Overview of Catastrophe Insurance Markets in the U.S.

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I. Introduction

A. The Problem of Catastrophe Risk

The risk of human and economic losses from natural disasters has grown tremendously in the U.S. within the last decade (Kunreuther, 1998). Estimates of the maximum potential **insured** loss alone from one event have increased from $7 to $120 billion (RMS/ISO, 1995).[1] Insurance industry perceptions of catastrophe risk changed after several recent disasters generated large insured losses: Hurricanes Hugo ($4.2 billion) in 1989 and Andrew ($15.5 billion) and Iniki ($1.6 billion) in 1992; and the Loma Prieta ($1 billion) and Northridge ($12.5 billion) earthquakes in 1992 and 1994, respectively (III, 1996). Figures I.1-I.3 show catastrophe insurance losses over the last two decades as well as estimates of the potential insured losses from mega-catastrophes. These amounts do not include significant economic losses that are not insured nor do they include the intrinsic cost of human suffering caused by natural disasters. These events, combined with adverse long-term weather cycles, rapid economic growth in high-risk areas, and the availability of sophisticated modeling tools to analyze catastrophe risk have caused insurers to reassess the devastating potential losses that would result from mega-catastrophes.

Insurance and reinsurance markets have experienced significant problems in financing and diversifying the upper ranges of this risk, much less expanding coverage to uninsured and underinsured property.[2] These problems are reflected in the diminished

[1] This is a projected "probable maximum loss" (PML) from an earthquake occurring in the New Madrid zone. PML's are based on 500-year return periods, i.e., there is a one in 500 chance in any given year of an event causing losses equal to or greater than the PML.

[2] One aspect of this problem is the intertemporal risk problem posed by catastrophes. Insurers must rely on premium flows that are relatively stable over time, but low-frequency, high-cost catastrophes require them to call on a large amount of capital to pay claims when a disaster occurs (Russell and Jaffe, 1997).

availability and the increased cost of property insurance coverage in regions of the U.S. subject to natural disasters, as well as insurers' exposure to the risk of insolvency or severe financial impairment because of catastrophes (see ISO, 1996a). Market forces and public policy also have failed to encourage hazard mitigation, which has further exacerbated the risk of severe losses when natural disasters do occur. Insurance regulation has impeded insurance market adjustments to greater catastrophe risk. These developments have prompted considerable public debate about appropriate private market responses, regulatory intervention and other government actions to alleviate these problems.

B. Research on Catastrophe Insurance Markets

This paper is the first in a series that will present the results of extensive and in-depth research into the structure, conduct and performance of catastrophe insurance and reinsurance markets in the U.S. This research will address key questions with respect to how catastrophe insurance markets are functioning, why they are functioning the way they are, and what can be done to improve their performance. The primary focus is on domestic primary insurance market and domestic and international reinsurance markets, accounting for the influence of other markets where significant.

This analysis is part of a broader study, the Wharton Catastrophe Risk Management Project, coordinated by the Wharton School's Risk Management and Decision Processes Center and Financial Institutions Center. The broader project includes: other modules on: the analysis of the costs and benefits of hazard mitigation; the financial capacity of the industry to handle catastrophes; the securitization of

catastrophe risk through innovative financial instruments; the use of other diversification mechanisms such as reinsurance; and policy and regulatory issues associated with these topics and catastrophe risk management generally.

In this particular module, we are examining the market structure, conduct, and performance of the catastrophe insurance industry over the last decade, with particular emphasis on the significant changes that occurred following recent calamities, as well as the future direction of the industry. Where appropriate, we will utilize a standard industrial organization framework, but we will tailor our analysis to assess the unique features and problems of catastrophe insurance markets.[3] These features include the uncertainty of infrequent but very severe losses, constraints on capacity and risk diversification, barriers to entry and exit, imperfect information, moral hazard, adverse selection, externalities, flawed decision processes of individuals and firms, regulatory constraints and other government policies. Our future work also will include a rigorous econometric analysis of the supply and demand for catastrophe insurance markets, which will provide a crucial foundation for the examination of catastrophe insurance markets and other aspects of the broader project. This research stream will provide a descriptive and dynamic look at the product markets for catastrophe insurance and their unique features and problems.

Our research begins with an analysis of the structure of catastrophe insurance markets. Structure refers to: the number and relative size of firms; barriers to entry and exit; information; market and government institutions and policies; and the responses of the industry to changes in its environment. As noted above, an important early step in this

[3] See Scherer and Ross (1990) for a standard reference on industrial organization analysis. Section III summarizes the basic concepts underlying this framework.

research will be the development and estimation of a model of the supply and demand for catastrophe insurance. This model will be developed utilizing various sources of detailed empirical information on the products and prices offered by insurers, the purchase decisions of consumers and a number of variables affecting insurance transactions. Secondly, we are examining the conduct of insurers in the market, including price and non-price strategies and risk diversification measures and their intended objectives. Thirdly, we are looking at the market's performance with respect to key parameters, including: economic efficiency and equity; cross subsidies; profitability; quality of products and service; stability; and innovation. Fourthly, we are assessing how regulatory policy interacts with the market's structure, conduct and performance and regulation's effects on market behavior and outcomes (see Klein, 1997). Our efforts will conclude with an analysis of the implications of the results of this research for catastrophe insurance markets and private and public policies.

This research will follow an iterative process that will start with the most readily available empirical data to draw a general picture and progressively uncover and analyze the underlying information necessary to fully understand the dynamics of catastrophe insurance markets and the factors that affect them. This paper presents an initial, high-level overview of the industrial organization of primary insurance markets affected by catastrophe risk, primarily utilizing data from insurer financial statements.[4] Data were obtained from the NAIC Annual Statement Database at Georgia State University and other NAIC and A.M. Best publications. These sources do not specifically delineate

[4] We will defer analysis of catastrophe reinsurance markets to a subsequent paper. We recognize the that the structure and performance of reinsurance markets is an important topic in understanding the functioning of catastrophe insurance markets in general.

catastrophe insurance coverages or markets, but they do contain information on lines of insurance that are significantly affected by catastrophe risk. This allows us to develop a general context for subsequent, more detailed analysis of catastrophe insurance markets.

This paper focuses on general indices of losses, profitability, concentration, and exits and entries for lines of insurance significantly affected by catastrophe risk. We examine these indices for the U.S. generally, and California and Florida specifically, where the risk of catastrophes and recent disasters have been the most significant.

C. Summary of Results

This initial, high-level overview of catastrophe-related insurance markets reflects the dramatic, negative effect of recent catastrophes on insurers' profitability. Profitability has been extremely volatile from year to year for insurance lines sensitive to catastrophe losses. Notwithstanding that, insured losses from recent earthquakes and hurricanes fall far short of the potential losses from severe mega-catastrophes striking large urban centers. The recent high loss ratios and negative profits caused by recent disasters would pale in comparison to the adverse financial results that would be generated by a catastrophe in the $50-$100 billion range. The financial impact of such losses would ripple throughout the industry and the nation's economy, as well as devastating the insurance markets where the disasters would occur.

The effect of recent disasters and the potential effects of more severe catastrophes on market structure are less clear. It appears that in markets where profits have been negative and catastrophe risk is high, such as in the Florida homeowners market, there has been a net reduction in the number of insurers writing business and an increase in

concentration. However, in markets where historical profits have generally been higher except in years when disasters have occurred, e.g., California earthquake, there is little evidence of a net reduction in the number of insurers or an increase in market concentration.[5] Regulatory constraints, the emergence of state catastrophe funds, and other factors affecting insurance markets complicate the assessment of the market effects of increased catastrophe risk. Regardless of the recent changes in market structure, it appears that the industry still retains a dangerous exposure to catastrophes based on this initial analysis and other studies (ISO, 1996a).

D. Organization of Paper

The next section of this paper outlines some basic concepts underlying the theory of competitive insurance markets and the structure-conduct-performance framework. It also discusses the prerequisites for properly functioning insurance markets and how some of these requirements may be compromised by catastrophic risks posed by hurricance and earthquakes. Section III examines various measures of profitability and loss ratios for key insurance lines affected by catastrophe risk. This is followed by a review of changes in market concentration in these lines. Section V looks at the patterns of entries into and exits from the key insurance lines and the market shares of entrants and insurers exiting markets or reducing their exposures. The paper concludes with some general observations and discussion of our next research steps.

[5] Some caution should exercised in interpreting these results as these data do not allow us to distinguish among insurers' actions with respect to the types of policies they are selling, the risk characteristics of the properties they are covering, and the extent to which they are writing new business or renewing existing business.

II. Market Analysis Framework

Understanding the economics of insurance markets is essential to understanding how they should function and how they can misfunction. This section provides a general review of the concepts underlying the analysis of catastrophe insurance markets. Competitive and alternative market structures are compared in terms of their implications for market efficiency and consumer welfare. We also discuss possible market failures affecting the sale of catastrophe insurance and their implications for market structure, conduct and performance.

A. The Structure-Conduct-Performance Framework

Economists postulate a set of theoretical relationships between market structure and market results, which is labeled the "structure-conduct-performance hypothesis". The basic hypothesis is that market structure determines market conduct, which, in turn, determines market performance. A market with easy entry and exit and a relatively large number of firms causes firms to behave independently and competitively, which, in turn, leads to good market performance. Easy and low-cost access to information pertinent to market transactions also contributes to market efficiency. Exceptions to these conditions and other structural flaws can cause market problems, which may or may not benefit from government intervention.

The structure-conduct-performance framework is depicted in Figure II.1. *Market structure* encompasses the number of buyers and sellers and their size distribution, the height of barriers to entry into (and exit from) the market, cost structures, the degree of

vertical integration, the character of buyer and seller information, and the degree of product differentiation. *Market conduct* refers to the actual behavior, i.e., the degree of independence, of firms in setting prices and output levels, product design, advertising, innovation, and capital investment. *Market performance* encompasses price, profit, and output levels, the efficiency of production and allocation, the rate of technological progress, and equity. The solvency of firms and the availability of coverage also are important performance parameters in insurance markets.

Analyzing industries like insurance is complicated by the presence of regulation and other forms of government intervention that affect market conditions. Hence, it is important to identify and evaluate government institutions and policies that may significantly influence market structure and behavior, along with other factors. For example, regulatory requirements for admission and exit can have a significant impact on the number, type and size of insurers in a market and their actions. Analyzing government's influence on the market is often a difficult task given the complex interaction between regulation and market forces, but it is necessary to understanding all of the relevant determinants of market outcomes.

B. The Supply and Demand for Insurance

The economics of insurance markets are driven by the supply of and demand for insurance coverage. Insurance markets, like other markets, tend to settle at a price and quantity where the amount of insurance that insurers are willing to supply equals the amount that insureds demand at a price agreeable to both. Changes in the supply of and/or the demand for insurance will change this point of equilibrium. Regulation or

other external interventions in the market also can affect supply and demand, changing the point of market equilibrium or causing an imbalance between the amount of insurance supplied and the amount demanded and distorting incentives to efficiently manage risk.

When economists use the term *supply*, they think in terms of a schedule of the quantities of a product that firms are willing to supply at different prices. The supply of insurance is determined primarily by the cost of providing coverage (i.e., the value of expected claim costs or benefits paid to insureds and expenses, adjusted for the investment income earned by the insurer, and the cost of capital,). Two important factors affecting insurers' costs are their access to information on the risk posed by different insureds and the cost of diversifying risk or retaining it, which increases an insurer's probability of ruin. The higher the degree of uncertainty about the potential losses faced by an insurer, the higher the risk and the greater the capital required to support that line of business, the greater will be the profit that capital providers such as owners of the insurer will require to supply coverage. Further, the conventional model of insurance markets assumes that insurers are risk-neutral, but some research suggests that some insurers are risk-averse or ambiguity-averse which could constrain the supply of insurance.[6] Alternatively, such apparent risk aversion could be the result of insurers adopting a safety-first strategy to satisfy certain objectives and constraints believed to be important by rating agencies such as A. M. Best. These strategic responses by insurers, whatever their origin, could significantly restrict the availability of coverage.

In the short run, the supply functions for most insurance markets are likely to be upward sloping, i.e., insurers require higher prices to provide larger quantities of

[6] "Ambiguity averse" means that an insurer is less willing to provide insurance coverage for a risk that is difficult to assess. This issue is discussed further in Section III.

insurance coverage, because their per-unit costs increase with the quantity of insurance they provide. In the long run, the supply functions for most insurance markets appear to be relatively flat or "price elastic" within the relevant range of production.[7] That is, the quantity of insurance that insurers are willing to supply should expand to meet increased demand without a significant increase in average cost that would require an increase in the market price. In the long run, insurers' costs are generally variable, i.e., fixed investments in their facilities can be adjusted to produce a given amount of insurance at the most efficient scale of operation (Joskow, 1973; Cummins and Weiss, 1991). This assumes that there are no significant barriers to entry and that capacity can flow easily into a market to meet increased demand for insurance without an increase in per-unit costs.

It is not clear that the same could be said for catastrophe insurance markets, at least at the present time. Some insurers appear to be constrained in their ability to assume significantly larger amounts of catastrophe exposures, notwithstanding claims by reinsurers of the ready availability of reasonably priced reinsurance. This could cause the supply function for catastrophe insurance to slope sharply upward beyond some level of output, i.e., the market will provide coverage beyond this level only at a significantly higher price, if at all.

The demand for insurance is determined principally by consumers' perception of their risk, degree of risk aversion, income and assets, other options for managing risk, and insurance requirements imposed on them. Generally speaking, the greater risk that an

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[7] Research by Cummins and Weiss (1993) suggests that larger insurers encounter relatively constant returns to scale beyond a certain level of output.

individual or firm faces, and the lower their ability to accommodate potential losses using other financial resources, the greater should be their demand for insurance. To the extent that consumers are risk averse, they will be willing to pay a premium that exceeds their expected loss (without insurance) to cover insurers' expenses, transaction costs, and cost of capital.

Consumers' perception of risk relative to their actual risk and the process by which they make insurance purchase decisions can have a significant effect on the demand for catastrophe insurance. There is some evidence that not all consumers seek to maximize their utility in making insurance purchase decisions (Kunreuther and Kleindorfer, 1996). Consumers may underestimate or ignore their risk exposure and, hence, decline to purchase insurance or purchase less insurance at a competitive price than implied by utility-maximizing models of consumer choice.[8] This is particularly evident for earthquake insurance in California, which is sold as separate coverage and is not necessarily mandated by lenders for home loans. This factor would tend to depress the demand for insurance or cause it to be more price sensitive.[9]

The price sensitivity of the demand for insurance may vary depending on the type of coverage. It may be relatively low for coverages that consumers perceive to be essential or are mandated by government or lenders, and higher for insurance where consumers have more discretion or do not deem it to be essential. For example, the demand for homeowners insurance appears to be less sensitive to price than the demand

[8] This phenomenon is discussed further in Section III.

[9] The experience of the California Earthquake Authority provides some evidence of the price sensitivity of the demand for earthquake insurers. Several large insurers participating in the CEA report a significant number of policy terminations by homeowners in response to the higher price of and the more limited coverage offered by the CEA policy.

for earthquake insurance. The price elasticity of demand for insurance has implications for the effect of risk-induced price increases on the amount of insurance that consumers purchase. One of our objectives in our analysis of the supply of and demand for catastrophe insurance will be estimating the price elasticity of demand.

C. Competition and Alternative Market Structures

1. Theory of Competition

The characteristics of a competitive market provide a benchmark for comparing alternative market structures and evaluating markets in the real world. Competition is considered desirable from society's standpoint because it ensures that resources are being used in the best way possible. An industry is considered *perfectly competitive* when the number of firms selling a homogeneous commodity is so large, and each firm's share of the market is so small, that no firm is able to affect individually the price of the commodity by varying its output. In addition, perfect competition requires that there be no barriers to the entry and exit of firms and that resources be perfectly mobile in and out of the market. The long-run equilibrium outcome of a competitive market possess three desirable properties:

1. The incremental or marginal cost of producing the last unit of output will be equal to the price that consumers are willing to pay for it.

2. There will be no "excess" or "economic" profits. Investors will receive a return just sufficient to induce them to maintain their investment at the level required to produce the industry's equilibrium output efficiently.

3. Each firm will be producing at an output level where its average cost will be at a minimum, i.e., maximum efficiency.

In essence, a large number of firms and the lack of barriers to entry and exit lead to independent and competitive pricing which results in optimal market performance.[10] Conversely, high market concentration and entry barriers will tend to constrain competition and cause suboptimal performance.

Perfect competition also requires complete and perfect knowledge (Martin, 1988). Ideally, all firms should know the relevant technologies and their costs and buyers and sellers should be fully informed about all aspects of the product they are buying and the market. Conditions with respect to consumer information and consumer choice may be more relevant when other conditions for perfect competition are violated. When entry is significantly constrained, the fact that buyers lack information about prices and/or are forced by law to buy a product could result in higher prices or diminished product quality.

2. Workable Competition

Of course, the conditions for perfect competition are never satisfied in reality. Many industries are characterized by a limited number of firms, considerable product diversity among firms, entry and exit barriers, information constraints, externalities, and other structural impediments to competition. Hence, competition will always be something less than perfect. For this reason, the concept of "workable competition" has been developed as a practical standard to evaluate the structure and performance of

[10]This principle is taken to its logical limit under the "theory of contestable markets" which argues that even high concentration may not permit firms to maintain a price above the competitive price if entry and exit are costless and can occur rapidly. However, the reality may be that very few markets, if any, have costless entry and exit - empirical support for the theory of contestable markets has not been forthcoming. Still, the disciplinary effect of potential entry into markets cannot be disputed. For a discussion of the theory of contestable markets, see Baumol, Panzar and Willig (1982).

industries (Scherer and Ross, 1990). Arguably, workable competition exists when the structural characteristics of a market reasonably approximate the conditions for perfect competition and government intervention cannot improve the performance of the market. This view appropriately focuses analysis on the question of whether regulation or other forms of government action can make a market work better.

Market structure and performance must be examined in a dynamic context. If a market is relatively unconcentrated, entry barriers are low, profits appear to be in line with other industries, and there is no evidence of gross inefficiency, then it is unlikely that government intervention could significantly improve performance. On the other hand, if a market is highly concentrated, entry is restricted, and long-run profits substantially exceed those in other industries, then some form of regulatory action may be beneficial. Workable competition does not require that all firms in the market operate at maximum efficiency at all times or that no sale is ever made at a price above the "competitive price." What is relevant is whether the market, over the long run, rewards efficient firms and punishes inefficient firms. If this dynamic is present, then a market will be driven to greater efficiency over time to consumers' benefit.

3. Alternative Market Structures

The main alternatives to a structurally competitive market are monopoly and oligopoly. A monopoly occurs when there is only one seller of a commodity for which there are no close substitutes. A monopolist can control output and the market price to maximize profits. This results in a lower amount of output and a higher market price than what would prevail in a competitive market.

Oligopoly occurs when a few relatively large sellers each possess a share of the market sufficient to cause them to recognize the interaction of their decisions in determining the market price and output. This recognition creates a basis for implicit or explicit cooperative behavior for the purpose of increasing profits or protecting inefficiency. Entry barriers further facilitate such behavior by preventing new firms from entering the market and undermining existing price and output agreements among firms already in the market. Entry also can be deterred if exit from the market would be costly.

Monopolistic competition is another possible market structure. Under monopolistic competition, there are numerous firms but they do not sell a homogenous commodity. Their products are sufficiently differentiated that each firm effectively faces a separate demand curve for its product. At the same time, firms' products are highly substitutable so that they must compete on price as well as the features of their products. Because consumers will switch for a small difference in price or quality in such a situation, firms are forced to be efficient and charge prices that yield no more than the cost of capital. The market for home mortgages might be a good example of monopolistic competition. Because consumers can choose among a large number of insurers who vary their products and quality of service to some degree, insurance markets also might be compared to the model of monopolistic competition.[11] The previous comments with respect to workable competition also would apply to markets that approximate the conditions for monopolistic competition.

[11] This is not to suggest that the markets for home mortgages and insurance are exactly alike in terms of the applicability of the monopolistic competition model. It could be argued that products and quality of service differs to a greater degree in insurance and it is more difficult for consumers to compare insurers' products and services than the terms for home loans.

4. The Potential for Underpricing

There are circumstances where the structure of a market may lead to negative profits for insurers. In the standard competitive model, economists assume that firms will not price below variable cost in the short run and average total cost in the long run. Economists also assume that firms know what their costs are when they set prices. In reality, however, insurance rates have to be set prospectively, based on projected costs. Absent any regulatory constraints, if insurers underestimate future costs, economic profits will be negative.

There are significant concerns about underpricing and cyclical pricing in long-tail liability lines of insurance (see Cummins, Harrington, and Klein, 1991). These problems may extend to short-tail lines subject to catastrophic losses. Economic losses are more likely if insurers systematically underestimate loss costs, take on excessive risk, or engage in underpricing strategies aimed at trading short-run losses for an increased market share.

Several factors might contribute to systematic underestimation of costs and prices by insurers. Insurers' difficulty in measuring increasing catastrophe risk is one factor. To the extent that advisory organizations and insurers tended, in the past, to project catastrophe costs based on historical information, they may not have appropriately accounted for the effect of significant changes in the economic environment or other cost drivers. This is particularly true for low-probability, high-consequence (LPHC) events such as earthquakes and hurricanes. A period of low incidence of these events could lull insurers into underestimating the risk of catastrophic losses. Indeed, insurers have found that historical experience, particularly over a short period of time, is a poor predictor of

potential catastrophe losses. Hence, since 1992, they have increasingly used catastrophe modeling to better estimate the actuarial cost of catastrophes.[12]

At the same time, some insurers may find it difficult to adhere to the prices indicated by catastrophe models if they experience several years when catastrophe losses are low. This tendency is reinforced by the sensitivity of catastrophe model results to their underlying assumptions and the potential for different results from different models. This necessarily introduces greater uncertainty and subjectivity in estimating appropriate catastrophe loads in setting prices, which leads to potential for price cutting when short-term profits are high.

Since the market cannot sustain economic losses in the long run, prices below cost must eventually rise. This may help to explain the cyclical movement of prices observed in long-tail lines. The long tail may delay the reconciliation of the market price and loss costs but it cannot ultimately prevent it. We may see a similar pattern in short-tail lines subject to catastrophic risk. A period of relatively low losses and high profits may induce some insurers to cut prices and increase their risk exposure despite the looming threat of a severe catastrophe. When these insurers suffer high losses from catastrophes, they will be forced to reduce their exposures and increase their prices.[13] This would be prompted by a loss of capital, the cost of acquiring additional capital, and the effect of a catastrophe

[12] The Insurance Service Office also has incorporated catastrophe modeling into its analysis of homeowners loss costs and its advisory homeowners loss cost filings with regulators.

[13] Note this type of cycle would be different than the one encountered in long-tail liability lines. In long-tail liability lines, incurred losses are fairly stable over time or move in more gradual trends. Hence, the consequences of underpricing becomes evident to insurers within several years of insurance transactions as the associated losses are paid. However, for short-tail lines subject to catastrophes, losses could remain relatively low for a number of years. Hence, a tight market would only occur after a major disaster which might not occur for a long period of time.

on insurer owners' and managers' attitudes towards assuming and pricing catastrophe risk.

Alternatively, some insurers may have reasons to temper rate increases and policy terminations, even in the face of evidence of greatly increased catastrophe risk. These insurers may seek to raise prices and adjust their risk portfolios gradually over time in order to maintain the goodwill of their policyholders and agents and retain their market shares. The economies of scope associated with cross marketing other insurance products (e.g., auto liability insurance and life insurance) could be a further inducement to avoid losing homeowners insurance policyholders. This strategy could mitigate cyclical pricing and provide some intertemporal buffering.

5. Implications of Government Intervention

Government intervention into insurance markets can have significant implications for their structure, conduct and performance. Insurance markets are subject to a number of regulatory constraints, determined and enforced primarily at the state level. The states regulate insurers' entry and exit, financial structures, products, pricing, underwriting and other market practices. State-sponsored insurance mechanisms also affect private insurance markets. Additionally, government policies in the areas of anti-trust, taxation, expenditures, non-insurance financial regulation, and international trade have significant effects on insurance markets. Government intervention can be particularly significant for insurance markets where interest group pressure is high, such as catastrophe insurance. The implications of government institutions and policies must be considered in analyzing insurance markets.

D. Market Failures in Catastrophe Insurance

Catastrophes are inconsistent with one of the fundamental conditions for insurable risks. The condition is that risk exposures are independent and diversified so that an insurer does not face potential losses from one or a series of events that overwhelm its financial capacity (Rejda, 1998). Insurers also must be able to develop reasonably accurate estimates of their future losses so that they can set appropriate prices and structure their reinsurance and investments to efficiently manage their cash flows. This is very difficult to do with LPHC events, which are affected by wide range of factors, and subject to considerable uncertainty. Looking forward, a mega-catastrophe could occur within the next year or not for many years. This leads to timing and liquidity problems, in that insurers must be able to draw on large amounts of cash when a catastrophe occurs (Russell and Jaffe, 1995).[14]

To address these problems, insurers must engage in extensive efforts to diversify their catastrophic risk exposure as well as utilize sophisticated modeling techniques to attempt to measure this risk. There are several means by which insurers can diversify or otherwise reduce their catastrophic risk, including: 1) reducing their concentration of exposures; 2) modifying the terms of their insurance contracts; 3) encouraging risk mitigation; 4) retaining additional amounts of capital; 5) purchasing reinsurance; 6) selling catastrophe-hedging instruments; and 7) establishing catastrophe reserves.

Each of these measures is costly and constraints on the availability of these mechanisms can hamper insurers' diversification efforts. Insurers lose certain

[14] Russell and Jaffee (1995) point out several difficulties insurers and reinsurers face in retaining large financial reserves for the purpose of covering catastrophe claims.

administrative efficiencies when they reduce their concentration of exposures. Contract modifications that lower an insurer's risk may be undesirable to consumers or may not be approved by regulators. Risk mitigation requires up-front financial investments with a long-term payoff. Insurers cannot retain large amounts of additional capital without attracting takeovers or prompting regulators to suppress their rates. Reinsurance can be relatively expensive, at least at higher layers, and there are some constraints on reinsurers' ability to assume a significant amount of catastrophe risk.[15] The market for catastrophe-hedging instruments is still in its infancy and buyers have demanded a relatively high return given their lack of familiarity with catastrophe risk and the high degree of uncertainty about the likelihood that these instruments will be triggered (see Lewis and Davis, 1998; and RAA, 1998).[16] Statutory and GAAP accounting principles do not currently provide for catastrophe reserves and such reserves are taxable (Davidson, 1996).

The extent to which problems of moral hazard and adverse selection afflict catastrophe insurance markets is less clear. Moral hazard arises from insurers' difficulty in monitoring and controlling insured's behavior with respect to manipulating their level of risk. To the degree that insurance reduces insureds' incentives to mitigate risk, it can

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[15] It should be noted that there are different points of view on the relative cost and availability of catastrophe reinsurance (see Froot and O'Connell, 1996; and RAA, 1998). Observers point out that the supply of catastrophe reinsurance has increased in recent years and its price had dropped.

[16] There is evidence that rates of return on catastrophe securities have fallen as the market matures (see Lane, 1998).

lead to potentially higher losses from catastrophes. However, insureds' behavior subsequent to purchasing insurance may have little impact on catastrophe losses.[17]

Adverse selection arises from high-risk individuals' and firms' increased incentives to purchase insurance if it is priced below their expected costs. If it is not controlled, adverse selection can undermine risk pooling and diversification and increase insurers' probability of failure. However, it is not clear that insureds have better knowledge of their catastrophe risk than insurers. Regulatory constraints on underwriting selection and rates may be the primary cause of any adverse selection, which occurs in catastrophe insurance.

Insurers' views toward risk can affect the supply of catastrophe insurance. Varying appetites for risk among insurers could result in different behaviors with respect to offering and pricing catastrophe insurance. The standard model of competitive insurance markets assumes that insurers are risk-neutral and seek to maximize profits. However, some insurers may be risk-averse or avoid uncertainty according to a "safety-first" model of behavior (Kunreuther, 1998; and Kunreuther and Kleindorfer, 1996). These insurers will seek a lower level of risk and/or demand a higher "risk premium" in the price they are willing to accept for catastrophe insurance than insurers that are risk-neutral. The managers of mutual insurers also may place a higher value on safety to better secure the continued operation of their companies and their employment. A greater

[17] Russell and Jaffee (1995) argue that moral hazard and adverse selection should not be significant sources of market failures for catastrophe insurance as insureds do not appear to possess any informational advantage over insurers nor are insureds liking to increase their risk after they have purchased insurance. This may be more true for earthquakes than for hurricanes. It is more difficult for insurers to monitor and control insureds' behavior with respect to securing their property (e.g., closing and latching storm shutters, securing lawn furniture, etc.) in the event of an impending hurricane.

aversion to risk and uncertainty could have a negative effect on the supply of catastrophe insurance.

On the other hand, moral hazard and principal-agent problems could cause some insurers to assume an excessive degree of financial risk (Hall, 1998). An insurer may be encouraged to gamble in terms of increasing its risk exposure as it will reap the full gains from such behavior but its losses will be limited to the economic value of the company. The existence of insolvency guarantees that are financed through premiums that are not sensitive to risk further increases this moral hazard. The lower the economic value of an insurer reflected in its net worth and franchise value, the greater the expected payoff from increasing risk (Cummins, 1988). Regulation and claims-paying ability ratings are intended to control this behavior. However, the difficulties in assessing catastrophe risk extend to regulatory and financial rating mechanisms. Further, regulators are pressured to keep catastrophe insurance available and affordable which conflicts with their responsibility to ensure that insurers do not incur excessive catastrophe risk.

Kunreuther and Kleindorfer (1996) have observed that consumer choices with respect to purchasing earthquake insurance also do not always appear to conform to conventional economic models. Many property owners appear to underestimate or ignore their financial risk from earthquakes and fail to purchase earthquake insurance and invest in hazard mitigation. Surveys indicate that less than half of the homeowners living in earthquake-prone areas purchase earthquake insurance. Irrational decisions on managing earthquake risk undermine the proper functioning of earthquake insurance markets (Roth, 1998).

Government subsidies of uninsured and unmitigated catastrophe losses result in the externalization of some of these losses and another type of moral hazard problem. The government provides some financial assistance to homeowners if an earthquake or a hurricane damages their home.[18] Also, homeowners can deduct property losses from a catastrophe (in excess of 10 percent of their income) in calculating their income taxes. Further, lenders have not typically required homeowners to purchase earthquake insurance which can result in increased mortgage defaults after an earthquake (see Thomas, 1997). The ability to externalize some portion of their losses diminishes homeowners' incentives to purchase adequate insurance and invest in mitigation. This further undermines the proper functioning of catastrophe insurance markets.

Insurance regulation compounds these problems. Regulators have restricted insurers' ability to increase prices and reduce risk exposures following recent disasters. There is some evidence that regulators have suppressed insurance prices below cost in high-risk areas and attempted to impose cross subsidies from low-risk to high-risk insureds (Klein, 1997). Regulators also limit insurers' flexibility in offering different coverage options (e.g., a range of deductibles for the windstorm peril in homeowners insurance) that could reduce insurers' risk as well as permit premium discounts and greater availability of coverage. These regulatory restrictions, in turn, can hamper insurers' ability to purchase reinsurance to transfer a portion of their catastrophe risk. The structure and administration of state-sponsored insurance facilities, such as residual market mechanisms and catastrophe funds, can have a detrimental impact on voluntary

[18] Consumers may perceive that the federal government will provide greater financial assistance than it actually does.

markets for catastrophe insurance.[19] The effects of these and other regulatory policies and institutions must be considered in evaluating changes in the structure and performance of catastrophe insurance markets.

The impediments to catastrophe risk measurement and diversification and the control of moral hazard and adverse selection may lessen over time, possibly to an extent that insurers can efficiently manage their risk and reduce their probability of failure to an acceptable level. The critical questions are whether and how quickly this will occur, and what happens in the interim. In the absence of adequate risk control and diversification, insurers must assume an excessive probability of ruin and/or significantly reduce the amount of coverage they supply. Neither is a desirable situation. Hence, there is a strong private and public interest in expediting efficient catastrophe risk management. This requires a better understanding of the underlying market problems and the implications of alternative private and public measures to remedy these problems.

III. Profitability of Catastrophe Insurance Markets

A. Introduction

Typically, economists would begin with an analysis of a market's structure before examining its performance. However, in this case, the effects of recent catastrophes on insurers' financial performance and the implications of these events and potentially worse catastrophes for insurers' financial risk appear to be a major force driving market

[19] See Marlett and Eastman (1997), Lecomte and Gahagan (1998) and Roth (1998) for a discussion of regulation and state-sponsored insurance mechanisms in Florida and California. A detailed discussion of the implications of regulation and state-sponsored insurance mechanisms for catastrophe insurance markets is beyond the scope of this paper but will be addressed in a subsequent paper.

structure changes. Hence, it makes sense to look at these financial impacts first and then assess their implications for market structure. Of course, market structure, conduct and performance interact and affect each other over the long run, so it should be understood that these effects do not move in only one direction. Also, profitability is only one aspect of insurance market performance and we intend to examine other aspects in subsequent papers. These forces have important implications for the cost and availability of insurance and the financial risk borne by insurers and the economy.

The tables and figures discussed in this section look at three measures or indicators of profitability of various lines in property/casualty insurance: 1) loss ratios; 2) profits on insurance transactions; and 3) rates of return on net worth. The lines most affected by catastrophe risk and examined in this paper are: fire; allied lines; commercial multiperil; homeowners multiperil; and earthquake. We also measure changes in profitability indices in all property/casualty lines combined.

It should be noted that each of these profitability measures has their advantages and disadvantages in evaluating insurance market performance. The loss ratio indicates the relationship of incurred losses to premiums earned which is the principal but not the only factor affecting insurers' profitability in a particular line and state.

Profit on insurance transactions, as calculated by the National Association of Insurance Commissioners (NAIC), reflects expenses, taxes and investment income, as well as losses, attributable to the underwriting of a particular line of insurance in a state. In this respect, it is a more inclusive measure than the loss ratio, but it also necessarily includes some formula-based allocations of certain financial items (which are not reported on a by line/by state basis).

The rate of return on net worth, as calculated by the NAIC, includes investment income attributable to insurers' surplus, as well as profits on insurance transactions, and requires the formula-based allocation of surplus by line and state. Some industry experts do not believe that this rate of return estimate is meaningful and they place greater reliance on profits from insurance transactions.[20]

Recognizing these issues and their limitations, each of these profit measures provide some insights into how insurance markets have been affected by recent catastrophe losses and how they might be affected by mega-catastrophes.

The product line delineations and profitability measures are based on statutory accounting information collected by the NAIC and published in the NAIC's *Report on Profitability by Line by State* (1997). There are a number of caveats to the use of this data that are described in the introduction to the report. The NAIC adjusts data reported in insurers' financial statements according to Statutory Accounting Principles (SAP) to approximate data on a Generally Accepted Accounting Principles (GAAP) basis. Stated simplistically, SAP accounting attempts to measure the liquidation value of an insurer at a given point in time while GAAP attempts to measure the value of an insurer as a going concern. The NAIC believes the latter is more relevant for the purpose of analyzing insurance market performance and is more comparable with profit indices for other industries. In addition, in the NAIC report, federal taxes are estimated, unrealized capital gains and losses are not included, and some arbitrary apportionment of certain data by line and by state is necessary to produce state and line specific information.

[20] These experts challenge the inclusion of investment income attributable to surplus in the assessment of the profitability of insurers' underwriting activity, as well as the allocation of surplus among different lines and states.

B. Lines of Insurance

Before examining the profitability results, a brief introduction to the NAIC lines of business we examine is necessary. Readers familiar with these lines may wish to skip over this section to page 30 where the discussion of profitability results begins.[21] The NAIC lines of business are, in some cases, aggregations of numerous types of contract coverages. This is especially true for the multiperil contracts. We focus on those lines that appear to cover the majority of catastrophe losses. These lines are described more fully below. In addition, we present summary information for all property/liability lines combined.

1. Fire and Allied Lines

Fire policies cover damage to property resulting from fire and lightning and can be extended to cover windstorm, hail, riot, civil commotion, smoke, explosions, vandalism or malicious mischief with an extended coverage endorsement or broad form policy. Fire coverage also includes fires caused by earthquakes. A particular policy can include many of these (and similar) perils or specifically exclude some of these perils. The fire line includes policies written on residential as well as commercial structures.

Allied lines is typically written on commercial structures and may include such perils as sprinkler leakage, water damage, earthquake, radioactive contamination, vandalism/malicious mischief, demolition, increased cost of construction, and data processing, among other perils.

[21] Rejda (1998) provides a description of the coverages encompassed by these lines.

2. Homeowners Multiperil

Homeowners multiperil insurance packages several different coverages for residential structures and their contents and inhabitants. The perils covered typically include fire, windstorm, hail, riot, lightning, explosion, theft, malicious mischief, as well as personal liability for injuries on the insured's property. Homeowners multiperil coverage is confined to residential structures, including multi-unit structures (2-4 units), where the owner occupies one of the units.[22]

There are several different forms of homeowners multiperil coverage that differ in terms of the perils covered and the basis for loss replacement (e.g., actual cash value, market value, or replacement cost). Also, depending on the state and company, certain coverages may be included or specifically excluded in a specific policy form and special riders may be included to provide additional coverage in a specific contract. For example, in coastal areas of states subject to hurricanes and tropical storms, the typical homeowners' policy excludes damage by windstorm, which is insured by separate state windstorm/beach pools. In states with significant earthquake risk, earthquake coverage will be typically sold separately or as a special endorsement. The flood peril (including flooding associated with hurricanes) is insured through a separate policy offered through the federal National Flood Insurance Program (NFIP).

[22] An owner occupying a multi-unit structure might purchase a homeowners policy that would coverage the entire structure and the contents of the owner's particular unit as well as the owner's liability exposure. Renters of the other units may purchase a renters' policy (HO-4) that covers the contents of their unit and their liability exposure. Owners of condominium units also may purchase coverage (HO-6) for their contents, the interior features of their unit, and their liability exposure.

Insurers' and homeowners' considerations in how perils and coverages are packaged in multiperil policies are an important factor that we hope to explore in further research. Homeowners multiperil coverage emerged in the 1960s, and until recently, both insurers and homeowners apparently perceived significant economies in the packaging of these different coverages. However, the recognition of significantly higher catastrophe risk in some areas may be causing a reassessment of this approach and encourage product innovations that will unbundle or differentiate some of these coverages. The introduction of different windstorm deductibles is as an example of one such innovation.

3. Earthquake

Earthquake coverage covers losses from earthquakes, landslides, volcanic eruption and earth movement. Earthquake coverage was historically purchased as an endorsement or attachment to a fire policy. More recently it is attached to a homeowners or commercial multiperil policy or is a separately purchased coverage. Earthquake policies are typically sold with large deductibles ranging from 5 to 15 percent of a loss. Earthquake insurance essentially covers losses from shake damage to a structure and its contents. Fire losses resulting from an earthquake are not covered under an earthquake endorsement or policy, but instead are covered under the fire peril in homeowners or fire insurance policies. The earthquake policies offered through the California Earthquake Authority (CEA) have a 15 percent deductible and some additional limits and exclusions that are not contained in standard earthquake policies.

4. Commercial Multiperil

Like homeowners multiperil, commercial multiperil packages a number of separate commercial coverages, such as fire, windstorm, hail, riot, liability and business interruption insurance. Business interruption covers the loss of income due to the events covered under the multiperil policy. Small businesses typically purchase a Business Owners Policy (BOP) with standard coverage provisions. Larger firms may purchase commercial multiperil contracts, which are modified to meet the specific needs of the particular buyer. The larger the firm and/or the more unique are its risks, the more likely it will be to purchase various property and liability coverages on an unbundled basis to allow greater flexibility in structuring its insurance coverages as part of its overall risk management program.

5. Financial Reporting By Line

States differ somewhat with respect to their rules for accounting for the premiums and losses associated with each of these types of policies. For example, for those companies offering earthquake insurance as part of the homeowners' multiperil policy, the coverage could be listed in either the homeowners line or the earthquake line in the insurers' financial statement. For states where earthquake tends to be insured separately, such as California, earthquake premiums are reported separately.

C. Loss Ratios

Loss costs are the most important driver of insurers' overall profitability for a particular line. Typically, loss costs or claim costs typically represent 60-75 percent of

insurers' total costs or premiums. This ratio will vary somewhat depending on the line. Various expenses in writing and servicing policies and insurers' cost of capital account for the other costs that insurers incur. With the exception of claims adjustment expenses, these other costs tend to be relatively constant so loss costs will tend to drive changes in insurers' profits from year to year.

Investment income on unearned premium and loss reserves also will influence the loss ratio. In short-tail lines, such as homeowners insurance, where claims are paid relatively quickly after they are incurred, investment income is less significant than for long-tail lines. Hence, all other things being equal, loss ratios should tend to be lower for short-tail property lines because higher premiums are needed to compensate for the lower investment income earnings.

The direct loss ratio is equal to the amount of direct losses incurred in a given calendar year divided by direct premiums earned. Since these data are on a direct basis, they do not reflect the effect of reinsurance cessions (or assumptions) on primary insurers' retention of premiums and losses. Premiums and losses are not reported on a net basis (reinsurance assumed minus reinsurance ceded) by state. Unless otherwise stated, all loss ratios are pure loss ratios. No loss adjustment expenses have been added to the numerator.[23] Hence, the pure loss ratio does not account for the considerable claims adjustment costs occurring after a significant earthquake or hurricane.

Tables III.1-III.3 track changes in loss ratios for the selected lines and states over the period 1986-1995 and the impact of particular catastrophes on loss ratios. These tables also show direct premiums earned and the mean loss ratios for the periods 1985-

[23] Until recently, the allocated loss adjustment expense was not reported by state and line, so we were not able to construct a historical series that included this expense component in the loss ratio.

1988 and 1989-1995. It is important to recognize that we are focusing on annual data in this analysis, which would be expected to be highly sensitive to catastrophes. The value of this exercise is demonstrating this sensitivity and the cash-flow management problem that catastrophes pose for insurers. Also loss shocks to primary insurers that are not sufficiently moderated by risk diversification and liquidity mechanisms will have an impact on the supply of insurance.

1. Homeowners Multiperil

For all three series (California, Florida and the U.S.), we see that the homeowners loss ratio is higher on average after 1989 than before. In fact, this is true for each line of business shown in the tables. However, it is apparent from these figures that homeowners multiperil and earthquake are the lines most affected by catastrophes.

For homeowners, the California loss ratio peaks in 1991 at 118.2 percent (Table III.1). This could reflect losses from brush fires, which have been a significant problem in California. For Florida, the loss ratio soars to 990.3 percent in 1992, reflecting the effect of Hurricane Andrew (Table III.2). For the entire period, excluding 1992, the average Florida loss ratio is 62.1 percent. However, homeowners insurance losses in 1992, including those caused by Hurricane Andrew, were approximately nine times greater than the premiums earned in that year. This demonstrates the need to accumulate funds in years when catastrophe losses are low to cover claims in years when catastrophe losses are high. Hurricane Andrew also had a significant effect on the countrywide loss ratio,

causing it to rise to 124.6 percent in 1992 (Table III.3).[24] Obviously, a more devastating hurricane would have a much greater effect on loss ratios in the affected state(s) and countrywide.

2. Commercial Multiperil

Commercial multiperil does not reveal the same sensitivity to storms and earthquakes as homeowners multiperil coverage. Coverage for catastrophe losses to property represents a smaller portion of the overall losses on commercial multiperil policies. For the U.S as a whole (Table III.3), there is only a small real difference between the 1985-1988 period's annual average loss ratio and the 1989-1994 period's loss ratio. The countrywide loss ratio does peak at 78.4 percent in 1992 (due to Hurricane Andrew), which is approximately 17 percentage points higher than the 1989-1995 average. In Florida, the effect of Andrew is much more evident as the 1992 loss ratio rose to 384.1 percent. California's loss ratio appears to have been most affected by the fires stemming from the Northridge earthquake (including associated business interruption losses) which caused the 1994 loss ratio to rise to 87.7 percent. The relative effects of an earthquake on personal insurance versus commercial insurance lines will depend on the location and timing of the earthquake.

3. Earthquake

For California, we see the effects of the 1989 and 1994 earthquakes directly in the earthquake loss ratio. The 1989 loss ratio was 129.7 percent and the 1994 loss ratio was

[24] States other than Florida also suffered some losses from Hurricane Andrew after it moved through Florida to other areas but Florida suffered most of the financial losses that were incurred.

1,178.2 percent. Even the 1995 loss ratio was 142.6 percent which suggests that some losses from Northridge affected 1995 results.[25] It is interesting to note that no other line has such low loss ratios in non-cat years. The mean loss ratio was 11 percent for the period 1985-1988 compared to 218.4 percent for the period 1989-1995. This is likely due to the fact that, even in California, significant earthquakes are rare events. Since earthquake policies only cover shake damage from earthquakes, losses will be low in most years. Hence, the need to accumulate funds in years without significant earthquakes is even more apparent for this line and is becoming more crucial as the risk of severe earthquakes increases.

4. Fire

California loss ratios for fire insurance rose after 1988, but remained much lower than the loss ratios for lines more significantly affected by catastrophes. This is true at the national level and in Florida, except for the year 1992. In Florida, the fire loss ratio rose to 714.4 percent in 1992, reflecting windstorm coverage provided to residential and commercial structures in fire policies.

5. Allied Lines

For California, the allied lines loss ratio peaks in 1994 at 96.3 percent due to the Northridge earthquake. The Florida loss ratio peaks at 502.5 percent in 1992 due to Hurricane Andrew. For the U.S. as a whole, the allied lines loss ratio also rises to its

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[25] This may reflect 1995 adjustments in estimates of losses incurred in 1994. Statutory accounting requires any revisions of estimated incurred losses for prior years to be reflected in the year in which the adjustments are made.

highest level at 121.9 percent in 1992, reflecting the effect of Hurricane Andrew in Florida and other states.

6. All Lines

For all lines combined, only the Northridge earthquake seems to have had a major effect on overall industry losses in California, while Hurricane Andrew had a significant effect on the loss ratio in Florida. Countrywide, the all lines loss ratio rose to 75.8 percent in 1992, 10 points higher than the average for the 1989-1995 period. This reflects the fact that the catastrophe-related lines examined in this analysis accounted for 19.3 percent of the direct losses incurred in all lines countrywide in 1992.

D. Estimated Profits

It also is helpful to review insurers' overall profitability over the last decade and the impact of catastrophes on insurers' profits. Three measures of profitability are compared in the Tables III.4-III.6 for California, Florida and the U.S., respectively. These measures are: the return on net worth; the direct loss ratio; and total profit on insurance transactions as a percentage of direct premiums earned. Each of these profitability measures is explained more fully in NAIC (1997).[26] In addition, Figures III.1 through III.9 plot these various measures by state and by line. The tables include the annual average for this period and the coefficient of variation (COV) for the historical series. The coefficient of variation is the ratio of the standard deviation of a series to the mean of

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[26] The NAIC does not calculate profitability ratios for the earthquake line of business. It may do so in the future. We include the loss ratio results for earthquake to show the potential impact on profitability.

the same series. In this analysis, the coefficient of variation indicates the relative variability of profits over time among the lines of business and states and the cash-flow timing and liquidity problems noted above.

Total profit on insurance transactions is defined as underwriting profit plus investment gain from insurance transactions minus estimated federal income taxes. Underwriting profit is equal to premiums earned minus all expenses. Some of these expenses are reported on a by state/by line basis and others are allocated using formulas. This measure is intended to reflect insurers' profits on their underwriting activity, including the investment income earned on reserves for unearned premiums and losses maintained for these lines and states.

The NAIC also calculates a total return on net worth, which includes all of insurers' income, including investment income earned on surplus. This measure is intended to permit comparisons of insurers' profitability for a particular line and state with similar measures for the insurance industry as a whole and other industries. The NAIC measure is the ratio of estimated total profits, including investment income attributable to surplus, to the estimated net worth by line and by state. Net worth is defined as the sum of surplus, excess statutory reserves, unauthorized insurance, non-admitted assets, prepaid expenses, salvage and subrogation and deferred taxes. Insurers' net worth is allocated among the different lines and states in proportion to the sum of insurers' premiums and loss reserves. It is understood that this is an imperfect approximation of insurers' return on the equity supporting a particular line and state, given the adjustments of statutory accounting data to a GAAP basis and the formula-

based division of insurers' surplus among different lines and states. Hence, great caution must be exercised in interpreting and drawing inferences from these figures.

For California (Table III.4), we see that homeowners insurance generated a negative average return on net worth as well as a negative average profit on insurance transactions for the entire 1985-1995 period. Profits have been negative every year since 1990. Homeowners also had the highest average loss ratio over the period. This is an interesting result given that severe earthquakes did not occur in some of these years. This could reflect, in part, the effects of an increased incidence of major brushfires as well as inadequate rates covering non-cat losses. Commercial multiperil also experienced a negative average profit on insurance transactions. As measured by the coefficient of variation, homeowners and commercial multiperil have been the most volatile lines of business, next to earthquake insurance.

As noted above, earthquake insurance stands out in terms of its loss ratio. Comparable profitability figures are not available for earthquake, thus the loss ratio signals the shock to overall profitability for insurers in California selling earthquake polices. Not only is the average loss ratio high for the 11-year period, the coefficient of variation for earthquake is ten times greater than for the other lines of business in California, reflecting the sensitivity of earthquake insurance to catastrophic events.

The picture for Florida (Table III.5) is similar in some respects and different in others. The year Hurricane Andrew hit South Florida (1992) stands out in all of the data. Every line reveals below normal profits or extremely high loss ratios for the 1985-1995 period. After Andrew, we still see low profits or a high loss ratio for some lines for some

years.[27] Further, the coefficient of variation is much higher for Florida than for California for the lines of business examined. Earthquake insurance is not shown for Florida as Florida does not face a high seismic risk.

For the U.S. as a whole (Table III.6), allied lines and homeowners multiperil experienced a negative return on net worth averaged over the last decade. Homeowners and allied lines also had the highest average loss ratio over the same period and the lowest profit on insurance transactions. Further, these same lines had the highest coefficient of variation across all profit indicators. This indicates that insurers have failed to cover their estimated cost of capital for these lines. This appears to be partially attributable to severe catastrophes but other factors also appear to have played a role, such as aggressive price competition.[28]

Figures III.1-III.9 visually represent the data in these tables and the effect of catastrophes. These effects are even visible in Figures III.3, III.6, and III.9, which shows the results for the U.S. as a whole. Figure III.10 compares the profit on insurance transactions for homeowners insurance for Florida, California and the U.S. over the 1986-1995 period. Note that in this figure, Florida's results should be read on the right hand side axis. The variation in homeowners insurance profits is particularly severe for these two states, indicating the vulnerability of these states' market performance to catastrophes, even though they are among the largest markets in the country. This also emphasizes the timing problem insurers face in managing cash flows for catastrophes and their need to employ various devices to be able to draw on large amounts of cash when

[27] Again this may be due to accounting adjustments in 1993 for losses incurred in 1992 as well as less severe storms and hurricanes that have occurred since 1992.

[28] An ISO study of homeowners insurance (1996b) reached a similar conclusion.

infrequent but costly catastrophes occur. The following sections examine the effects of recent catastrophes and insurers' reassessments of catastrophe risk on the structure of these markets.

Section IV. Structure of Catastrophe Insurance Markets

A. Market Structure Measures

Concentration is an important aspect of insurance market structure, both in terms of its potential affect on competition and market performance, and its implications for insurers' vulnerability to severe losses from a catastrophe or series of catastrophes. On the one hand, less concentration may be advantageous in promoting greater competition as well as greater risk diversification. On the other hand, greater concentration can facilitate increased economic efficiency if low-cost insurers are able to write a larger share of the market and also gain from administrative efficiencies that can be reaped from servicing a greater number of policies in a given geographic area.

Hence, there is an issue as to the optimal degree of concentration in insurance markets subject to catastrophe risk. The availability and cost of risk diversification measures such as reinsurance and catastrophe securities also will affect this tradeoff. Concentration in the voluntary market may be increased if residual market mechanisms account for a large share of the total number of policies. This makes it difficult to make a priori statements about an efficient or desirable level of concentration in a given insurance market. However, beyond a certain point, a highly concentrated market should

raise some concerns with respect to the risk exposure of insurers in the market, as well as competition.

Concentration in insurance markets can be affected by changes in the economic environment, as well as profitability. Regulatory policies affecting insurers' ability to increase or reduce their exposures also will have an effect on market structure. If some insurers leave a market or adjust their exposures because of increased catastrophe risk, concentration may change. The degree of concentration in particular insurance markets could either increase or decrease because of the effect of increased catastrophe risk. If the market leaders leave or reduce their volume of business, it could reduce market concentration, all other things equal. On the other hand, if insurers with small market shares are more likely to exit or reduce their exposures, then concentration could increase. In reality, insurers of varying sizes could be increasing or decreasing their relative share of exposures. Hence, there is no a priori expectation with respect to concentration changes in insurance markets affected by catastrophe risk and we could see different trends in different markets.

In this paper, we measure market concentration using concentration ratios at the four-firm (CR4), eight-firm (CR8), and 20-firm (CR20) levels and the Herfindahl-Hirschman Index (HHI). These measures are calculated on a statewide basis for each line and for the U.S. as a whole. A concentration ratio is equal to the combined market share of some number of the top insurers, e.g., CR4 is equal to the combined market share of

the top four insurers. These measures reflect the market power possessed by the largest firms in a market as well as their risk exposure.[29]

The HHI is equal to the sum of the squared market shares of all firms in the market and can range from near zero to 10,000, the HHI value when there is only one firm in the market. The higher the HHI, the greater the degree of market concentration. Hence, it measures the degree of concentration throughout the market, not just for some number of the top firms. It also gives more weight to firms with larger market shares which is consistent with economic theories about the relationship between firms' market shares and the degree of market power they can exercise. According to benchmarks utilized in the U.S. Department of Justice merger guidelines, markets with HHI's less than 2,000 are considered to have a low or moderate degree of concentration and are less likely to be subject to anti-trust restrictions on mergers and acquisitions.[30]

B. Market Structure Trends

These concentration measures are presented in Tables IV.1-IV.4 by state and by line for 1989 and 1995. The number of insurers in these markets for these two years is also indicated.

Note that concentration is measured by insurer groups, plus non-affiliated insurers, which better reflects the implications of concentration for competition. Insurers within a group are under common control and typically do not compete with each other.

[29] These concentration measures are somewhat crude indicators of catastrophe risk exposure as they are based on statewide data. An insurer's market share could vary significantly among different areas within a state with different degrees of catastrophe risk.

[30] As noted in Section II, the degree of market concentration is only one factor that affects structural competition in a market. Concentration in catastrophe insurance markets is of interest with respect to its impact on competition as well as its implications for catastrophe risk.

In this paper, the term "insurers" refers to insurer groups and non-affiliated insurance companies and the term "insurance companies" refers to individual insurance companies affiliated within groups as well as non-affiliated insurance companies.

These tables also are constructed from NAIC data and hence do not include any insurers that do not report to the NAIC.[31] Concentration is measured by insurers' share of premiums written which will be affected by pricing differences as well as insurers' number of exposures and the amount of insurance coverage provided.

The first set of tables for California, Florida and the United States (IV.1-IV.4) show the various concentration measures for insurers. Insurers were included in our analysis if they had positive direct premiums written. Companies or groups with zero or negative direct writings, even if possessing a license, were excluded.[32]

Table IV.1 shows mean values for the number of insurers and the HHI in 1989 and 1995 for all states and separately for catastrophe prone states and all other states. We designated California, Florida, North Carolina, South Carolina, Puerto Rico, Texas, and the U.S. Virgin Islands as catastrophe-prone states/territories.[33]

The first item to note is that, with the exception of earthquake insurance, the mean number of insurers selling cat-related lines among all states decreased from 1989 to 1995.

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[31] All multi-state insurers and most larger single-state insurers report data to the NAIC. Some smaller single-state insurers report to the NAIC and others do not. Business written through assigned risk plans, FAIR plans and windstorm/beach pools should be reflected in the data reported to the NAIC.

[32] This leaves the discussion of the possibility of potential competition for further study. A license may be a necessary requirement for selling business within a state, but there is also some technical expertise that goes with pricing a given line or effectively servicing a given line. The presence or absence of a license does not necessarily imply anything about these two competencies.

[33] This selection is subjective. The states selected appear to be those that are more most vulnerable to severe catastrophe losses but there are a number of other states that face some exposure to earthquakes and hurricanes. Also, of the selected states, only California has a significant seismic risk and, hence, the earthquake figures for the "catastrophe-prone" states are less meaningful than the figures for the other lines.

However, the number of insurers in all lines combined increased, on average, among states. This implies that while the number of insurers operating in states increased on average, a substantial number of insurers avoided or exited catastrophe-prone lines.

At the same time, concentration countrywide decreased in every line but homeowners. While the number of insurers did fall for these cat-related lines, the 1995 HHI is about the same or smaller than the 1989 HHI. This implies that the fewer insurers in these markets are writing more business on a relatively equal basis. On the other hand, concentration in homeowners increased countrywide. This may, in part, reflect the constraints large homeowners writers face in reducing their exposures in large markets that are vulnerable to catastrophes.

This is more apparent as we examine market concentration in catastrophe-prone states versus other states. In catastrophe-prone states, concentration increased in both homeowners and commercial multiperil. The increased concentration in commercial multiperil may be affected by factors in addition to catastrophe risk, noting that other lines reflected greater sensitivity to catastrophe losses from recent events.[34] On the other hand, concentration decreased in every line in other states.

California (Table IV.2) experienced a slight drop in the total number of insurers in all lines combined over the period 1989-1995. However, California experienced at least an 8 percent decrease in the number of insurers in all of its cat-related lines of business. Most significantly, the number of homeowners multiperil writers decreased by 19

[34] These other factors could include mergers and consolidations and retrenchment by commercial multiperil due to soft pricing and excess capacity in this line.

percent.[35] It should be noted that California requires homeowners insurers to offer earthquake coverage and face risk from fires following earthquakes. The emergence of the CEA in 1996, which allows insurers to lay off some of their earthquake risk to the CEA, may lessen pressure on homeowners writers to exit the California market. However, insurers still retain a significant portion of the risk under the CEA's financing structure, which may deter some insurers from participating in the homeowners and earthquake insurance markets in California (Roth, 1998).

On the other hand, concentration in California, with minor exceptions, appears to be relatively constant over this time period for most lines. Interestingly, in the earthquake line, which might be the line most subject to ex post reevaluation by insurers in the market, concentration is almost unchanged. The percentage decrease in the number of earthquake writers also was less than for the other lines. The fact that less than half of homeowners in earthquake-prone areas buy earthquake insurance, despite mandatory offer requirements, may have something to do with this unexpected result although this is not clear. The incentives underlying adverse selection imply that higher-risk property owners would be more likely to purchase earthquake insurance, but relatively high prices and deductibles for this coverage (due to the higher actuarial risk) may cause some of these property owners to decline coverage.[36] Also, the relatively high profits from this line in years when large earthquakes do not occur may be a substantial inducement for

[35] Of course, catastrophe related risks may not be the only source of negative profits and exit among multiperil writers. For example, mandated rollbacks and other regulatory policies under Proposition 103 (as implemented by regulators under a California Supreme Court ruling) have arguably had a chilling effect on all personal lines in California, with obvious incentives for exit of existing writers.

[36] There is some evidence that home owners are declining CEA coverage because of the 15 percent deductible, other limits and exclusions, and price increases, and are electing to retrofit their homes to be more earthquake-resistant, as an alternative (Roth, 1998).

some insurers to stay in or enter the market despite their high potential loss from a severe earthquake.

Florida (Table IV.3) experienced a net loss of one insurer among the total number of insurers writing in the state. Every catastrophe line, however, experienced a double-digit loss in insurers writing business. At the four-firm level, concentration fell for allied lines. It rose most significantly for homeowners from 49 percent to 60 percent. Additionally, at the eight-firm and the 20-firm level, only homeowners insurance shows any increase in concentration. Further, homeowners shows the only increase in the HHI over the time period. These figures would be consistent with regulatory constraints on large insurers' reduction of homeowners exposures that do not extend to large insurers' reduction of exposures for other lines. They also reflect, in part, the emergence of the Florida JUA as a major writer of homeowners insurance with a 17.4 percent market share in 1995.

For the U.S. (Table IV.4), there is a slight decrease (6 percent) in the number of insurers between 1989 and 1995 for all lines combined. However, for the lines associated with catastrophe losses, we see a dramatic decrease in the number of insurers operating in the market ranging from 46 to 52 percent reductions. Concentration as indicated by every measure also increases. Other factors may be influencing the number of insurers in the non-homeowners lines countrywide in addition to the factors that are most significant in California and Florida. Soft market conditions and sub-par performance may be prompting some insurers to withdraw from certain lines where they do not believe they are sufficiently competitive. Also, less severe regulatory constraints in states other than

Florida and California may be making it easier for insurers to exit lines where they wish to do so.

Section V. Exits and Entries in Catastrophe Insurance Markets

A. General Exits and Entries

In Section III we presented evidence regarding the profitability of the cat related lines. General economic theory says that if prospective profits are high (low), then entry is encouraged (discouraged). We noted that a number of lines, most notably homeowners multiperil, experienced low rates of return and high loss ratios in Florida and California. Consequently, we would expect exits in those states in the homeowners line. Tables V.1-V.3 show the general entry and exits in cat-related lines in California, Florida, and the United States as a whole. Note that these figures represent individual insurance companies, rather than insurer groups. A given insurer group may have multiple companies writing business in a particular line.

For California (Table V.1), we see that the number of insurance companies fell in the homeowners line between 1989 and 1995, as did the number of insurer groups (Table IV.2). Insurance companies in the market in 1989 who were not writing positive amounts of business in 1995 are "exits". Similarly, insurance companies that did not write business in 1989 but did so in 1995 are considered to be "entrants".

Exits outnumbered entrants over this period for homeowners, fire, and earthquake. In addition, the percent of premiums written in 1989 by those insurance companies that eventually left the market ranged from 5.5 percent for earthquake writers

to 13.3 percent for allied lines. Entrants' market share in 1995 was greater than the exiting insurers' 1989 market share for allied lines and earthquake. This means that entrants more than replaced exiting insurance companies' premiums as a percentage of market share. All of the lines experienced growth in premiums over the period, so the entrants in allied lines and earthquake have a larger share of a bigger pie. High profits in low-catastrophe years for earthquake may have served as an inducement for new insurance companies to enter the market.

For homeowners, entrants accounted for 2.3 percent of 1995 premiums while exiting insurance companies wrote 8.7 percent of the 1989 market. This suggests that entrants did not replace exits for homeowners. The same can be said for fire, commercial multiperil, and all lines combined. Lower profits in these lines may account for this behavior.

For Florida (Table V.2), we see small overall changes for every line except homeowners, reflecting the relative sensitivities of these lines to catastrophe losses. Homeowners lost a net of 61 insurance companies over this period. In addition, the market share in terms of premiums written by entrants was less than the 1989 market share of premiums written by insurance companies exiting the Florida market. The same is true for fire and commercial multiperil. On the other hand, for allied lines, entrants' market share in 1995 is greater than the exiting insurance companies' market share in 1989.

For the U.S. as a whole (Table V.3), we see a much different picture. Every line except earthquake experienced a net increase in insurance companies. In addition, every line except earthquake has entrants with a much greater market share in 1995 than the

1989 market share of exiting insurance companies. This is an interesting result given the decline in the number of insurer groups in every cat-related line in the U.S. as a whole. One possible explanation is that while some insurer groups are exiting these markets, the insurer groups that are staying in these markets are writing business through more companies within each group. This question requires further study.

B. California Earthquake

1. Earthquake Market leaders, 1990-1995

Because a portfolio of insurance contracts is almost perfectly divisible, it is difficult to define entry and exit. Tables V.1-V.3 assume for the sake of argument that entry and exit constitutes a decision to either write or not write business in a line and state. However, an insurance company can "exit" by not writing new policies. The firm is still in the market because it is still servicing its existing policies, but it no longer looks for new business and thus, in one sense, has effectively exited the market. Similarly, a company that enters may enter for a very narrow purpose rather than to write all risks. It may geographically limit itself or it may take on only certain types of risks.

In the California earthquake line we see that the largest companies in 1990 tend to be the largest ones in 1995 in terms of market share. State Farm, Allstate, the Fire Insurance Exchange and Aetna had 50 percent of the market in 1990 and in 1995. This indicates that the market leaders have not retrenched in terms of their share of the market. The fact that insurance companies writing homeowners insurance must also offer earthquake insurance may have contributed to this result. Plans to develop the CEA also may have encouraged insurance companies to maintain their market share.

2. Top 25 Gainers in Market Share/Bottom 25 Gainers in Market

Table V.4 shows in more detail the companies losing market share over the period 1990-1995. The top 25 companies in California losing market share accounted for only a 17.2 percent total loss in market share from 1990-1995. Only one "large market share company" (20th Century Insurance Co) appeared to quit the earthquake business. Other companies decreasing their market share seemed to change their writings on a very marginal basis. In contrast, the top 25 companies increasing market share accounted for a 17.7 percent increase (shown in Table V.5). Most companies did not change their total premium writings dramatically in terms of the over all market share, but many went from close to zero to 1.0 percent.[37] This suggests that companies with a relatively low degree of earthquake exposure in California found it advantageous to increase their business.

C. Florida Homeowners

1. Top 25 Gainers in Market Share/Bottom 25 Gainers in Market

The top 25 companies losing market share in Florida over the period 1990-1995 are some relatively well known companies (Table V.6). These include Allstate, Prudential and Aetna. A number of the top 25 market share losers are writing no business in homeowners in 1995. These are complete exits. The total market share loss for these 25 companies in market share over the period was 20.6 percent. Some of this may reflect shifting of business to other companies within a group while other groups or non-

[37] Entrants to the California earthquake accounted for $66.8 million in 1995 direct premiums. This was approximately 7.2 of total earthquake premiums. There may be a regulatory implication here as the California Earthquake Authority came into existence in 1996.

affiliated companies completely exited the market. The low historical profits for homeowners and other catastrophe-related lines and concerns about the regulatory climate may have prompted greater exit in Florida than in California.

In contrast, the top 25 gainers of market share increased their share over 29 percent (Table V.7). The major entrant to the Florida market is the Florida PC JUA. It did not exist in 1992, but by 1995 it had substantial market share of 17.4 percent. This JUA is a government entity set up to provide insurance to those who cannot obtain insurance in the voluntary market.[38] However, its market share poses risks to the industry and taxpayers and there have been efforts to "depopulate" the JUA by giving bounties to companies taking contracts out of the JUA. The size of the JUA has decreased in recent months but it is unclear how long this trend will continue which will depend on a number of factors, including its administration and regulation of the voluntary market.

There is some concern that with Florida's JUA depopulation program that some new insurance companies may not be adequately capitalized and/or reinsured in the event of a severe catastrophe. Table IV.8 shows (for comparison purposes) the companies writing larger percentage of business in Florida by the two most important lines of insurance. The larger a company's homeowners' market share, the lower it's A.M. Best rating is likely to be. This may be partly attributable to Best's concern about companies with a high concentration of homeowners business in Florida, but it also may reflect lower capitalization for small and start-up companies entering the Florida homeowners market.

2. Changes in Group Writings in Florida Homeowners

As a result of Florida's regulatory policies with respect to catastrophe insurance pricing and underwriting restrictions, certain insurers' have sought to insulate their nationwide operations by setting up Florida-only subsidiaries. The Florida sub could be dissolved in the case of a catastrophe without taxing the parent as long as the legal formalities of incorporation are observed and no fraud occurs. Allstate, for example set up Allstate Floridian to sell only in Florida. Examining changes in group writings (within the group) over the period 1990-1995, there were no obvious examples of a company reducing its market share while a sibling increased its market share. After Allstate's action, more insurers may undertake this strategy.

VI. Conclusions

This initial, high-level overview of catastrophe-related insurance markets reflects the dramatic effect of relatively moderate catastrophes on insurers' profitability. Insured losses from recent earthquakes and hurricanes fall far short of the potential losses from severe disasters striking large urban centers. Recent high loss ratios and negative rates of return would pale in comparison to the figures generated from a catastrophe in the $50-$100 billion range. The financial impact of such losses would ripple throughout the industry and the nation's economy as well as devastate the markets where the disasters would occur. This emphasizes the need for greater mitigation and diversification of

[38] This is the way residual markets are intended to function. However, if residual market rates are set too low relative to the amount of coverage that is offered some insureds may seek coverage from the residual market even if they could obtain voluntary market coverage.

catastrophe risk through various mechanisms, supported by appropriate regulatory and other government policies.

The effect of recent disasters and the potential of more severe catastrophes on market structure is less clear. It appears that in markets where profits have been negative and catastrophe risk is high, such as in the Florida homeowners market, there has been a net loss in the number of insurers writing business and an increase in concentration. However, in markets where historical profits have generally been high except in years when disasters have occurred, e.g., California earthquake, there is little evidence of pervasive net losses in insurers or an increase in market concentration. Regulatory constraints, the emergence of state catastrophe funds, and other factors affecting commercial insurance markets complicate the assessment of increased catastrophe risk. Regardless of the causes and results, there is a concern that the industry still retains a dangerous exposure to catastrophes.

Further research is necessary to gain a deeper understanding of insurers catastrophe exposure and its implications for market behavior and the effects of a major catastrophe. Our next efforts will focus on the econometric modeling of the supply and demand for catastrophe insurance, insurers' financial exposure to catastrophes, the effects of reinsurance and financial markets, and the effects of state regulation and catastrophe risk financing. We also need to better understand how other public policies are hampering efficient management of catastrophe risk. The results of this research will enable us to evaluate alternative public and private sector strategies to lower catastrophe risk and secure the financial soundness of insurers selling catastrophe coverage.

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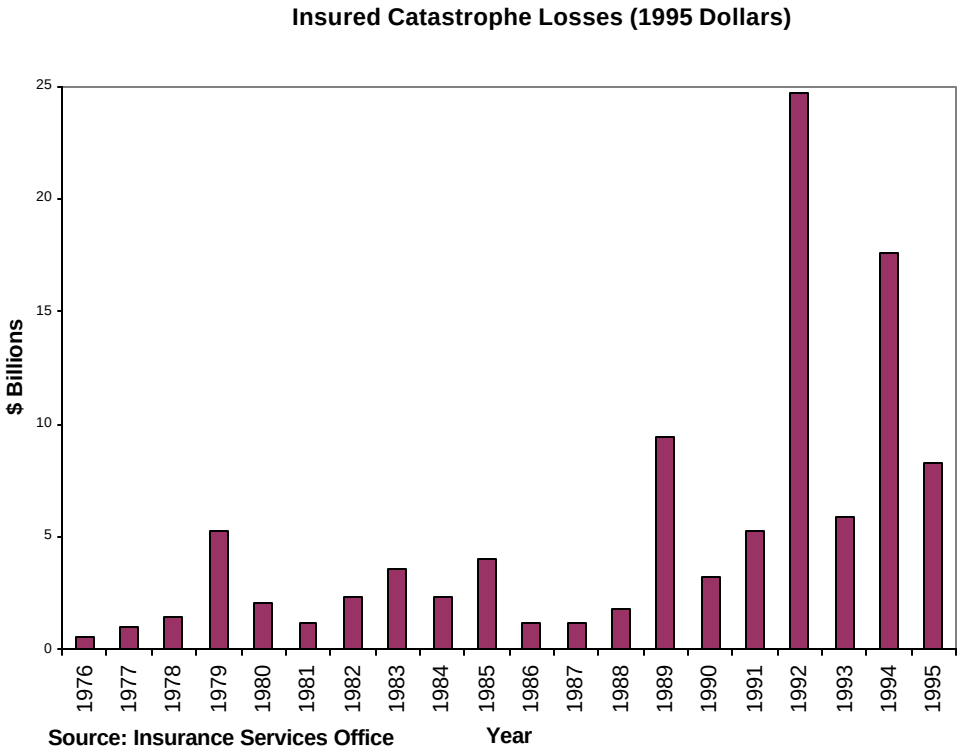
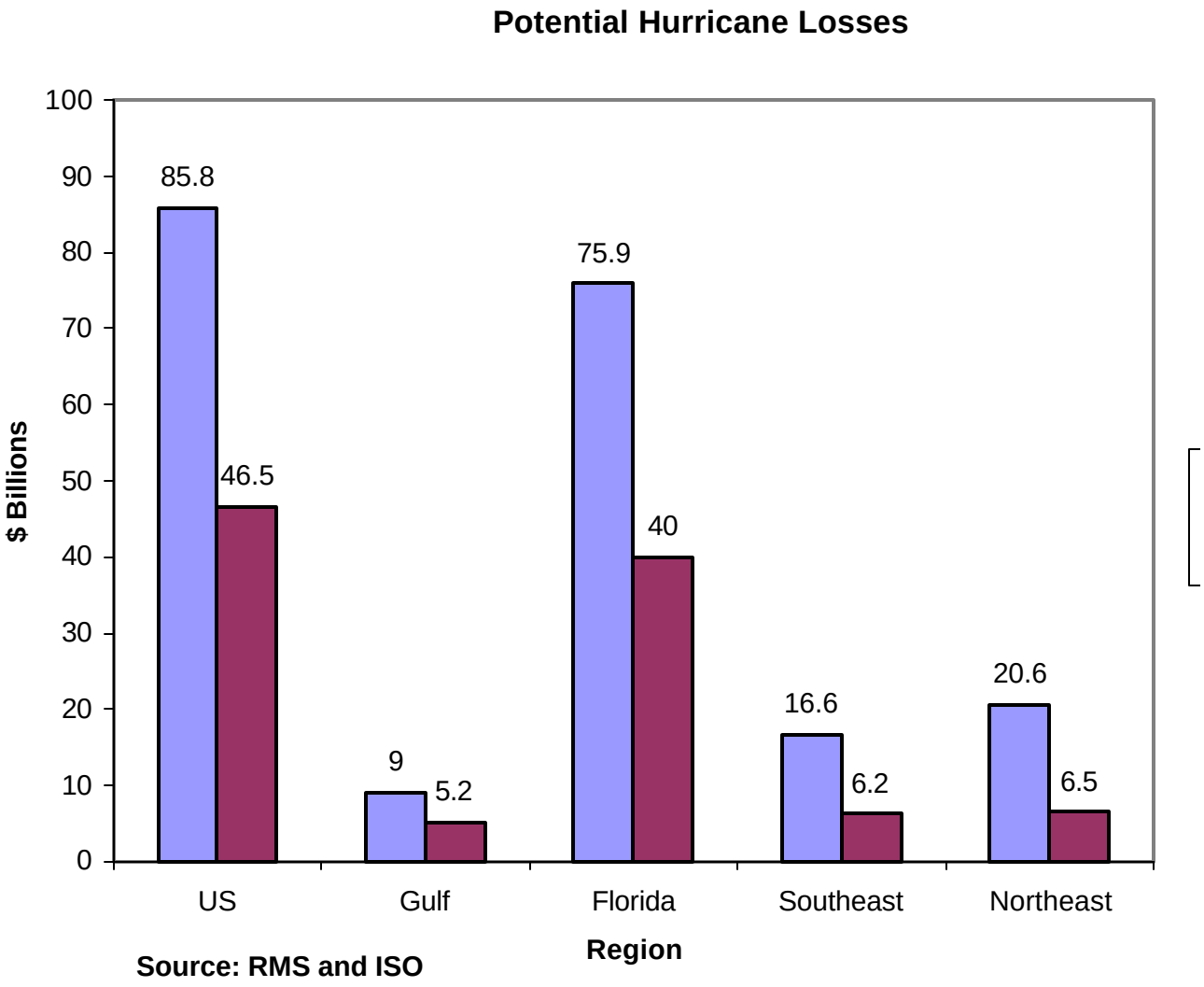
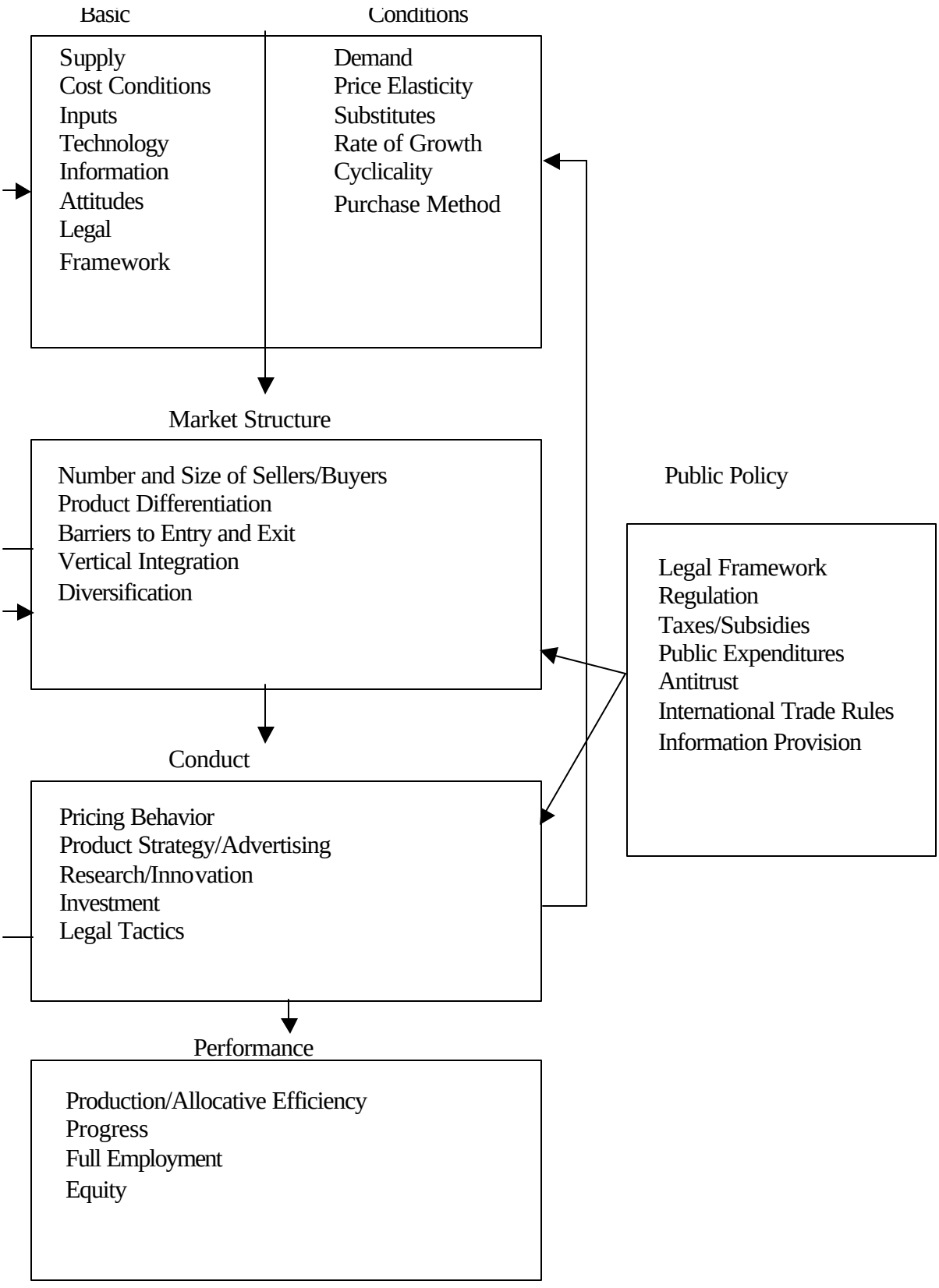
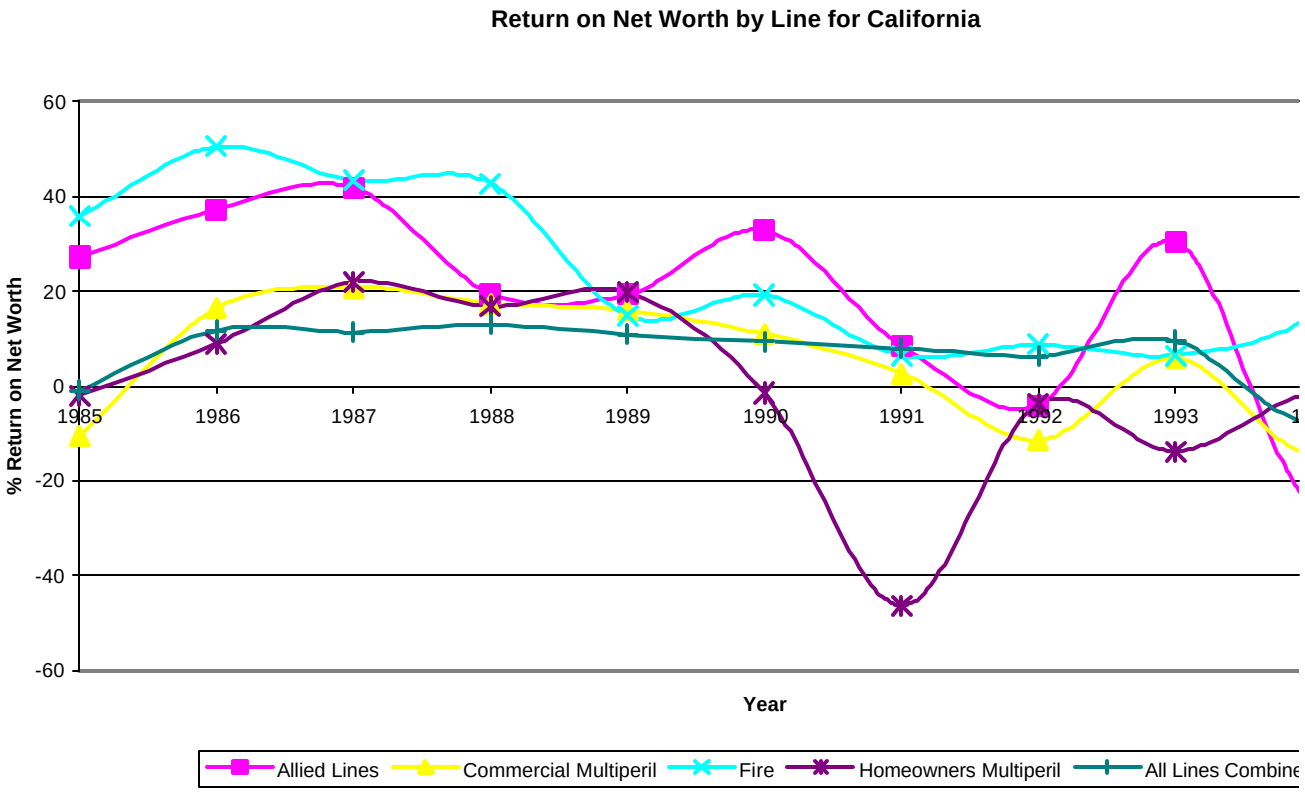
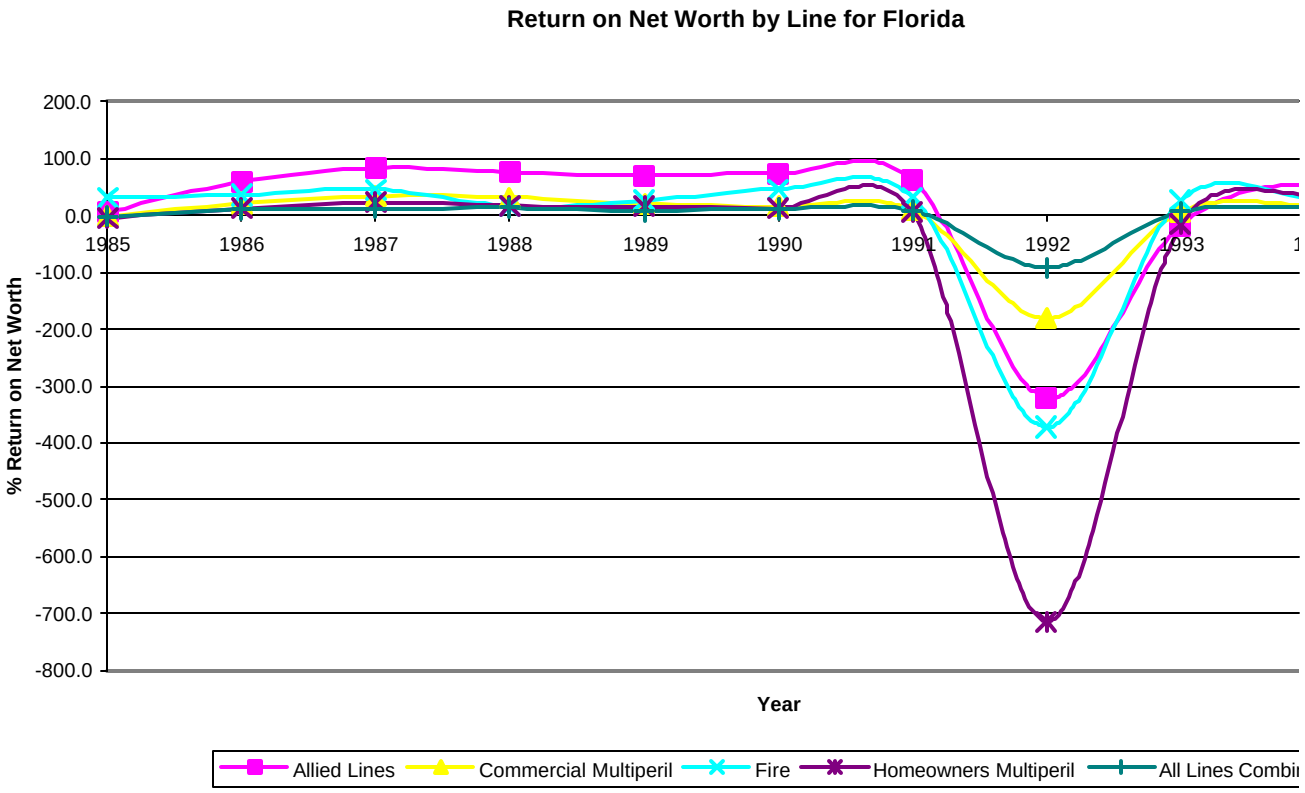

Insured Catastrophe Losses (1995 Dollars)
$ Billions
25
20
15
10
5
0
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Year
Source: Insurance Services Office

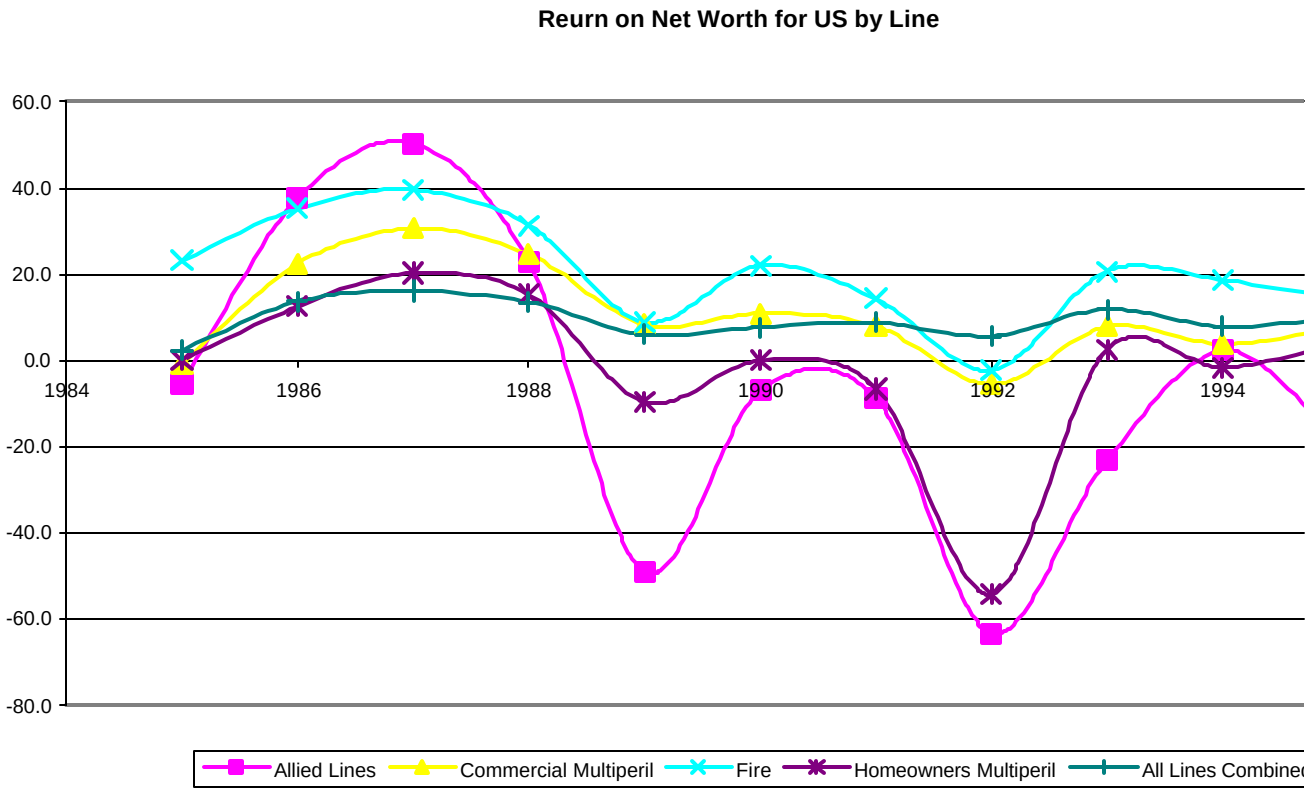


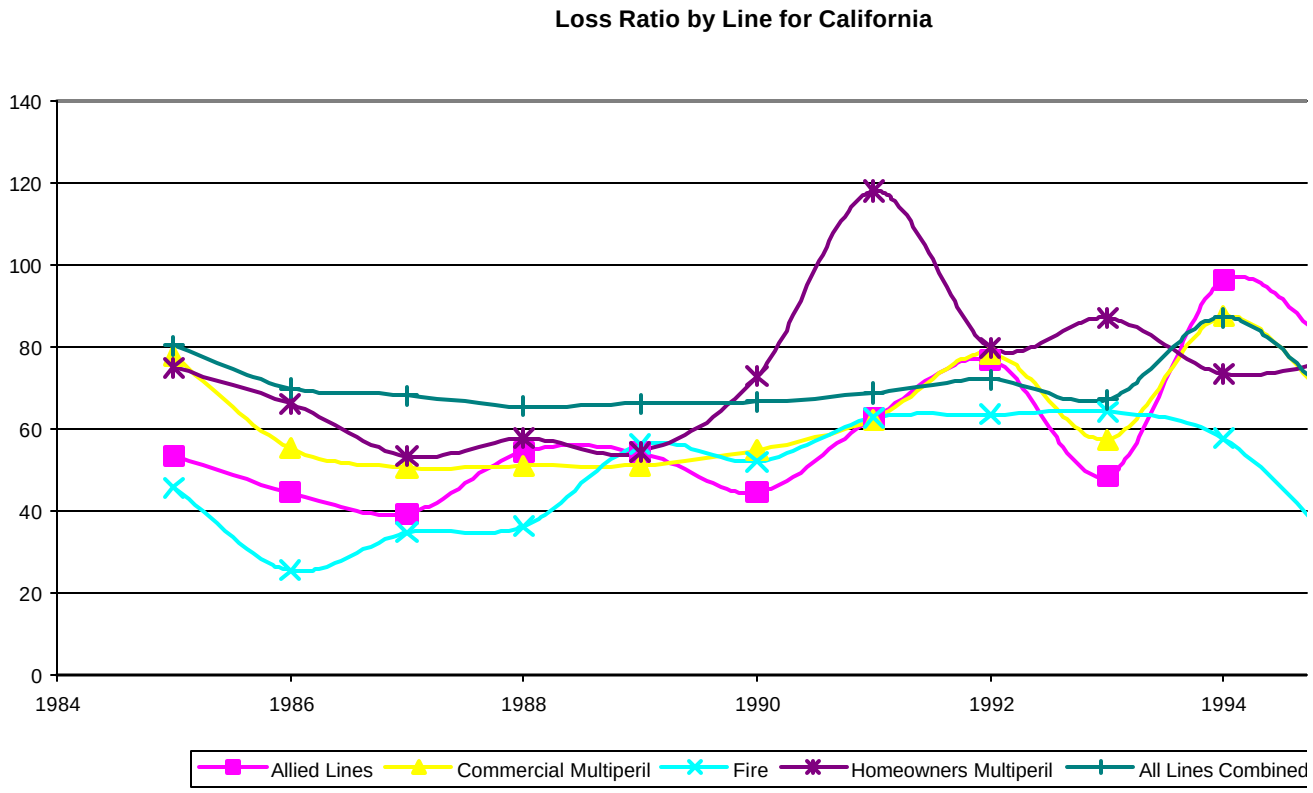
Source: RMS and ISO

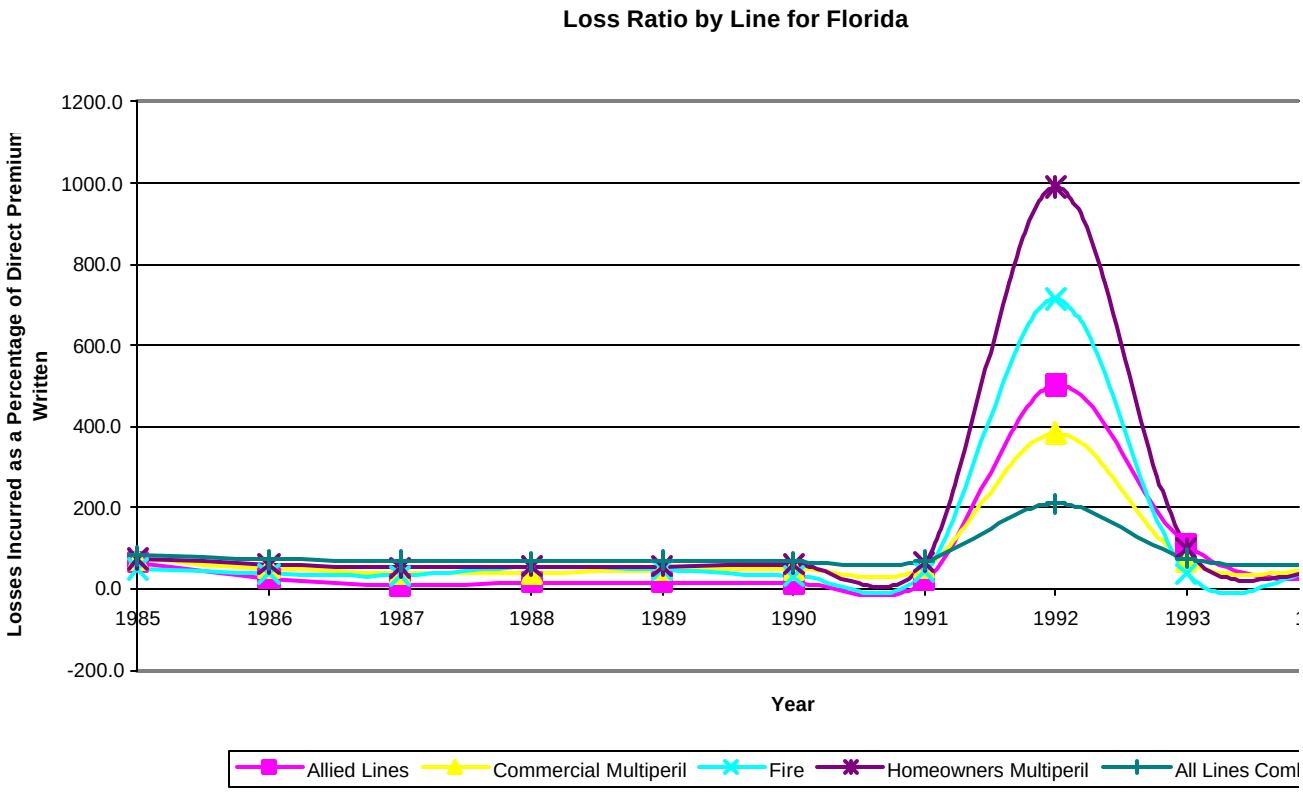

Basic
Conditions
Supply
Cost Conditions
Inputs
Technology
Information
Attitudes
Legal
Framework
Demand
Price Elasticity
Substitutes
Rate of Growth
Cyclicality
Purchase Method
Market Structure
Number and Size of Sellers/Buyers
Product Differentiation
Barriers to Entry and Exit
Vertical Integration
Diversification
Public Policy
Legal Framework
Regulation
Taxes/Subsidies
Public Expenditures
Antitrust
International Trade Rules
Information Provision
Conduct
Pricing Behavior
Product Strategy/Advertising
Research/Innovation
Investment
Legal Tactics
Performance
Production/Allocative Efficiency
Progress
Full Employment
Equity

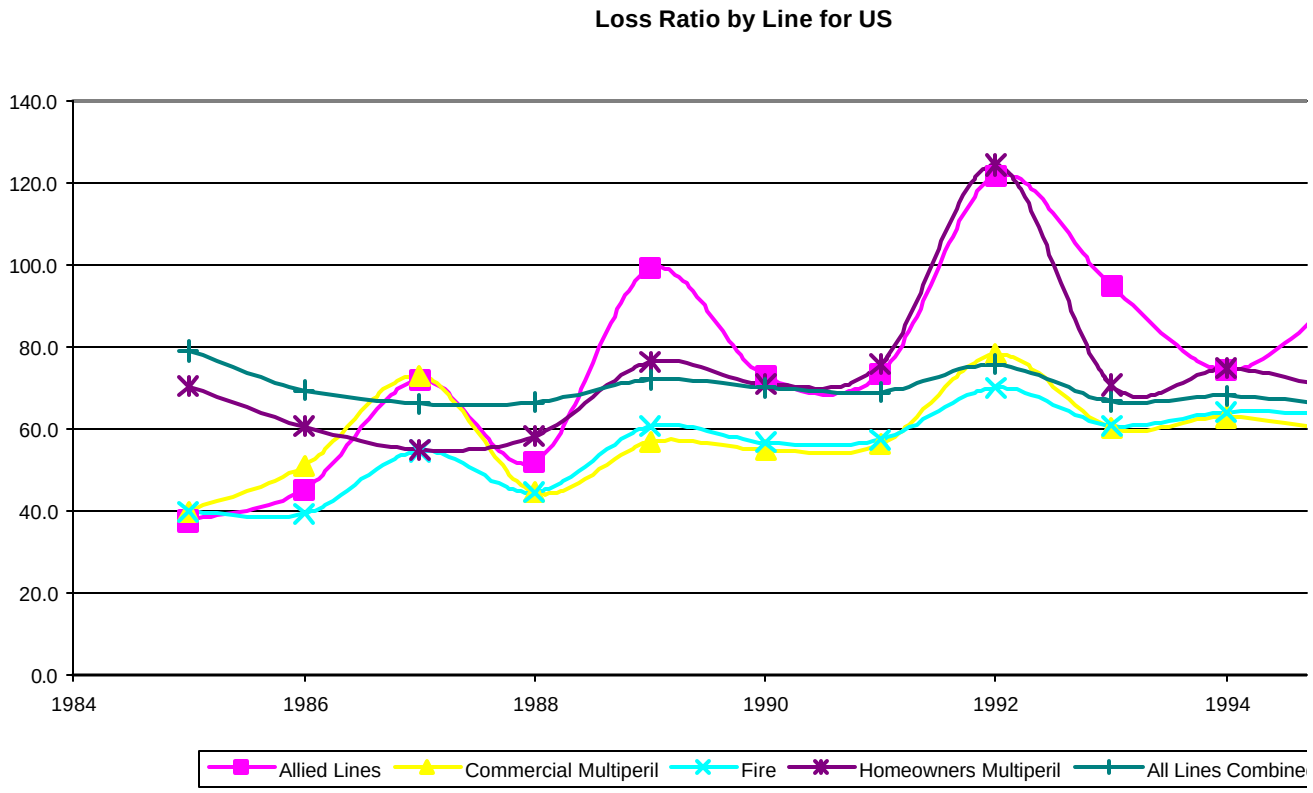

Return on Net Worth by Line for California
% Return on Net Worth
60
40
20
0
-20
-40
-60
1985
1986
1987
1988
1989
1990
1991
1992
1993
Year
Allied Lines
Commercial Multiperil
Fire
Homeowners Multiperil
All Lines Combine


Return on Net Worth by Line for Florida
200.0
100.0
0.0
-100.0
-200.0
-300.0
-400.0
-500.0
-600.0
-700.0
-800.0
1985
1986
1987
1988
1989
1990
1991
1992
1993
% Return on Net Worth
Year
Allied Lines
Commercial Multiperil
Fire
Homeowners Multiperil
All Lines Combi

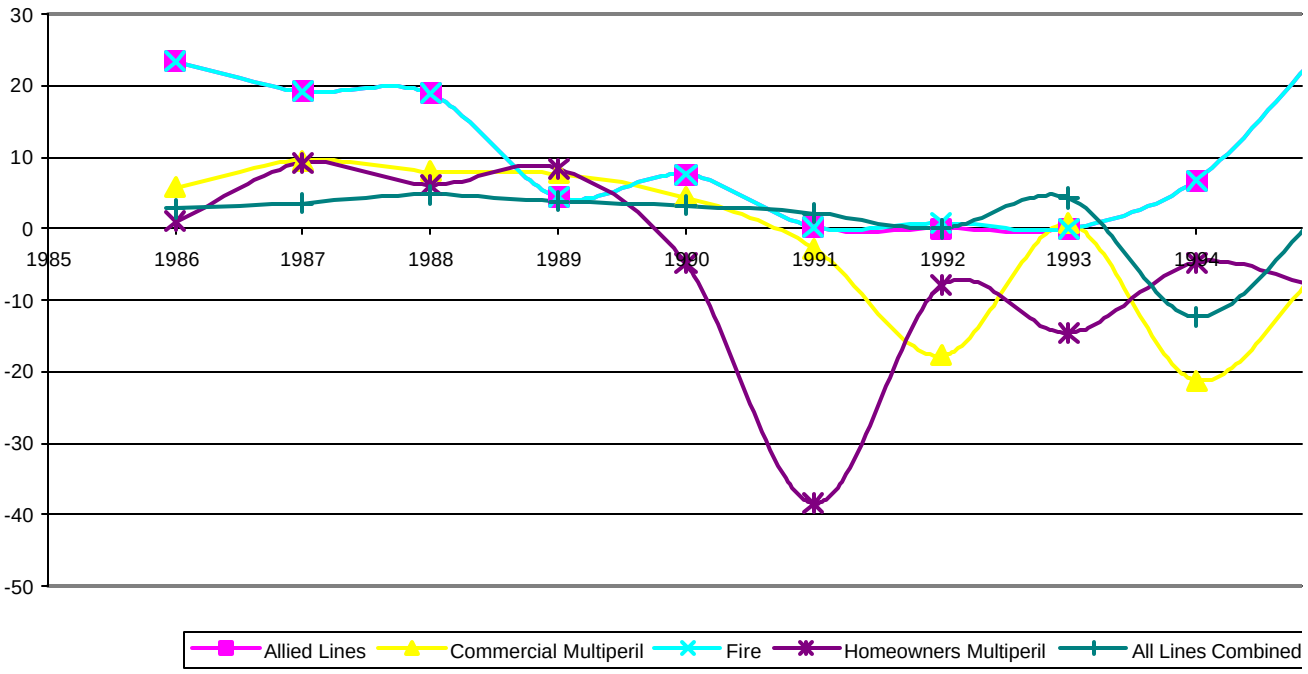

Reurn on Net Worth for US by Line
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
1984
1986
1988
1990
1992
1994
Allied Lines
Commercial Multiperil
Fire
Homeowners Multiperil
All Lines Combine


Loss Ratio by Line for California
140
120
100
80
60
40
20
0
1984
1986
1988
1990
1992
1994
Allied Lines
Commercial Multiperil
Fire
Homeowners Multiperil
All Lines Combined

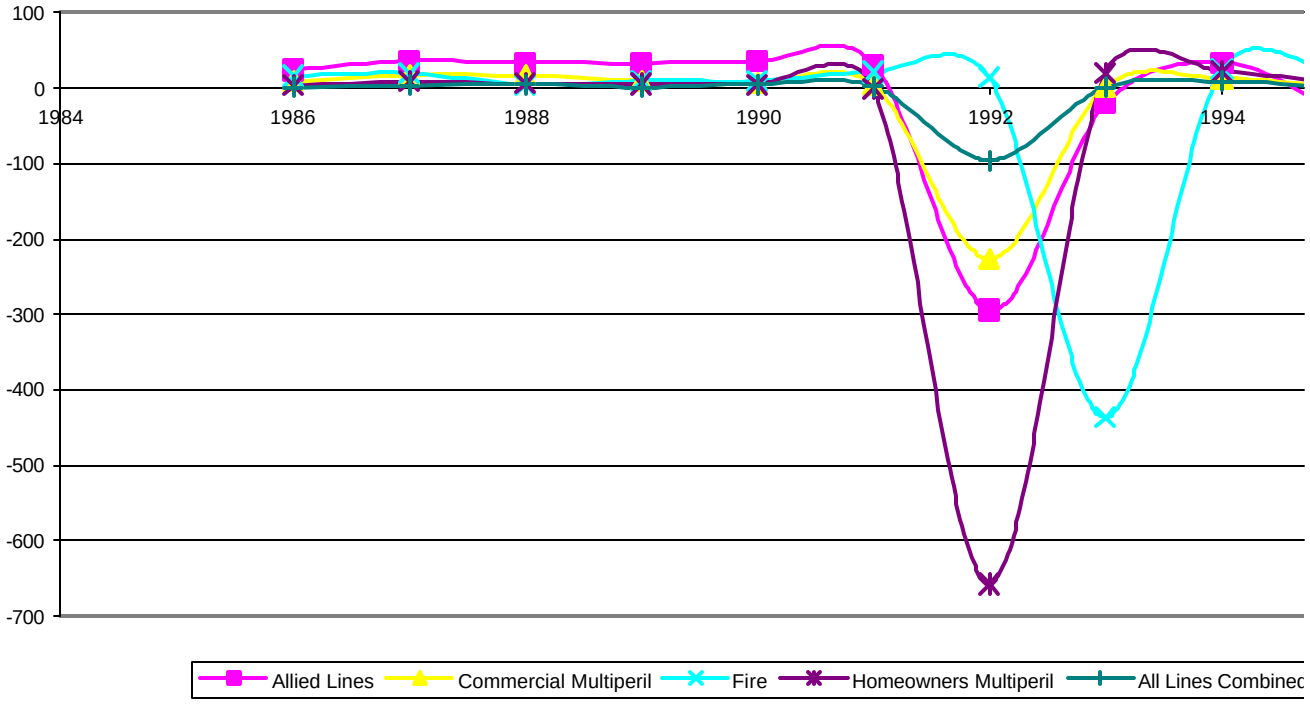

Loss Ratio by Line for Florida
Losses Incurred as a Percentage of Direct Premium Written
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
-200.0
1985
1986
1987
1988
1989
1990
1991
1992
1993
Year
Allied Lines
Commercial Multiperil
Fire
Homeowners Multiperil
All Lines Comb


Loss Ratio by Line for US
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
1984
1986
1988
1990
1992
1994
Allied Lines
Commercial Multiperil
Fire
Homeowners Multiperil
All Lines Combine

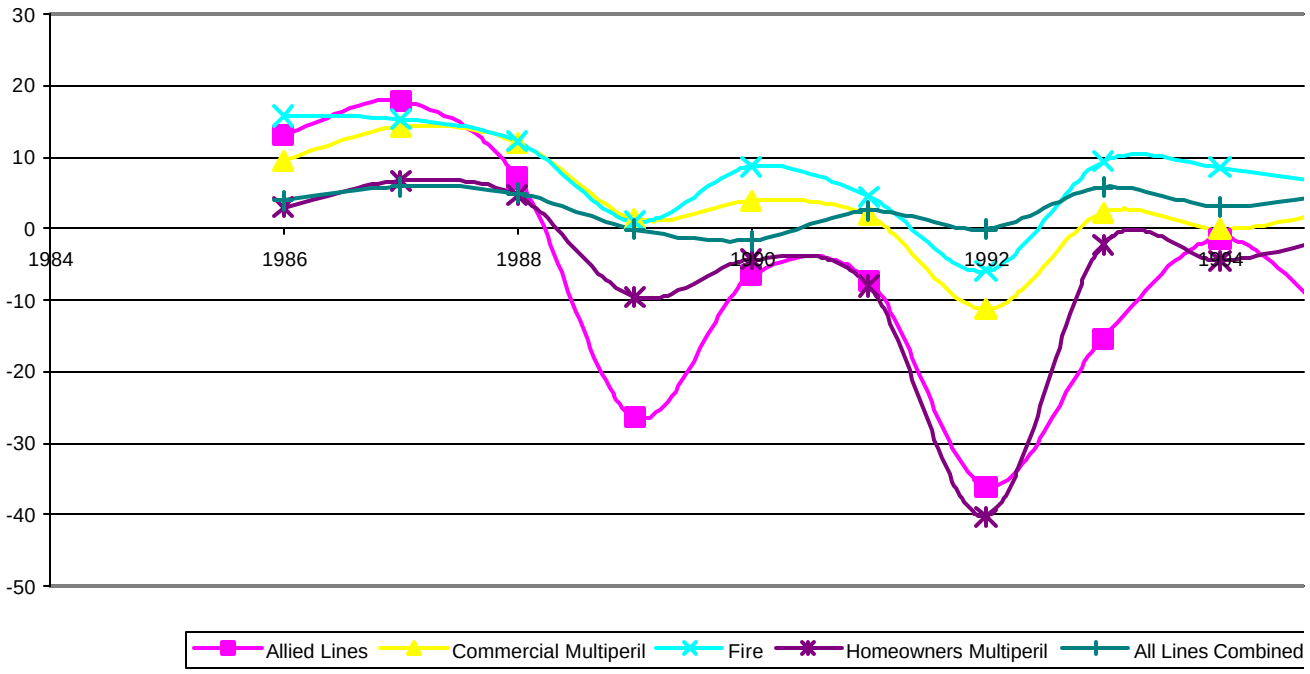
Profit on Insurance Transactions as a Percent of Direct Premiums Earned for California

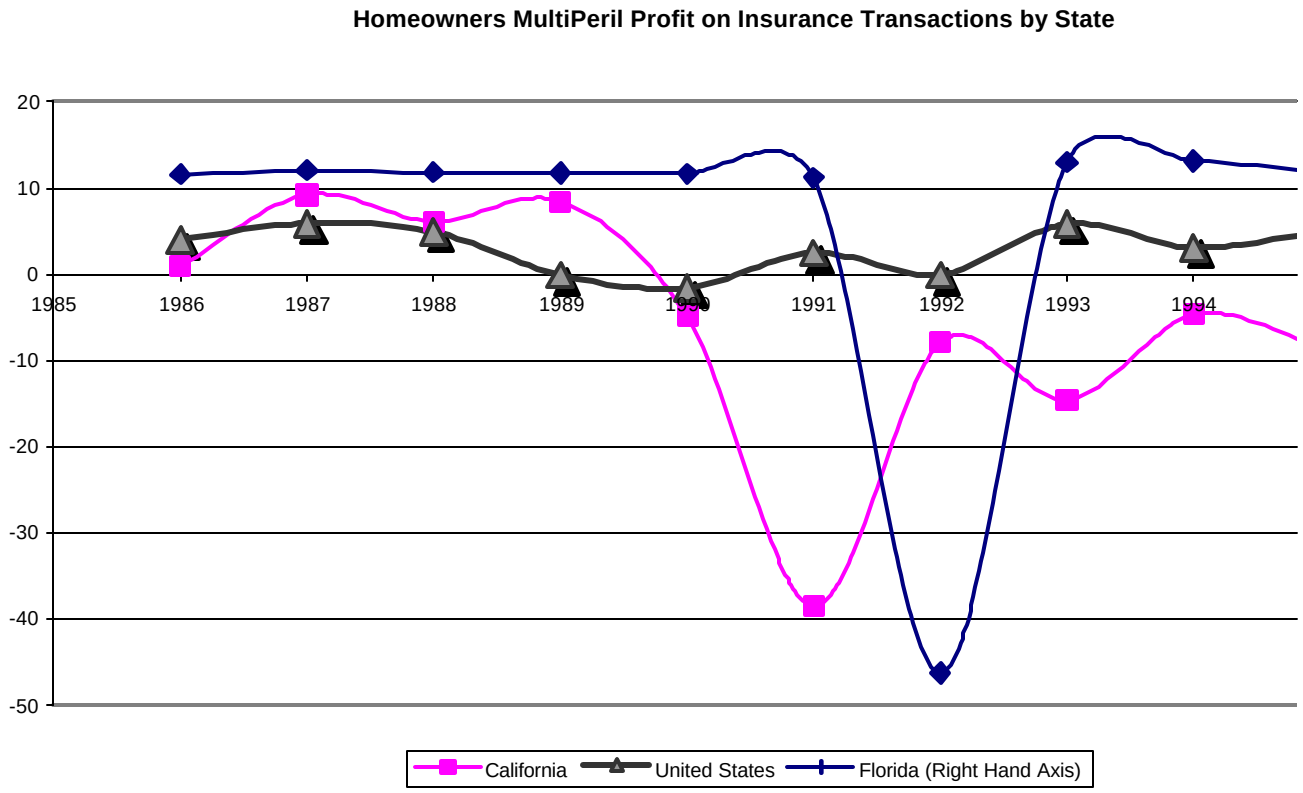


Profit on Insurance Transactions as a Percent of Direct Premiums Earned for Florida



Profit on Insurance Transactions as a Percent of Direct Premiums Earned for the United States Combined




Homeowners MultiPeril Profit on Insurance Transactions by State
20
10
0
-10
-20
-30
-40
-50
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
California
United States
Florida (Right Hand Axis)

Loss Ratio and Net Premiums Earned, 1982-19

California

Year	Allied Lines		Commercial MP		Earthquake		Fire	
	Direct Premiums Earned (000)	Loss Ratio	Direct Premiums Earned (000)	Loss Ratio	Direct Premiums Earned (000)	Loss Ratio	Direct Premiums Earned (000)	Lo Ra
1985	$ 186,244	53.6	$ 1,821,163	77.9	$ 135,695	1.2	$ 380,852	4
1986	$ 215,584	44.6	$ 2,653,430	55.5	$ 180,460	8.9	$ 492,127	2
1987	$ 216,232	39.5	$ 3,083,595	50.8	$ 210,167	22.7	$ 478,733	3
1988	$ 205,785	54.7	$ 3,116,405	51.1	$ 280,794	11.2	$ 444,364	3
1989	$ 207,888	54.4	$ 2,976,346	51.3	$ 335,122	129.72	$ 445,423	5
1990	$ 214,131	44.7	$ 3,009,217	54.9	$ 388,460	46.54	$ 444,211	5
1991	$ 231,866	62.8	$ 2,954,105	62.5	$ 432,293	16.24	$ 439,500	6
1992	$ 238,736	77.1	$ 2,841,819	78.6	$ 488,558	12.73	$ 457,589	6
1993	$ 263,838	48.7	$ 2,865,111	57.5	$ 529,750	3.18	$ 490,878	6
1994	$ 289,837	96.3	$ 2,974,779	87.7	$ 636,224	1,178.21	$ 568,633	5
1995	$ 342,735	79.0	$ 3,047,554	64.7	$ 772,463	142.46	$ 654,207	3
1985-1988 Average		48.1		58.8		11.0		
1989-1995 Average		66.1		65.3		218.4		

Source: NAIC Database and NAIC Profitability Study (various years)

Loss Ratio and Net Premiums Earned, 1982-1995

Florida

Year	Allied Lines		Commercial MP		Earthquake		Fire	
	Direct Premiums Earned (000)	Loss Ratio	Direct Premiums Earned (000)	Loss Ratio	Direct Premiums Earned (000)	Loss Ratio	Direct Premiums Earned (000)	Lo Ra
1985	$ 84,865	65.7	$ 615,914	70.6	$ 902	4.5	$ 119,314	4
1986	$ 131,812	26.3	$ 890,154	50.9	$ 1,612	16.9	$ 152,183	3
1987	$ 165,236	9.8	$ 1,007,580	38.1	$ 1,802	22.8	$ 174,902	3
1988	$ 173,529	54.7	$ 1,034,515	38.6	$ 1,369	37.3	$ 169,045	5
1989	$ 179,943	16.6	$ 1,003,273	45.4	$ 1,540	36.52	$ 159,653	4
1990	$ 196,814	14.7	$ 977,331	49.3	$ 1,656	46.64	$ 151,177	3
1991	$ 203,653	20.6	$ 939,499	53.2	$ 1,317	373.37	$ 152,433	4
1992	$ 212,168	502.5	$ 910,844	384.1	$ 1,697	185.27	$ 140,798	71
1993	$ 249,924	108.5	$ 1,000,431	67.0	$ 2,089	107.45	$ 170,312	3
1994	$ 318,629	21.9	$ 1,095,060	44.5	$ 3,232	38.27	$ 232,355	3

1995	$ 387,578	112.7	$ 1,157,441	61.9	$ 4,211	52.21	$ 234,577	3
1985-1988 Average		39.1		49.6		20.4		
1989-1995 Average		113.9		100.8		120.0		1

Source: NAIC Database and NAIC Profitability Study (various years)

Loss Ratio and Net Premiums Earned, 1982-19

United States Combined

	Allied Lines		Commercial MP		Earthquake		Fire	
Year	Direct Premiums Earned (000)	Loss Ratio	Direct Premiums Earned (000)	Loss Ratio	Direct Premiums Earned (000)	Loss Ratio	Direct Premiums Earned (000)	Lo Ra
1985	$ 2,085,520	37.7	$ 13,631,721	40.0	$ 179,107	1.8	$ 3,547,854	4
1986	$ 2,346,595	45.3	$ 14,668,995	51.1	$ 235,531	0.8	$ 4,270,201	3
1987	$ 2,454,227	72.2	$ 16,075,522	73.2	$ 272,499	17.9	$ 4,574,058	5
1988	$ 2,435,949	52.1	$ 16,858,595	44.6	$ 341,510	1.1	$ 4,202,319	4
1989	$ 2,367,489	99.3	$ 19,439,215	57.0	$ 336,055	98.01	$ 4,464,737	6
1990	$ 2,785,458	73.0	$ 17,590,626	55.0	$ 411,423	29.39	$ 4,082,966	5
1991	$ 3,020,382	73.6	$ 18,710,713	56.3	$ 1,418,931	52.72	$ 4,095,503	5
1992	$ 3,172,543	121.9	$ 18,431,685	78.4	$ 617,386	9.92	$ 4,066,685	7
1993	$ 3,474,705	95.1	$ 18,851,845	60.3	$ 676,729	3.25	$ 4,165,507	6
1994	$ 3,956,774	74.5	$ 19,684,384	63.1	$ 919,107	724.30	$ 4,700,533	6
1995	$ 4,396,067	92.1	$ 20,486,149	59.8	$ 1,161,368	98.08	$ 4,984,513	6
1985-1988 Average		51.8		52.2		5.4		
1989-1995 Average		89.9		61.4		145.1		

Source: NAIC Database and NAIC Profitability Study (various years)

California

Return on Net Worth

Line	1985	1986	1987	1988	1989	1990	1991	1992	1
Allied Lines	27.2	37.3	41.9	19.6	19.3	32.8	8.5	(4.1)	
Commercial Multiperil	(10.6)	16.4	20.9	17.5	15.9	11.0	2.7	(11.5)	
Fire	35.8	50.5	43.3	42.8	14.8	19.2	6.5	8.7	
Homeowners Multiperil	(2.1)	8.9	21.9	16.8	19.8	(1.5)	(46.4)	(3.7)	
All Lines Combined	(1.0)	11.8	11.4	12.9	10.9	9.4	8.0	6.3	

Source: NAIC Profitability Study (1995)

Loss Ratio (Losses Incurred over DPE)

Line	1985	1986	1987	1988	1989	1990	1991	1992	1
Allied Lines	53.6	44.6	39.5	54.7	54.4	44.7	62.8	77.1	
Commercial Multiperil	77.9	55.5	50.8	51.1	51.3	54.9	62.5	78.6	
Fire	45.9	25.5	34.9	36.3	56.4	52.2	62.8	63.6	
Homeowners Multiperil	75.1	66.4	53.4	57.8	54.5	72.9	118.2	80.0	
Earthquake	1.2	8.9	22.7	11.2	129.7	46.5	16.2	12.7	
All Lines Combined	80.5	70.1	68.4	65.6	66.4	66.8	68.9	72.2	

Source: NAIC Profitability Study (1995)

Profit on Insurance Transactions as a Percent of Direct Premiums Earned

Line	1985	1986	1987	1988	1989	1990	1991	1992	1
Allied Lines		23.4	19.2	18.9	4.5	7.6	0.2	0.1	
Commercial Multiperil		5.8	9.6	8.0	7.7	4.4	(2.7)	(17.7)	
Fire		23.4	19.2	18.9	4.5	7.6	0.2	0.8	
Homeowners Multiperil		1.0	9.2	6.1	8.4	(4.9)	(38.4)	(7.9)	
All Lines Combined		2.8	3.6	4.8	3.8	3.2	2.2	0.0	

Source: NAIC Profitability Study (1995)

Florida

Return on Net Worth

Line	1985	1986	1987	1988	1989	1990	1991	1992	1
Allied Lines	6.1	59.9	83.3	76.1	70.2	74.0	64.1	(321.5)	
Commercial Multiperil	(2.1)	22.1	34.2	32.2	20.5	15.5	10.1	(181.3)	
Fire	31.3	36.2	46.5	16.7	25.7	46.4	32.4	(372.5)	
Homeowners Multiperil	(4.8)	13.1	22.3	17.0	16.2	13.3	6.9	(714.9)	
All Lines Combined	(1.9)	9.7	12.0	13.4	7.8	11.7	8.5	(91.7)	

Source: NAIC Profitability Study (1995)

Loss Ratio (Losses Incurred over DPE)

Line	1985	1986	1987	1988	1989	1990	1991	1992	1
Allied Lines	65.6	26.3	9.8	16.0	16.6	14.7	20.6	502.5	
Commercial Multiperil	71.8	50.4	38.2	38.0	45.4	49.3	53.2	384.1	
Fire	49.0	37.7	32.8	55.0	47.9	31.9	41.7	714.4	
Homeowners Multiperil	73.7	60.3	51.9	56.4	56.3	59.3	64.1	990.3	
All Lines Combined	81.9	73.0	68.6	66.8	70.4	66.6	69.4	210.2	

Source: NAIC Profitability Study (1995)

Profit on Insurance Transactions as a Percent of Direct Premiums Earned

Line	1985	1986	1987	1988	1989	1990	1991	1992	1
Allied Lines		24.2	36.4	34.2	33.1	35.3	31.7	(294.1)	
Commercial Multiperil		8.7	17.2	16.8	10.5	7.7	3.8	(226.2)	
Fire		16.1	19.9	4.9	10.2	10.1	21.5	14.0	(
Homeowners Multiperil		3.2	8.7	5.7	5.6	4.3	0.1	(657.4)	
All Lines Combined		1.6	3.9	5.1	1.4	4.9	2.6	(95.5)	

Source: NAIC Profitability Study (1995)

United States Combined

Return on Net Worth

Line	1985	1986	1987	1988	1989	1990	1991	1992	1993
Allied Lines	(5.4)	37.5	50.3	22.8	(49.1)	(7.1)	(8.8)	(63.3)	(23.2
Commercial Multiperil	(0.8)	22.4	30.6	24.5	8.3	10.9	8.0	(5.6)	7.9
Fire	23.1	35.2	39.6	31.4	8.9	22.1	14.3	(2.3)	20.7
Homeowners Multiperil	0.0	12.6	20.3	15.3	(9.6)	(0.1)	(6.6)	(54.3)	2.5
All Lines Combined	2.4	13.7	16.1	13.5	6.1	7.7	8.8	5.6	11.8

Source: NAIC Profitability Study (1995)

Loss Ratio (Losses Incurred over DPE)

Line	1985	1986	1987	1988	1989	1990	1991	1992	1993
Allied Lines	37.7	45.3	72.2	52.1	99.3	73.0	73.6	121.9	95.1
Commercial Multiperil	40.0	51.1	73.2	44.6	57.0	55.0	56.3	78.4	60.3
Fire	40.1	39.4	54.7	44.7	60.8	56.8	57.5	70.2	61.0
Homeowners Multiperil	70.6	60.8	55.1	58.2	76.5	71.1	75.9	124.6	70.9
All Lines Combined	79.2	69.6	66.3	66.6	72.2	70.3	69.1	75.8	66.9

Source: NAIC Profitability Study (1995)

Profit on Insurance Transactions as a Percent of Direct Premiums Earned

Line	1985	1986	1987	1988	1989	1990	1991	1992	1993
Allied Lines		13.2	17.8	7.1	(26.4)	(6.5)	(7.2)	(36.0)	(15.3
Commercial Multiperil		9.6	14.3	12.1	1.4	3.9	1.8	(11.3)	2.3
Fire		15.8	15.3	12.2	1.0	8.7	4.5	(5.9)	9.4
Homeowners Multiperil		3.0	6.7	4.6	(9.6)	(4.3)	(8.0)	(40.2)	(2.2
All Lines Combined		4.0	5.9	4.9	(0.1)	(1.6)	2.5	(0.1)	5.8

Source: NAIC Profitability Study (1995)

Catastrophe Insurance Markets
State Market Concentration (Mean Values)
1989 and 1995

	All States				Catastrophe-Prone		
	No. of Insurers*		HHI		No. of Insurers*		
Line	1989	1995	1989	1995	1989	1995	19
Homeowners Multiperil	93	77	1,253	1,291	81	62	
Fire	140	127	787	516	122	111	
Allied Lines	128	122	1,040	692	112	104	
Commercial Multiperil	110	106	806	604	95	109	
Earthquake	50	56	2,116	1,571	46	49	
All Lines Combined	274	289	655	549	251	260	

*** Insurer groups**
**** California, Hawaii, Florida, North Carolina, South Carolina, Puerto Rico, Texas, Virgin Islands**

Source: NAIC Database

Catastrophe Insurance Markets
Market Concentration By State by Line of Groups and Unaffiliated Single
1989 and 1995
California

	No. of Insurers			CR4		CR8	
Line	1989	1995	Percent Change	1989	1995	1989	19
Allied Lines	164	149	-9%	34%	28%	49%	
Commercial Multiperil	141	125	-11%	33%	40%	49%	
Fire	182	158	-13%	28%	30%	43%	
Homeowners Multiperil	119	96	-19%	54%	57%	65%	
Earthquake	113	104	-8%	55%	54%	68%	
All Lines Combined	364	352	-3%	29%	31%	43%	

*** Insurer groups and Unaffiliated Singles with Positive Direct Premiums written in 1989 and 1995**
Source: NAIC Database and A.M. Best

Catastrophe Insurance Markets
Market Concentration By State by Line of Groups and Unaffiliated Single
1989 and 1995
Florida

Line	No. of Insurers			CR4		CR8	
	1989	1995	Change	1989	1995	1989	19
Allied Lines	185	158	-15%	49%	43%	61%	
Commercial Multiperil	159	129	-19%	28%	30%	44%	
Fire	195	164	-16%	27%	27%	44%	
Homeowners Multiperil	149	100	-33%	49%	60%	61%	
All Lines Combined	398	399	0%	31%	35%	44%	

*** Insurer groups and Unaffiliated Singles with Positive Direct Premiums written in 1989 and 1995**
Source: NAIC Database and A.M. Best

Catastrophe Insurance Markets
Market Concentration By State by Line of Groups and Unaffiliated Single
1989 and 1995
US Combined

Line	No. of Insurers			CR4		CR8	
	1989	1995	Change	1989	1995	1989	19
Allied Lines	1,230	603	-51%	16%	22%	25%	
Commercial Multiperil	943	477	-49%	15%	23%	26%	
Fire	1,378	667	-52%	18%	26%	28%	
Homeowners Multiperil	1,045	531	-49%	34%	45%	41%	
Earthquake	360	194	-46%	40%	49%	53%	
All Lines Combined	1,388	1,304	-6%	24%	27%	35%	

*** Insurer groups and Unaffiliated Singles with Positive Direct Premiums written in 1989 and 1995**
Source: NAIC Database and A.M. Best

Catastrophe Insurance Markets
Entries and Exits*
1989-1995
California

Line	Number of Insurers		Entries		Exits	
	1995	1989	No.	Pct.	No.	Pct.
Homeowners Multiperil**	180	224	36	16.07%	80	35.7
Fire	336	337	84	24.93%	85	25.2
Allied Lines	317	310	89	28.71%	82	26.4
Commercial Multiperil	282	265	64	24.15%	81	30.5
Earthquake	229	234	58	24.79%	63	26.9
All Lines Combined	722	713	151	21.18%	142	19.9

*** Insurers with positive premiums written in 1995 and not in 1989 are treated as exits and vice versa for entries; percents are in relation to the number of insurers in 1989**
****Does not include any state owned insurer**
Source: NAIC Database

Catastrophe Insurance Markets
Entries and Exits*
1989-1995
Florida

Line	Number of Insurers		Entries		Exits	
	1995	1989	No.	Pct.	No.	Pct.
Homeowners Multiperil**	202	263	35	13.31%	96	36.5
Fire	334	331	91	27.49%	88	26.5
Allied Lines	323	325	88	27.08%	90	27.6
Commercial Multiperil	294	299	86	28.76%	91	30.4
All Lines Combined	784	724	208	28.73%	148	20.4

*** Insurers with positive premiums written in 1995 and not in 1989 are treated as exits and vice versa for entries; percents are in relation to the number of insurers in 1989**
****Does not include any state owned insurer**
Source: NAIC Database

Catastrophe Insurance Markets
Entries and Exits*
1989-1995
United States

	Number of Insurers		Entries		Exits	
Line	**1995**	**1989**	**No.**	**Pct.**	**No.**	**Pct.**
Homeowners Multiperil	1,008	839	348	41.48%	179	21.3
Fire	1,243	1,048	410	39.12%	215	20.5
Allied Lines	1,172	962	397	41.27%	187	19.4
Commercial Multiperil	945	784	353	45.03%	192	24.4
Earthquake	402	528	214	40.53%	88	16.6
All Lines Combined	2,349	1,637	970	59.25%	258	15.7

*** Insurers with positive premiums written in 1995 and not in 1989 are treated as exits and vice versa for entries; percents are in relation to the number of insurers in 1989**

Source: NAIC Database

California Earthquake Writers
Top 25 Losing Market Share 1995 - 1990

Name	MS 90	MS 91	MS 92	MS 93	MS 94	MS 95
TWENTIETH CENTURY INS CO	2.76%	3.69%	3.43%	3.95%	2.39%	0.0
FIRE INSURANCE EXCHANGE	8.29%	7.59%	7.95%	8.34%	6.73%	6.0
STATE FARM FIRE AND CASUALTY CO	23.97%	22.48%	22.06%	23.66%	22.43%	22.0
AETNA CASUALTY & SURETY CO	5.43%	5.20%	5.62%	5.92%	5.12%	3.9
UNITED SERVICES AUTOMOBILE ASSOC	3.78%	3.92%	3.88%	4.12%	3.32%	2.6
HOME INDEMNITY CO	1.05%	1.32%	0.83%	0.28%	0.02%	0.0
ASSOCIATED INDEMNITY CORP	1.56%	1.39%	1.16%	1.08%	0.86%	0.8
WEST AMERICAN INS CO	0.59%	0.60%	0.44%	-0.01%	0.00%	0.0
NORTH RIVER INS CO	0.56%	0.00%	0.00%	0.00%	0.00%	0.0

TOPA INS CO	0.42%	0.39%	0.17%	0.36%	0.07%	0.0
ILLINOIS UNION INS CO	0.44%	0.54%	0.34%	0.07%	0.00%	0.0
CENTURY INDEMNITY CO	0.35%	0.41%	0.34%	0.15%	0.39%	-0.0
CONTINENTAL CASUALTY CO	0.68%	0.63%	0.63%	0.43%	0.28%	0.3
BLUE RIDGE INS CO	0.95%	0.92%	0.71%	0.70%	0.60%	0.6
UNITED PACIFIC INS CO	0.35%	0.30%	0.24%	0.20%	0.09%	0.0
TRAVELERS INDEMNITY CO OF CT	0.37%	0.15%	0.13%	0.00%	0.13%	0.0
HARTFORD ACCIDENT & INDEMNITY CO	0.34%	0.11%	0.10%	0.00%	0.00%	0.0
RELIANCE INS CO	0.34%	0.29%	0.27%	0.26%	0.16%	0.0
AETNA CASUALTY & SURETY CO OF IL	0.51%	0.48%	0.38%	0.38%	0.41%	0.2
CIGNA INS CO	0.25%	0.28%	0.26%	0.07%	0.03%	0.0
ATLAS ASSURANCE CO OF AMERICA	0.23%	0.22%	0.17%	0.01%	0.00%	0.0
EAGLE WEST INS CO	0.26%	0.14%	0.12%	0.09%	0.06%	0.0
ASSOCIATES INSURANCE CO	0.21%	0.00%	0.00%	0.00%	0.00%	0.0
INDEMNITY INS CO OF NORTH AMERICA	0.21%	0.17%	0.15%	0.21%	0.06%	0.0
HOUSTON CASUALTY CO	0.98%	0.93%	0.67%	0.39%	0.85%	0.7
Total	54.88%	52.16%	50.06%	50.68%	44.02%	37.7

California Earthquake Writers
Top 25 Companies Increasing Market Share in DPW from 1990 to 1995

Name	MS 90	MS 91	MS 92	MS 93	MS 94	MS 95
ALLSTATE INSURANCE COMPANY	13.19%	13.25%	12.42%	12.49%	11.47%	14.8
ESSEX INSURANCE CO	0.00%	0.00%	0.00%	0.26%	1.20%	1.3
STATE FARM GENERAL INS CO	1.27%	1.58%	1.94%	2.30%	2.30%	2.6
INTERINS EXCH-AUTO CLUB OF SO CA	0.76%	0.84%	0.93%	1.11%	1.36%	1.9
NATIONAL FIRE & MARINE INS CO	0.00%	0.00%	0.00%	0.00%	0.40%	1.1
CNA CASUALTY OF CALIFORNIA	0.00%	0.00%	0.00%	0.18%	0.46%	0.9
CENTURY-NATIONAL INS CO	0.49%	0.50%	0.55%	0.52%	0.84%	1.4
ROYAL SURPLUS LINES INS CO	0.01%	0.00%	0.00%	0.05%	0.31%	0.9
INSURANCE CO OF THE WEST	0.03%	0.01%	0.00%	0.00%	0.49%	0.8
ROYAL INDEMNITY CO	0.11%	0.05%	0.02%	0.23%	1.31%	0.8
FEDERAL INS CO	0.10%	1.68%	1.47%	1.41%	0.97%	0.8
AETNA INSURANCE COMPANY	0.00%	0.00%	0.00%	0.00%	0.37%	0.7
SAFECO INS CO OF AMERICA	2.63%	2.77%	3.27%	3.54%	3.31%	3.2
ASSOCIATED INTERNATIONAL INS CO	0.00%	0.20%	0.14%	0.27%	0.75%	0.5
NORTHERN ASSURANCE CO OF AMERICA	0.01%	0.00%	0.00%	0.00%	0.00%	0.5
GOLDEN BEAR INS CO	0.14%	0.12%	0.08%	0.15%	0.36%	0.6
ALLIANZ INSURANCE COMPANY	0.07%	0.03%	0.05%	0.01%	0.33%	0.5
SAFECO INS CO OF ILLINOIS	0.00%	0.00%	0.15%	0.33%	0.37%	0.3
AETNA CASUALTY & SURETY CO OF AMER	0.00%	0.00%	0.00%	0.00%	0.18%	0.3
FIREMANS FUND INS CO	1.45%	1.40%	1.60%	1.76%	1.48%	1.8
HARTFORD FIRE INS CO	0.23%	0.21%	0.18%	0.31%	0.44%	0.5
AMERICAN GUARANTEE & LIABILITY INS	0.07%	0.02%	0.03%	0.06%	0.28%	0.3
FARMINGTON CASUALTY CO	0.10%	0.11%	0.10%	0.15%	0.29%	0.3
GREAT AMERICAN INS CO	0.08%	0.07%	0.06%	0.09%	0.31%	0.3
CALIFORNIA CASUALTY INS CO	0.00%	0.00%	0.00%	0.00%	0.15%	0.2
Total	20.73%	22.85%	22.97%	25.23%	29.74%	38.4

Florida Homeowners Writers

Top 25 Companies Losing Market Share in DPW from 1990 to 1995

Name	MS 90	MS 91	MS 92	MS 93	MS 94	MS 95
ALLSTATE INSURANCE COMPANY	17.67%	17.82%	17.69%	18.05%	15.87%	13.7
INDEPENDENT FIRE INS CO	1.92%	1.87%	1.64%	0.80%	0.10%	0.0
PRUDENTIAL PROPERTY & CAS INS CO	3.03%	3.35%	3.41%	3.30%	1.72%	1.7
AETNA CASUALTY & SURETY CO	1.26%	-0.02%	0.00%	0.00%	0.00%	0.0
HOME INDEMNITY CO	1.22%	1.23%	0.73%	0.19%	0.02%	0.0
FEDERAL INS CO	1.99%	1.97%	1.97%	1.83%	1.23%	1.1
MEDMARC CASUALTY INSURANCE COMPANY	0.78%	0.59%	0.45%	0.02%	0.00%	0.0
FLORIDA FARM BU MUTUAL INS CO	0.78%	0.82%	0.72%	0.00%	0.00%	0.0
PHOENIX INSURANCE CO	1.61%	1.39%	1.22%	1.15%	0.91%	0.8
TRAVELERS INDEMNITY CO	1.78%	1.39%	1.27%	1.25%	0.97%	1.0
ARI MUTUAL INSURANCE COMPANY	0.59%	0.65%	0.60%	-0.11%	0.00%	0.0
WEST AMERICAN INS CO	0.53%	0.56%	0.53%	0.41%	0.31%	0.0
UNITED STATES FIDELITY&GUARANTY CO	0.58%	0.53%	0.48%	0.52%	0.32%	0.0
AUTO-OWNERS INS CO	1.64%	1.63%	1.57%	1.66%	1.11%	1.1
INSURANCE CO OF NORTH AMERICA	0.60%	0.52%	0.46%	0.45%	0.31%	0.1
ST PAUL FIRE & MARINE INS CO	0.49%	0.34%	0.14%	0.00%	0.00%	0.0
PREMIER INS CO	0.49%	0.01%	0.00%	0.00%	0.00%	0.0
COLONIAL PENN INS CO	1.08%	1.10%	0.79%	0.81%	0.69%	0.5
INSURANCE CO OF FLORIDA	0.48%	0.37%	0.00%	0.00%	0.00%	0.0
MERRIMACK MUTUAL FIRE INS CO	0.47%	0.47%	0.42%	0.06%	0.04%	0.0
MCA INSURANCE CO	0.44%	0.41%	0.00%	0.00%	0.00%	0.0
SOUTH CAROLINA INS CO	0.40%	0.37%	0.38%	-0.03%	0.00%	0.0
BANKERS & SHIPPERS INSURANCE COMPANY	0.49%	0.46%	0.46%	0.43%	0.24%	0.0
HIGHLANDS INS CO	0.45%	0.41%	0.38%	0.13%	0.07%	0.0
STATE AUTOMOBILE MUTUAL INS CO	0.38%	0.32%	0.12%	0.00%	0.00%	0.0
Total	41.15%	38.55%	35.44%	30.91%	23.89%	20.5

Florida Homeowners Writers

Top 25 Companies Increasing Market Share in DPW from 1990 to 1995

Name	MS 90	MS 91	MS 92	MS 93	MS 94	MS 95
Florida Residential P&C JUA	0.00%	0.00%	0.00%	0.00%	15.55%	17.3
STATE FARM FIRE AND CASUALTY CO	22.11%	23.18%	26.37%	27.64%	24.63%	24.7
AUTOMOBILE INS CO OF HARTFORD CT	0.00%	1.12%	0.95%	1.17%	1.21%	1.4
FLORIDA FARM BUREAU GENERAL INS CO	0.00%	0.00%	0.00%	0.74%	1.04%	1.1
CLARENDON NATIONAL INS CO	0.00%	0.00%	0.00%	0.09%	0.52%	0.8
METROPOLITAN PROPERTY & CAS INS CO	0.95%	1.21%	1.40%	1.55%	1.23%	1.4
USAA CASUALTY INS CO	0.66%	0.74%	0.83%	0.97%	1.06%	1.1
ST PAUL GUARDIAN INS CO	0.00%	0.13%	0.37%	0.56%	0.49%	0.4

FLORIDA FARM BUREAU CASUALTY INS CO	0.48%	0.57%	0.59%	0.73%	0.82%	0.9
LEXINGTON INS CO	0.00%	0.00%	0.00%	0.09%	0.08%	0.4
FIREMANS FUND INS CO	0.47%	0.55%	0.64%	0.83%	0.77%	0.8
CONTINENTAL CASUALTY CO	0.00%	0.08%	0.23%	0.30%	0.31%	0.3
UNITED SERVICES AUTOMOBILE ASSOC	3.03%	3.22%	3.24%	3.29%	3.40%	3.3
HARTFORD FIRE INS CO	0.00%	0.00%	0.04%	0.23%	0.31%	0.2
GREAT NORTHERN INS CO	0.00%	0.02%	0.54%	0.49%	0.32%	0.2
LUMBERMENS MUTUAL CASUALTY CO	0.05%	0.06%	0.10%	0.18%	0.27%	0.3
USF&G SPECIALTY INSURANCE CO	0.00%	0.00%	0.00%	0.00%	0.00%	0.2
MOBILE USA INS CO INC	0.43%	0.44%	0.45%	0.48%	0.59%	0.6
WEST AMERICAN INSURANCE CO	0.00%	0.00%	0.00%	0.00%	0.00%	0.2
VESTA INSURANCE CORP	0.01%	0.05%	0.15%	0.33%	0.23%	0.1
AMERICAN STATES PREFERRED INS CO	0.03%	0.08%	0.12%	0.16%	0.17%	0.1
JEFFERSON INS CO OF NY	0.00%	0.00%	0.00%	0.16%	0.12%	0.1
SAFECO INS CO OF AMERICA	0.34%	0.37%	0.39%	0.49%	0.48%	0.4
METROPOLITAN CASUALTY INS CO	0.00%	0.00%	0.00%	0.02%	0.08%	0.1
AMERICAN NATIONAL PROPERTY & CAS CO	0.11%	0.11%	0.12%	0.15%	0.19%	0.2
Total	28.68%	31.95%	36.51%	40.66%	53.88%	57.8

Companies with Large Percentage of Writings in

Company Name	State of Domicile	AMB_CO	NAIC_CO	Most Important Line	Percentage of Writings in Most Important Line	Second Most Important Line	Per of in Im
America First Insurance Co	FL	02186	12696	Com'l MultiPeril	23	Workers' Comp	
The London Assurance of Amer	NY	02093	20311	Com'l MultiPeril	25.8	Homeowners	
Britamco Underwriters, Inc.	FL	10571	09989	Com'l MultiPeril	32.3	Oth Liab Occur	
T.H.E. Insurance Company	LA	00789	12866	Comm'l Auto Liab	37.3	Com'l MultiPeril	
Florida Farm Bureau Casualty	FL	03590	31216	Priv Pass Auto Li	38.3	Homeowners	
Florida Farm Bureau Group	FL	03946		Priv Pass Auto Li	38.3	Homeowners	
Preferred National Ins Co	FL	11035	34118	Com'l MultiPeril	38.8	Oth Liab Occur	
Consolidated Prop & Cas Ins Co	FL	10805	34932	Comm'l Auto Liab	43.1	Com'l MultiPeril	
First Floridian Auto & Home	FL	11872	10647	Priv Pass Auto Li	43.1	Homeowners	
Owners Insurance Company	OH	03628	32700	Com'l MultiPeril	44.4	Homeowners	
AIB Insurance Group	FL	18327		Priv Pass Auto Li	46.9	Comm'l Auto Liab	
Amer Empire Surplus Lines Pool	DE	03011		Oth Liab Occur	47.5	Com'l MultiPeril	
American Empire Surplus Lines	DE	03735	35351	Oth Liab Occur	47.5	Com'l MultiPeril	
Colony Insurance Company	VA	03283	39993	Oth Liab Occur	47.6	Com'l MultiPeril	
Front Royal Pool	VA	05719		Oth Liab Occur	49.5	Com'l MultiPeril	
Continental Heritage Ins Co	UT	01933	39551	Oth Liab Occur	52.3	Com'l MultiPeril	
Capital Assurance Company, Inc	FL	03830	36617	Com'l MultiPeril	52.9	Comm'l Auto Liab	
Capital Assurance Group	FL	00451		Com'l MultiPeril	52.9	Comm'l Auto Liab	
Service Insurance Company	FL	03785	36560	Com'l MultiPeril	55.6	Homeowners	
Nautilus Insurance Group	AZ	18295		Oth Liab Occur	56.1	Comm'l Auto Liab	
Merchants & Business Men's Mut	PA	00588	14486	Com'l MultiPeril	59	Homeowners	
American Surety & Casualty Co	FL	00542	15130	Com'l MultiPeril	61.2	Comm'l Auto Liab	
Armed Forces Ins Exchange	KS	03240	41459	Homeowners	65.4	Inland Marine	
First Oak Brook Corp Syndicate	IL	10577	38270	Com'l MultiPeril	67.2	Oth Liab Occur	
Regis Insurance Company	PA	02676	37052	Com'l MultiPeril	75.1	Oth Liab Occur	
Bankers Security Insurance Co	FL	11572	13990	Homeowners	76.5	Fire	
Penn Charter Mutual Ins Co	PA	04763	17620	Homeowners	81.3	Allied Lines	
Florida Select Insurance Co	FL	11869	10663	Homeowners	82.6	Fire	
Capacity Insurance Company	FL	10738	32930	Com'l MultiPeril	86.2	Allied Lines	
Allstate Floridian Ins Co	IL	10648	30511	Homeowners	94.3	Com'l MultiPeril	
Omega Insurance Company	FL	02727	38644	Homeowners	96	Allied Lines	
Mobile USA Insurance Co., Inc.	FL	10698	32760	Homeowners	96.5	Allied Lines	
NOVA Casualty Company	NY	02708	42552	Com'l MultiPeril	96.7	All Other	
Pegasus Insurance Company	OK	10771	12530	Homeowners	97.3	Oth Liab Occur	
Florists' Insurance Company	IL	03711	33278	Com'l MultiPeril	100		
National Fire & Indemnity Exch	MO	03245	15679	Com'l MultiPeril	100		
Southern-Owners Insurance Co	FL	11676	10190	Com'l MultiPeril	100		
Florida Family Mutual Ins Co	FL	11975	10688	Homeowners	100		
Home & Auto Insurance Company	FL	11782	10314	Homeowners	100		