

**MARKET IMPLICATIONS OF PUBLIC POLICY INTERVENTIONS:
THE CASE OF FLORIDA'S PROPERTY INSURANCE MARKET**

Lorilee A. Medders*
Charles M. Nyce
J. Bradley Karl

Florida Catastrophic Storm Risk Management Center
College of Business, Room 112 RBB
Florida State University
Tallahassee, FL 32306-1110

*Phone: 850-645-8393
Fax: 850-645-8391
lmedders@fsu.edu

The authors wish to thank Patrick F. Maroney and Sue Ellen Smith for their valuable contributions to this article.

Last updated: March 2, 2012

MARKET IMPLICATIONS OF PUBLIC POLICY INTERVENTIONS: THE CASE OF FLORIDA'S PROPERTY INSURANCE MARKET

Abstract

This article asserts that the market for property insurance, particularly homeowners insurance, in the State of Florida currently is experiencing a number of failures, and that a combination of market problems, externalities and interventions unique to Florida led to these failures. The authors provide a narrative description of the market events, problems and policies preceding the market failures and present data that evidence the market failures. Recommendations for a return to risk-based pricing and incentives for appropriate mitigation are made.

Introduction

Florida's heavy geographic exposure to catastrophic tropical windstorms is clear, but this single market factor is only one of myriad factors that impact Florida's market. The availability of private capital to support catastrophic windstorm exposure is contingent upon regulatory and legislative directives intended to ease market pressures and stabilize pricing. We submit that recent government interventions in the state's property insurance market have suppressed prices and increased long-term state market pressures that create questions of market sustainability.

The paper consists of four sections. Section 1 contains a discussion of the prior literature relevant to insurance market problems, capacity constraints, market performance and their relationship to government interventions. Section 2 describes the structure of Florida's homeowners insurance market as well as its current condition, and compares Florida's market with markets in other states. Section 3 examines specific market problems in Florida and negative externalities created by government responses to these problems that the authors assert all have contributed to the market's present condition. Section 4 offers concluding thoughts and avenues of future research.

Risky Insurance Markets, Capacity Constraints and Government Interventions

Prior research into the nature of insurance market capacity and its relationship to market performance and market interventions is abundant. What follows is a discussion of the existing relevant literature.

Problems in High-Risk (Catastrophe) Insurance Markets

Both on the demand and supply side, insurance markets experience a number of well-known difficulties, from seller-buyer informational problems to seller constraints on capacity. Markets that include high potential for catastrophic industry losses especially are subject to these problems. Thus, the relationships between demand-supply efficiencies, resulting market performance and aggregate market capacity are important in the study of catastrophe-exposed markets. Arrow (1971) and Dionne and Harrington (1992) describe basic models for insurance demand by individuals, and Kunreuther (1998) describes the special effects of catastrophic risk on these models. Several studies, such as Ehrlich and Becker (1972), Kunreuther (1978), Dionne and Eeckhoudt (1985), Hiebert (1989), Kunreuther and Kleffner (1992), Kunreuther (1996) and Kleffner and Kelly (2001), have established the individual insurance purchase in the face of disaster potential as being, to some extent, a choice between loss mitigation (self-insurance) and risk transfer (insurance).¹ Additional research has found evidence of an inverse relationship between expectations of government disaster relief and both structural mitigation and insurance demand. The findings of Kaplow (1991), Kelly and Kleffner (2003) and Kunreuther and Pauly

¹ The findings of research regarding the actual relationship between the availability/pricing of insurance and personal investments in risk-reducing activities are mixed; while insurance transfers risk of financial loss from the individual to the insurance company it inherently creates an incentive for insurance companies to develop a pricing scheme that rewards policyholders who mitigate. So while the availability of insurance reduces the incentive to make mitigation expenditures, all else the same, insurance prices can be adequately high to encourage mitigation. See Kleindorfer and Klein (2003) for mathematical illustration and additional literature pertaining to the relationship between insurance and mitigation.

(2006) are consistent with the idea that disaster assistance reduces incentives for individuals to invest in risk reduction or private risk transfer.

The literature on supply-side problems in markets shows us that solvency constraints limit the available capacity of the marketplace.² Herring and Vankudre (1987) and Greenwald and Stiglitz (1990) contend that insurers may view solvency concerns in light of the transactions costs of insolvency and the franchise value of the firm as a going concern. Klein and Kleindorfer (2003) extend the model to the case of markets with industry-wide disaster potential, such as the Florida property insurance market.

Stone (1973) and Cummins, Doherty and Lo (2002) find that market insurance capacity is at a maximum when there is either one monopolistic insurer or when all insurers participate in some proportion of every risk. Segmentation by line therefore reduces market capacity. Furthermore, capacity for catastrophic insurance will increase if: there is a shift toward greater risk bearing; data related to catastrophes improves; catastrophic insurance rates increase; or segmentation is reduced. Doherty (1980) develops a model wherein capital market structure determines capacity, and specifically market capacity differs with choice of reinsurance. Doherty (1983) builds on this capital structure theory to model capacity as a measure of the risk-return performance of an insurer's asset-liability portfolio. Market capacity, in all of these models, is the aggregation of capacity of all individual firms in the market. Nielson (1984) analyzes the interrelationships among surplus, investment risk, underwriting risk and expenses with regard to how they relate to capacity. Nielson (1984) expresses the capacity of the insurance industry as a relationship between policyholders' surplus, investment risk, total assets, rate of return, underwriting expenses and insurer-specific capital needs and premiums.

² Stone (1973) and Herring and Vankudre (1987), followed by Grace, Klein and Kleindorfer (1999) lay out the capacity issues faced by insurers when considering risk-taking in problematic markets.

Prior literature pertaining to the underwriting cycle offers insight into factors that impact insurance availability as well. Gron (1994) evaluates the validity of arbitrage theory and the capacity constraint hypothesis as explanations for the underwriting cycle and finds support for the capacity constraint hypothesis. Gron (1994) finds evidence of a negative relationship between fluctuations in insurer capacity and insurer profitability. Gron (1994) also points out that guarantee fund associations may exacerbate capacity crises by reducing solvent insurers' net worth through assessments. Doherty and Garven (1995) extend Gron's (1994) work to include the impact of interest rates on underwriting profits, with findings that suggest a relationship exists between insurer capacity and asset-liability management.

Government Intervention and Market Performance

A variety of studies have analyzed the relationship between legislative-regulatory intervention and market performance. Building on the prior work of Stigler (1971), Herring and Vankudre (1987), Greenwald and Stiglitz (1990) and Klein (1998), Klein and Kleindorfer (2003) develop a theoretical illustration of the negative externalities, and ultimately market failures, that can result from decreases in the price ceiling within catastrophe-prone markets. Grace and Klein (2009) likewise provide further descriptive evidence of the impact of government choices on catastrophe markets. The choice by private insurers to decrease market exposure, and thus decrease capacity in the highest-risk zones, as a result of interventions is of particular interest to this research.³

³ Meier (1991) asserts the goals of insurance regulation should be viewed, not solely in terms of alleviating market problems or correcting market failures, but also as partially a function of political externalities. Meier (1991) goes on to argue that the degree of involvement of the parties involved in the regulatory process is determined by the importance and complexity of each issue at hand. That is, as the importance and complexity of the issue increases, so does the likelihood that members of the regulatory process will become involved in the act of regulating insurance. However, Meier (1991) asserts that as the complexity of the issue at hand increases, so does the incentive for members of the regulatory process to generalize and simplify the regulated issue. As an illustration of such simplification, Meir (1991) notes that California, rather than dealing with the technicalities of prior rate approval regulation, proposed to implement an overarching 20 percent premium reduction.

Several empirical studies examine the dynamic relation between regulation and the insurance industry. Dumm, Liebenberg, Liebenberg and Ruhland (2010) consider the stock market's reaction to a special legislative session on insurance regulation in Florida in 2006. Prior to the call for the special legislative session, Florida had experienced unprecedented property insurance rate increases and state lawmakers had promised to take measures to artificially curtail the rising cost of insurance for Floridians. Dumm et al (2010) hypothesize that the call for the special legislative session would be viewed by the market as political risk and Dumm et al (2010) test their hypothesis using an event study methodology. In support of their hypothesis, Dumm et al (2010) find that publicly traded insurers with homeowners and commercial multiple peril business exposure in Florida experienced a negative stock price reaction as a result of the special legislative session. We find the work of Dumm et al (2010) important because it demonstrates the far reaching impact of regulation on insurance industry performance.

Other empirical studies of regulation and insurance industry performance have focused on specific lines of business such as automobile insurance (e.g. Grabowski, Viscusi, and Evans, 1989) or workers compensation insurance (e.g. Harrington and Danzon, 2000). Grabowski et al (1989) examine the effects of automobile insurance regulation among 30 states from 1974 - 1981. They find that, consistent with the political objective of regulation, regulatory intervention lowers the price of insurance. Grabowski et al (1989) also find, however, that in highly regulated states, larger numbers of drivers are thrust into the residual market with the result that unsafe drivers receive larger subsidies in highly regulated states. Also of importance is that Grabowski et al (1989) find a large drop in the price of insurance in states which deregulated during the sample period. The work of Grabowski et al (1989) is important to our study because it

illustrates that while regulation may accomplish the goal of reducing the price of insurance, regulation may also result in negative market externalities.

Another automobile insurance regulation study of importance is that of Harrington and Doerpinghaus (1993) who examine the consequences of restrictions on rate classification in automobile insurance markets. The authors note that many states place restrictions on the rating information to be used by insurers, such as age, sex, marital status, territory, etc., and note that the purpose of these restrictions is to prevent rating practices that are arbitrary or unfair. Harrington and Doerpinghaus (1993) consider both the direct and indirect effects of rate classification restriction and find that classification restrictions could greatly increase the cost of risk due to the indirect costs associated with large involuntary markets and reduced political pressure for control of costs. We rely on Harrington and Doerpinghaus (1993) because this study documents additional negative externalities resulting from regulation in insurance markets.⁴

There are also line-of-business specific studies outside of automobile insurance markets that analyze the role insurance regulation plays in industry performance. For example, Harrington and Danzon (2000) examine the effects of rate suppression in workers compensation insurance on the propensity to implement loss control techniques. Harrington and Danzon (2000) hypothesize that rate regulations, which prevent insurers from charging rates that reflect

⁴ Other studies that examine the impact of regulation in auto insurance markets specifically consider the role that regulation plays in loss costs. For example, Cummins, Weiss, and Philips (2001) examine the incentive effects that result from the presence of no-fault automobile insurance and provide theoretical evidence that no-fault is likely to lead to an increase in accidents. Cummins et al (2001) also perform an empirical analysis of the automobile insurance markets of all 50 states for the period 1982 – 1994 in which they control for the possible endogenous nature of no-fault laws. The empirical results of Cummins et al (2001) indicate that, compared to tort states, fatality rates are 5.5 to 9.9 percent higher in no-fault states and this result suggests that no-fault laws may impact loss costs. In another relevant study, Weiss, Tennyson and Regan (2010) examine the effects of automobile insurance rate regulation in the US for the period 1981 – 1998 and, similar to Cummins et al (2001), control for the potential endogenous nature of states' regulatory selections. Weiss et al (2010) find that rate regulation, as well as measures of regulatory stringency, positively and significantly increase loss costs and claims frequencies in automobile insurance markets. The studies of Cummins et al (2001) and Weiss et al (2010) are particularly valuable to our work because they highlight another important way which regulation impacts insurance industry performance – increased loss costs.

expected loss costs, reduce the loss control incentives for employers, employees, and insurers. Harrington and Danzon (2000) test their hypothesis using data from the National Council on Compensation Insurance (NCCI) for the years 1984 – 1990 and find support for their hypothesis. More specifically, Harrington and Danzon (2000) find a positive and significant relation between loss growth and two separate lagged measures of rate suppression, indicating that workers compensation insurance regulation led to increased loss costs from 1984 - 1990.⁵ In our study, the Harrington and Danzon (2000) findings are important because they document another line of business, outside of the automobile insurance market, where regulation leads to increased loss costs.

The next section examines the structure of Florida's homeowners insurance market as well as its present state, and provides a descriptive comparative analysis of Florida's market with that of other Atlantic and Gulf coastal states. The examination is narrative, using available data to build a case for caution in implementing market interventions.⁶

Evidence of Market Failures in Florida

This section includes information on the structure of the Florida residential property insurance market and provides a descriptive evaluation of market performance, including comparisons to the markets of nearby coastal states.

Market Structure

The Florida residential property insurance market structure has changed over time, especially since Hurricane Andrew hit the coast in 1992. Today, it consists of a unique

⁵ The two measures of rate suppression used by Harrington and Danzon (2000) are: 1) filed rate increases versus approved rates increases and 2) residual market share.

⁶ Empirical analysis in this paper is limited to t-testing; future studies may enjoy sufficient data, and thus degrees of freedom for event analysis to be worthwhile.

combination of private and residual insurers grappling with increasing demand- and supply-side economic pressures in the face of high-density development near high-risk coastlines.

Florida's Primary Insurance Market Participants

The primary insurance tier of Florida's residential property insurance market includes both private (national insurers, national insurer subsidiaries specially designed for the Florida market, independent insurers domiciled and specializing in Florida risk) and a state-run entity (Citizens). The private market for primary insurance includes insurers admitted by the Florida Office of Insurance Regulation (FLOIR) to compete in Florida for standard business as well as non-admitted insurers selling only in the surplus lines. Data on the premiums collected and the amount of exposure currently being insured in the surplus lines market are unavailable. The current research focuses on admitted and residual market insurers and partitions the Florida property insurance market into four segments of primary insurers.

Citizens Property Insurance Corporation (Citizens). Originally developed as a residual market entity for Florida residential property, Citizens now insures more than 1.4 million policyholders. This residual insurer is described more fully in a later section.

Florida domestic insurers ("domestics"). Florida-domiciled insurers who write primarily Florida property insurance make a significant contribution to the supply of property insurance. Many of these domestics commenced operations since Hurricane Andrew.

National company subsidiaries ("pups"). Florida-domiciled subsidiaries of national insurers are focused solely on property insurance in Florida while still members of the parent's insurance group. The subsidiary structure allows national insurers to isolate the parent's assets from Florida's catastrophic property exposure.

National insurers and others. These insurers are not Florida-based and do not fall in any of the above categories. Most are traditional national insurers with a multi-line focus.

Florida's private, admitted market collected approximately \$6.2 billion in homeowners insurance premiums in 2010. Citizens collected nearly \$2 billion in residential property premiums in 2010.

Florida's Residual Insurance Market Participants

Residual markets exist to address government concerns about insurance availability and many states have residual market mechanisms⁷. Since 1970, when the Florida Windstorm Underwriting Association (FWUA) was enacted by the Florida Legislature to offer "wind only" coverage in Monroe County and the Florida Keys, three entities have evolved with expressly different purposes: Citizens Property Insurance Corporation, the Florida Hurricane Catastrophe Fund and the Florida Insurance Guaranty Association. Each is briefly introduced here.⁸

Citizens. After Hurricane Andrew in 1992, several Florida insurers became insolvent, and others were concerned about increased insolvency risks. In a special session, The Florida Legislature addressed the need for homeowners insurance policies that provided "full" (multi-peril) coverage rather than wind-only policies offered by the FWUA by creating the Florida Residential Property and Casualty Joint Underwriting Association (FRPCJUA) or (JUA). The JUA was later combined with the residual market mechanism that insured commercial residential (the Florida Property Casualty Joint Underwriting Association), creating Citizens Property

⁷ Residual markets are intended to offer basic insurance coverage for substandard risks at rates higher than those available for coverage of standard and preferred risks in the private insurance market but lower than the private market rates may indicate for the substandard risks. In property insurance, residual markets tend to have one of two purposes: 1) FAIR plans (Fair Access to Insurance Requirements): provide insurance coverage in typically urban areas underserved by private insurers; and 2) Catastrophe-focused programs, such as wind plans, coastal plans, beach plans, earthquake funds and Citizens Insurance: provide property coverage (single or multi-peril) in catastrophe-prone areas. Several states have developed mechanisms to provide coverage specifically to property owners who reside on or near the coast and Appendix A provides information on the nature of these markets.

⁸ For a complete discussion of residual market mechanisms and their development in Florida see Florida Catastrophic Storm Risk Management Center (2011), Newman (2010) and Newman (2009).

Insurance Corporation (Citizens) effective August 1, 2002. Citizens has three distinct accounts: the Personal Lines Account, the Commercial Lines Account, and the Coastal (formerly High-Risk) Account. The Coastal Account consists of policies from the FWUA territories. When any of these three accounts has a deficit, Citizens may levy assessments. These assessments are not only against its policyholders but also against the policyholders of private insurers in almost all lines of property casualty insurance.

The Florida Hurricane Catastrophe Fund (FHCF). Created by the Florida Legislature in 1993 to provide additional insurance capacity and help stabilize the property insurance market in Florida (Fla. Stat. s. 215.555(1)), the FHCF provides reimbursement for a portion of a property insurer's hurricane losses above the amount retained by the insurers. Insurers enter into contracts with the FHCF and pay a premium. The FHCF is able to accumulate premium payments on a tax-free basis as it is exempt from federal income taxation. In the event that the FHCF's losses exceed its surplus, the FHCF is authorized to collect assessments on policyholders in almost all lines of property casualty insurance. The amount of coverage available from the FHCF, the cost of the coverage and the potential assessments are significant factors in the state of the insurance market.

Florida Insurance Guaranty Association (FIGA). The FIGA was created by the Florida Legislature in 1970 to address concerns about the adverse effects of insolvent insurers. Its specific purpose is to "provide a mechanism for the payment of covered claims under certain insurance policies to avoid excessive delay in payment and to avoid financial loss to claimants or policyholders because of the insolvency of an insurer." (Section 631.51(1), F.S.) FIGA does not accumulate funds in advance of an insurer's insolvency, but similar to Citizens and the FHCF

obtains funds through pro-rata assessments levied by the Office of Insurance Regulation on companies subject to assessment.

Exposure

The exposure levels in Florida's property insurance market have remained relatively stagnant in recent years. As shown in Chart 1, the total number of residential policies demanded by Florida's market remained highly consistent at about 5.7 million between 2005Q4 and 2011Q2. According to Chart 2, insured exposure values decreased slightly over the last two years, from \$2.1 trillion in 2009Q2 to \$2.0 trillion in 2011Q2⁹, and population growth has slowed significantly over the last few years coinciding with the drastic changes in the Florida housing markets.¹⁰

[Insert Chart 1: Residential Property Insurance Policies in Force]

The housing depression in Florida has resulted in slack markets and only slow inflation in replacement costs since 2007Q2. The path of statewide insured values is shown in Chart 2.

[Insert Chart 2: Trend in Florida Personal Residential Property Insured Values (2005-2011)]

The net rise since the Second Quarter of 2007 to just under \$1.9 trillion in insured value likely reflects insurer efforts to improve insurance-to-value (i.e., reduce the coinsurance problem). Since the personal lines policy count has hovered near 5.7 million (plus or minus 100,000) in recent years, the increase in exposures is almost certainly due to increases in the insured value of existing properties rather than population growth.¹¹

⁹ From OIR QUASRng reports 2009Q2 and 2011Q2.

¹⁰ See University of Florida Study on Florida Population at <http://www.bebr.ufl.edu/bebr-products/series/Florida%20County%20Population%20Projections>.

¹¹ It is important to remember that insurance provides replacement cost coverage on structures, so market value of property is not a good measure of exposure. While construction costs (and therefore replacement costs) vary, they do not necessarily move with housing market prices. The table in Appendix B shows that construction costs since

The State of the Florida Property Insurance Market

The number of carriers that choose to do business in the state, the structure of these participants, their premium sales volume and their policyholders' surplus are all important elements of availability and capacity. This section explores the admitted, private homeowners insurance market in the State of Florida according to these four aspects of the market, and compares the market in Florida to the market for homeowners insurance nationally as well as in other Atlantic and Gulf Coastal states.¹² Specifically, states selected for comparison are Alabama, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas and Virginia since these states face hurricane risk similar in nature to Florida's, even if not to the same degree. Performance data primarily are taken from the National Association of Insurance Commissioners (NAIC) Annual Statements and the Florida Office of Insurance Regulation (FLOIR)'s Quarterly Supplemental Reports (QUASR). The statistics and analysis here focus on statewide figures and conclusions.

For comparison, Florida's private homeowners insurance supply is segmented by company structure type in two ways:

- 1) whether an insurance "decision center" behaves in the market as an independent company or as a group interest; and

2008 have increased only slightly. This, combined with slow construction, implies exposure, as measured by replacement costs, has remained relatively stagnant during this time period.

¹² Since information regarding the activity and performance of surplus lines insurers is not readily available, the discussion here focuses on admitted insurers in these states.

- 2) whether an insurer is a national carrier, a pup company (established by a national carrier separate from its other non-Florida or non-Florida-property business), or a domestic Florida company.

First, a common distinction in insurance is between independent (i.e., stand-alone) companies and those insurance companies that are members of a group of insurers. In this analysis all insurance companies that are members of a group (e.g., State Farm, Allstate, Progressive) are considered to be a single entity or “decision center.” This is an attempt to recognize that these companies may work in conjunction to achieve the group’s goal, rather than competing as individual entities. Each independent company is considered its own decision center. This allows for an apples-to-apples comparison across states since the definition of independent and group companies will remain consistent across all states.

The second distinction between national carriers, pup companies and domestics is unique to Florida. It is more reflective of the true Florida homeowners insurance market to evaluate segment size by sorting according to the national, domestic and pup categories. Other states do not have a sufficient number and size of domestic and pup companies to make such categorization possible; these are important distinctions within Florida.¹³

Evidence of Market Failure: Market Composition and Capitalization

Three vital elements of the market’s health are the number of companies active in the marketplace, their Direct Premiums Written (DPW) and Policyholder Surplus (PHS). Chart 3 and

¹³ The importance of these categorizations is related to the ability of a company to 1) raise capital and 2) diversify its business, and thus also its risks. These categorizations are notably different from the independent versus group manner of segmenting company structure type. Two examples of the difference are easily described. First, most group companies are considered national in scope, so the parallel between these two categories is close. All pups, however, are also considered group companies such that the national-to-group parallel is, at best, imprecise. Second, most domestics are set up as independent companies although, again, the parallel is imperfect. Some domestics are, in fact, group companies.

Table 1 below show how these statistics in Florida have changed from 1985 to 2010, as compared with other select coastal states.

[Insert Chart 3: 1985-2010 Trend in Number of Insurers Writing Homeowners Insurance, by State]

[Insert Table 1: Percentage Changes in Number of Companies, PHS and DPW by State and Company Structure in the Florida Homeowners Insurance Market (1985-2010)]

All catastrophe prone states have seen insurers leaving the homeowners market at a rate greater than the national average during the period 1985-2010. The presence of fewer companies does not necessarily indicate a problem so long as the capacity has increased or is at appropriate levels. What is disconcerting is that Florida holds the highest insured value exposure and still has the most companies of the nine states being compared, yet it has the second lowest PHS (Texas having the lowest) and the lowest growth in PHS. As illustrated in Table 1, while Florida has seen a 37.8% overall decrease in the number of insurers writing homeowners business in the state, it has experienced a 46.15% loss of group (mostly large, national) insurers yet no net loss of independent (mostly domestic) insurers.¹⁴ During the same 1985-2010 period, independent companies writing homeowners insurance in Florida have increased their DPW by 6,462.47% – the greatest increase seen in any of these states by any structure type – yet the PHS of these independent companies writing in Florida only increased 338.6%.

Looking at Florida alone, we can segment DPW by national, pup, domestic and Citizens categories to more accurately reflect Florida’s homeowners insurance marketplace. Chart 4

¹⁴ The Insurance Capital Build-Up Incentive Program has countered the negative effect on capacity, at least with respect to numbers of market participants. Taking effect in 2006, the program provided start-up surplus loans to 13 new Florida domestic property insurers in 2006-2007. The number of new domestics dwindled in 2010-2011.

displays the DPW in Florida for homeowners insurance policies, categorized by insurer type, for the years 1985-2010.

[Insert Chart 4: Florida Homeowners Insurance Direct Premiums Written by Insurer Type, 1985-2010]

Chart 4 illustrates the substantial growth in Citizens, the domestic insurers and the pups in recent years as the premium size of the national insurers in the Florida homeowners insurance market has remained flat. This change in the composition of the marketplace is concerning since national companies typically have more capacity to pay claims and write additional business than do the other types of companies. Despite their large capacity, the large, national insurers have chosen to limit their exposure to the Florida homeowners insurance market.

As of year-end 2010, there were 79 total private market decision centers writing homeowners insurance in Florida, more than in any of the other coastal states used for comparison. As indicated by Table 2 below, no other coastal state boasted more than 69 total insurers writing homeowners insurance (Texas).¹⁵ Compared to the national total of 403, the amount of competitive interest in the Florida market appears relatively high.

Segmenting the private marketplace into independent companies and group interests, however, Table 2 reveals that the comparatively large supply of homeowners insurers doing business in Florida is largely attributable to independent companies. Relative to the states compared, independent insurers contribute significantly more to the total homeowners insurance supply in Florida. The 23 independent insurers writing homeowners insurance business in

¹⁵ Florida's count of 79 decision centers makes it a statistical outlier even among the states compared, at a 0.01 significance level.

Florida represent not only a higher absolute number than in any of the other states but also a higher portion of the total number of decision centers in the state.¹⁶

[Insert Table 2: Number of Homeowners Insurance Decision Centers by State in 2010]

The high number of independent companies is an important statistic regarding the nature of available homeowners insurance in Florida relative to other states and the nation. Generally, group companies are larger and have a larger geographic reach than independents and, therefore, tend not only to produce higher premium sales volume than their independent counterparts but also achieve greater geographic diversity of their business risks. For Florida, this dependence on independent insurers may create a level of constraint on capacity not observed in the other states.

Table 3 shows the number of insurers in each state whose business, as measured DPW, is 90% or higher concentrated within that state. Forty-seven companies doing business in Florida had concentrated at least 90% of that business in Florida as of year-end 2010.¹⁷ It is notable that all 23 of the independent companies operating in the Florida homeowners insurance market concentrated at least 90% of their business in the 1) homeowners insurance line and 2) in Florida. This lack of diversification in the Florida property insurance market indicates a capacity disadvantage consistent with Stone (1973).

[Insert Table 3: Number of Companies with 90% or More of Total DPW in the State in 2010]

This concentration of business effectively requires an insurer to heavily reinsure the risk taken to ensure solvency in the event of catastrophic losses. It is fair to say that each of the 23

¹⁶Florida domestic insurers represent slightly more than 29% of the total decision centers writing homeowners insurance in the State, significantly different from the mean (approximately 15.5%) of the compared states, at a 0.01 significance level. As additional information, Florida's 23 independent companies represent more than 10% of the entire nation's 203 independents.

¹⁷ Both in terms of raw number of companies and percentage of total, the concentration of business within the State among Florida homeowners insurers is significantly different from the other states examined, at a 0.01 significance level.

insurers conducting homeowners business independently in Florida are either highly sensitive to reinsurance rate volatility, highly sensitive to one large loss event (or several smaller loss events occurring within the same year), or both.

Table 4 displays the year-end 2010 DPW by company type for each state. Florida comprises nearly 10% of the nation's total DPW in homeowners insurance.

[Insert Table 4: Direct Premiums Written (DPW) in \$ Millions for Homeowners Insurance by Structure Type and State in 2010]

Table 4 also indicates that Florida premiums are more heavily dependent on independent insurer business than are the other states examined.¹⁸ Selling a quarter of the State's DPW in private homeowners insurance, Florida's independent insurers are responsible for a substantial portion of privately sold homeowners risk in the State. It is likewise notable that approximately 56% of Florida's \$6 billion in 2010 DPW for private market homeowners insurance is attributable to Florida domestic companies (\$3.37 billion in DPW), with pups and national companies each representing approximately 22% of the market (at \$1.31 billion and 1.33 billion in DPW, respectively).¹⁹

The picture of policyholders' surplus (PHS) in Table 5 reflects an especially disconcerting difference between Florida and other states. Despite its relatively large market size, Florida's year-end 2010 PHS, at just under \$95 billion, was lower than any of the other hurricane-exposed states. And despite their one-quarter market share of premiums, independent companies in Florida contributed only slightly more than one-tenth of the State's total PHS, at slightly over \$985 million.²⁰

¹⁸ Florida is statistically different at a 0.01 level of significance.

¹⁹ Bear in mind that while some domestic insurers are group companies, most are independent.

²⁰ Policyholder surplus is used to support all operations, not just homeowners insurance in the state of Florida.

[Insert Table 5: Policyholders' Surplus (PHS) in \$ Billions by Structure Type and State in 2010]

If a more Florida-centric picture of PHS is drawn, segmenting companies by national, domestic and pup types, the reason for concern regarding the capacity of the Florida market to pay claims is more easily evident. Florida's PHS of almost \$95 billion in 2010 is largely attributable to large, national insurers, representing more than \$91.5 billion of the total PHS available. Unfortunately, these national insurers are not heavily exposed in Florida relative to their domestic and pup peers, who account for less than \$1.5 billion and \$2 billion in PHS, respectively. The issue is more clearly evidenced in Charts 5 a-d below.

[Insert Charts 5 a-d: Frequency Histogram for Florida Private Homeowners Insurers' Premium-to-Surplus Ratios]

Looking at Chart 5(a), one sees nearly all Florida homeowners insurers enjoyed a premium-surplus ratio of ≤ 1.0 in 1985 (well before Andrew hit), indicating a claims-paying ability of at least \$1 PHS to every \$1 DPW. As of 1994 (two years post-Andrew), Chart 5(b) shows the vast majority of insurers still held their premium-surplus ratios at or below 1.0, with just a handful of companies potentially over-extending their capitalization. Chart 5(c) suggests a turning point from 1994-2003 in the capitalization of Florida homeowners insurers as 22 insurers saw their premium-surplus ratios above 1.0, and three companies experienced ratios in the 6.0 – 7.0 range. Such an abrupt change within a 10-year period may be attributable to two drivers: the formation of Florida pups by national insurers; and the entrance of domestic insurers to the Florida homeowners market. Between 1996 and 2000, Travelers, Allstate, State Farm and Nationwide all formed pup companies, limiting the capital they placed at risk to underwrite Florida homeowners. Plus, 23 domestic insurers started-up during the 1996-2003 timeframe,

several of which were arguably undercapitalized. Capitalization among Florida homeowners insurers was even worse by 2010 after the 2004-2005 storm seasons depleted substantial PHS of many insurers and regulatory-legislative interventions increased pricing pressures on all insurers. By this time, thirty-two companies had ratios in excess of 1.0, two of them above 7.0.

The current picture of private homeowners insurance availability and capacity in Florida describes a market with heavy dependence on small companies with limited capitalization and risk diversification capabilities. Although Florida attracts a high number of insurers relative to other coastal states, many of these insurers (more than in any other state) are independent, mostly small domestic Florida companies. These independents make up one-fourth of Florida's private homeowners premium volume, and domestics (based on OIR's QUASR data that includes both the independent and group-based domestics) represent more than half the private insurance premium at 56%.

Despite the high number of insurers and the relatively high total premium amounts sold in Florida, the State's private homeowners insurance market has the worst level of capitalization (as measured by PHS) of any catastrophe-prone state other than Texas. Given the large number of homeowners insurance companies concentrating most of their business in Florida and the large Florida homeowners insurance premium base attributable to domestics having relatively small stores of PHS, the existing level of capitalization may be insufficient should a major storm hit Florida.

Evidence of Market Failure: Underwriting Profitability, Capitalization and Volume

Table 6 below displays the average loss ratio (losses and loss-adjustment expense as a proportion of direct premiums earned) and the variability of these ratios for the private insurance

industry in each of the nine states across 1985-2010. Both the average loss ratio for Florida, as well as its standard deviation, is the highest of the nine states.

[Insert Table 6: Average Loss Ratio, Standard Deviation and Coefficient of Variation by State (1985-2010)]

The 97.31% average loss ratio indicates that Florida insurers needed 97.31% of the premiums earned simply to pay losses and loss adjustment expenses, leaving less than 3% of premiums available to cover all other business expenses.²¹ The 193.37% standard deviation indicates an extremely high level of volatility within Florida's loss ratio over the time period examined. Therefore, within Florida, insurers not only experienced the worst performance of any of these states but they have a measurable reason to have less confidence in the Florida market to perform in a stable manner than any of the other states.

It is notable that in the years since the 2004-2005 storm seasons, the Florida private homeowners insurance market has enjoyed relatively low loss ratios. Attributable to an absence of major storms, Table 7 reveals the underwriting profitability of the overall market has improved during this time.

[Insert Table 7: Loss Ratios (%) in the Private Homeowners Insurance Market from 2004-2010 by State]

The risk of a major storm, and the volatility of loss ratios resulting from these storms, explains why, during such a period of seeming profitability, the Florida market's DPW and PHS have contracted and the composition of its participants has changed while losses stayed well below total premium levels. Reserves held to pay for catastrophic losses – due to future events as

²¹ The average loss ratio is calculated as the average of the annual loss ratios for the years provided.

well as loss development from prior events²² deplete PHS and downward pressures on DPW (to be discussed in detail in a later section) cause industry participants who can to divert capital from the market to other markets that hold less volatility.

Evidence of Market Failure: Market Concentration

The changing composition of the Florida homeowners insurance marketplace during the past 25 years, is evidenced in Chart 4 although the chart only indicates changing market share, with no information about market concentration. In contrast, Chart 6 shows the Herfindahl indices plotted over time for each state in the sample. The Herfindahl index is a measure of how concentrated an industry is. Any marketplace where a few competitors hold most of the market share will have a high Herfindahl index (high level of concentration), while a market with many competitors, or relatively equal market share among competitors, will have a low Herfindahl index (low concentration).²³ As a general rule, a Herfindahl index below 0.1 signals low concentration, while a Herfindahl index above 0.18 signals high concentration. Between 0.1 and 0.18 an industry is moderately concentrated.

[Insert Chart 6: Homeowners Insurance Market Concentration Levels by State, 1985-2010]

²² Property insurance claims have traditionally been considered short-tailed. Property claims associated with catastrophes may have generally longer tails than ordinary property claims since it takes more time to settle catastrophe claims because of the overwhelming nature of the catastrophe and the strain it puts on the claims process. Even with catastrophes, however, the amount of time it takes to settle property claims traditionally is relatively short compared with longer-tail lines of insurance. In Florida, the tail on property claims, especially catastrophe claims, has significantly increased in the last four years. Between March 2008 and June 2009, for example, Citizens opened or re-opened 14,997 catastrophe claims (7,299 new claims and 7,698 re-opened claims) related to the 2004-2005 storms. This represents approximately 5% of all Citizens claims related to those storms. This type of claims activity significantly lengthens the tail of the claims distribution and substantially impacts the loss costs associated with property insurance.

²³ The Herfindahl index measures concentration as the sum of the squared market share of each firm in the industry. For example, consider an industry with six competitors, with respective market share of 30%, 20%, 20%, 10%, 10% and 10% the Herfindahl index will be $(0.3*0.3) + (0.2*0.2) + (0.2*0.2) + (0.1*0.1) + (0.1*0.1) + (0.1*0.1) = 0.09 + 0.04 + 0.04 + 0.01+0.01 + 0.01 = 0.2$.

At first glance, the Florida market appears to have a low market concentration relative to other coastal states, hovering around 0.15 for the most recent years. Bear in mind that the data being measured include only the private market. Since Citizens insures nearly 25% of the 5.7 million residential insurance policies in Florida, the true market has been more highly concentrated since at least 2007 when Citizens was encouraged to compete with the private marketplace for standard risk policies. Table 8 shows the growth in Citizens policy count from end-of-year 2003 to September, 2011.

[Insert Table 8: Citizens Property Insurance Corporation Personal Residential Policy Counts]

As of September 2011, Citizens insured in excess of 1.4 million Florida personal residential policies. Nearly 1 million of these policies were in the multi-peril Personal Lines Account category, meaning they covered non-coastal properties and were not limited to windstorm coverage only. Further evidence of the demand effect of price competition from Citizens can be seen in Table 9, showing that Citizens is the primary writer of new insurance policies in Florida. Indeed, Citizens' total number of new policies is greater than the combined total of the other 9 companies in the Top 10.

[Insert Table 9: Top 25 - New Policies Written]

A Note on Reinsurance Usage

Chart 7 indicates the percentage of risk retained by Florida homeowners insurers over the time period 1985-2010.

[Insert Chart 7: Percentage of Direct Premiums Written Retained by Florida Homeowners Insurers (1985-2010)]

Immediately post-Andrew, Florida homeowners insurers decreased their usage of reinsurance, commensurate with sharp increases in reinsurance rates-on-line (prices) during that time. Since 2007, however, insurers in Florida have held their risk retentions at around 40%, reinsuring the remainder. Their ability to do so may, in large part, be aided by a lack of catastrophic storms during 2007-2010, accompanied by softening reinsurance prices and the availability of FCHF reinsurance. It can never be known whether catastrophic storms, and resultant higher reinsurance prices, might have resulted in company decisions to increase their retentions once again.

Market Summary

As of the end of 2010, Citizens wrote 50% of Florida's dwelling/fire coverage, 85% of Allied Lines coverage (where wind-only policies reside) and 15% of Regular Homeowners coverage. It writes a combined total of 23% of Florida's personal residential marketplace, not including mobile homes. Citizens now insures more than 1.4 million policyholders (a 42% increase since December 2009) and is adding 3,000 to 5,000 new policyholders each week.

Meanwhile, the private portion of the market has shifted from one dominated by large national insurers, whether utilizing Florida subsidiaries (pups) or not, to a fragmented market dominated by smaller Florida-based insurers (domestics). Domestic insurers' premium market share has increased from 30% at year-end 2005 to 46% at year-end 2010, while the national insurers and pups have reduced their exposure from 52% to 30% of the premium base. The current picture of private homeowners insurance availability in Florida illustrates a market with heavy dependence on small, start-up companies generally having limited capitalization and risk diversification capabilities. The relatively low PHS and high concentration of business within Florida's private market for homeowners insurance effectively requires heavy dependence on

reinsurance of the risk taken to ensure both claims-paying capacity and future solvency in the event of catastrophic losses.

The evidence from the observed data points to multiple areas of market failure, indicating a market composed largely of undiversified young companies and the residual insurer, both in terms of number of companies and business volume (DPW), with increased solvency constraints (restrictions on rate ceilings) and decreased capitalization (PHS). The efficiency of the primary market's ability to respond to changes in the reinsurance market really cannot be known since inexpensive reinsurance has been made available through government policy (via the FHCF) , stabilizing and fortifying what might otherwise be a primary market heavily dependent on volatile reinsurance rates on line.

Factors Leading to Florida's Property Insurance Market Failures

The story of Florida's recent property insurance market failures is a narrative of market problems, followed by government responses that resulted in negative externalities. The purpose of this section is to connect this narrative to the evidence related to market failures revealed in the prior sections.

Market Problems

Exposure to tropical storms is the primary driver of property loss costs, and thus property insurance rates, in the State of Florida. The three major ways in which the exposure poses market problems are through under-investment in mitigation, informational problems in the estimation of loss costs and the market power of the reinsurance market. We established in the review of prior research that individuals may treat insurance and mitigation efforts as substitutes. Uncertainty regarding storm loss costs stems from multiple sources: the dependence on

(inherently sensitive) loss models; the difficult-to-model loss impacts of demand surge; and the imperfect information regarding mitigation features of insured properties. The availability and pricing of reinsurance and other catastrophe capital create another challenge for the property insurance industry in Florida. Volatility in insurance rates over the last decade, including a relatively high 15% increase occurring between year-end 2005 and 2007, primarily are due to increased reinsurance rates on line following the busy 2004-2005 storm season.²⁴

Under-investment in Mitigation

Evidence indicates that proper mitigation against hurricanes does indeed result in risk reduction. For instance, Fronstin and Holtman (1994) find that older homes suffered proportionally less damage than newer homes as a result of Hurricane Andrew. Additionally, research conducted by Risk Management Solutions (RMS), following the 2004 and 2005 hurricanes in Florida, demonstrates that lower losses were suffered by structures built in compliance with the most up-to-date building codes.²⁵ Substantial evidence indicates that mitigation increases the value of the home, decreases expected losses, and decreases the burden placed on the public in the event of a catastrophic event (Kleindorfer and Kunreuther, 1999a, 1999b). Fronstin and Holtman (1994), however, reviewing the damage following Andrew, find that "... consumers have substituted homeowners insurance for structurally sound homes that are built to withstand hurricanes." The State of Florida recognizes the problem and since Andrew has commissioned multiple task forces, working groups and studies to attempt to address the

²⁴ Guy Carpenter (2009).

²⁵ Risk Management Solutions (2009), page 5.

problem.²⁶ Policy and industry studies have indicated repeatedly that cost is the primary reason Florida property owners provide for why they do not engage in structural mitigation²⁷

Catastrophe Models

Because of the nature of the hurricane peril in particular (i.e., frequency, intensity and correlation of exposures), traditional estimation methods have been replaced largely in Florida by catastrophe models (Nyce and Maroney, 2010).²⁸ The role of model verification and data credibility/reliability become critical as questions about predictive analytics and granularity are increasingly asked. It is important to note, for instance, that even seemingly small differences in model input parameters and their values (many of which are assumptions largely based on differences in expert opinion) can result in widely different model outputs. Thus, the models can be quite sensitive. Indeed, the variation across models (Cole, McCullough and Macpherson, 2010; Rollins, 2011) and the volatility found from one version to the next (Rollins, 2011) are problematic.

Demand Surge

Separate from uncertainty around the estimates of storm frequency, intensity and structural vulnerability, demand surge can increase loss costs once a windstorm occurs. Demand surge is defined by the Actuarial Standards Board as “a sudden and usually temporary increase in the cost of materials, services, and labor due to the increased demand for them following a catastrophe.” However, Olsen and Porter (2011) note that there is “no consensus on what specific material and labor costs contribute to demand surge.” The most common way of quantifying

²⁶ Florida Catastrophic Storm Risk Management Center (2010a, 2010b).

²⁷ See Peacock (2003), International Hurricane Research Center (2004), Florida Catastrophic Storm Risk Management Center (2010a, 2010b) and Medders (2011).

²⁸ Although catastrophe models can generate AALs at the property level, rating plans filed by insurers (in Florida and other states) still rely on territorial rating for homeowners and wind-only property coverage. The potential for switching to property-level rate making exists, but consideration of such a granular approach raises a number of questions as to the appropriate role of the catastrophe models in setting wind rates.

demand surge is through catastrophe models that increase the calculated first-dollar losses by some demand surge multiplier. Olsen and Porter (2011) note that the multiplier is typically between 1.0 and 1.6, which is a significant range. In other words, losses could be up to 60% greater than what was modeled solely based on demand surge. There has been some research attempting to quantify demand surge in recent disasters. Hallegatte (2008) found a 13% cost of demand surge following Katrina in Louisiana.

Unknown Mitigation Features

A crucial element in estimation of windstorm loss costs is the identification of property features important in determining the amount of damage a structure will sustain during a windstorm. These features can be related to construction (e.g., roof shape), maintenance (e.g., age and condition of the roof covering) or site (e.g., terrain). These relevant property features can be risk (and thus loss cost) reducing, and ideally are included in insurance ratings. Information regarding the existence of (or need for) mitigation features must be known for catastrophe models and insurers to incorporate them in the estimation of loss costs. While some of these features can be drawn from public records and building schematics, many cannot. And even the information available publicly may be incorrect or outdated. The most reliable method of verification is physical inspection; time and labor intensive, this mechanism adds substantial costs to the property insurance marketplace.

Reinsurance

Reinsurers are the primary link between Florida property insurance companies and the broader capital markets that may be interested in making capital investments in the catastrophe risk market. The reliance on reinsurance impacts rates and premiums in Florida in two ways. First, reinsurers can set risk-based rates using their choice of catastrophe models, while primary

companies are restricted to using only one model from the list approved by the Florida Commission on Hurricane Loss Projection Methodology (Commission). Given the models used by reinsurers may be outside the list of those approved by the Commission and they may be blended, or weighted, significantly different rate indications may result than from those used by Florida primary property insurers. Second, as the link between Florida windstorm risk and the capital markets, reinsurers are the best indicator of the cost of capital needed to entice investors to Florida's catastrophe risk market. Because this cost of capital is dependent on market conditions and other investment opportunities to which investors have access, it can fluctuate widely and have significant impact on rates, premiums, and private market insurance stability in Florida.

Other Market Problems

Although the windstorm problem is Florida's greatest homeowners insurance challenge, Florida is not without non-windstorm problems. Two insurance coverage issues in particular are notable for exacerbating the market problems already discussed. Citizens' standard of providing residual market coverage at high limits on an all-risks basis and the sinkhole and subsidence coverage unique to the state are both discussed below.

Citizens' coverage standard. The insured value of property in the state of Florida has been estimated to be over \$3 trillion dollars with 79% or \$2.5 trillion being coastal property. The only state that approaches the coastal insured value of Florida is New York with around \$2.4 trillion in coastal exposure.²⁹ Contributing significantly to insured values is the fact that Citizens, the residual property primary insurer, offers the same depth and breadth of coverages as do the primary insurers in the private market. The standard is a HO-3 contract with a maximum policy limit of \$1 million for Coverage A (structure) alone, meaning that the claims settlement values in

²⁹ AIR Worldwide, 2008.

the event of a total loss (i.e., after paying for losses to other structures, contents and additional expenses) effectively can be much higher than the nominal \$1 million.³⁰ Citizens does not differentiate between the voluntary and residual market policies in provision of this all-risks, replacement cost value coverage; all insured properties are covered to this standard. This runs counter to the usual practices found in other residual markets and counter to mitigation incentives.³¹

Sinkhole and subsidence coverage. Florida is the only state in the nation that requires insurers to provide coverage for property losses related to sinkholes and subsidence. In other states, all-risks insurance policy wording specifically excludes sinkholes and subsidence from coverage, even within the residual market. In 2010, Citizens earned approximately \$32 million in sinkhole premium and is expecting to pay out approximately \$245 million in losses and loss related expenses (\$19.6 million and \$84 million respectively in 2009).³² Furthermore, there is evidence the significant increase in sinkhole claims is at least partially due to policyholder incentivizes to file claims because they can keep the cash proceeds from the claim instead of effectuating repairs to their home or remediating the land.³³

Government Intervention and Negative Market Externalities

Often, government intervention is used to ease market problems, such as the ones described here. Such intervention in the insurance market can make economic and social sense

³⁰ The maximum Citizens policy limit was reduced from \$2 million, effective February 1, 2012.

³¹ Dionne and Harrington (1992), Kunreuther et al (2009).

³² Private insurers have seen their sinkhole claims and costs rise by double and triple-digit percentages over the past several years. According to the OIR Data Call report, the total reported sinkhole claims increased from 2,360 in 2006 to 6,694 in 2010. Over that time period, there were 24,671 total sinkhole claims for approximately \$1.4 billion.

³³ See Florida Catastrophic Storm Risk Management Center (2011) for a more thorough discussion of the problem. During the 2011 Florida Legislative Session, legislation specifically designed to address sinkhole insurance issues passed. It is too early to quantify the effects of SB408 on sinkhole loss trends. While it is likely safe to assume that the changes effected by SB408 will reduce sinkhole claims, the magnitude of the reduction is difficult to quantify.

when planned and implemented in ways that improve industry solvency, market conduct and/or incentivize an increased private supply of capital. In Florida’s residential property insurance market, however, a focus on price-reducing legislation and regulation has led to increased solvency constraints and negative first-order effects on private industry capacity. Such legislation and regulatory actions impacting Florida’s property insurance market create significant uncertainty to private insurers and add to the cost of doing business in Florida. Appendix C shows the timeline of major legislative and regulatory changes in Florida’s residential property insurance market since 1970. The focus in this section is on the specific implemented legislation and regulation that have resulted in negative market externalities leading to market failures. We contend two state government policies in particular – House Bill 1A and the Windstorm Mitigation Discount program – are the primary, direct drivers of the failures noted earlier.³⁴

House Bill 1A and Subsequent “Glidepath” Legislation

House Bill 1A (HB1A), passed in the 2007 Session of the Florida Legislature, rolled back Citizens rates, froze rates going forward, allowed policyholders to purchase Citizens policies without first being rejected by the admitted market and expanded the capacity of the FHCF.³⁵ By the time of the 2009 Legislative Session, Florida lawmakers effectively began a slow reversal of pivotal parts of HB1A, setting Citizens on a gradual “glidepath” to higher rates, effective 2010.³⁶ Despite its intent to reverse the premium-reducing policies of 2006-2007, this legislation limited

³⁴ The Florida Catastrophic Storm Risk Management Center, in its *State of Florida’s Property Insurance Market* (2011) provides a thorough treatment of these, and preceding, state government policies impacting the market for property insurance in Florida.

³⁵ Prior to HB1A a policyholder had to be rejected in the private market or show that admitted insurers were charging 25% more or higher than Citizens to be eligible for Citizens coverage. HB1A removed the requirement that a policyholder must be rejected by the private admitted insurance market to be eligible for Citizens coverage. After the passage of HB1A, the minimum premium difference requirement for Citizens eligibility was reduced from 25% to 15%.

³⁶ It is important to note, however, that Citizens’ 2011 rate filing had a greater than 10% rate indication from 2010. In other words, the glidepath may not be enough to allow for year over year rate indications let alone allowing Citizens to “catch-up” on underpriced properties.

premium increases on any individual Citizens policy to 10% per year, a restriction that is estimated to keep rates actuarially inadequate for at least five years.

Windstorm Mitigation Discount Program

Originally intended, at least in part, to incentivize mitigation, Florida's Wind Mitigation Discounts (credits) and the My Safe Florida Home policies became premium-reduction programs.³⁷ Since 1993, the Florida Legislature has required residential property insurers to include appropriate discounts, credits, or other rate differentials (or appropriate reductions in deductibles) for properties on which fixtures have been installed that are actuarially demonstrated to reduce the amount of loss in a windstorm. Since 2000, the discounts, credits, or other rate differentials, or appropriate reductions in deductibles must be "actuarially reasonable." In 2003, the FLOIR effectively determined that the program would operate strategically as a premium-reduction policy when it made the weakest structure the base house for adjusting base rates for loss relativities.³⁸ Using the weakest house as the base for mitigation credits, the results of applying mitigation rate differentials were premium neutral or resulted in premium decreases, not premium increases. Credits were tempered by 50% initially. The mitigation credit structure was 100% implemented in 2006-2007 without allowing insurers to adjust their base rates to

³⁷ Indeed, the My Safe Florida Home 2007 Annual Report (<http://edocs.dlis.state.fl.us/fldocs/dfs/disaster/safehome/ar/2007.pdf>) stated the program's goals were to: "1. Help Floridians better protect their property and assets. 2. Help Floridians save money on their insurance premiums.

3. Promote public education and awareness of the financial and safety benefits of mitigation."

³⁸ This was accomplished by rescaling results of an Applied Research Associates mitigation credit study from the average structure being the base house to the weakest structure being the base house, thus ensuring that most inspected homes can be eligible for a mitigation credit, and being a worse than average risk results in no surcharges. See Florida Catastrophic Storm Risk Management Center (2010b, 2011).

reflect the weakest structure as the base house. (Insurers typically use the average house as their base structure to compute their base rates.)

The rate effect of these legislative and regulatory actions on the private property insurance market was immediate and significant. Homeowners insurance rates in the admitted market declined in 2007 below year-end 2005 levels, and still remain more than 12% below that baseline on a statewide average basis. Rate levels for domestic companies and Citizens are generally even farther below the 2007 baseline. Premium base erosion combined with growing or even stagnant insured values implies significant erosion in the statewide average rate level, as shown in Chart 8.

[Insert Chart 8: Trend in Florida Personal Residential Property Insurance Rate Levels (2005-2011)]

During the MSFH program period, 401,372 free home inspections were conducted at a total cost to the State of nearly \$58.5 million. Only 33,547 of these homes were retrofitted as a result of the program (at a total cost to the State of approximately \$111.2 million and \$3,317, on average, per home).³⁹ According to the MSFH Annual Reports, an estimated 55 percent of the homes awarded mitigation credits stemming from the MSFH program were “eligible for insurance savings without making a single improvement” (i.e., no improvement in fortification of the home from what existed before the MSFH program).⁴⁰

³⁹ DFS reimbursed 24,486 in grants to homeowners while 525 were direct pay grants issued to low income homeowners. Some 6,203 grants were issued through non-profit partnerships and local government partnerships issued 2,333 grants. See Florida Catastrophic Storm Risk Management Center (2010a).

⁴⁰ See the My Safe Florida Home 2008 Annual Report and McChristian (2009). Even more disconcerting, testimony received in the public hearings conducted by the Florida Commission on Hurricane Loss Projection Methodology indicates extremely high error rates on the Florida OIR 1802 (mitigation inspection) forms. The Florida Association of Insurance Agents presented error rates as high as 55-80% depending on the region of the state. AmeriPro Inspection Corporation reported error rates between 68 and 78%. See “Windstorm Mitigation Discounts Report,” Florida Commission on Hurricane Loss Projection Methodology, February 1, 2010.

The Mitigation Discounts program continues, although the MSFH program ended in mid-2009. We cannot state with certainty that homeowners are dis-incented to mitigate under this program; we can, however, observe insurer behavior as a guide to what the industry believes. One area of evidence lies within the Citizens take-out policies. The Legislature has charged the FLOIR with the task to help Citizens reduce (depopulate) its homeowners insurance policy count over time. An admitted Florida insurer can apply to be a “take-out company,” meaning it can submit a proposal to take away homeowners policies of its choosing from Citizens if the company is approved by the FLOIR to participate in the take-out program. Interestingly, only eight insurers currently participate in the program. And the anecdotal evidence indicates that across all eight companies, there is a preference to take out un-inspected homes. If this is true, that is a strong indication insurers either do not: think that inspected homes earning mitigation credits against their wind premiums constitute premiums adequate to sustain a profitable book of business; trust that the inspection is correct; or both. In other words, it would indicate that insurers view the inspections as resulting in excessive or unwarranted credits.⁴¹

The volatility of the rate level – the key factor determining financial profitability for insurers – is worth noting. Rates rose approximately 15% statewide in 2006, while insured values rose nearly twice that percentage. Rates then declined precipitously, stabilizing well below year-end 2005 levels in almost every region of the state.⁴² Since that time, average rate levels have remained below year-end 2005 levels in nearly every region of the state.

⁴¹ This potential problem of skewed take-out demand can be considered a negative externality on its own; since the evidence is merely anecdotal thus far, the authors do not go so far as to assert the externality exists. Regardless, the issue is of interest, and needs scrutiny.

⁴² The only notable exception is Tampa Bay; the most severely impacted include the Keys and Southeast regions. Source: FLOIR QUASR data, 2010-2011.

Externality 1: Non-risk-based rates and cross subsidies among property insurance policyholders⁴³

Florida, like many catastrophe-prone states, hosts multiple types of subsidies within its risk financing system. These can be seen both in pre-loss and post-loss financing. Despite the use of catastrophe models by insurers, rate and premium differentials that are still based on wide (zip-code level) territories can result in a failure to capture the precise risk base in the insurance rate. Thus, two homeowners' insurance policies within the same pricing territory can be charged the same insurance rate despite one having a higher risk of loss. Further, the implementation of mitigation premium credits, if actuarially unbalanced such that no risk premiums are increased, may create rate subsidies among houses on the same street.

Externality 2: Cost shifting from current homeowners insurance policyholders to future policyholders and policyholders in other lines of business⁴⁴

Post-loss financing can create subsidies depending on the structure of post-loss assessments. If assessments are not purely risk based, it is possible that lower-risk policyholders pay larger post-loss assessments relative to their exposure than do higher-risk policyholders. In particular, assessments levied as a flat percentage of total premiums (such as Florida's FHCF, Citizens, and FIGA assessments) propagate the same relative degree of subsidy that exists in the up-front premiums among risks. Additional assessments are levied on most lines of property-casualty insurance. Subsidies may not be restricted to differences in hurricane risk. They also may result from timing in the sense that new policyholders, while required to pay assessments for the prior losses of other homeowners, did not receive the benefit of below-market rates prior to the catastrophe. This outcome is dangerous for an economy dependent largely on net

⁴³ Florida Catastrophic Storm Risk Management Center (2009).

⁴⁴ See Cole, Macpherson, Maroney, McCullough, Newman and Nyce (2011) for a detailed treatment of the subsidies across insurance lines and across time that are embedded within the state's post-loss assessment system.

migration to the state. Finally, subsidies may exist between the private and state-run entities, since the residual market mechanisms may be able to assess both their policyholders as well as policyholders in the private market.

Externality 3: Mitigation disincentives

We established in the discussion of prior research that mitigation can be a substitute for insurance. We also established that a major property insurance market problem in the State of Florida has been under-investment in risk-reduction efforts. Rather than reducing the market problem of under-investment in mitigation, the joint effect of the implementation of the two mitigation policy efforts discussed here appears to be the opposite. The Florida Catastrophic Storm Risk Management Center (2010b) and the Florida Commission on Hurricane Loss Projection Methodology (2010) provide ample anecdotal evidence that the programs, via exaggerated insurance discounts for existing mitigation features, actually discouraged further expenditure on mitigation efforts for most Florida homeowners. Carson, McCullough and Pooser (2012) find that the insurance subsidies within the Florida property insurance market are correlated with statistically significant reductions in mitigation practices.

Conclusions and Avenues for Future Research

Florida provides lessons for states around the nation as policy makers struggle with the task of making financial preparations for the likelihood of catastrophic events. As the only state that requires catastrophe models (simulation-based modeling of hurricanes) be used to price residential property insurance, Florida is ahead of its U.S. peers in developing a financial market for catastrophes based on a forward-looking view of the risk. At the same time, legislative and regulatory interventions in the Florida insurance and reinsurance markets have resulted in externalities, such as suppressed property insurance prices, cost shifting from one policyholder to

another (via non-risk-based pricing) and from current to future policyholders (via a system of assessments), and disincentives for homeowners to engage in mitigation activities.

Since the implementation of the rate rollbacks and mitigation credits in 2006 and 2007, the claims-paying ability (PHS) of Florida's homeowners insurers has declined as large, well-capitalized (and diversified) insurers exit the market, being replaced by small, domestic (many of which are monoline) homeowners insurers and the residual insurer (Citizens). Market stability today is contingent on two factors: the continued ability to purchase inexpensive reinsurance from the state's "reinsurance" entity (FHCF); and suffering no major storms. The authors contend the legislative and regulatory interventions in recent years are directly responsible for these market failures despite their likely good intentions of protecting the public good. And although recent legislative activity has begun to reverse the trajectory of rates and the population of Citizens, these efforts may not be enough to repair the market before the next major storm.

Additional avenues of research are warranted. Empirical examination of capitalization by company and company type is important to understanding more thoroughly the transition the Florida homeowners insurance market has made in a short period of time. A study of the relationship between 1) rates and 2) company diversification and capacity (e.g., number of companies, capitalization) is needed. Empirical analysis of the precise correlation between the mitigation credits (discounts) program and actual mitigation performed is critical information for use by policy makers as they design future incentives programs for policyholders and homeowners. Furthermore, although Florida's capacity to "pay for the big one" has been subject to much scrutiny in recent years, the national market has not been studied as closely. Updated studies of the adequacy of insurance market capacity nationally to pay for either an extreme event or multiple events experienced close together are needed.

References

- AIR Worldwide (2008) *The Coastline at Risk: 2008 Update to the Estimated Insured Value of US Coastal Properties*, Boston, Massachusetts
<http://www.air-worldwide.com/_public/images/pdf/AIR2008_Coastline_at_Risk.pdf>
- Arrow, Kenneth J. (1971) *Essays in the Theory of Risk Bearing*, Markham Publishing Co.: Chicago
- Carson, James M. Kathleen A. McCullough, and David M. Pooser (2010) “Deciding Whether to Invest in Mitigation Measures: Evidence from Florida” *Journal of Risk and Insurance*, Forthcoming
- Christoplos, Ian, John Mitchell and Anna Liljelund (2001) “Re-framing risk: The Changing Context of Disaster Mitigation and Preparedness” *Disasters*, 25(3)
- Cole, Cassandra, David Macpherson and Kathleen McCullough (2010) “Comparison of Hurricane Loss Models” (2010) *Journal of Insurance Issues*, Spring
- Cole, Cassandra R., David A. Macpherson, Patrick F. Maroney, Kathleen A. McCullough, James W. (Jay) Newman, Jr. and Charles Nyce (2011) “The Use of Postloss Financing of Catastrophic Risk” *Risk Management and Insurance Review*, 14(2): 265-298
- Cummins, J. David, Mary A. Weiss and Richard D. Phillips (2001) “Incentive Effects of No Fault Automobile Insurance” *Journal of Law and Economics*, 44: 427 – 464
- Cummins, J. David, Neil Doherty and Anita Lo (2002) “Can Insurers Pay for the Big One? Measuring the Capacity of the Insurance Market to Respond to Catastrophic Losses” *Journal of Banking and Finance* 26: 557 – 583
- Dionne, G. and L. Eeckhoudt (1985) “Self-insurance, Self-protection and Increased Risk Aversion” *Economic Letters*, 17, pp. 39-42
- Dionne, Georges and Scott Harrington, Editors (1992) *Foundations of Insurance Economics*, Kluwer, Boston
- Doherty, Neil A (1980) “A Portfolio Theory of Insurance Capacity” *Journal of Risk and Insurance* 47(3): 405 – 420
- Doherty, Neil A (1983) “The Measurement of Firm and Market Capacity” *Journal of Risk and Insurance* 50(2): 224 – 234
- Doherty, Neil A and James R. Garven (1995) “Insurance Cycles: Interest Rates and the Capacity Constraint Model” *The Journal of Business* 68(3): 383 – 404
- Dumm, Randy E. Andre P. Liebenberg, Ivonne A. Liebenberg and Joseph Ruhland (2010) “Market Reaction to Regulatory Capture and Political Risk in a Highly-Salient Environment” *Journal of Insurance Regulation*, 29(6): 141 – 167

Ehrlich, I. and G. Becker (1972) “Market Insurance, Self-insurance and Self-protection” *Journal of Political Economy*, 80, pp. 623-648

Florida Catastrophic Storm Risk Management Center (2009) “Pre-loss Subsidies in the Florida Insurance Market” White paper, The Florida State University, Tallahassee, Florida

Florida Catastrophic Storm Risk Management Center (2010a) *Hurricane Mitigation Inspection System Study: Final Report*, The Florida State University, Tallahassee, Florida, Submitted to the Florida Department of Financial Services

Florida Catastrophic Storm Risk Management Center (2010b) *Mitigation Credit Study: Final Report*, The Florida State University, Tallahassee, Florida, Submitted to the Florida Department of Financial Services

Florida Catastrophic Storm Risk Management Center (2011) *The State of Florida’s Property Insurance Market*, The Florida State University, Tallahassee, Florida, Submitted to the Florida State Legislature

Florida Commission on Hurricane Loss Projection Methodology (2010) *Wind Mitigation Discounts Report*, The Florida State Board of Administration, Tallahassee, Florida, Submitted to the Governor’s Cabinet

Fronstin and Holtman (1994) “The Determinants of Residential Property Damage Caused by Hurricane Andrew. *Southern Economic Journal*, 61: 387–397

Grabowski, Henry, W. Kip Viscusi and William N. Evans (1989) “Price and Availability Tradeoffs of Automobile Insurance Regulation” *Journal of Risk and Insurance*, 56(2): 275 – 299

Grace, Martin, Robert W. Klein and Paul R. Kleindorfer (1999) “The Supply of Catastrophe Insurance under Regulatory Constraint” Working Paper, Wharton Managing Catastrophic Risks Project, December

Grace, Martin F. and Robert W. Klein (2009) “The Perfect Storm: Hurricanes, Insurance and Regulation” *Risk Management and Insurance Review*, 12(1): 81-124

Greenwald, Bruce C. and Joseph E. Stiglitz (1990) “Asymmetric Information and the New Theory of the Firm: Financial Constraints and Risk Behavior” *American Economic Review*, 80: 106-165.

Gron, Anne (1994) “Capacity Constraint in Property-Casualty Insurance Markets” *The RAND Journal of Economics* 25(1): 110 – 127

Guy Carpenter and Company, LLC (2009) *World Catastrophe Reinsurance Market 2008*

Hallegatte, S. (2008) “An Adaptive Regional Input-Output Model and its Application to the

- Assessment of the Economic Cost of Katrina” *Risk Analysis*, 28(3).
- Harrington, Scott E. and Helen I. Doeringhaus (1993) “The Economics and Politics of Automobile Insurance Rate Classification” *Journal of Risk and Insurance*, 60(1): 59 – 84
- Harrington, Scott E. and Patricia M. Danzon (2000) “Rate Regulation, Safety Incentives, and Loss Growth in Workers’ Compensation Insurance” *Journal of Business*, 73(4): 569 – 595
- Herring, Richard J. and Prashant Vankudre (1987) “Growth Opportunities and Risk-Taking by Financial Intermediaries” *The Journal of Finance*, 42(3): 583-599
- Hiebert, L. D. (1989) “Optimal Loss-reduction and Increases in Risk Aversion” *Journal of Risk and Insurance*, 56, pp. 300-305
- International Hurricane Research Center (2004) *Hurricane Loss Reduction for Housing in Florida: Final Report to the Florida Department of Community Affairs*, Florida International University
- Kaplow (1991) “Incentives and Government Relief for Risk” *Journal of Risk and Uncertainty*, 4, pp. 167-175
- Kelly, Mary and Anne E. Kleffner (2003) “Optimal Loss Mitigation and Contract Design” *The Journal of Risk and Insurance*, 70(1), pp. 53-72
- Kleffner, Anne E. and Mary Kelly (2001) “The Impact of Insurance on the Level of Optimal Loss Mitigation” *Northwest Journal of Business and Economics*, pp. 29-42
- Klein, Robert W. (1998) “Regulation and Catastrophe Insurance” in Howard Kunreuther and Richard Roth, Sr., Editors, *Paying the Price: The Status and Role of Insurance Against Natural Disasters in the United States*, Joseph Henry Press, Washington, D.C., 171-208.
- Klein, Robert W. and Paul R. Kleindorfer (2003) “Regulation and Markets for Catastrophe Insurance” in Murat R. Sertel and Semih Koray, Editors, *Advances in Economic Design*, Springer-Verlag, Berlin
- Kleindorfer, Paul R. and Howard Kunreuther (1999a) “Challenges Facing the Insurance Industry in Managing Catastrophic Risks” in Kenneth Froot, Editors, *The Financing of Catastrophe Risks*, University of Chicago Press, Chicago
- Kleindorfer, Paul R. and Howard Kunreuther (1999b) “The Complementary Roles of Mitigation and Insurance in Managing Catastrophic Risks” *Risk Analysis*, Vol. 19, No. 4, 1999
- Kleindorfer, Paul R. and Sertel, Murat R., Editors (2001) *Mitigation and Financing of Catastrophe Risks: Turkish and International Perspectives*, Kluwer, Dordrecht
- Kunreuther, Howard et al. (1978) *Disaster Insurance Protection: Public Policy Lessons*, New York: Wiley Press

Kunreuther, Howard and Anne E. Kleffner (1992) “Should Earthquake Mitigation Measures be Voluntary or Required?” *Journal of Regulatory Economics* 4: 321-333

Kunreuther, Howard (1996) “Mitigating Disaster Losses through Insurance” *Journal of Risk and Uncertainty* 12: 171-187

Kunreuther, Howard (1998) “The Role of Insurance in Dealing With Catastrophic Risks from Natural Disasters” in Robert W. Klein, editor, *Alternative Approaches to Insurance Regulation*, National Association of Insurance Commissioners, Kansas City, MO

Kunreuther, Howard and Richard Roth, Sr. (1998) *The Status and Role of Insurance Against Natural Disasters in the United States*, Joseph Henry Press, Washington, D.C.

Kunreuther, Howard and Mark Pauly (2006) *Insurance Decision Making and Market Behavior* Now Publishers

Kunreuther, Howard and Erwann O. Michel-Kerjan, with Neil A. Doherty, Martin F. Grace, Robert W. Klein and Mark V. Pauly (2009) *At War with the Weather: Managing Large-Scale Risks in a New Era of Catastrophes* MIT Press, Cambridge, MA

McChristian, Lynne (2009) “Mitigation Discounts – Are They ‘On the Money’?” *Florida Underwriter* September: 14

Medders, Lorilee (2011) “Improving the Affordability of Property Mitigation: Innovative Ideas from the Energy Sector” *CPCU eJournal*, 64(8)

Meier, Kenneth J. (1991) “The Politics of Insurance Regulation” *Journal of Risk and Insurance*, 58(4): 700 – 713

Newman, James (Jay) W. (2009) “Residual Market Subsidies in Florida’s Property Insurance Market” White paper, Florida Catastrophic Storm Risk Management Center, The Florida State University, Tallahassee, Florida

Newman, James (Jay) W. (2010) “Insurance Residual Markets: Historical and Public Policy Perspectives” White paper, Florida Catastrophic Storm Risk Management Center, The Florida State University, Tallahassee, Florida

Nielson, Norma (1984) “Capacity of the Property-Casualty Insurance Industry” *Journal of Risk and Insurance* 51(3): 393 – 411

Nyce, Charles M. and Patrick Maroney “Are Territorial Rating Models Outdated in Residential Property Insurance Markets? Evidence from the Florida Property Insurance Market” *Risk Management and Insurance Review*, 14(2): 201-232

Olsen, Anna H. and Keith A. Porter (2011) “What We Know about Demand Surge: Brief Summary” *Natural Hazards Review* 12(2)

Peacock, Walter Gillis. 2003 “Hurricane Mitigation Status and Factors Influencing Mitigation Status among Florida’s Single-Family Homeowners” *Natural Hazards Review*, 4(3): 1-10

Risk Management Solutions (2009) *RMS Special Report Analyzing the Effects of the My Safe Florida Home Program on Florida Insurance Risk*, Risk Management Solutions

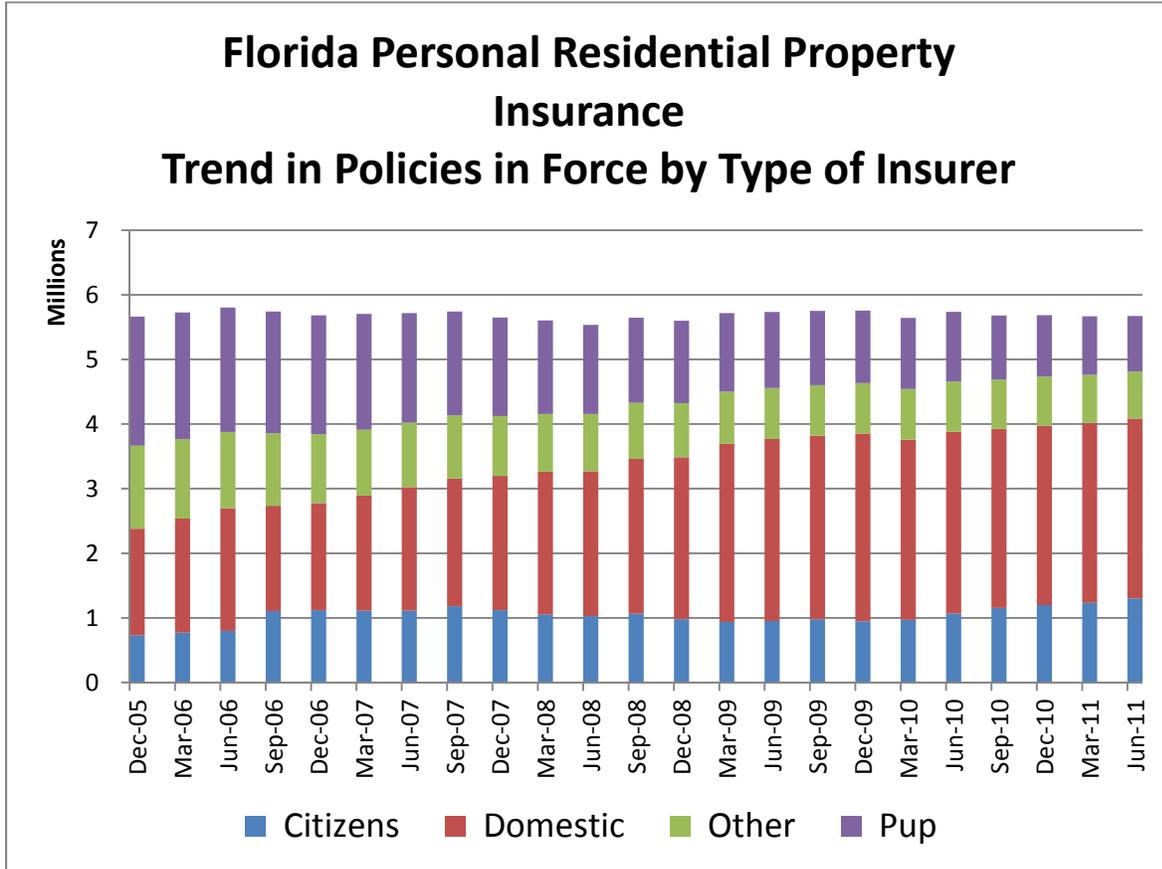
Rollins, John W. (2011) “Comparison of AIR and RMS Modeled Loss Cost Estimates” Rollins Analytics, Inc.

Stigler, George J. (1971) “The Theory of Economic Regulation” *The Bell Journal of Economics and Management Science*, 2(1): 3 – 21

Stone, James M (1973) “A Theory of Capacity and the Insurance of Catastrophe Risk (Part II)” *Journal of Risk and Insurance* 40(3): 339 – 355

Weiss, Mary A., Sharon Tennyson and Lauren Regan (2010) “The Effects of Regulated Premium Subsidies on Insurance Costs: An Empirical Analysis of Automobile Insurance” *Journal of Risk and Insurance*, 77(3) 597 – 624

Chart 1: Residential Property Insurance Policies in Force



Source: Florida Office of Insurance Regulation Quarterly Supplemental Reporting (QUASR) system

Chart 2: Trend in Florida Personal Residential Property Insured Values (2005-2011)

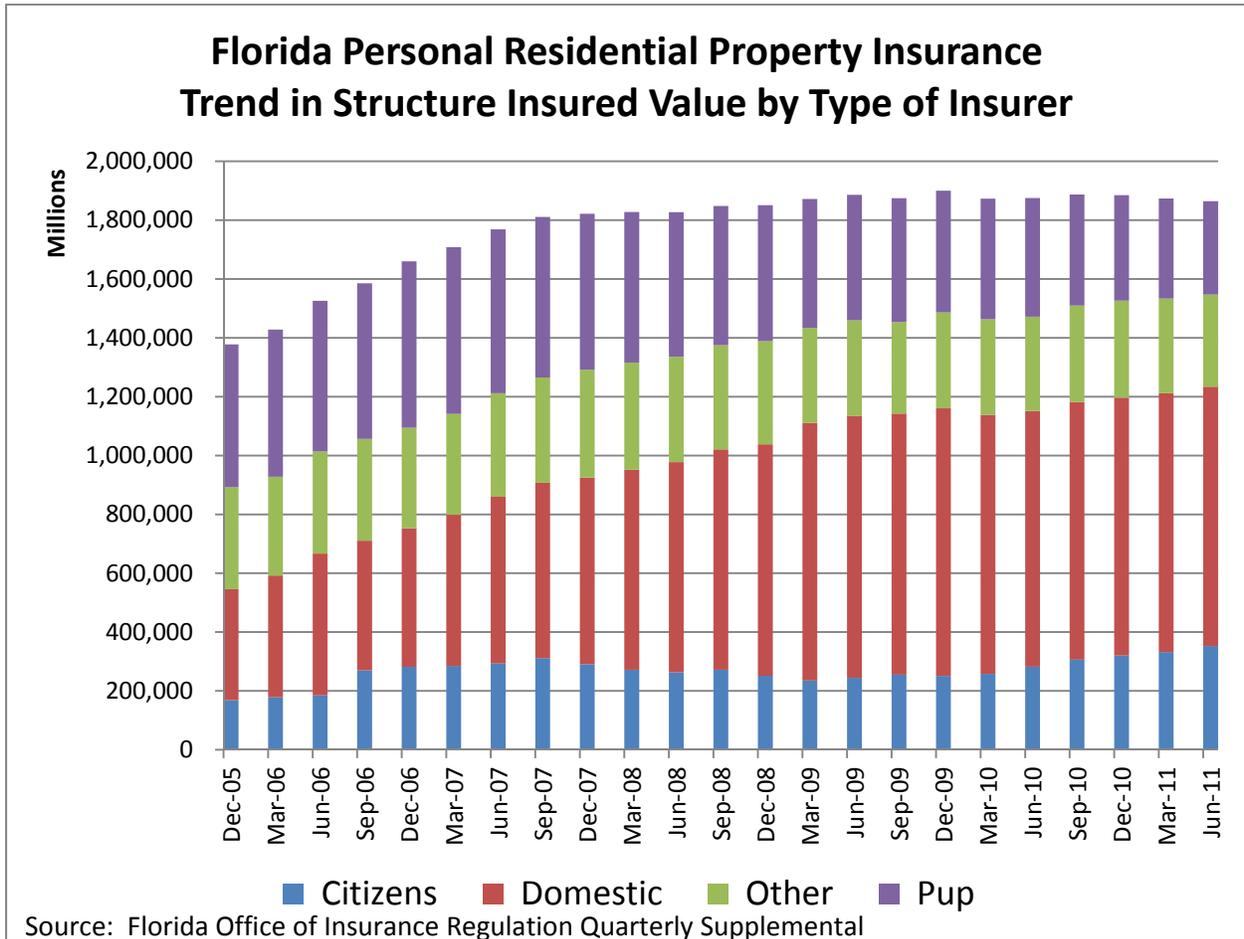


Chart 3: 1985-2010 Trend in Number of Insurers Writing Homeowners Insurance, by State

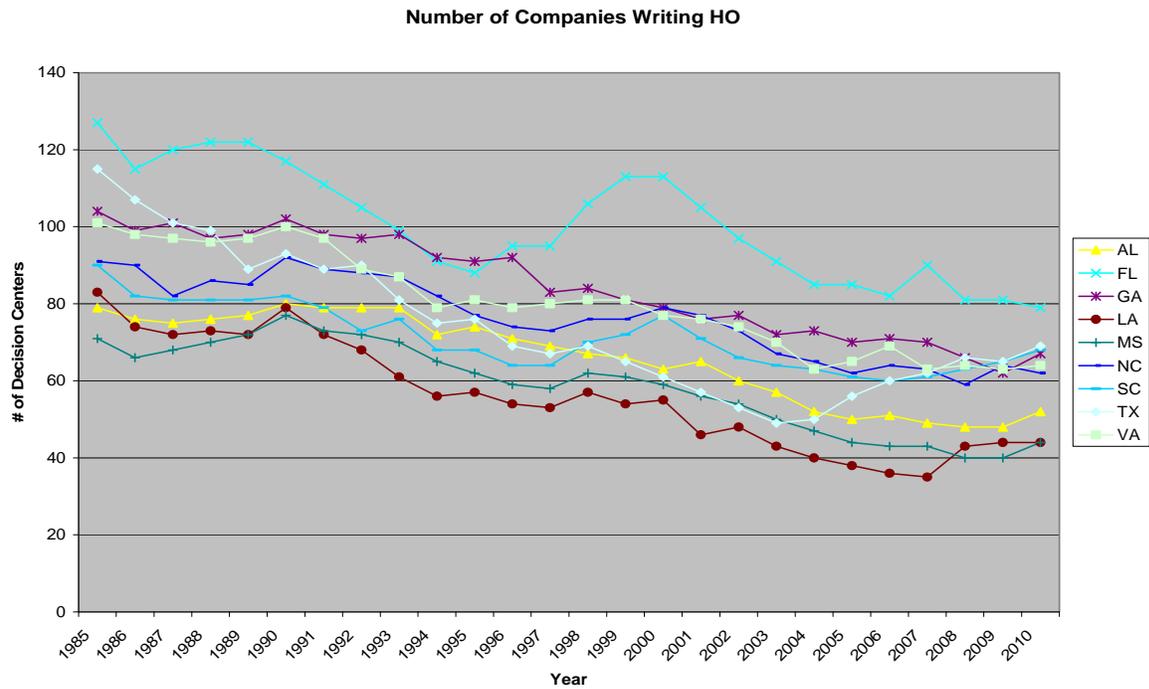


Table 1: Percentage Changes in Number of Companies, PHS and DPW by State and Company Structure in the Florida Homeowners Insurance Market (1985-2010)

1985-2010	Total Decision Centers	Groups	Ind. Cos.	Total PHS	Group PHS	Ind. Cos. PHS	Total DPW	Group DPW	Ind. Cos. DPW
Nat'l	-19.40%	-27.27%	-9.78%	431.80%	429.60%	536.14%	364.74%	354.95%	628.60%
AL	-34.18%	-34.25%	-33.33%	300.75%	298.65%	1613.27%	420.60%	421.38%	227.04%
FL	-37.80%	-46.15%	0.00%	145.54%	144.41%	338.60%	849.12%	638.04%	6462.47%
GA	-35.58%	-37.63%	-18.18%	364.18%	362.45%	1110.49%	473.17%	486.44%	83.60%
LA	-46.99%	-53.33%	12.50%	283.14%	281.53%	1282.99%	357.19%	323.81%	1092.75%
MS	-38.03%	-39.39%	-20.00%	306.98%	304.58%	2160.90%	405.20%	430.07%	-86.12%
NC	-31.87%	-41.98%	50.00%	425.35%	424.64%	591.78%	500.20%	502.51%	408.59%
SC	-24.44%	-29.27%	25.00%	275.23%	272.95%	1125.98%	509.62%	503.54%	767.25%
TX	-40.00%	-44.90%	-11.76%	154.61%	152.11%	1579.91%	381.37%	369.22%	1097.66%
VA	-36.63%	-39.13%	-11.11%	331.74%	329.85%	927.39%	500.24%	493.79%	4081.72%

Chart 4: Florida Homeowners Insurance Direct Premiums Written by Insurer Type, 1985-2010

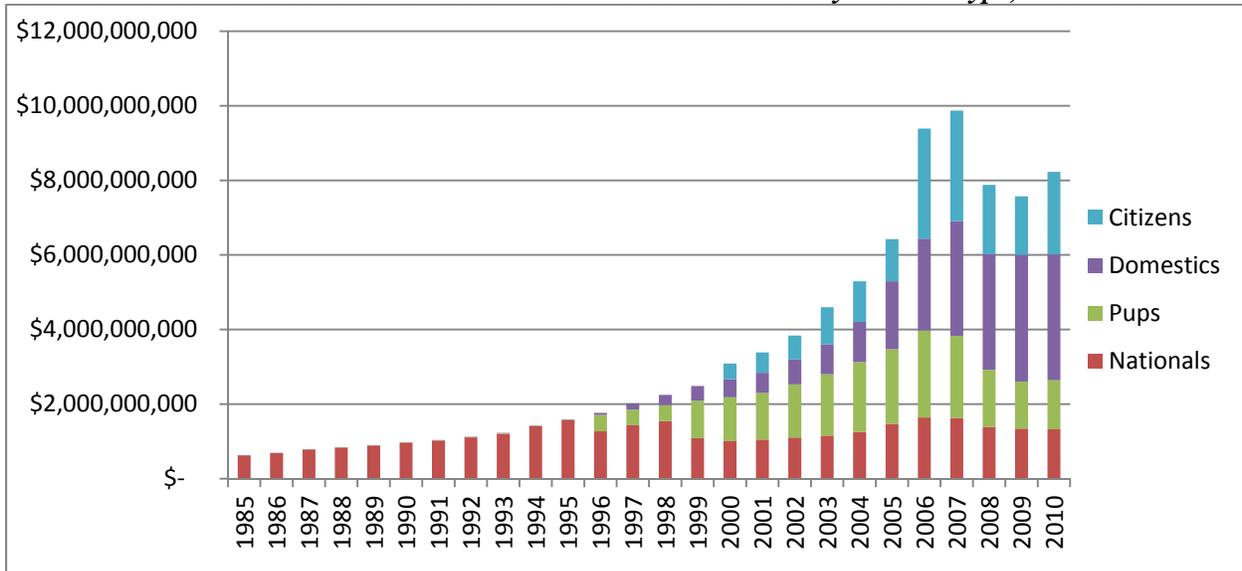


Table 2: Number of Homeowners Insurance Decision Centers by State in 2010

Type State	Nat'l	AL	FL	GA	LA	MS	NC	SC	TX	VA
Group	200	48	56	58	35	40	47	58	54	56
Independent	203	4	23	9	9	4	15	10	15	8
Total	403	52	79	67	44	44	62	68	69	64

Table 3: Number of Companies with 90% or More of Total DPW in the State in 2010

	AL	FL	GA	LA	MS	NC	SC	TX	VA
# of companies	2	47	8	7	2	11	1	24	3

Table 4: Direct Premiums Written (DPW) in \$ Millions for Homeowners Insurance by Structure Type and State in 2010

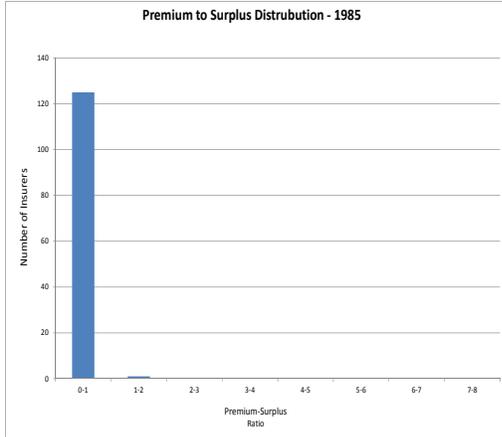
Type	Nat'l	AL	FL	GA	LA	MS	NC	SC	TX	VA
Group	58348	1185	4508	1732	1113	650	1708	1031	3862	1409
Independent	3467	3	1507	18.47	142.09	0.9	36.45	34.95	167.17	17.89
Total	61815	1188	6015	1750.47	1255.09	650.9	1744.45	1065.95	4029.17	1426.89

Table 5: Policyholders' Surplus (PHS) in \$ Billions by Structure Type and State in 2010

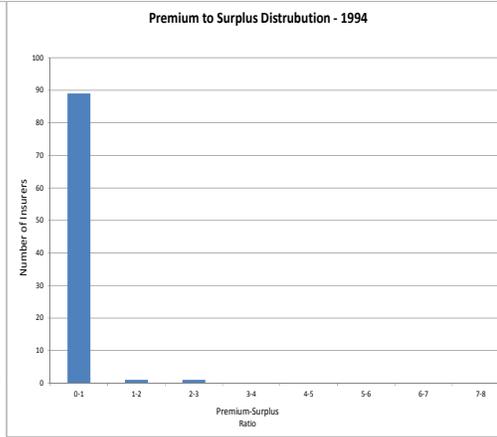
Type	Nat'l	AL	FL	GA	LA	MS	NC	SC	TX	VA
Group	299.3	137.5	94	172.2	123.7	131.1	183.3	129.1	88	156
Independent	7.59	0.948	0.985	1.04	0.722	0.948	1.02	1.14	1.03	1.19
Total	306.89	138.448	94.985	173.24	124.422	132.048	184.32	130.24	89.03	157.19

Chart 5: Frequency Histogram for Florida Private Homeowners Insurers' Premium-to-Surplus Ratios

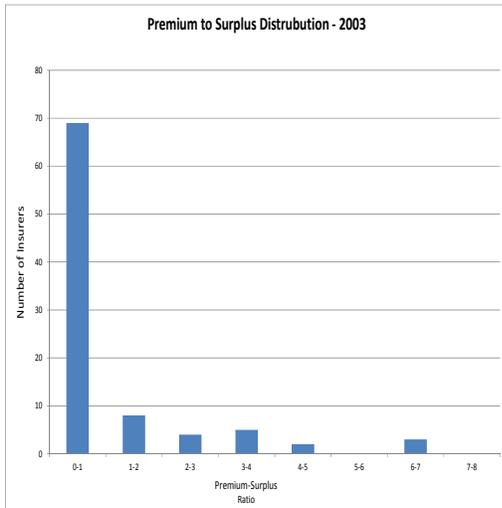
(a) 1985



(b) 1994



(c) 2003



(d) 2010

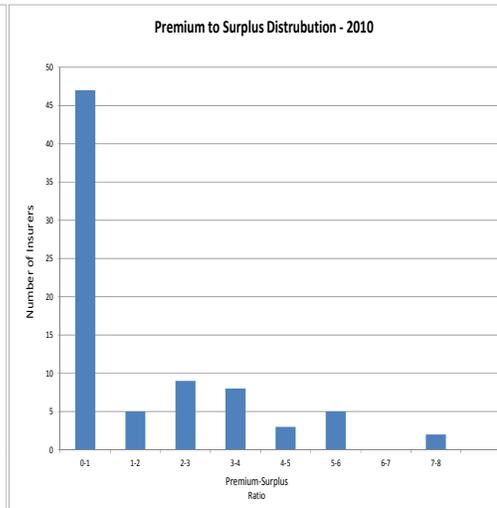


Table 6: Average Loss Ratio, Standard Deviation and Coefficient of Variation by State (1985-2010)

	AL	FL	GA	LA	MS	NC	SC	TX	VA
Average Loss Ratio	74.55	97.31	71.25	92.50	90.73	69.79	75.69	71.94	64.99
Standard Deviation	20.17	193.37	19.41	160.36	119.77	37.00	100.04	27.75	24.36
Coefficient of Variation	0.2706	1.9871	0.2725	1.7336	1.3201	0.5301	1.3217	0.3858	0.3748

Table 7: Loss Ratios (%) in the Private Homeowners Insurance Market from 2004-2010 by State

LR % State	AL	FL	GA	LA	MS	NC	SC	TX	VA
2004	146.5	302.6	59.1	35.3	46.8	43.8	40.9	30.0	35.8
2005	92.3	153.3	67.1	855.3	660.2	39.4	35.6	50.1	30.7
2006	62.0	32.8	58.7	*	43.0	41.9	34.0	35.5	38.5
2007	57.0	24.2	63.7	*	41.5	41.9	31.1	37.9	40.5
2008	62.8	33.2	114.5	166.6	69.2	54.2	47.0	130.2	51.1
2009	93.8	37.5	144.4	11.0	46.7	57.6	45.7	65.0	46.9
2010	64.9	37.0	71.7	25.4	60.9	59.7	58.1	48.6	56.5

Chart 6: Homeowners Insurance Market Concentration Levels by State, 1985-2010

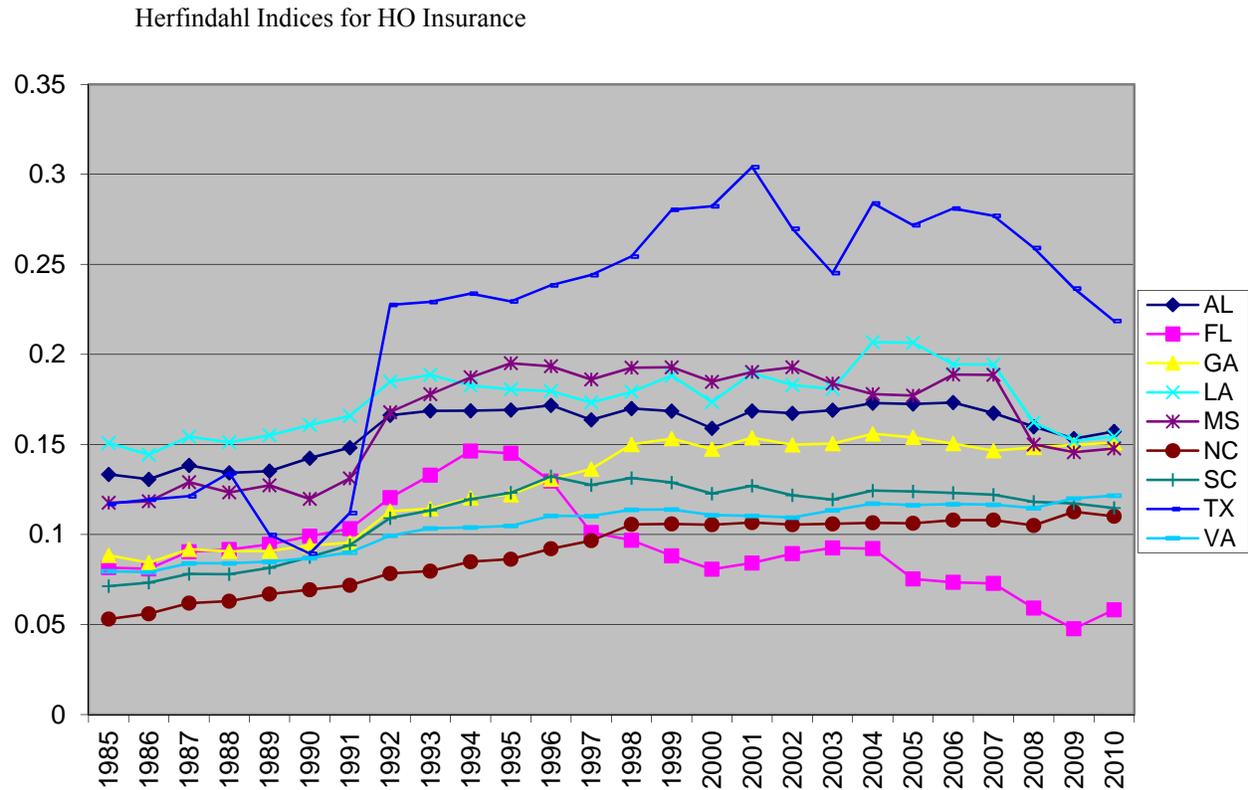


Table 8: Citizens Property Insurance Corporation Personal Residential Policy Counts

	PLA (Multi-peril)	Coastal (Wind Only)	Coastal (Multi-peril)	Total Personal Residential Policy Count
Sep. 2011	992,002	246,832	172,651	1,411,485
Dec. 2010	829,406	248,328	154,663	1,232,397
Dec. 2009	609,652	251,287	114,561	975,500
Dec. 2008	629,467	328,775	67,672	1,025,914
Dec. 2007	845,857	421,505	24,676	1,292,038
Dec. 2006	743,592	403,509		1,147,101
Dec. 2005	407,387	399,418		806,805
Dec. 2004	416,529	453,765		870,294
Dec. 2003	383,280	433,056		816,336

**Table 9: Top 25 - New Policies Written (First 6 months 2011)
Personal & Commercial Residential⁴⁵**

Rank	Insurer Name	# of New Policies	Type of Insurer
1	Citizens Property Insurance Corporation	139,532	State Run Residual Market
2	Universal Property & Casualty Insurance Company	41,724	Florida Domestic
3	American Bankers Insurance Company of Florida	17,273	Other
4	Security First Insurance Company	17,046	Florida Domestic
5	Castle Key Indemnity Company	12,320	Florida Pup
6	St. Johns Insurance Company, Inc.	11,106	Florida Domestic
7	United Property & Casualty Insurance Company	10,266	Florida Domestic
8	Ark Royal Insurance Company	10,244	Florida Domestic
9	American Integrity Insurance Company of Florida	9,652	Florida Domestic
10	Tower Hill Prime Insurance Company	9,466	Florida Domestic
11	Florida Peninsula Insurance Company	9,018	Florida Domestic
12	American Modern Insurance Company of Florida	8,676	Florida Domestic
13	ASI Preferred Insurance Corporation	8,364	Florida Domestic
14	Safe Harbor Insurance Company	6,678	Florida Domestic
15	Cypress Property & Casualty Insurance Company	6,590	Florida Domestic
16	Olympus Insurance Company	6,014	Florida Domestic
17	Federated National Insurance Company	5,966	Florida Domestic
18	Tower Hill Select Insurance Company	5,296	Florida Domestic
19	Florida Family Insurance Company	5,013	Florida Domestic
20	Gulfstream Property and Casualty Insurance	4,835	Florida Domestic
21	Tower Hill Preferred Insurance Company	4,693	Florida Domestic
22	First Protective Insurance Company	4,433	Florida Domestic
23	Auto Club Insurance Company of Florida	4,245	Other
24	Modern USA Insurance Company	3,789	Florida Domestic
25	Prepared Insurance Company	3,622	Florida Domestic
	Top 25 Total	365,861	

⁴⁵ Data are taken from the OIR's Quarterly Supplemental Reporting System (QUASR).

Chart 7: Percentage of Direct Premiums Written Retained by Florida Homeowners Insurers (1985-2010)

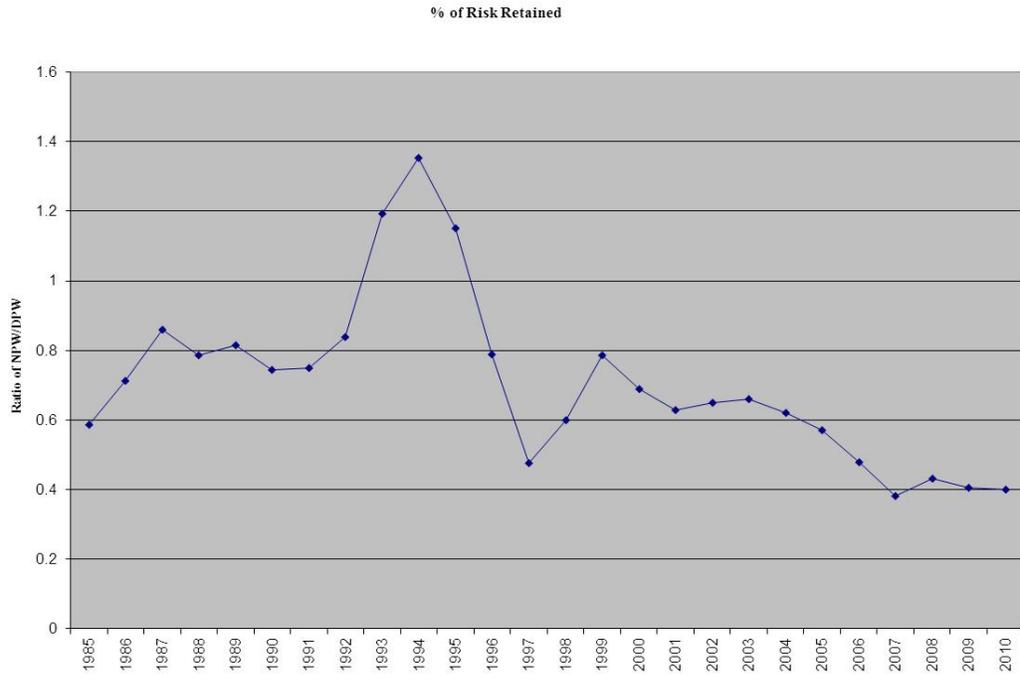
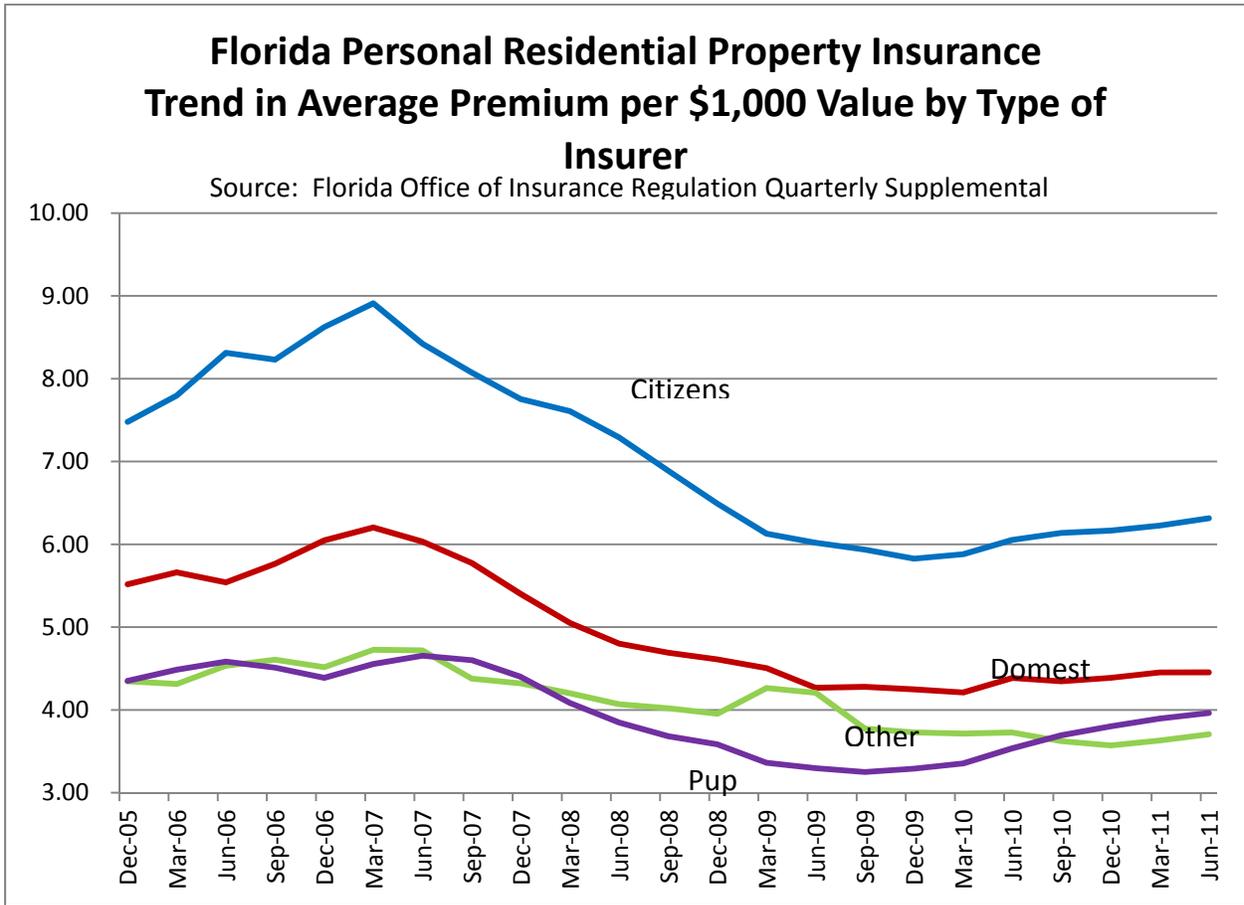


Chart 8: Trend in Florida Personal Residential Property Insurance Rate Levels (2005-2011)



APPENDIX A***Premiums and Exposure of Residual Markets***

State	Premiums Written (PW) in 000's	Premiums Earned (PE) in 000's	Exposure (000,000's)	PW to Exposure	PE to Exposure
Alabama	\$37,769	\$15,006	\$3,335	11.325	4.500
Florida	\$2,604,265	\$1,971,649	\$508,520	5.121	3.877
Louisiana	\$209,946	\$154,738	\$26,675	7.871	5.801
Mississippi	\$79,082		\$7,024	11.26	
North Carolina	\$ 303,258	\$302,197	\$68,000	4.460	4.444
South Carolina	\$97,127	\$12,099	\$14,493	6.702	0.838
Texas	\$304,393		\$76,971	3.955	

Alabama, Mississippi, South Carolina, and Texas wind-only.

Alabama as of November, 2010; Louisiana Exposure as of March, 2010; Texas as of September, 2011; Others as of December, 2010.

APPENDIX B***Historical Construction Cost Index
R.S. Means 2011***

Year	Index Value	% Change
2011*	185	0.82%
2010	183.5	1.89%
2009	180.1	-0.17%
2008	180.4	6.49%
2007	169.4	4.57%
2006	162	6.86%
2005	151.6	5.50%
2004	143.7	
* Jan. 2011 Estimate		

APPENDIX C

Figure 1: Timeline of Legislative and Regulatory Changes Impacting Florida Residential Property Insurance

	1970	1992	1993	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Significant Weather Events		Hurricane Andrew				Hurricanes Charley, Frances, Ivan, Jeanne	Hurricanes Dennis, Katrina, Rita, Wilma						
Legislative Activity	Florida Insurance Guaranty Association Formed	Joint Underwriting Association Formed	Florida Hurricane Catastrophe Fund Formed	Citizens Property Insurance Corporation Formed (merger of JUA & FWJUA)			CS/SB 1486 signed: Created S. 627.711 F.S.; Required insurers to notify policyholders of construction options and cost impact	CS/CS/SB 1980 signed: Required OIR to Reevaluate Mitigation Credits; Panhandle Exemption to SBC removed	FL Legislature: CS/HB 1A signed; froze Citizens rates; created optional coverage for FHCF		MSFH program expires	Citizens glidepath begins	SB 408 signed: Citizens sinkhole rates not subject to glidepath
Regulatory Activity				ARA Mitigation Credit Study	Informational Memorandum 03-001M issued: Rescaled ARA tables to make the base	Southern Building Code (SBC) updated	Informational Memorandum OIR-05-22M issued: Form explains actions needed to obtain discounts	Property & Casualty Insurance Reform Committee: Requires notice to insureds detailing credits and savings; Mitigation credits doubled	OIR disapproves ISO Advisory Rate System	ARA conducts second mitigation credit study			
				Statewide Building Code Adopted					Windstorm Mitigation Study Commission created		HB1495 passed: sets Citizens glidepath for rate increases		

APPENDIX D

	1992	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Weather Events	Hurricane Andrew									Hurricanes Charley, Frances, Ivan, Jeanne	Hurricanes Dennis, Katrina, Rita, Wilma						
Pup Formation		Travelers of Florida established (First Floridian Auto & Home)			State Farm Florida established					Encompass Floridian established (Allstate)							
		Allstate Floridian established (Castle Key Insurance)			Nationwide Insurance Company of Florida established												
Capital Incentive Programs												Insurance Capital Build-Up Incentive Program					
Domestic Insurer Entries		3	3	8	5	2		1	1	4	8	6	9	4	1		
Domestic Insurer Insolvencies												Atlantic Preferred Ins. Co. (Poe Group)	Vanguard Fire & Casualty			Coral Ins. Co.	Homewise Preferred Ins. Co. (receivership)
												Florida Preferred Property Ins. Co.				Northern Capital Ins. Co.	
												Southern Family Ins. Co.					