

EFFECTS OF HURRICANE KATRINA:  
HOW THE PUBLIC OVERREACTS

by  
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A THESIS

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## **Immediate Effects of Hurricane Katrina**

Newspapers, television, and other media sources constantly discuss the potential \$100 billion in economic losses the United States faces in the wake of Hurricane Katrina, the most severe blow from a hurricane this country has ever faced. According to *Risk Management Solutions*, the storm was one of the most devastating in the country, with its winds the eighth strongest ever recorded at landfall (2005). The winds sped along 250 miles of coastline, covering three states and reaching as far as 100 miles inland (RMS, 2005). Residents of Alabama, Louisiana and Mississippi continue in their struggle to regain their property, jobs and lifestyles. 309,000 people were reported unemployed by the Bureau of Labor Statistics directly after the hurricane in September. The US Census Bureau reported an estimated 9.7 million residents who experienced winds from the hurricane and approximately 3.2 million people who lived within the imminent or occurring flood area. This left almost 10 million people's homes or other property destroyed or damaged. Moreover, insurance companies faced costs of over 40-60 billion dollars in coverage.<sup>1</sup> They confronted more claims than they have seen for a hurricane, even surpassing that of Hurricane Andrew in 1992.

Many studies have been conducted analyzing the impact of natural disasters on insurance companies. Most studies show that given large losses from a natural disaster, most insurance companies see a decrease in stock prices, leaving them in an unfavorable position (Sprecher and Pertl, 1983). This is exemplified in Spudeck and Moyer's (1989) analysis of the 1979 Three Mile Island incident, where electrical utility firms were left with a decrease in stock prices. Given such studies and numerous replications, this tends

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<sup>1</sup> Hurricane Katrina: Profile of a Supercat Lessons and Implications for Catastrophe Risk Management, *Risk Management Solutions*, 2005.

to be the commonly held view that natural disasters negatively impact insurance companies.

However, two separate studies have proven otherwise, including Shelor, Anderson & Cross' (1992) analysis of the aftermath of the 1989 California Earthquake, another colossal natural disaster, and found that despite the unprecedented losses insurance companies faced, in the end they were the ones who gained and their stock values ended up increasing. They explained the increase being due to positive investor expectations of an increase in demand for insurance, enough to offset any damages incurred by the insurance companies. Similarly, Aiuppa, Carney, and Krueger (1993) in a separate study of the California earthquake, also reported a positive net effect after the disaster.

This counterintuitive finding raises questions concerning the reaction of the public after a natural disaster. Do people overreact and have such a monstrous fear of a similar catastrophe occurring in their area that it forces them into buying insurance? Not only in affected areas, but in areas where such a catastrophe will not happen, do consumers overreact even more by responding to disasters irrelevant to their region? If consumers' desires to increase insurance purchases can be influenced by a disaster in an area completely unrelated to their own, for example, reacting to a hurricane when your house resides in Nebraska, there is reason to argue that consumers overreact to natural disasters when it comes to insurance purchases.

### **Hypothesis**

In the months following Katrina, debates arose as to whether or not insurance companies would be able to handle the losses they incurred. With the industry facing

claims of up to \$60 billion, would these companies survive? In fact, most large companies affected by Hurricane Katrina not only survived, but also seemed to be barely disturbed. For some companies, they exceeded their own expectations for 2005. For example, fourth-quarter earnings in 2005 for two major homeowners' insurance firms indicated a larger than expected profit. Yet, both of these insurance companies that operate in Alabama, Louisiana and Mississippi, despite the devastating effects of Hurricane Katrina, ended 2005 with an increase in profits. Chubb Corp., a leading insurance provider nationwide, reported fourth-quarter profits that rose from \$467.6 million, or \$2.39 per share, to \$614 million, or \$2.92 a share, over the course of one year. Wall Street projections had only predicted earnings of \$2.15 per share for the end of 2005. In addition, net written premiums rose 1 percent to \$3.1 billion during the quarter. The company's combined loss and expense ratio enhanced from 90.6 percent to 89.3 percent. Overall in 2005, annual profits were \$1.8 billion, or \$8.94 per share and operating income hit a record high of \$1.6 billion, or \$7.73 per share. The projected annual profits had only been set at \$7.53 per share. President and CEO of Chubb Corp., John Finnegan, stated that "Chubb achieved its third consecutive year of record operating earnings despite unusually high catastrophic losses".

Similarly, Safeco Corp., another prominent property and casualty insurer nationwide, reported record earnings for 2005. For fiscal 2005, Safeco reported net income earnings of \$691 million, or \$5.34 per share, an increase from \$562.4 million, or \$4.16 per share, a year earlier. For fourth-quarter earnings, Safeco reported a net income of \$191 million, or \$1.53 per share, an increase from \$180 million, or \$1.41 per share, in

2004. Analysts had expected fourth-quarter earnings of only \$1.28 per share and fiscal earnings of \$4.95 per share.

While the nature and source of these profits is unknown, the fears of the fall of many companies in the industry have fully subsided in the months following Katrina, with most insurance companies not only surviving the disaster, but also acting almost unchanged.

However, what may have changed rests not in the hands of the insurers, but in the eyes of uninsured homeowners. Following a devastating disaster, how does the public react? Given the huge effects on the industry being publicized daily, the personal stories of the victims of the disaster and the fears mounting in those that watch from outside, I conjecture an overreaction of the public, specifically in areas untouched by the hurricane. It might be possible to see a reaction specifically within the realm of hurricane insurance, but because insurance is not offered as an exclusive “hurricane coverage plan”, there are far too many other possible confounding variables. Damages from hurricane insurance are covered either within homeowner’s insurance, for example, wind damage, or through extraneous plans, such as flood insurance. Given the fact that hurricane damage is covered across many plans and that no single type of plan covers all hurricane damage, it would be difficult to show that a hurricane affected “hurricane insurance sales”. In addition, in such a situation, it is hard to know whether people are rationally reacting to an imminent threat and taking precautions in case of another similar disaster, or whether or not it is actually an overreaction. An alternative way to examine the overreaction of the public in the event of a natural disaster is to then look whether a specific and localized type of disaster (in this case hurricanes) sparks an increase in sales in another

insurance sector somewhere else. Specifically, I speculate an increase in earthquake insurance sales, despite the fact that it is a natural disaster that should be seen by consumers as independent of hurricanes. If there is a trend tying hurricanes to an increase in earthquake insurance, there is reason to argue an overreaction by the public, since the occurrence of a hurricane provides no statistical information about the likelihood of there being an earthquake.

### **Data & Methodologies**

To analyze the reaction of the public following Hurricane Katrina, I look at an area completely unaffected by the disaster, California. I investigate the trends of the earthquake insurance sales by the California Earthquake Authority, the main provider of earthquake coverage in the state of California, to see if they coincide with the timing of natural disasters. Specifically, I look at the earthquake insurance sales over the past 8 years and compare them to the incidences of earthquakes in that time period, to see if sales correlate with earthquake incidences. Then, I look at other natural disasters during the same time period, in particular hurricanes, to see if they possibly have an impact on earthquake insurance sales. In addition, I analyze the costs of earthquake insurance, relative to flood insurance and standard homeowner's insurance. I examine whether or not it is even of value to purchase insurance as opposed to risking a disaster and potentially having to pay for damages out-of-pocket. I discuss the costs and benefits of purchasing insurance versus investing the money that would have been spent on premiums to see which option, insurance or investing, would seem more profitable and appealing.

### **Earthquake Insurance Background**

California law requires that all insurers that sell homeowner's premiums also offer earthquake insurance, although the earthquake insurance price has no limitations. Insurers have the option to either sell their own earthquake insurance coverage or they can sell premiums provided by the California Earthquake Authority (CEA).

The California legislature established the CEA in 1996 following the devastating magnitude-6.7 Northridge earthquake of 1994, when approximately 93% of homeowner insurance providers withdrew from selling homeowners insurance in California (CEA, 2006). Providers could not afford to sell their own earthquake insurance premiums as part of their homeowner's insurance plans, therefore, many providers left the California homeowner's insurance market in entirety. The legislature then had a choice to either repeal the law requiring that insurers sell earthquake coverage with homeowner's coverage in California, or find a way to keep insurers selling homeowner's coverage and offer earthquake insurance in a different way. They opted to create the authority, which is now comprised of 19 insurance companies who sell the common policy. The authority is governed by five elected state officials, including the governor, treasurer and insurance commissioner.

Today, the CEA holds approximately two thirds of the earthquake coverage sold in California. The CEA estimates that in the event of an earthquake, it could pay out \$7.1 billion in claims, collected from already sold premiums, assessments on participating insurance companies and reinsurance. Representatives from the CEA report that they are not worried about its capabilities to meet financial obligations, but rather the lack of earthquake insurance homeowners currently buy (Pender, 2005). The authority worries that in the event of a catastrophic earthquake, damages would destroy people without

insurance and since only approximately 15% of homeowners in California currently have earthquake coverage, the authority has increased its efforts to sell more insurance. While the authority may have good reasons to desire an increase in sales, the means by which they are increasing sales seem suspect. Between the media maintaining high coverage of the damages from Katrina, instilling fear in homeowners nationwide, and the constant reminders that California is “past due” for another earthquake, did the authority end up benefiting from the hurricane by capitalizing on a weak moment of the California public?

## **Results**

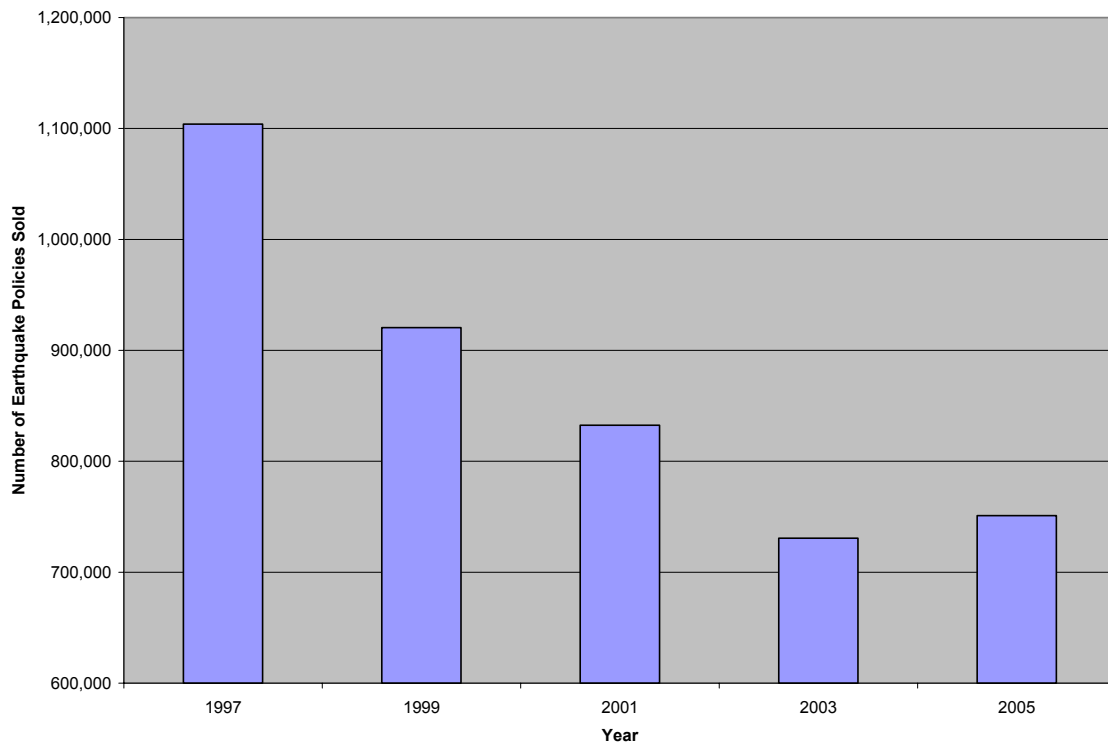
At the end of 2005, Nancy Kincaid, a spokeswoman from the California Earthquake Authority, reported an increase in call volume for the CEA and an increase in inquiries concerning coverage after the events of Hurricane Katrina. In addition, she stated that “marketing activity proved more effective after the hurricane,” meaning that advertisements and efforts to increase sales yielded more responses after the hurricane than they had earlier in 2005. Following Katrina, the number-one destination of CEA web site visitors was the CEA estimated premium calculator.

This sudden interest in earthquake insurance is surprising given overall trends of earthquake insurance sales in the past 10 years. Beginning in 1996, earthquake insurance sales plummeted. According to the California Department of Insurance, from 1996-2000, homeowner’s insurance policies in the state of California increased by 18%, while earthquake insurance policies fell significantly. In 1996, 33% of homeowners had earthquake insurance, but by 2000, the number fell to 17% (California Department of Insurance). Earthquake insurance continued to fall until 2003, but by the end of 2004,

earthquake insurance sales through the California Earthquake Authority began to slowly rise and have continued to do so today.

While insurance sales within the CEA have not risen nearly as much as they fell in 1997, the trend has been upward since the end of 2003. The CEA reports that at the end of 2003, 725,000 CEA policies were sold statewide. By the beginning of 2006 the number of policies had increased to 751,000.

*Figure 1. California Earthquake Authority Insurance Sales*



Specifically looking at the time-period surrounding Hurricane Katrina, the CEA policy count for a base policy in the San Diego metropolitan area was at 83,000 at the beginning of 2005. By the end of 2005, Kincaid reports an increase of sales up to 91,000.

Unfortunately, data prior to the mid 1990's is unavailable, as it was not collected due to a lack of interest in earthquake insurance sales at the time.

## **Discussion**

What caused the initial decline of earthquake insurance sales in 1997? Many factors may have contributed to the decrease, but earthquake insurance analysts suspect that the primary reason for the decline is that after a major earthquake, for example the Northridge earthquake in 1994, earthquake insurance sales decline rapidly and do not rise again until another earthquake hits (California Department of Insurance, 2006).

However, given that there has not been a major earthquake in California since Northridge, this cannot explain the recent rise, albeit small, in earthquake insurance sales since the end of 1993.

One possible alternative explanation is that something else caught the attention of homeowners without earthquake insurance. While a hurricane bestows no statistical information about the probability of an earthquake, perhaps the increased awareness of an effect on the insurance industry as a whole awoke those that lacked some type of insurance that may protect homes against potential threats in that area. Behavioral economics literature refutes the classical theories of economics, that all people are rational beings and argues that oftentimes people choose to act, without fully understanding how those actions will affect future behavior and outcomes. Specifically, the standard supposition of rational, forward looking, utility maximization is violated. Oftentimes, humans rely on heuristics, or information-processing rules of thumb that enable us to think quickly and easily (Kahneman & Tversky, 1982). We use these general applications of the world to fit specific situations in order to make decisions more

quickly and without having to think about every detail all the time. Accepting the fact that people use such shortcuts does not fit standard theories of economics that assume that people fully incorporate all information to maximize future or present utility.

However, these heuristics are usually extremely useful and efficient ways of organizing the world. This is not to say that the use of heuristics may not lead to adverse decisions at times. Tversky (1974) notes that these heuristics can lead to disastrous and systematic errors at times, given that not all situations follow the general trend.

More specifically, the availability heuristic, a heuristic subtype, is of particular importance to this paper, as it may help to explain why we find this increase in earthquake insurance sales following a hurricane. The availability heuristic is the tendency to estimate the probability that an event will take place by how easily instances of it come to mind (Brehm et al., 2002). The availability heuristic is related to the cognitive psychology concept of salience or vividness, which Akerlof (1991) argues explains the tendency of mistakes to be relational in decision making. When present choices are more salient, or more readily available in one's mind as an option, a person is more likely to choose that option. Miller and Campbell (1959) combine Schelling's (1960) idea that players choose the more salient option with their idea of the recency effect, or the cognitive bias resulting from disproportionate salience of recent events to explain such irrational behavior. Tversky's (1974) research has shown that heuristics lead to an overestimation of the likelihood of highly available or salient events and to the overconfidence of the assessment of subjective probability distributions.

Applied to the choice of buying earthquake insurance after a hurricane, the idea of a natural disaster occurring or the idea of massive damage to your home, property and

assets is extremely salient after a catastrophe, regardless of its nature. Buying flood or wind damage insurance is the most obvious way to protect oneself from a hurricane. Similarly, if the pending natural disaster in one's area is an earthquake, insurance covering earthquake damage would seem most logical. While the event of a hurricane can in no way predict the probability of an earthquake, the reaction to insure oneself against a completely separate disaster can be plausibly explained by its salience in the consumer's mind.

However, the overall trends in California show an upward growth of earthquake insurance sales beginning after 2003, not 2005. Specific data is not yet available for California earthquake insurance sales in 2005, however, Kincaid, a spokeswoman for the CEA, reports that preliminary data does indeed support the idea that earthquake insurance sales in 2005 were higher than 2004. For example, in the San Diego region, earthquake insurance sales increased directly after Hurricane Katrina, as noted above. Just as the slew of hurricanes may have influenced the increase in earthquake insurance sales starting in 2004, the largest, most devastating hurricane in a decade, Katrina, may have similarly affected earthquake insurance sales in 2005.

After Hurricane Andrew in 1992, the United States did not see another comparably damaging single hurricane until Katrina, 13 years later. The late 1990s and early 2000s were relatively inactive hurricane periods, compared to other time-periods. However, in 2004, the United States was hit with 4 major hurricanes, Jean, Francis, Ivan and Charley, creating the first major hurricane season since Hurricane Andrew. At the time, it was reported as possibly being the costliest hurricane season ever recorded in US History (National Geographic, 2004). The Federal Emergency Management Agency

reports an annual number of total disaster declarations in the United States, ranging from hurricanes, to floods, tornadoes, high winds and earthquakes. From 1997 to 2003, with the exception of 1998, where most damage was due to high winds, total disaster declarations were relatively low (see table 1). In 2004, total disaster declarations spiked up to 68, with the majority being hurricane related. It is important to note that throughout all the years listed in the table, not one disaster declaration was due to an earthquake.

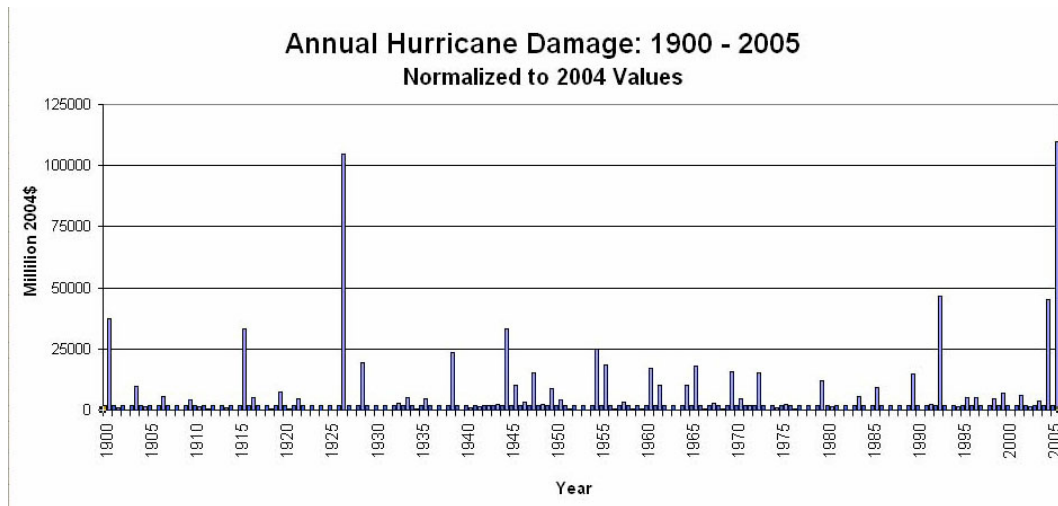
*Table 1. Annual Major Disaster Declarations by FEMA*

	<b>Year</b>	<b>Total Disaster Declarations</b>
1	<a href="#"><u>2006</u></a>	10
2	<a href="#"><u>2005</u></a>	48
3	<a href="#"><u>2004</u></a>	68
4	<a href="#"><u>2003</u></a>	56
5	<a href="#"><u>2002</u></a>	49
6	<a href="#"><u>2001</u></a>	45
7	<a href="#"><u>2000</u></a>	45
8	<a href="#"><u>1999</u></a>	50
9	<a href="#"><u>1998</u></a>	65
10	<a href="#"><u>1997</u></a>	44

Hurricane damage followed a similar trend, where there was a spike in total damages in 1994, mostly due to Hurricane Andrew, and not another spike again until 2004 when the 4 major hurricanes hit the United States (see Figure 2). While none of the hurricane damage figures appeared close to that of Hurricane Katrina in 2005, except for a Hurricane back in 1926, 1994 and 2004 were the only 2 other recent time periods with any significant damage. According to Joel Gratz, from the University of Colorado/CIRES, (2005) corrected for inflation and normalized to 2004 values, damages were up to \$45 billion in 2004. This is a significant jump from the total damages of \$1.4

billion and \$3.7 billion in 2002 and 2003 respectively. The major damages were in 2005, where estimates reached \$100 billion.

*Figure 2. Annual Hurricane Damage: 1900-2005 from Joel Gratz, University of Colorado/CIRES*



Given that a plausible explanation of the fluctuation in earthquake insurance sales is due to an entirely different natural disaster, hurricanes, the research findings that individuals do not always act rationally is supported. What does this mean for the insurance industry related to hurricanes themselves? If consumers in a different sector of the insurance industry can be affected by, or even overreact to, the disaster by using the occurrence of a hurricane to enhance the probability of an earthquake, it is all the more likely that a similar situation has and will happen in affiliate hurricane insurance sectors. This may present itself through an increase in more comprehensive homeowners' insurance, flood insurance or other plans related to hurricane damage. An increase in any of these sectors directly following a hurricane is still an overreaction, as the occurrence of

a hurricane in no way increases the probability of another one in that area. While a hurricane may not decrease the probability of a second, it certainly does not increase it.

This overreaction is even more surprising given the high costs of insurance, in both the earthquake and hurricane related sectors. Furthermore, it seems as though earthquake insurance is more expensive than hurricane related (primarily flood) insurance. If the earthquake insurance sales are already an overreaction, they are even more so given the relatively higher cost of earthquake insurance to other types of insurance.

Standard homeowner's insurance does not cover either flood damage, a leading cause of destruction in a hurricane, or earthquake damage. According to Forbes, flood insurance costs on average \$352 a year for a policy that provides a maximum coverage of \$250,000 for damages to a home and up to \$100,000 for its contents. This is contrasted to anywhere between \$1 and \$3 annually per \$1,000 of earthquake coverage on a wood-sided house in the Pacific Northwest and between \$3 and \$15 per \$1,000 if the house is made of brick (Insurance Information Institute). As shown by these numbers, earthquake insurance is extremely expensive, relative to flood insurance. Pender, (2005) a reporter for the San Francisco Chronicle, reports that earthquake insurance alone would cost 50 percent more than homeowner's insurance for her own house. While a comparison between two houses, in two separate parts of the country is difficult to make, even flood insurance versus earthquake insurance on the same house shows the high expense of quake insurance. Janet Ruiz, a spokeswoman for State Farm Insurance, analyzed the cost of insurance on a house in San Francisco covered by both flood and earthquake damage. The homeowner pays \$745 per year for \$178,000 worth of flood insurance and \$1,112 a

year for \$229,000 in earthquake insurance. While the rate per thousand dollars actually ends up being less expensive for earthquake insurance, the deductible is significantly higher at \$22,900 for earthquake damage, as opposed to \$5,000 for flood damage.

When you contrast earthquake coverage to no coverage, insurance is not necessarily the best option, especially when compared to what could be done with the money spent on premiums. Weinstein (2005) created the example of a hypothetical home that would cost \$250,000 to rebuild if destroyed by a natural disaster. If the home were owned for 30 years and earthquake premiums totaled \$1,200 per year, total premium payments would reach \$36,000, assuming the rates did not increase for simplification purposes. This is contrasted to investing the premium payments in a diversified mutual fund with an 8% annual return, which would yield a total of \$135,000 after 30 years (ignoring inflation), a significant increased profit from the \$36,000 you initially invested. This example is an exaggeration, seeing as how you would not get this money today, it would be in 30 years, and you would have to have enough money to sustain the possibility of a disaster tomorrow. If you are highly risk averse, or value a more certain outcome that may yield lower payoffs over a higher payoff option with less certainty, the assurance of being able to rebuild tomorrow if a disaster were to occur would be the more attractive option. However, if you are less risk averse and have the collateral, it would appear that the option to purchase insurance would not be logical and that your money would be better spent elsewhere, for example, in a mutual fund.

The other shortcoming with insurance is that when there is a high deductible, as there is with earthquake insurance, chances are you will not be eligible to use your insurance coverage. Insurance only pays for structural damages, not broken dishes or

cracked driveways, which are the more common damaged items in an earthquake (Weinstein). Once again, given such limitations, insurance may not be the most enviable option.

Just as with earthquake insurance, flood insurance poses problems. With comprehensive flood insurance premiums reaching \$745 per year for \$178,000 worth of coverage (Ruiz, 2005), it is no wonder that only 25-60% of homeowners in the Katrina affected area had flood insurance (Pender, 2005). Furthermore, in the aftermath of Katrina, many without flood insurance still received payments from flood damage. Despite the fact that standard homeowner's insurance technically is not responsible for floods, it does cover hurricane damage. Pender (2005) explains how many victims of Katrina not covered by flood insurance, are in the midst of litigation, trying to argue that the flooding itself was caused by the hurricane, hence any damages should be covered by homeowner's insurance. Numerous court cases are in fact settling in favor of the homeowners, meaning that flood insurance was not necessary for the damage coverage. If this is the case, then why purchase flood insurance at all when loopholes are created to force insurance agents to cover some flood damage through the homeowner's insurance plans? Given the high expense of the insurance plans, the possible lack of necessity at times, and the high increase in rates, is flood insurance a worthwhile purchase? Similar to the argument made for earthquake insurance, the answer depends upon the consumer, their degree of risk aversion, their current financial situation and their home's level of risk, dependent on its geographic location.

In addition, flood insurance rates are expected to significantly increase over the course of the next year. With the financial difficulties many insurance providers are

experiencing after paying out claims from Hurricane Katrina, there is an overall reluctance to sell insurance plans to people who reside in high risk hurricane areas. Most insurance agencies are trying to rebuild their reserves by targeting low to moderate risk areas, in hopes of reaping the benefits from the premiums and not having to pay out money in claims. In addition, due to the events of Katrina, the National Flood Insurance Program asked Congress to consider phasing out the subsidies for flood insurance (Insurance Information Institute, 2006). This would more than double the price of premiums from an average of \$710 to \$1,800 annually. Despite the rising rates and the potential for a huge increase, the Insurance Information Institute (2006) reports an increase in flood insurance sales since the beginning of 2004, similar to what we saw with earthquake insurance sales. In 2003, the flood policy premiums were at \$1.9 billion. By 2004, they had increased to \$2 billion. It has not yet been determined what the premium sales amounted to at the end of 2005, but I speculate with the occurrence of Katrina, a similar trend occurred.

We saw how people in California reacted to the hurricanes, with a high increase in earthquake insurance sales. We can similarly hypothesize that flood insurance sales rates have increased just as much. Furthermore, we are likely to be underestimating the effects on the flood insurance industry, given that we already saw a high increase for earthquake insurance sales, a separate type of disaster from the hurricane. We can therefore speculate that an insurance industry within the same disaster field, floods and hurricanes, would see an even greater impact on sales following a devastating disaster like Katrina. With the already expensive rate of flood insurance, the projected high premium rate increase, and the evidence that without flood insurance, your home may

still be protected under your homeowner's insurance policy, is it really sensible to purchase flood insurance? More importantly, will people react to Hurricane Katrina by ignoring such information about flood insurance and be so fearful of another disaster affecting them that it scares them into purchasing flood insurance no matter how much the rates increase? Because of the reaction we observed in the earthquake insurance industry after the beginning of the destructive hurricanes, I suspect it will be an even greater impact in the flood insurance industry. Perhaps Katrina, arguably the most destructive hurricane of the century to both homeowners and insurers, may end up being a blessing in disguise for the insurance industry.

## References

Akerlof, George A, 1991, Procrastination and Obedience, *The American Economic Review*, 81.2: 1-19.

Brehm, Sharon S., Kassin, Saul M., & Fein, Steven. *Social Psychology*. Houghton Mifflin: Boston, 2002.

Catastrophes: Insurance Issues, 2006, Insurance Information Institute.

<<http://www.iii.org/media/hottopics/insurance/xxx/>>

Census Bureau Estimates Nearly 10 Million Residents Along Gulf Coast Hit by

Hurricane Katrina, 2005, US Census Bureau.

< [http://www.census.gov/Press-Release/www/releases/archives/hurricanes\\_tropical\\_storms/005673.html](http://www.census.gov/Press-Release/www/releases/archives/hurricanes_tropical_storms/005673.html)>

Drye, Willie, 2004, 2004 Hurricane Season May be Costliest on Record, *National*

*Geographic News*, September 27.

Gratz, Joel, 2005, Climate Change, Demographics, and Hurricanes, Hurricane Katrina

- Symposium Sponsored by the Natural Hazards Center, University of Colorado/CIRES, October 21.
- Kahneman, D., Slovic, P., & Tversky, A. (Eds.) *Judgment under Uncertainty: Heuristics and Biases*. New York: Cambridge University Press, 1982.
- Kincaid, Nancy & Brown, Dwane, 2006, Earthquake Insurance Sales Rise in California Following Katrina, *KPBS News*, January 24.
- Labor Market Statistics for Areas Affected by Hurricanes Katrina and Rita, September 2005, Bureau of Labor Statistics.  
< [http://www.bls.gov/katrina/data\\_after.htm](http://www.bls.gov/katrina/data_after.htm)>
- Lamb, Reinhold P., 1995, An Exposure-Based Analysis of Property-Liability Insurer Stock Values around Hurricane Andrew, *Journal of Risk and Insurance*, 62.1: 111-123.
- Hurricane Katrina: Profile of a Supercat, Lessons and Implications for Catastrophe Risk Management, 2005, Risk Management Solutions.
- Miller, N. and Campbell, D. T., 1959, Recency and primacy in persuasion as a function of the timing of speeches and measurements, *Journal of Abnormal and Social Psychology*, 59, 1-9.
- News: Earthquake Coverage Experience Five-Year Trend, 2002, California Department of Insurance.  
< <http://www.insurance.ca.gov/0400-news/0200-studies-reports/0300-earthquake-study/1996-2000/index.cfm>>
- Pender, Kathleen, 2005, Woeful Lack of Insurance, *San Francisco Chronicle*, 11 September.

- Shelor, Roger M., Dwight C. Anderson and Mark L. Cross, 1992, Gaining from Loss: Property-Liability Insurer Stock Values in the Aftermath of the 1989 California Earthquake, *Journal of Risk and Insurance*, 59.3: 476-488.
- Sprecher, C. Ronald and Mars A. Pertl, 1983, Large Losses, Risk Management and Stock Prices, *Journal of Risk and Insurance*, 50: 107-117.
- Spudeck, Raymond E. and Charles R. Moyer, 1989, A note on the Stock Market's Reaction to the Accident at Three Mile Island, *Journal of Economics and Business*, 41: 235-241.
- Tversky, Amos, Assessing Uncertainty, *Journal of the Royal Statistical Society. Series B (Methodological)*, 36.2: 148-159.
- Weinstein, Elizabeth Potts, Earthquake Insurance in California, 2005, Ezine Articles.  
<<http://www.ezinearticles.com/?Earthquake-Insurance-in-California&id=145161>>
- Willis, Gerri, 2005, Flood insurance- From assessing risk and acting quickly to the limits of the government -- what you need to know, *CNN Money*.