8e-0004

Analysis of Factors Affecting People's Purchase of Property Insurance in Order to Prevent Disasters

G. Wu [1]

[1] *Associate Professor, Institute of Geophysics China Earthquake Administration, guochunwu@cea-igp.ac.cn*
...

Abstract

In July 2014, the State Council's Opinions on Accelerating the Development of Modern Insurance Service Industry pointed out that "China's insurance industry is still in the initial stage of development and it is necessary to incorporate insurance into disaster prevention and rescue system and establish a catastrophe insurance system. Shenzhen, Ningbo, Yunnan Dali, Xiamen and other places have successively implemented catastrophe insurance pilots. The catastrophe insurance pilots so far are basically divided into two types: "government pays, individuals gain" or "government and individuals share". Since catastrophe is a low probability event, maintaining the sustainability of catastrophe insurance requires a certain number of policies. To promote the public to buy catastrophe insurance, it is necessary to study what kind of people are currently buying insurance, and what factors will promote the purchase of catastrophe insurance stocks. We conducted a questionnaire survey from July to September 2018 in the form of an online survey. Sampling to control gender and place of residence. Beijing, Shanghai, Tianjin, Chongqing as a mega city, each city sampled 200, other cities sampled 100, allowing 5% error. A total of 95,388 mails were sent, and a total of 6,530 questionnaires were collected from 60 cities in 31 provinces, with a recovery rate of 6.85%. We analyzed the data using stata15.1.This study distinguishes individuals through logistic model analysis. The dependent variable is to purchase property insurance to prevent earthquakes or other disasters. Independent variables are individual socioeconomic factors, housing factors, risk perceptions, disaster experience, participation in disaster reduction activities, and the impact of reinstatement funding sources on property insurance purchase behavior. The results of the analysis show whether the housing meets seismic fortification standards and whether there is a risk of disaster losses in their own housing and product participation in disaster reduction activities can help promote the purchase of property insurance to prevent earthquakes or other natural disasters. According to the result, the following policy recommendations are proposed: to provide the public with accurate information about housing risks, and to increase public participation in disaster reduction activities is an important way of promoting disaster insurance participation rate..

Keywords: national questionnaire data; logistics model; property insurance; earthquake; other disasters

1. Introduction

In July 2014, the State Council's Opinions on Accelerating the Development of Modern Insurance Service Industry pointed out that "China's insurance industry is still in the initial stage of development and it is necessary to incorporate insurance into disaster prevention and rescue system and establish a catastrophe insurance system. On December 27, 2016, China 's urban and rural residential earthquake disaster insurance operation platform was launched on the Shanghai Insurance Exchange.

In many developed countries, catastrophe insurance is often used as a supplement to disaster relief mechanisms. Internationally, the compensation for catastrophe insurance generally accounts for 30% -40% of disaster losses. For the Wenchuan earthquake, the direct economic loss was 845.1 billion yuan, and the insurance only 2 billion yuan. The background of the establishment of a catastrophe insurance system is, on the one hand, the increase in economic losses after the catastrophe, and on the other hand the increasing popularization of humanitarian aid to the victims. Along with economic development, the amount of funds required for victims to recover to their pre-disaster living standards has continued to increase. Diversified assistance to victims is a problem facing many countries. When individuals cannot fully compensate for disaster losses, it is inevitable that assistance will be provided from society, government and the market. Social, government and market risk division of labor model is the basic principle of catastrophe risk system design.

Trials of catastrophe insurance have been implemented in Shenzhen, Ningbo, Dali, Yunnan, and Xiamen. The catastrophe insurance trials so far have basically been divided into two types: "government bills, mass income" and "government and individual burden". Because catastrophe insurance is a low-probability event, to maintain the sustainability of catastrophe insurance, a certain number of policies need to be reached. To promote the purchase of catastrophe insurance by the public, it is necessary to study what kind of people have purchased insurance and what factors have contributed to the purchase of earthquake insurance stocks. This research will use questionnaire data survey to do exploratory research on the above questions.

2. Research Background

In 2014, Shenzhen issued the "Shenzhen Catastrophe Insurance Plan". The program involves government catastrophe relief insurance, catastrophe funds and personal catastrophe insurance. To ensure the implementation of catastrophe insurance. Chongqing City and Meishan City, Sichuan Province respectively issued "Implementation Opinions on the Implementation of Catastrophe Insurance in Chongqing City" and "Implementation Plan of Urban and Rural Residents Earthquake Catastrophe Insurance in Meishan City". The Chongqing plan includes the common major meteorological, geological and earthquake disasters, including the rescue of human casualties caused by disasters, and rescue and relief of human casualties caused by bravery as the basic guarantee content of rescue. Prominent government-led, financial burden of districts and counties, 20% subsidy of municipal finance. Meishan City has different insurance coverage for urban and rural houses. It adopts a financial subsidy mechanism, with individual commitments of 40% and financial subsidies of 60%. The implementation plan of the two places is basically in line with the "Implementation Plan for Establishing Urban and Rural Residents' Earthquake Catastrophe Insurance System".

The targets of the disaster insurance pilots implemented so far are divided into housing and personal. The insurances implemented in Fujian, Jiangxi, Yunnan, and Dalian are all rural housing insurance. Fujian Ningde, Weifang Citizens Comprehensive Insurance, Shenzhen Catastrophe Insurance are life insurance. Shenzhen pilots encourage insurance companies to develop relevant catastrophe commercial insurance for personal property. The disaster insurance implemented by Zhangjiagang, Xiamen, Ningbo, and Dali, Yunnan, includes both housing and personal injuries. Dali's insurance for earthquake disaster relief. The insurance in Ningbo, Shenzhen, and Weifang is not subject to *hukou* restrictions and covers all population within the administrative area.

In terms of insurance types, Jiangxi's policy-based farm insurance letter covers all housing collapses caused by natural disasters and accidents except earthquakes. The catastrophes in Shenzhen, Ningbo and Xiamen are all multi-hazards. Yunnan Chuxiong's policy farm insurance scheme is earthquake farm insurance. In 2013, the policy-based housing insurance system in Chuxiong Prefecture of Yunnan Province proposed that "insurance liability is the direct loss of insurance objects in areas with an earthquake intensity of 6 degrees or more caused by earthquake vibration (including secondary disasters caused within 72 hours)." In 2015, the implementation plan of Dali Prefecture, Yunnan, provided "insurance protection for the direct loss of rural houses caused by an earthquake of magnitude 5 or higher, the cost of restoration and reconstruction, and the rescue of residents' deaths".

The areas where catastrophe insurance has been implemented so far are divided into two types: "government bills, mass income" and "government and individual burden." Fujian, Zhangjiagang, Fujian Ningde, Shenzhen, Ningbo, Dali, Yunnan, and Weifang are all paying by the government. Weifang adopts the method of purchasing public services. Jiangxi's policy-based rural house insurance is divided into two categories: government pay and government individual burden. The government individual burden area is divided into three categories based on risk. According to different premiums, the government and individual burden are different. For counties and cities where the insurance participation rate does not reach 30%, the provincial finance does not subsidize it, and the county-level finance shall bear it. The pilot scheme of Chuxiong, Yunnan Province, determined that the government and farmers' ratio was 7: 3, and the provincial, state, and county financial ratio was 3: 2: 2. Individually-insured insurance schemes are used to finance the needy. The five-guarantee personnel provided by the policy-based rural house insurance in Jiangxi Province will be responsible for the insurance premiums in full at a rate of 50% by the provincial and county finances. The Chuxiong plan in Yunnan will pay premiums in full for the five-guarantee households, subsistence allowance households, and key preferential treatment groups. The current government of related disaster insurance cannot be ignored as a driving factor.

3. Reaserch

3.1 Previous research

Insurance demand and risk perception are important concerns in catastrophe insurance research. The research uses the change in property insurance premiums as a measure of risk response behavior, and uses distance, TV home ownership of 100 households, disaster area, and the number of historical earthquakes as alternative indicators to characterize risk perception, and proposes negative emotions caused by catastrophe shocks. It affects the public's perception of risk, which increases people's subjective probability of risk in a short period of time, which in turn causes an increase in people's demand for insurance (Zhuo Zhi, Zhou Zhigang 2013). Research by Zhou Zhigang et al. Found that the individual's risk perception will lead to changes in insurance demand (Zhou Zhigang, Chen Ye 2013). Other analysis based on data from a questionnaire survey and found that the level of risk perception and the demand for catastrophe insurance show a significant positive correlation, but its effect on the demand for catastrophe insurance will be reduced by government actions; The government's engineering prevention behavior will significantly reduce the individual's catastrophe insurance demand, and the government's non-engineering behavior and post-disaster relief have promoted it (Tian Ling, Yao Peng, Wang Hanbing 2015).

Existing researches mainly take catastrophe insurance demand as the main research content. This study analyzes the influencing factors of the purchase of related insurance by the respondents who have purchased insurance through questionnaire survey.

3.2 Research Method

From July to September 2018, the questionnaire survey was implemented in the form of online survey. Sampling controls gender and place of residence, adopts classified sampling of the place of residence, and takes into account the national key earthquake surveillance defense areas (including Beijing, Shanghai, Tianjin, Chongqing and other major cities and municipalities and provincial capitals), cities that implement

catastrophe insurance (Ningbo , Chuxiong, Shenzhen, and Xiamen), cities that have suffered earthquake disasters (including Tangshan, which has experienced huge earthquake disasters, and cities that have experienced earthquakes in recent years, such as Yuxi and Songyuan), and cities that have not experienced earthquakes (Chengmai). Beijing, Shanghai, Tianjin, and Chongqing are huge cities, with 200 samples taken from each city and 100 samples taken from other cities, with a tolerance of 5%. A total of 95,388 emails were sent and 6,530 questionnaires were collected from 337 cities in 31 provinces, with a recovery rate of 6.85%. Data were analyzed using stata 15.1.

3.2.1 Dependent variable

Respondents who answered yes to "whether to buy property insurance", further asked about the purpose of buying insurance, and answered "1" (insur_ed) for "for earthquake prevention" or "for other disaster prevention".

3.2.2 Independent variable

The independent variables are divided into individual factors (marriage, education, gender, urban and rural, annual family income, work unit, political outlook), housing factors (geographic location, housing structure, whether your own housing is safe, whether you have rebuilt housing due to the disaster), and risk recognition.

Table 1 – Independent variable description

Total	(N = 6533)				
marriage			**Housing Safety Evaluation**		
Not in marriage	1365 (20.9%)		safe	4945 (75.7%)	
in marriage	5165 (79.1%)		general	1257 (19.2%)	
highest education			unsafe	328 (5.0%)	
Elementary and below	41 (0.6%)		**Whether rebuild house due to the disaster**		
junior high	1441 (22.1%)		no	5567 (85.3%)	
College and above	5048 (77.3%)		yes	963 (14.7%)	
gender			**Whether focus on disaster information**		
male	3915 (60.0%)		no	598 (9.2%)	
female	2615 (40.0%)		yes	5932 (90.8%)	
Annual household income in the last year(yuan)			**Know the national house regulation**		
30000 ≤	247 (3.9%)		no	1714 (26.2%)	
30,000~60,,000	508 (8.1%)		yes	4816 (73.8%)	
60,000~120,000	1662 (26.5%)		**Learn about future natural disasters in your community**		
120,000~150,000	1663 (26.5%)		know very well	824 (12.6%)	
150,000~200,000	1071 (17.1%)		Know more	2418 (37.0%)	
≥200000	1115 (17.8%)		General	2075 (31.8%)	
Main place of residence			Not so well	1047 (16.0%)	
urban	5600 (85.8%)		Not really	166 (2.5%)	
rural	930 (14.2%)		**Understand health knowledge**		
employer			Do not understand	703 (10.8%)	
Government departments (including township communities)	367 (6.7%)		general	1969 (30.2%)	
State-owned enterprises	820 (14.9%)		understand	3858 (59.1%)	
Private / foreign investment / self-employed / entrepreneurship	3426 (62.4%)		**Housing disaster possibility**		
NGO/NPO	58 (1.1%)		Less possibility	1720 (26.3%)	
Institution	817 (14.9%)		average	2260 (34.6%)	
Main building type			more possibility	2550 (39.1%)	
Concrete	5600 (85.8%)		**whether have a disaster experience**		
Brick	759 (11.6%)		have	5470 (83.8%)	
Masonry	157 (2.4%)		no	1060 (16.2%)	
Thatched house / adobe house	14 (0.2%)		**house location**		
			flat land	5730 (87.7%)	
			hills	406 (6.2%)	
			mountain	254 (3.9%)	
			riverside	140 (2.1%)	

4

8e-0004

Knowledge (following disaster risk information, knowing earthquake-resistant fortification standards for housing, understanding natural disasters that may occur in your community in the future, mastering health knowledge, and the possibility of your own house being affected by disasters), experience of disasters, frequency of participating in disaster reduction activities, and housing reconstruction Resources.

3.3.Results and discussion

The independent variables are gradually input into the logistics model. The final results are shown in Table 2. After investing all the variables, the model can explain 29.2% of the reasons for buying property insurance to prevent earthquakes or other disasters.

Table 2 – Result of logistic

	(1) insur_ed	(2) insur_ed	(3) insur_ed	(4) insur_ed	(5) insur_ed
marriage	0.04	0.03	-0.03	-0.03	-0.06
	(0.095)	(0.095)	(0.097)	(0.097)	(0.097)
edu0	-0.18*	-0.18*	-0.17	-0.16	-0.16
	(0.085)	(0.086)	(0.087)	(0.087)	(0.087)
female	-0.23***	-0.22***	-0.22***	-0.22***	-0.20**
	(0.063)	(0.063)	(0.064)	(0.064)	(0.064)
suminc0	0.17***	0.17***	0.16***	0.16***	0.16***
	(0.025)	(0.026)	(0.026)	(0.026)	(0.026)
rural	0.13	0.15	0.12	0.12	0.11
	(0.103)	(0.108)	(0.109)	(0.109)	(0.109)
danwei	0.06*	0.06*	0.05	0.05	0.04
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
party_1	0.18*	0.17*	0.15*	0.15*	0.16*
	(0.071)	(0.072)	(0.073)	(0.073)	(0.073)
hstruc_1		-0.05	-0.06	-0.06	-0.06
		(0.079)	(0.079)	(0.079)	(0.079)
hlocation1		0.03	0.02	0.02	0.02
		(0.054)	(0.054)	(0.055)	(0.055)
hsafty1		-0.10	-0.09	-0.08	-0.08
		(0.058)	(0.065)	(0.065)	(0.065)
rebuild_exp		0.13	0.04	0.05	-0.00
		(0.084)	(0.087)	(0.087)	(0.089)
focusd			0.22	0.22	0.12
			(0.128)	(0.128)	(0.132)
house_regu			0.42***	0.41***	0.29**
			(0.087)	(0.088)	(0.096)
ackcom_d			-0.08	-0.08	-0.06
			(0.040)	(0.040)	(0.040)
ack_h			-0.27***	-0.27***	-0.28***
			(0.056)	(0.056)	(0.056)
hdpro			0.18***	0.19***	0.21***
			(0.040)	(0.040)	(0.041)
hexp				-0.05	-0.05
				(0.087)	(0.087)
reduce0					0.10**
					(0.030)
hresource					
_cons	-1.44***	-1.42***	-1.45***	-1.45***	-1.54***
	(0.209)	(0.211)	(0.297)	(0.297)	(0.298)
N	5457	5457	5457	5457	5457
R^2					

Standard errors in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In individual factors, education and women (0 for men) are inversely related to the purchase of insurance to prevent earthquakes or other disasters. People with higher qualifications are less likely to purchase in-process insurance to prevent earthquakes or other disasters. Women are less likely than men to buy property insurance to prevent earthquakes or other disasters. The annual income of the family and party members are positively related to the purchase of property insurance to prevent earthquakes or other disasters. That is, under the control of other variables, the households with higher incomes in the previous year are more likely to purchase property insurance to prevent earthquakes or other disasters. Party members are more likely than non-party members to purchase property insurance against earthquakes or other disasters. No relationship was found between urban and rural areas, units, and marriages to purchase property insurance to prevent earthquakes or other disasters.

There is no relationship between housing factors (housing location, housing structure, evaluation of housing safety, whether the house has been rebuilt) and purchase of property insurance to prevent ea Among the risk perception factors, knowing the earthquake resistance of houses will help to purchase property insurance to prevent earthquakes or other disasters. Pay attention to disaster information and understand the risks to communities, whether they are affected, and insurance purchases are not relevant. However, mastering health knowledge is inversely related to purchasing property insurance to prevent earthquakes or other disasters. Respondents who were more likely to believe that their homes could suffer from natural disasters were more likely to purchase property insurance to prevent earthquakes or other disasters. It can be seen that providing accurate information on housing risks can help facilitate the purchase of disaster prevention property insurance.

Respondents who are more active in disaster mitigation activities are more likely to purchase disaster insurance property insurance. Respondents who felt they needed government assistance to rebuild their homes after their homes were damaged bought more property insurance against earthquakes or disasters than those who depended on them to rebuild their homes. Increasing public participation in disaster prevention and reduction activities will also help promote the purchase of disaster insurance.

4. Acknowledgements

5. Copyrights

6. References

[1] Tian Ling, Yao Peng, Wang Hanbing (2015): The elationship among Government Behavior，Ｒisk Perception and Catastrophe Insurance Demand. *China Soft Science,* No.9, 70-81.

[2] Zhou Zhi-gang, Chen Han (2013): Risk Perception and the Fluctuation of Insurance Demand: A Theoretical Proof Based on the Optimal Insurance Model. *Insurance Studies*, No.5,14-21.

[3] Zhuo Zhi，Zhou Zhi-gang（2013）: Catastrophic shock , risk perception and demand of insurance. *Insurance Studies*, No.12,74-86.