



“Typhoons and Opportunistic Fraud: Claim Patterns of Automobile Theft Insurance in Taiwan”

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Synopsis By John Thomas Seigfreid

In Taiwan, automobile theft claims have experienced a noticeable rise directly after typhoons cause flooding. Why are the occurrences of automobile theft and typhoons correlated? Tsung-I Pao, Larry Y. Tzeng, Kili C. Wang answer this question by presenting evidence to support the existence of opportunistic fraud in the automobile theft insurance market in Taiwan. Insurance fraud is generally considered an act committed with the intent to obtain a fraudulent outcome through the insurance process. The authors assert that opportunistic fraud occurs when a claimant is insured with unrewarding coverage, and uses an opportunity, such as a typhoon, to obtain some benefit to which they are not entitled. Using a sample period from January 1, 2004 to December 31, 2008, the authors test the hypothesis that a particular claim pattern exists. After experiencing a typhoon, people insured with automobile theft insurance but without flood insurance tend to have a dramatically higher probability of filing a total theft claim. The authors provide convincing evidence that opportunistic fraud exist in places flooded by typhoons.

Background

Fraud is a topic of interest to insurance practitioners and researchers and one of the motivations for this research was the work of Dionne and Gagne (2002) who provided evidence for the claim that opportunist fraud may result in a particular time pattern insofar as claims are concerned.¹ Similar to the inherent incentives for any type of claim, typhoon damage presents an opportunity for people to illegally take advantage of the insurance claim process. Surrounded by confusion and an influx of claims, insurance companies providing automobile coverage in a flooded area can become overwhelmed, increasing the probability of making a mistake or wrongfully reimbursing a fraudulent claim. Theft claims and typhoons are related for two distinct reasons. First, many people are covered by theft insurance but not typhoon or flood insurance after realizing flood damage to their automobile. Thus, they have an incentive to lie to the insurance company stating that their vehicle had been stolen.² Here, it becomes apparent why opportunistic fraud originates from the pool of people who are restricted to theft protection. Comparatively, a typhoon increases the number of flood-damaged cars being in need of repair. Thus, the demand for automobile parts on the black market rises, creating an incentive for automobile thieves. For this reason, there can be a higher rate of automobile theft claims following a typhoon. However, the authors argue that this relationship does not provide a sufficient basis for pointing at either one of these two groups of insureds.

¹See Dionne and Gagné

²See Pao, Tzeng and Wang p. 92

Data and Methodology

Pao et al looked at a sample of typhoons over a four-year time period in which more than 800 millimeters of cumulative rainfall was produced.³ This study assumption produced 10 typhoons. The insurance data came from a Taiwanese insurance company that controls 20% of the country's automobile insurance market. Data gathered included claim information, the characteristics of the insured and the insured vehicle. These characteristics are commonly used by the insurance company for underwriting and include but are not limited to, gender, age, marital status, automobile age and brand.⁴ During this process, the authors discovered that over half of the insureds that have automobile insurance do not simultaneously purchase typhoon/flood insurance for their vehicles.

The data is then separated into two time periods. Namely, right before the typhoon and a month later, which constitutes a period in time immediately after the typhoon. According to their preliminary observations, "a total of 0.064 percent of the theft claims were made during the periods right after the typhoons, and 0.053 percent of the total theft claims were made during the periods before the typhoons."⁵ For partial theft claims, the authors found a higher probability in periods before a typhoon which indicates that total theft claims caused the higher probability in overall theft claims during periods right after a typhoon occurred.

Using this data, the authors test whether an insured, covered solely by theft insurance and who has encountered a typhoon hit, has a higher propensity to file a claim than those insured by flood coverage. Hence, they "test the conditional correlation between the choice of the coverage and the occurrence of a claim separately according to different regions hit by typhoons or others, and by the period right after or before the typhoon hit."⁶ Their findings suggest that following a typhoon, an insured residing in a typhoon-hit region and who is only covered by theft insurance is more likely to file a claim than other insured. Yet, they do not expect to observe such a pattern before the typhoon.

The Empirical Results

When looking at the results of the tests for the typhoon-hit region during the period right after the typhoons, the authors found only two out of ten periods that did not represent significantly positive correlation between the total theft claims and contracts with only theft insurance. These results imply a positive relationship between total theft claims and contracts with only automobile theft insurance coverage among the insured that encountered a typhoon hit.⁷ Thus, the authors found an obvious connection between individuals solely protected by automobile insurance and the apparent rise in theft claims during the period right after a typhoon incident. Through additional observation of the estimated coefficients, the authors found no dramatic conditional correlation between total theft claims and contracts with only automobile theft insurance coverage within the regions not affected by the typhoons. Such an outcome indicates that opportunistic fraud is the proper explanation for increased claims, instead of ordinary theft catalyzed by the demand from the black market. If the demographic

³See Pao, Tzeng and Wang p. 94 (obtained from the statistics compiled by the Central Weather Bureau)

⁴See Pao, Tzeng and Wang p. 96 (Table 2)

⁵See Pao, Tzeng and Wang P. 97

⁶See Pao, Tzeng and Wang p. 97

⁷See Pao, Tzeng and Wang, p. 103-104

of people in typhoon-free areas are not filing claims at the same frequency as the typhoon-dense demographic, then significant evidence exists to consider opportunistic fraud as the front running theory for increased claim activity during post-typhoon periods.

The empirical evidence proves that “some opportunistic flood-damage vehicle owners who live in the typhoon-hit region and only have theft insurance pretend to have had their automobiles stolen and file false claims to compensate for their loss from flood damage.”⁸ As a verification of the findings, Pao et al performed two robustness tests. The first test adopts different time lengths for one period. Before, they were using a constant time period of one month. However in this test, they run a sensitivity analysis and shorten the duration or observation period to ½ a month, as well as, increase the duration to 1½ months and to 2 months. When the duration of the observation period was shortened, the preexisting claim pattern disappeared, indicating that opportunistic fraud cannot be observed in only the half-month period following the typhoon. However, when duration was lengthened they found a particular pattern that echoes their original results. The extended duration test produced an emergent pattern for those insured with only automobile theft insurance. Such a consistency suggests that engaging in fraudulent behavior requires time.

Conclusion

The evidence the authors provide strengthens the argument that a particular claim pattern brought about by opportunistic fraud exists in this particular natural disaster setting. They found that people, who both live in typhoon-damaged geographies and only possess auto theft coverage, are “characterized by a higher possibility of filing a total theft claim right after a typhoon.”⁹ While the findings are compelling for typhoons in this particular region and among this particular culture, they are limited to the focus of this study and do not necessarily pertain to other types of natural disasters in other regions of the world.

References

Dionne, G., and R. Gagné, 2002, Replacement Cost Endorsement and Opportunistic Fraud in Automobile Insurance, *Journal of Risk and Uncertainty*, 24: 213-230.

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⁸See Pao, Tzeng and Wang p. 106

⁹See Pao, Tzeng and Wang p. 110