | 4.2 |
| Hannover | 8 | 158,233,186 | 3.5 | 2 | 330,849,854 | 11.4 | | | | | | |
| Liberty Mutual | 9 | 139,205,799 | 3.1 | 10 | 51,714,570 | 1.8 | 13 | 28,536,397 | 1.7 | 12 | 32,534,992 | 1.5 |
| Chubb | 10 | 108,212,923 | 2.4 | 8 | 68,324,921 | 2.4 | 11 | 31,015,810 | 1.8 | 6 | 62,874,910 | 2.9 |
| Hartford | 11 | 108,054,760 | 2.4 | 7 | 76,738,521 | 2.6 | 6 | 43,881,208 | 2.6 | 9 | 49,288,247 | 2.3 |
| AIG | 12 | 95,266,627 | 2.1 | 15 | 38,442,829 | 1.3 | 21 | 9,557,402 | 0.6 | 53 | 3,771,785 | 0.2 |
| Maguire Corp. Group | 13 | 85,778,604 | 1.9 | 13 | 42,295,949 | 1.5 | | | | | | |
| ARX Holding Co. Group | 14 | 85,450,628 | 1.9 | 25 | 27,120,693 | 0.9 | | | | | | |
| Sunshine State Ins Co | 15 | 81,449,541 | 1.8 | 32 | 21,470,909 | 0.7 | | | | | | |
| Southern Farm Bureau | 16 | 70,954,090 | 1.6 | 9 | 59,636,471 | 2.1 | 7 | 41,734,721 | 2.5 | 71 | 1,781,096 | 0.1 |
| United Prop & Cas Ins Co | 17 | 65,188,327 | 1.4 | 42 | 14,473,319 | 0.5 | | | | | | |
| Cypress Holdings Grp | 18 | 58,029,132 | 1.3 | 31 | 19,328,299 | 0.7 | | | | | | |
| Vanguard Fire & Cas Co | 19 | 56,203,489 | 1.2 | 35 | 16,630,455 | 0.6 | | | | | | |
| Vesta Insurance Group | 20 | 53,968,323 | 1.2 | 83 | 833,744 | 0.0 | 45 | 4,048,112 | 0.2 | | | |
| Source: NAIC Financial Database | | | | | | | | | | | | |

**Table 3**

**Changes in Leading Insurers' Market Share**

**Alabama - 1992, 1995, 2000, 2004**

| | 2004 | | | 2000 | | | 1995 | | | 1992 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Rank** | **DPW** | **MS(%)** | **Rank** | **DPW** | **MS(%)** | **Rank** | **DPW** | **MS(%)** | **Rank** | **DPW** | **MS(%)** |
| STATE FARM IL | 1 | 275,007,487 | 30.0 | 1 | 103,513,285 | 30.3 | 1 | 142,053,507 | 31.7 | 1 | 229,650,275 | 33.1 |
| ALFA INS GRP | 2 | 190,503,687 | 20.8 | 9 | 6,916,773 | 2.0 | 2 | 90,144,461 | 20.1 | 2 | 143,199,840 | 20.6 |
| ALLSTATE INS GRP | 3 | 101,174,277 | 11.0 | 3 | 30,711,635 | 9.0 | 3 | 49,361,444 | 11.0 | 3 | 91,725,516 | 13.2 |
| ZURICH INS GRP | 4 | 51,837,945 | 5.7 | 6 | 12,824,003 | 3.8 | 28 | 2,150,030 | 0.5 | 18 | 3,830,217 | 0.6 |
| St Paul Travelers Grp | 5 | 34,543,077 | 3.8 | 5 | 17,453,445 | 5.1 | 15 | 4,449,132 | 1.0 | 10 | 10,175,636 | 1.5 |
| NATIONWIDE CORP | 6 | 32,868,790 | 3.6 | 4 | 20,831,723 | 6.1 | 6 | 12,085,813 | 2.7 | 6 | 15,258,652 | 2.2 |
| UNITED SERVICES AUTOMOBILE AS | 7 | 30,642,881 | 3.3 | 7 | 8,519,573 | 2.5 | 4 | 14,898,679 | 3.3 | 4 | 22,654,118 | 3.3 |
| AUTO OWNERS GRP | 8 | 28,070,074 | 3.1 | | | | 5 | 12,535,584 | 2.8 | 5 | 18,608,494 | 2.7 |
| Country Ins & Financial Services Grp | 9 | 19,700,504 | 2.2 | | | | | | | | | |
| CINCINNATI FNCL CP | 10 | 18,219,699 | 2.0 | | | | 8 | 8,708,933 | 1.9 | | | |
| SAFECO INS GRP | 11 | 13,925,599 | 1.5 | 11 | 3,678,662 | 1.1 | 9 | 8,360,644 | 1.9 | 9 | 11,616,118 | 1.7 |
| METROPOLITAN GRP | 12 | 13,739,838 | 1.5 | 26 | 1,485,628 | 0.4 | 36 | 1,412,152 | 0.3 | 45 | 1,111,178 | 0.2 |
| AMERICAN INTRNL GRP | 13 | 12,537,659 | 1.4 | 10 | 6,284,625 | 1.8 | 21 | 3,385,906 | 0.8 | 21 | 3,436,225 | 0.5 |
| HARTFORD FIRE & CAS GRP | 14 | 11,305,901 | 1.2 | 31 | 1,154,274 | 0.3 | 14 | 4,514,956 | 1.0 | 24 | 3,167,556 | 0.5 |
| CHUBB & SON INC | 15 | 10,568,172 | 1.2 | 12 | 3,670,517 | 1.1 | 20 | 3,851,958 | 0.9 | 13 | 7,331,416 | 1.1 |
| LIBERTY MUT GRP | 16 | 10,425,903 | 1.1 | 38 | 625,776 | 0.2 | 29 | 2,090,375 | 0.5 | 39 | 1,496,506 | 0.2 |
| AMERICAN NATL FNCL GRP | 17 | 8,528,646 | 0.9 | 30 | 1,185,794 | 0.3 | 30 | 2,062,518 | 0.5 | 30 | 2,608,226 | 0.4 |
| CNA INS GRP | 18 | 8,363,184 | 0.9 | 57 | 18,041 | 0.0 | 11 | 5,240,546 | 1.2 | 29 | 2,655,434 | 0.4 |
| NC FARM BUREAU INS GRP | 19 | 5,527,694 | 0.6 | | | | | | | | | |
| NATIONAL SECURITY | 20 | 5,500,457 | 0.6 | 48 | 78,525 | 0.0 | 33 | 1,564,928 | 0.3 | 54 | 603,068 | 0.1 |

Source: NAIC Financial Database

**Table 4**

**Changes in Leading Insurers' Market Share**

**Louisiana - 1992, 1995, 2000, 2004**

| | 2004 | | | 2000 | | | 1995 | | | 1992 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Rank** | **DPW** | **MS(%** | **Rank** | **DPW** | **MS(%** | **Rank** | **DPW** | **MS(%** | **Rank** | **DPW** | **MS(%** |
| STATE FARM IL | 1 | 321,168,094 | 34.7 | 1 | 206,915,546 | 32.7 | 1 | 177,153,442 | 35.0 | 1 | 296,329,687 | 39.3 |
| ALLSTATE INS GRP | 2 | 192,296,624 | 20.8 | 2 | 109,882,352 | 17.4 | 2 | 86,855,152 | 17.2 | 2 | 138,934,302 | 18.4 |
| Louisiana Farm Bureau Mut Ins Co | 3 | 55,956,850 | 6.0 | 5 | 33,004,197 | 5.2 | 4 | 25,217,945 | 5.0 | 7 | 15,058,306 | 2.0 |
| ZURICH INS GRP | 4 | 38,575,964 | 4.2 | 7 | 13,995,825 | 2.2 | 22 | 4,267,013 | 0.8 | 27 | 3,882,307 | 0.5 |
| St Paul Travelers Grp | 5 | 36,030,101 | 3.9 | 4 | 34,021,036 | 5.4 | 5 | 17,399,821 | 3.4 | 18 | 6,770,084 | 0.9 |
| LIBERTY MUT GRP | 6 | 35,862,877 | 3.9 | 8 | 12,888,336 | 2.0 | 9 | 8,649,404 | 1.7 | 8 | 13,639,288 | 1.8 |
| UNITED SERVICES AUTOMOBILE | 7 | 31,045,440 | 3.4 | 6 | 18,074,280 | 2.9 | 8 | 14,597,500 | 2.9 | 4 | 21,547,364 | 2.9 |
| AMERICAN INTRNL GRP | 8 | 21,828,510 | 2.4 | 3 | 45,741,995 | 7.2 | 3 | 31,447,325 | 6.2 | 3 | 57,999,274 | 7.7 |
| AMERICAN NATL FNCL GRP | 9 | 21,621,833 | 2.3 | 12 | 11,521,270 | 1.8 | 20 | 4,578,991 | 0.9 | 26 | 3,934,258 | 0.5 |
| ALLMERICA FINANCIAL CORP | 10 | 18,295,139 | 2.0 | 14 | 9,859,910 | 1.6 | 10 | 8,037,103 | 1.6 | | | |
| SHELTER INS COS | 11 | 16,107,421 | 1.7 | 10 | 12,137,611 | 1.9 | 17 | 6,416,520 | 1.3 | 17 | 7,512,746 | 1.0 |
| METROPOLITAN GRP | 12 | 15,214,060 | 1.6 | 11 | 11,721,868 | 1.9 | 13 | 7,240,464 | 1.4 | 21 | 5,374,359 | 0.7 |
| ALLIANZ INS GRP | 13 | 13,310,681 | 1.4 | 15 | 9,458,097 | 1.5 | 21 | 4,278,044 | 0.8 | 28 | 3,335,448 | 0.4 |
| CNA INS GRP | 14 | 11,811,431 | 1.3 | 9 | 12,166,136 | 1.9 | 6 | 15,149,367 | 3.0 | 5 | 18,397,628 | 2.4 |
| CHUBB & SON INC | 15 | 11,799,087 | 1.3 | 21 | 5,640,064 | 0.9 | 26 | 3,245,655 | 0.6 | 24 | 5,211,142 | 0.7 |
| HARTFORD FIRE & CAS GRP | 16 | 9,707,107 | 1.0 | 20 | 6,236,463 | 1.0 | 19 | 5,408,846 | 1.1 | 16 | 8,324,818 | 1.1 |
| AUTO CLUB GRP | 17 | 9,512,886 | 1.0 | 40 | 219,477 | 0.0 | | | | 66 | 12,872 | 0.0 |
| SOUTHERN FARM BUREAU CAS | 18 | 9,287,354 | 1.0 | 18 | 6,983,607 | 1.1 | 16 | 6,756,145 | 1.3 | | | |
| HORACE MANN GRP | 19 | 8,770,122 | 0.9 | 22 | 5,536,722 | 0.9 | 28 | 2,416,299 | 0.5 | 31 | 2,432,390 | 0.3 |
| UNITRIN GRP | 20 | 8,564,490 | 0.9 | 23 | 4,293,595 | 0.7 | 15 | 7,047,114 | 1.4 | 23 | 5,305,261 | 0.7 |
| Source: NAIC Financial Database | | | | | | | | | | | | |

**Table 5**

**Changes in Leading Insurers' Market Share**

**Mississippi - 1992, 1995, 2000, 2004**

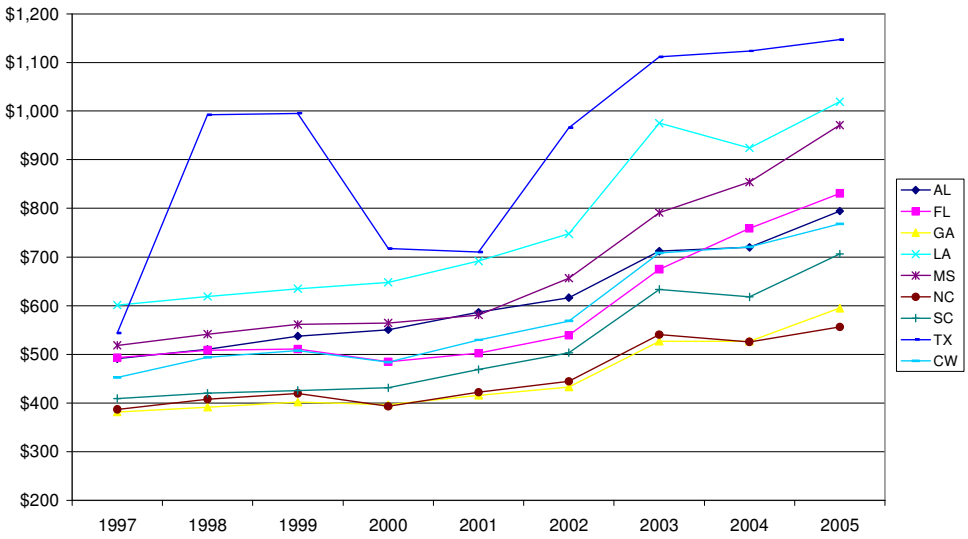
| | 2004 | | | 2000 | | | 1995 | | | 1992 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Rank** | **DPW** | **MS(%)** | **Rank** | **DPW** | **MS(%)** | **Rank** | **DPW** | **MS(%)** | **Rank** | **DPW** | **MS(%)** |
| STATE FARM IL | 1 | 165,631,397 | 30.4 | 1 | 103,513,285 | 30.3 | 1 | 87,893,300 | 35.8 | 1 | 141,224,694 | 39.1 |
| Mississippi Farm Bureau Mut Ins Co | 2 | 107,200,733 | 19.7 | 2 | 69,909,963 | 20.5 | 2 | 50,352,334 | 20.5 | 3 | 38,629,628 | 10.7 |
| ALLSTATE INS GRP | 3 | 54,218,337 | 9.9 | 3 | 30,711,635 | 9.0 | 4 | 17,560,216 | 7.1 | 4 | 32,137,653 | 8.9 |
| NATIONWIDE CORP | 4 | 38,341,702 | 7.0 | 4 | 20,831,723 | 6.1 | 5 | 12,043,631 | 4.9 | 5 | 15,785,332 | 4.4 |
| ZURICH INS GRP | 5 | 31,196,929 | 5.7 | 6 | 12,824,003 | 3.8 | 22 | 1,157,874 | 0.5 | 14 | 2,186,215 | 0.6 |
| METROPOLITAN GRP | 6 | 23,459,507 | 4.3 | 26 | 1,485,628 | 0.4 | 42 | 273,853 | 0.1 | 51 | 108,994 | 0.0 |
| SHELTER INS COS | 7 | 15,313,220 | 2.8 | 8 | 7,690,845 | 2.3 | 10 | 3,873,659 | 1.6 | 12 | 5,401,060 | 1.5 |
| UNITED SERVICES AUTOMOBILE | 8 | 14,830,551 | 2.7 | 7 | 8,519,573 | 2.5 | 7 | 5,617,896 | 2.3 | 7 | 8,742,988 | 2.4 |
| ALFA INS GRP | 9 | 13,754,961 | 2.5 | 9 | 6,916,773 | 2.0 | 8 | 5,078,776 | 2.1 | 9 | 6,938,430 | 1.9 |
| St Paul Travelers Grp | 10 | 10,096,841 | 1.9 | 5 | 17,453,445 | 5.1 | 30 | 552,852 | 0.2 | 21 | 1,235,666 | 0.3 |
| SOUTHERN FARM BUREAU CAS | 11 | 7,285,213 | 1.3 | 34 | 778,528 | 0.2 | 28 | 810,796 | 0.3 | 62 | 24,960 | 0.0 |
| SAFECO INS GRP | 12 | 7,206,394 | 1.3 | 11 | 3,678,662 | 1.1 | | | | 64 | 19,362 | 0.0 |
| CHUBB & SON INC | 13 | 7,110,347 | 1.3 | 12 | 3,670,517 | 1.1 | 16 | 1,452,773 | 0.6 | 28 | 747,702 | 0.2 |
| AMERICAN INTRNL GRP | 14 | 4,552,829 | 0.8 | 10 | 6,284,625 | 1.8 | 6 | 5,729,715 | 2.3 | 6 | 14,193,994 | 3.9 |
| GUIDEONE INS GRP | 15 | 4,387,371 | 0.8 | 20 | 2,302,441 | 0.7 | | | | | | |
| NATIONAL SECURITY | 16 | 4,254,759 | 0.8 | 48 | 78,525 | 0.0 | 50 | 90,868 | 0.0 | 54 | 76,631 | 0.0 |
| AMERICAN NATL FNCL GRP | 17 | 3,607,447 | 0.7 | 30 | 1,185,794 | 0.3 | 37 | 384,547 | 0.2 | 39 | 358,108 | 0.1 |
| UNITRIN GRP | 18 | 3,500,107 | 0.6 | 61 | 1,953 | | | | | | | |
| NLASCO | 19 | 3,315,840 | 0.6 | | | | | | | | | |
| STATE AUTO MUT GRP | 20 | 3,157,600 | 0.6 | 27 | 1,360,260 | 0.4 | 14 | 2,129,809 | 0.9 | 17 | 1,612,691 | 0.4 |
| Source: NAIC Financial Database | | | | | | | | | | | | |

**Table 6**
**Market Concentration in Selected States**
**Homeowners Insurance: 1992 and 2004**

| State | 1992 | | 2004 | |
|---|---|---|---|---|
| | CR20 | HHI | CR20 | HHI |
| Alabama | 89.9% | 1,742 | 96.3% | 1,765 |
| Florida | 85.2% | 1,440 | 82.6% | 832 |
| Louisiana | 91.4% | 1,991 | 96.6% | 1,967 |
| Mississippi | 95.4% | 1,949 | 95.8% | 1,543 |

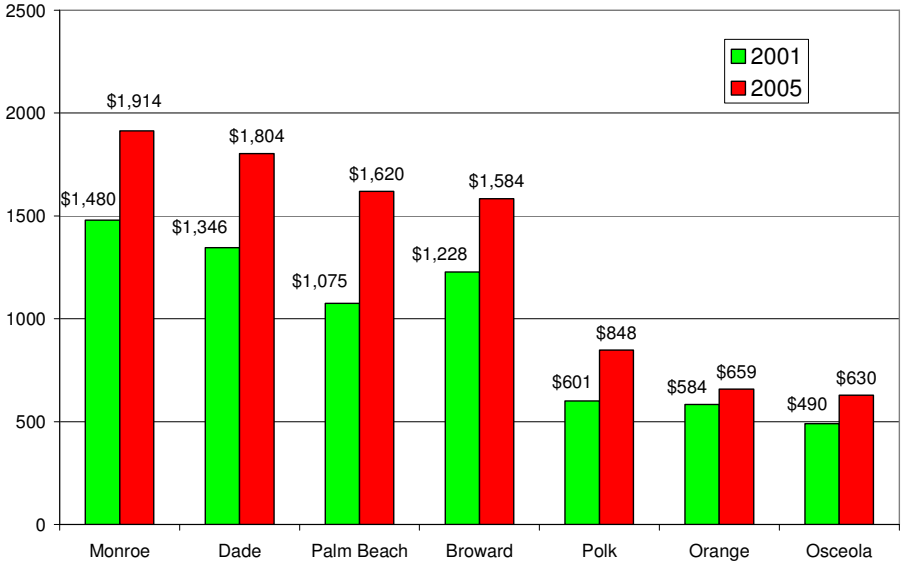
Source: NAIC Financial Database, authors' calculations.

**Figure 5**
**Average Homeowners Insurance Premiums**
**1997-2005**




Source: NISS/ISO Fast Track Monitoring System, authors' calculations.

**Figure 6**
**Comparison of State Farm Homeowners Insurance Premiums**




Source: Florida Department of Insurance

**Table 7**
**Property Residual Market Facilities in Southeast States**
**As of June, 2004**

| State Facility | Habitational Policies | Total Exposure ($000) | Market Share |
|---|---|---|---|
| Alabama Insurance Underwriting Association | 1,198 | 134,621 | 0.3% |
| Florida Citizens Property Insurance Corporation | 288,372 | 190,837,071 | 16.7% |
| Georgia FAIR Plan | 14,639 | 2,732,377 | 0.9% |
| Louisiana Citizens Property Insurance Corporation | 48,181 | 12,139,249 | 8.6% |
| Mississippi Windstorm Underwriting Association | 6,896 | 1,488,867 | 1.3% |
| North Carolina Insurance Underwriting Association | NA | NA | NA |
| South Carolina Insurance Underwriting Association | 7,915 | 5,623,379 | 0.6% |
| Texas Windstorm Underwriting Association | 48,276 | 31,516,481 | 2.1% |
| Texas FAIR Plan | 91,511 | 4,369,043 | 1.1% |

Source: Property Insurance Plans Services Office

**Table 8**
**Florida HO Exposures 1996-2005 by Group**
**Leading Groups in 2005**

| Rank | Group | 05EXP | MS 96 | MS 98 | MS 01 | MS 04 | MS 05 |
|---|---|---|---|---|---|---|---|
| 1 | State Farm | 222,989,926,265 | 33.3% | 32.5% | 30.3% | 25.7% | 22.1% |
| 2 | CPIC | 135,191,932,883 | 12.5% | 8.6% | 1.7% | 14.4% | 13.4% |
| 3 | USAA | 64,688,417,024 | 4.1% | 4.6% | 6.9% | 5.9% | 6.4% |
| 4 | Allstate | 59,533,572,828 | 10.1% | 7.9% | 5.9% | 6.0% | 5.9% |
| 5 | Nationwide | 54,920,035,830 | 7.3% | 8.4% | 6.6% | 5.5% | 5.4% |
| 6 | Liberty Mutual | 42,447,484,700 | 4.2% | 4.4% | 5.4% | 4.5% | 4.2% |
| 7 | Poe Financial Grp | 42,292,630,534 | 0.0% | 1.0% | 1.0% | 2.8% | 4.2% |
| 8 | Tower Hill Ins Grp | 41,761,231,571 | 0.1% | 0.2% | 2.2% | 2.5% | 4.1% |
| 9 | Hartford | 23,853,960,923 | 2.5% | 2.8% | 3.4% | 2.5% | 2.4% |
| 10 | Hannover | 22,046,970,541 | 0.4% | 1.6% | 6.0% | 2.7% | 2.2% |
| 11 | St Paul-Travelers | 21,822,145,204 | 4.1% | 5.5% | 4.3% | 2.1% | 2.2% |
| 12 | Arx Holding Co Grp | 20,050,838,467 | 0.0% | 0.0% | 0.6% | 1.7% | 2.0% |
| 13 | Southern Farm Bureau | 19,578,000,577 | 1.9% | 2.3% | 2.4% | 2.0% | 1.9% |
| 14 | Chubb | 17,042,474,674 | 1.4% | 0.0% | 1.7% | 1.7% | 1.7% |
| 15 | Vanguard Fire & Cas Co | 12,823,755,723 | 0.0% | 0.0% | 0.7% | 1.4% | 1.3% |
| 16 | AXA | 11,902,359,314 | 0.0% | 0.0% | 0.9% | 1.6% | 1.2% |
| 17 | Metropolitan | 10,824,740,700 | 1.3% | 1.1% | 0.8% | 1.1% | 1.1% |
| 18 | Auto Owners | 10,434,772,362 | 1.3% | 1.2% | 1.0% | 0.9% | 1.0% |
| 19 | Gulfstream P&C Ins Co | 10,118,134,677 | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% |
| 20 | United P&C Ins Co | 9,839,363,589 | 0.0% | 0.0% | 0.5% | 0.5% | 1.0% |
| | Total Market | 1,009,866,612,797 | | | | | |

**Table 9**
**Homeowners Exposures in High-Risk Counties in 2005**

| Rank | Group | Exposures | MS |
|---|---|---|---|
| 1 | Citizens Property Insurance Corporation | 77,780,817,594 | 28.2% |
| 2 | State Farm | 42,342,595,834 | 15.3% |
| 3 | Poe Financial Grp | 30,405,849,335 | 11.0% |
| 4 | Tower Hill Ins Grp | 13,170,609,643 | 4.8% |
| 5 | Hannover | 11,917,649,092 | 4.3% |
| 6 | Liberty Mutual | 11,687,136,300 | 4.2% |
| 7 | USAA | 9,650,932,302 | 3.5% |
| 8 | Gulfstream Property & Casualty Ins Co | 6,680,213,825 | 2.4% |
| 9 | United Prop & Cas Ins Co | 6,664,252,475 | 2.4% |
| 10 | Hartford Fire & Casualty | 5,302,554,958 | 1.9% |
| 11 | Chubb | 5,168,496,715 | 1.9% |
| 12 | Allstate | 4,622,888,917 | 1.7% |
| 13 | Axa | 4,550,382,558 | 1.6% |
| 14 | Nationwide | 4,365,558,230 | 1.6% |
| 15 | AIG | 4,355,058,519 | 1.6% |
| 16 | Qualsure Insurance Company | 3,832,913,347 | 1.4% |
| 17 | 21st Century Holding Grp | 3,777,049,200 | 1.4% |
| 18 | Vanguard Fire & Cas Co | 2,372,341,593 | 0.9% |
| 19 | Metropolitan | 2,336,189,650 | 0.8% |
| 20 | First Protective | 2,145,062,776 | 0.8% |
| | Total All Insurers | 276,129,531,643 | |

Source: Florida Office of the Insurance Commissioner

**Table 10**
**Descriptive Statistics for Group Level Analysis**

| Variable | N | Mean | Std. Dev | Min | Max |
|---|---|---|---|---|---|
| Indicator for Agency Marketing System | 81 | 0.593 | 0.494 | 0.000 | 1.000 |
| AM Best Rating (2004) High Number Indicates Low Rating | 80 | 5.563 | 4.738 | 1.000 | 15.000 |
| Market Share Change for High Risk Counties 2001-2005 | 71 | -0.092 | 0.944 | -6.665 | 1.620 |
| Market Share Change for Low Risk Counties 2001-2005 | 71 | -0.072 | 0.446 | -2.110 | 0.764 |
| Market Share Change for High Risk Counties 1996-2005 | 64 | -0.008 | 0.478 | -1.498 | 1.870 |
| Market Share Change for Low Risk Counties 1996-2005 | 64 | -0.022 | 0.365 | -2.207 | 0.648 |
| Market Share Change for Coastal Counties 2001-2005 | 48 | 0.342 | 0.688 | -0.772 | 3.382 |
| Market Share Change for Coastal Counties 1996-2005 | 47 | 0.359 | 0.698 | -0.786 | 3.164 |
| Overall Market Share Change from 2001-2005 | 81 | 0.001 | 0.011 | -0.061 | 0.039 |
| Overall Market Share Change from 2004-2005 | 81 | 0.000 | 0.005 | -0.037 | 0.016 |
| Overall Market Share Change from 1996-2005 | 66 | 0.002 | 0.017 | -0.107 | 0.042 |
| Florida HOMP Loss Ratio | 81 | -0.901 | 30.603 | -269.672 | 9.684 |
| Indicator for Membership in a Group | 81 | 0.815 | 0.391 | 0.000 | 1.000 |
| Indicator for Whether Firm Entered Florida Market After 1992 | 81 | 0.173 | 0.380 | 0.000 | 1.000 |
| All State HOMP Loss Ratio | 81 | -0.383 | 15.194 | -134.868 | 7.757 |
| Log of Total Assets | 81 | 20.633 | 3.390 | 0.000 | 25.373 |
| Market Share 1996 | 66 | 0.008 | 0.041 | 0.000 | 0.328 |
| Market Share 1998 | 68 | 0.009 | 0.040 | 0.000 | 0.320 |
| Market Share 2001 | 81 | 0.010 | 0.034 | 0.000 | 0.282 |
| Market Share 2004 | 81 | 0.010 | 0.031 | 0.000 | 0.258 |
| Market Share 2005 | 81 | 0.010 | 0.027 | 0.000 | 0.221 |
| Ratio of Net Premiums to Surplus | 80 | 1.364 | 1.065 | -0.575 | 8.415 |
| Indicator for Companies with Non-stock Forms | 81 | 0.210 | 0.410 | 0.000 | 1.000 |
| Percent of Florida HOMP Prems to Total Florida All Lines Premiums Earned | 81 | 0.318 | 0.344 | 0.000 | 1.000 |
| Percent of Florida All Lines to Total State All Lines DPE | 81 | 0.275 | 0.379 | 0.001 | 1.000 |
| SE Region HOMP Market Share | 81 | 0.175 | 0.263 | -0.002 | 1.000 |
| Publicly Traded Stock Company (or Owned by a Pub. Traded Co.) | 81 | 0.346 | 0.479 | 0.000 | 1.000 |
| Ratio of Auto Premiums in Florida to HOMP Premiums Earned | 81 | 3799.430 | 31383.910 | 0.000 | 281662.530 |
| Ratio of Net HO Prems to Total HOMP Premiums | 81 | 0.335 | 0.442 | -0.274 | 2.660 |
| Ratio of Total Net Prems to Total Premiums | 81 | 0.728 | 0.404 | -1.393 | 1.435 |

**Table 11**
**Regression Analysis of Insurer Market Share Changes**
**Dependent Variable = Change in Mkt Share Between 2005 and 1996 - Statewide Exposures**

| Variable | Coefficient | Std. Err. | T - value | prob |
|---|---|---|---|---|
| Intercept | **0.258** | 0.066 | 3.910 | 0.000 |
| Indicator for Agency Marketing System | **0.010** | 0.006 | 1.810 | 0.075 |
| Indicator for Membership in a Group | **0.045** | 0.010 | 4.560 | <.0001 |
| Indicator for Whether Firm Entered Florida Market After 1992 | **-0.039** | 0.006 | -7.060 | <.0001 |
| AM Best Rating (2004) High Number Indicates Low Rating | **0.003** | 0.001 | 2.710 | 0.009 |
| Publicly Traded Stock Company (or Owned by a Pub. Traded Co.) | **0.018** | 0.005 | 3.460 | 0.001 |
| Indicator for Companies with Non-stock Forms | **0.054** | 0.006 | 8.410 | <.0001 |
| Florida HOMP Loss Ratio | **-0.008** | 0.002 | -3.610 | 0.001 |
| All State HOMP Loss Ratio | 0.003 | 0.003 | 1.240 | 0.219 |
| Percent of Florida HOMP Prems to Total Florida All Lines Premiums Earned | **-0.048** | 0.018 | -2.610 | 0.011 |
| Percent of Florida All Lines to Total State All Lines DPE | -0.003 | 0.015 | -0.200 | 0.845 |
| SE Region HOMP Market Share | -0.013 | 0.011 | -1.190 | 0.238 |
| Ratio of Auto Premiums in Florida to HOMP Premiums Earned | 0.000 | 0.000 | -0.250 | 0.803 |
| Ratio of Net HO Prems to Total HOMP Premiums | 0.012 | 0.013 | 0.870 | 0.389 |
| Ratio of Total Net Prems to Total Premiums | **-0.032** | 0.015 | -2.150 | 0.035 |
| Ratio of Net Premiums to Surplus | 0.004 | 0.003 | 1.370 | 0.174 |
| Log of Total Assets | **-0.012** | 0.003 | -4.960 | <.0001 |
| Adj R2 | 0.900 | | | |
| N | 80 | | | |

**Table 12**
**Regression Analysis of Insurer Market Share Changes**
**Dependent Variable = Change in Mkt Share Between 2005 and 2001 - Statewide Exposures**

| Variable | Coefficient | Std. Err. | T - value | prob |
|---|---|---|---|---|
| Intercept | **0.086** | 0.044 | 1.980 | 0.052 |
| Indicator for Agency Marketing System | 0.001 | 0.004 | 0.350 | 0.730 |
| Indicator for Membership in a Group | **0.030** | 0.007 | 4.510 | <.0001 |
| Indicator for Whether Firm Entered Florida Market After 1992 | **-0.031** | 0.004 | -8.560 | <.0001 |
| AM Best Rating (2004) High Number Indicates Low Rating | **0.001** | 0.001 | 2.240 | 0.028 |
| Publicly Traded Stock Company (or Owned by a Pub. Traded Co.) | **0.008** | 0.003 | 2.500 | 0.015 |
| Indicator for Companies with Non-stock Forms | **0.029** | 0.004 | 6.870 | <.0001 |
| Florida HOMP Loss Ratio | -0.002 | 0.001 | -1.510 | 0.137 |
| All State HOMP Loss Ratio | -0.001 | 0.002 | -0.340 | 0.737 |
| Percent of Florida HOMP Prems to Total Florida All Lines Premiums Earned | -0.013 | 0.012 | -1.090 | 0.279 |
| Percent of Florida All Lines to Total State All Lines DPE | **0.025** | 0.010 | 2.510 | 0.015 |
| SE Region HOMP Market Share | -0.003 | 0.007 | -0.380 | 0.709 |
| Ratio of Auto Premiums in Florida to HOMP Premiums Earned | 0.000 | 0.000 | -0.130 | 0.896 |
| Ratio of Net HO Prems to Total HOMP Premiums | 0.011 | 0.009 | 1.200 | 0.235 |
| Ratio of Total Net Prems to Total Premiums | -0.007 | 0.010 | -0.690 | 0.492 |
| Net Premiums to Surplus | 0.002 | 0.002 | 0.940 | 0.352 |
| Log of Total Assets | **-0.005** | 0.002 | -3.200 | 0.002 |
| Adj R2 | 0.868 | | | |
| N | 80 | | | |

**Table 13**
**Regression Analysis of Insurer Market Share Changes**
**Dependent Variable = Change in Mkt Share Between 2005 and 2004 - Statewide Exposures**

| Variable | Coefficient | Std. Err. | T - value | prob |
|---|---|---|---|---|
| Intercept | 0.032 | 0.022 | 1.450 | 0.151 |
| Indicator for Agency Marketing System | **0.004** | 0.002 | 1.880 | 0.065 |
| Indicator for Membership in a Group | **0.015** | 0.003 | 4.460 | <.0001 |
| Indicator for Whether Firm Entered Florida Market After 1992 | **-0.015** | 0.002 | -8.050 | <.0001 |
| AM Best Rating (2004) High Number Indicates Low Rating | **0.001** | 0.000 | 3.170 | 0.002 |
| Publicly Traded Stock Company (or Owned by a Pub. Traded Co.) | **0.012** | 0.002 | 7.190 | <.0001 |
| Indicator for Companies with Non-stock Forms | **0.018** | 0.002 | 8.140 | <.0001 |
| Florida HOMP Loss Ratio | -0.001 | 0.001 | -1.010 | 0.315 |
| All State HOMP Loss Ratio | 0.000 | 0.001 | -0.290 | 0.771 |
| Percent of Florida HOMP Prems to Total Florida All Lines Premiums Earned | -0.010 | 0.006 | -1.630 | 0.108 |
| Percent of Florida All Lines to Total State All Lines DPE | **0.016** | 0.005 | 3.150 | 0.003 |
| SE Region HOMP Market Share | -0.005 | 0.004 | -1.220 | 0.225 |
| Ratio of Auto Premiums in Florida to HOMP Premiums Earned | 0.000 | 0.000 | -0.150 | 0.879 |
| Ratio of Net HO Prems to Total HOMP Premiums | 0.005 | 0.005 | 1.110 | 0.270 |
| Ratio of Total Net Prems to Total Premiums | 0.000 | 0.005 | 0.050 | 0.964 |
| Net Premiums to Surplus | 0.001 | 0.001 | 0.620 | 0.536 |
| Log of Total Assets | **-0.003** | 0.001 | -3.110 | 0.003 |
| Adj R2 | 0.890 | | | |
| N | 80 | | | |

**Table 14**
**Regression Analysis of Insurer Market Share Changes**
**Dependent Variable = Change in Mkt Share Between 2005 and 1996 - "High-Risk" Counties**

| Variable | Coefficient | Std. Err. | T - value | prob |
|---|---|---|---|---|
| Intercept | -0.109 | 1.652 | -0.070 | 0.948 |
| Indicator for Agency Marketing System | **-0.311** | 0.157 | -1.980 | 0.053 |
| Indicator for Membership in a Group | 0.290 | 0.390 | 0.740 | 0.460 |
| Indicator for Whether Firm Entered Florida Market After 1992 | -0.331 | 0.243 | -1.360 | 0.181 |
| AM Best Rating (2004) High Number Indicates Low Rating | -0.034 | 0.036 | -0.950 | 0.346 |
| Publicly Traded Stock Company (or Owned by a Pub. Traded Co.) | **-0.444** | 0.198 | -2.250 | 0.030 |
| Indicator for Companies with Non-stock Forms | -0.215 | 0.272 | -0.790 | 0.434 |
| Florida HOMP Loss Ratio | -0.111 | 0.072 | -1.540 | 0.131 |
| All State HOMP Loss Ratio | 0.082 | 0.076 | 1.090 | 0.282 |
| Percent of Florida HOMP Prems to Total Florida All Lines Premiums Earned | 0.683 | 0.553 | 1.230 | 0.223 |
| Percent of Florida All Lines to Total State All Lines DPE | -0.126 | 0.354 | -0.360 | 0.723 |
| SE Region HOMP Market Share | -0.341 | 0.344 | -0.990 | 0.327 |
| Ratio of Auto Premiums in Florida to HOMP Premiums Earned | 0.000 | 0.002 | -0.030 | 0.973 |
| Ratio of Net HO Prems to Total HOMP Premiums | 0.298 | 0.387 | 0.770 | 0.445 |
| Ratio of Total Net Prems to Total Premiums | **-0.942** | 0.360 | -2.620 | 0.012 |
| Net Premiums to Surplus | **0.192** | 0.073 | 2.640 | 0.011 |
| Log of Total Assets | 0.040 | 0.071 | 0.560 | 0.575 |
| Adj R2 | 0.619 | | | |
| N | 64 | | | |

**Table 15**
**Regression Analysis of Insurer Market Share Changes**
**Dependent Variable = Change in Mkt Share Between 2005 and 1996 - "Low-Risk" Counties**

| Variable | Coefficient | Std. Err. | T - value | prob |
|---|---|---|---|---|
| Intercept | 0.592 | 1.088 | 0.540 | 0.589 |
| Indicator for Agency Marketing System | **-0.260** | 0.103 | -2.520 | 0.015 |
| Indicator for Membership in a Group | 0.289 | 0.257 | 1.120 | 0.267 |
| Indicator for Whether Firm Entered Florida Market After 1992 | **0.391** | 0.160 | 2.440 | 0.019 |
| AM Best Rating (2004) High Number Indicates Low Rating | 0.004 | 0.024 | 0.190 | 0.850 |
| Publicly Traded Stock Company (or Owned by a Pub. Traded Co.) | **0.487** | 0.130 | 3.740 | 0.001 |
| Indicator for Companies with Non-stock Forms | **0.475** | 0.179 | 2.650 | 0.011 |
| Florida HOMP Loss Ratio | **-0.080** | 0.048 | -1.690 | 0.098 |
| All State HOMP Loss Ratio | 0.049 | 0.050 | 0.980 | 0.331 |
| Percent of Florida HOMP Prems to Total Florida All Lines Premiums Earned | 0.183 | 0.364 | 0.500 | 0.618 |
| Percent of Florida All Lines to Total State All Lines DPE | **0.451** | 0.233 | 1.940 | 0.059 |
| SE Region HOMP Market Share | **-0.438** | 0.226 | -1.930 | 0.059 |
| Ratio of Auto Premiums in Florida to HOMP Premiums Earned | 0.000 | 0.001 | -0.040 | 0.970 |
| Ratio of Net HO Prems to Total HOMP Premiums | 0.205 | 0.255 | 0.800 | 0.425 |
| Ratio of Total Net Prems to Total Premiums | **0.545** | 0.237 | 2.300 | 0.026 |
| Net Premiums to Surplus | **-0.109** | 0.048 | -2.280 | 0.027 |
| Log of Total Assets | -0.062 | 0.047 | -1.330 | 0.189 |
| Adj R2 | 0.363 | | | |
| N | 64 | | | |