

A Review on Chinese Insurance Market: Focus on Disaster Insurance

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Synopsis

There is a great development in Chinese insurance market such as bigger market scale, more competition and more integrated companies. At the same time, this developing market has many insufficiencies such as low profit rate, failure in transforming the potential demand into real demand, deficient social insurance and so on. This paper generalizes the chances and the challenges for Chinese insurance market at first. Based on that, the corresponding countermeasures are presented. Then, we focus on the disaster insurance in China. The importance, the shortage, the system problems and the developing means of Chinese disaster insurance are discussed one by one. At last, the possible future work for us will be talked about.

Keywords: Chinese insurance market, disaster insurance, public-private partnership, disaster risk securities

1. Introduction

In recent years, Chinese disaster losses become the third biggest of the world. At the same time, Chinese insurance market, especially disaster insurance industry, still stays its primary phase despite the fast and huge improvement in economics. That means more and more population and treasures will be exposed under the threat of disaster without adequate and efficient risk mitigation and recovery. Considering the lack of insurance consciousness and the inefficacy of Chinese traditional disaster insurance system, it is very necessary to find out the detailed problems and corresponding solutions for Chinese insurance, especially for disaster insurance industry.

This paper is organized as follows.

First, we define Chinese insurance market from positive aspect. The main improvements will be listed as the encouraging things for further and difficult work in the future.

Second, we judge Chinese insurance market from negative aspect. Several serious deficiencies are

indicated and discussed as the target for our future work.

Third, from every possibility, we will talk about the countermeasures against above shortcomings in Chinese insurance. As the title mentions, we will focus on disaster insurance.

Forth, we pick out two possible countermeasures, public-private partnership and disaster risk security, for further and detailed discussion. Corresponding potential patterns are checked respectively.

At last, we will conclude the advice about detailed future work for improving Chinese disaster insurance market.

2. The general characteristics of Chinese insurance market

2.1 Quick and great development

After entering WTO, Chinese insurance industry has been developing very quickly. Premium income has increased from 211 billion RMB (2001) to 432 billion RMB (2004). And the number of insurance companies has one increase from 35 to 61 (Yang, 2005). Total asset

has reached 1.36 trillion RMB till June of 2005 with an increase of 15% compared with the end of 2004. In the invested insurance capital, the rate of bond has exceeded that of bank deposit for the first time. Insurance company has become the second largest organization investor in the bond market. The consciousness of insurance organizations to serve the development of economics and society has been improved. In 2005, the insurance payment has achieved 54 billion RMB with 12.9 percent increase compared with 2004 (Zheng, 2005).

(1) More competition and less monopoly

Along with opening of Chinese insurance market and relaxing of admittance limitation, the number of insurance companies is creasing quickly while the market shares of relative large companies are decreasing step by step. It is seen from Table 1 and Table 2 that the monopoly in insurance industry is being broken gradually with more and more market competition (Yang, 2005).

(2) The challenge from quick-developing foreign companies

After getting the permission to Chinese insurance market, foreign insurer has been making bigger and bigger challenge for Chinese companies through their abundant capital, professional management, high-level

which the premium income is almost 90% of the total premium income. And Chinese companies' premium income from that mode is only 60% (Yang, 2005).

Third, foreign insurers focus on the insurances with relative higher profit rate such as industrial property insurance, liability insurance and freight insurance. At the same time, for those insurances, foreign insurers have relative higher market shares that are respectively 2.94%, 4.93% and 5.98% in 2003 (Yang, 2005).

Forth, there are 75 business organizations established by 40 foreign insurance companies till the end of 2004. Those 40 insurers consist of 23 life insurers, 14 property insurers and 3 re-insurers. Presently, the increasing speed of foreign insurers' premium income has already been twice or three times of that of Chinese insurance companies (Zhu, 2005).

(3) More integrated and professional competition

In 2003, China Insurance Regulatory Commission (CIRC) allowed property insurers to operate suddenness insurance and health insurance. Since that time, Chinese insurance industry became more and more integrated and competitive. The insurance companies have to strengthen their branches' professional management for surviving from serious market competition. At the same time, for improving Chinese insurance industry's international competition ability, CIRC allowed establishing several

Table 1 The change in numbers of insurers

	Life Insurer	Property Insurer	Foreign Property Insurer
2001	16	17	7
2003	30	24	14
Percent Up	87.5%	41.2%	100%

Table 2 The change in market shares (property insurance)

	PICC	Other Insurers (Except Top 3)
2000	77.3%	3.65%
2003	66.88%	11.75%

R&D and high-class staffers.

First, the increasing speed of foreign insurers is far higher than that of Chinese companies despite that the market share of foreign insurers is less than 2% till the end of 2003 (Yang, 2005).

Second, for the marketing mode, foreign life insurers pay more attention to individual agent mode owing to

professional insurance companies such as endowment insurance company, healthy insurance company and agriculture insurance company (Yang, 2005).

(4) Industry absorbing: the critical method for future competition

International financial industry's development trend

shows that collectivizing, large-scale and all-powerful have become the main current of financial magnate's development. Till 2004, Chinese insurance industry has 61 insurance companies, 1344 professional insurance agent organizations, more than 1.5 million insurance employees and more than 1 trillion RMB insurance assets. But it is still not strong enough to compete with international insurance companies such as American International Group, Inc. (AIG) that has more than 4 trillion RMB total assets in 2002 that is far more than that of the whole Chinese insurance industry. So, Chinese insurance industry has to strengthen its own competitive ability by absorbing, reforming and coming into the market if they want to win in the coming international competition (Yang, 2005).

(5) Critical competitive methods: benefit, technology, management and service

It is necessary for Chinese insurance industry to bring out low risk and high benefit insurance products based on policy-holders' requirement, financial investment environment, supervising request, advanced technology and support clients with high-quality, reliable and believable service through reforming resources and improving operating efficiency. So, the future competition between insurance companies will change from scale and share competition to benefit, technology, management and service competition (Yang, 2005).

2.2 The main insufficiency

(1) Deficient capital abundance level

There is a great distance between the capital abundance level of Chinese insurance industry and that of international industry standard. The rate of net assets over total assets is 15% for American insurance industry while that for Chinese insurance industry is only 9.99%. According to the report of CIRC, for recent 5 years, the average increasing rate of premium income was 24.8%. Suppose the developing rate of Chinese insurance market is 20% in future 5 years, the responding capital needed will be 50 billion RMB. The amount should be 100 billion RMB if we take the loss due to interest rate fluctuating into account. Presently, the total capital of Chinese insurance industry is only 25 billion RMB. So there will be a capital absence of 75 billion RMB in future 5 years (Zhao, 2004).

(2) The core challenge: the lack of solvency

The solvency abundance rate (real solvency ability amount over necessary solvency ability standard) of Chinese insurance industry is only 67.31% that mainly because of too much operation, low benefit rate and inadequate capital input (Zhao, 2004).

(3) Congenitally inadequate original capital

Foreign insurance companies have already entered Chinese insurance market with competitive advantage in technology, management, service, brand and credit standing besides abundant capital. Presently, the capitals of foreign insurance companies that entered the Chinese market are all more than 3 billion dollars while Chinese national capital is only 20 billion RMB. The wide gap will absolutely cause Chinese insurance companies are passive in future international competition (Zhao, 2004).

(4) Low profit rate

Chinese insurance industry could not solve capital demand and improve solvency ability based on its own profit accumulating because of low profit rate. Chinese insurance companies' average assets benefit rate is only 1.19% that is far from international industry average standard of 2.1%. The main reasons are listed as follows.

The means to invest insurance capital is very limited. Till 1998, insurance capital can only be used in bank deposit, government bonds, financial bonds and other areas set down by state department. After 1998, China has made some new reforming on insurance capital investment means such as fund investment in security market. But all the means are in their primary phases.

Chinese security market is not so canonical. Insurance companies' investment depends on the maturity of investment market very much while Chinese security market is very nonstandard. This fact makes a great effect on insurance companies' investment strategy and benefit. The liquid circulation and investment effect of insurance capital are affected a lot by the non-matching between capital source and using due to the absence of the long-time investment projects with stable return rate (Zhao, 2004).

In 2003, the whole premium income was 388 billion RMB while the total assets were 912 billion RMB. At the same time, insurance assets used to invest is 874 billion RMB that consists of 455 billion RMB for bank deposit and 140 billion RMB for government bonds. The enterprise bonds that insurance companies held is 50% of the total enterprise bonds while insurance companies'

securities is 26.30% of the total close fund. That means insurance capital's investment means only include bank deposit, government bonds, financial bonds, enterprise bonds and securities investment fund. All the annual benefit rates are all less than 4% while that of insurance capital should be 7% for continuous development (Fan, 2005).

(5) Weak consciousness for insurance in China

The understanding that insurance is a necessary social system is not rooted in China. As a market, insurance market's equilibrium depends on supplier and demander. In the west, insurance's long history has made itself become one kind of social system. As a direct result, people only need to choose some individual insurance company to supply them insurance. And insurance companies pay more attention to products' diversification and the scale benefit of capital operation. On the contrary, Chinese people even have not gotten the final decision to enter the insurance industry or not (Zhao, 2004).

(6) Faith in changing potential demands to real ones

Chinese economics and average income increase very quickly while people's consuming conception is changing step by step. And insurance demand has been supposed to increase very much. But there is a problem about how to change potential demands to real ones. For example, agricultural insurance has a great potential demand from one hundred million farmers while insurers could not develop it because of its high risk, high premium rate, high cost, big external effect and technology obstacle. It is abjective but really true that the potential demands are useless if we could not realize that transferring. From another aspect, Chinese insurance market's effective supply is not enough because of few suppliers, high monopolization, lack insurance products, disagrees with real demands and bad service (Zhang 2004).

(7) Inter-local, inter-insurant and inter-market imbalance

In the east area of China, the insurance industry is very advanced with many suppliers, many demanders and much competition because of advanced economics. At the same time, in the middle-west area of China, the insurance demands are very few because of lack insurance consciousness.

There is a great imbalance between insurants. The insurance rate of national enterprises is high while that of privates is low. The insurance rate of townsmen is high while that of farmers is low.

Further, there is a huge imbalance between insurance markets. Some insurances with long history and high insurance rate are almost saturated while some insurances with short history such as insurance of contents and liability insurance have low insurance rate. The commercial insurances are in serious competition while policy insurances are very lack.

The inter-local and inter-insurant imbalance is due to the imbalance in Chinese economical system while inter-insurance imbalance is because of the problem related with system and technology. This fact requires us to choose different developing strategies according to individual market's characteristics (Zhang, 2004).

(8) The limited insurance function

Chinese insurance industry is still staying its primary course because of the following six reasons.

(a) Small scale

The rate of insurance in national economics is low. The rate of insurance capital in Chinese total financial capital is only 3% that is far less than that of banking and securities industry.

(b) Excessively extensive operation

The operation cost is always very high. Marketing is mainly based on the personal relationship. And competition is mainly based on price.

(c) Low service quality

Insurance companies always prefer marketing to the service after selling because of the lack of the service consciousness for claims. The level of honest, lawful and canonical operation is far from enough.

(d) Inadequate insurance function

In developed countries, insurance industry is very important for disaster prevention and reduction, lives insuring and national steady maintenance once the disaster comes. On the contrary, the financial support, compensating policy and social salvation do the most work while insurance is only of assistance. The insurance payment over disaster losses is only 1:100 while that rate of Europe is 1:5.

(e) Weak competition ability

Chinese insurance companies are ragescent in management and operation and low in technology and service's level compared with foreign ones.

(f) Insufficient opening to the outside world (Fan, 2005).

3. Countermeasures

3.1 Developing and widening capital using means

Insurance industry is a typical industry with scale economy. Chinese insurers should develop all kinds of means (such as transformation for system of shares) for drawing on capital because of their small scale and inadequate capital input. At the same time, they should widen the using means (such as draw out insurance capital from bank deposit and put it into capital market) for capital to increase utilization ratio of capital, benefit rate and solvency. That will support insurers with enough capital and expend demand (Zhang, 2004).

3.2 Improving central competitive ability

Chinese insurance companies have to do their best to bring out high-class professional talents because insurance products must be full of innovation, specialization and technology. Further, the insurers should try to make innovation, become professional and focus on service quality in operation and service area (Zhang, 2004).

3.3 Strengthening market extent

Chinese government should loosen the control of market permission, operation area and insurance products and encourage innovation and competition. At the same time, the government should add the number of insurance companies and agencies step by step, moderately and opportunely develop foreign insurance companies, tighten the reforming of national insurance companies, explore the mode of opposing insurance companies or insurance cooperation based on detailed situations and try to produce one competitive insurance market (Zhang, 2004).

3.4 Re-optimizing the allocation of insurance resources

There is a great imbalance between policy insurances and commercial insurances, especially for the insurance

resources. Because of that, policy insurances are lack in some sense while the commercial insurances are inefficient. The government should make some thoroughgoing reforming at property rights level. That means some national capital should be drew out from commercial insurances to recognize some policy insurance companies such as agricultural insurance company, export credit insurance company and deposit insurance company. At the same time, the commercial insurance companies should be allowed to be listed on the stock market while the transformation for system of shares should be made in national insurance companies. By doing that, we can increase insurance resources, strengthen external supervising and improve operation efficiency and competitive ability by market methods (Zhang, 2004).

3.5 Strengthening the market supervising

For making it sure that insurance companies can operate steadily, we should establish one fair and orderly market by establishing operation risk early warning system, exploring modern information technology, improving non-on-the-spot supervising level, gently canceling political examining and approving, improving the transparency clarity of insurance supervising, perfecting the system of information disclosing, tightening the supervising of insurance marketing, brokers and agents and forming fair and orderly insurance market (Zhang, 2004).

4. Disaster insurance

4.1 The necessity of disaster insurance

The probability that tsunami, earthquake, typhoon, flood and drought happens becomes larger and larger because of the global warming. The threat from this change is becoming bigger and bigger.

According to statistics, in 2002, the global economic losses due to natural disaster were 55 billion dollars. In 2003, that amount was 58 billion dollars while the related insurance payment was 42 billion dollars in 2004.

Recently, AllianzAG (one of the largest financial insurance groups) and World Wide Fund for Nature published the report named by 《Climate Change and Financial Industry》 that proves climate change can seriously affect the development of economics and forecasts related insurance premium will increase (Li, 2005).

In 2004, there were 4 times cyclone in American Caribbean area that caused 56 billion dollars losses and 27 billion dollars insurance claim. In the same year, there were 9 times strong typhoon and once 6.9 degree earthquake that caused 41.4 billion dollars losses and the insurance claim was more than one half (Xiong, 2005).

In recent years, Chinese annual average losses due to natural disaster were more than 100 billion RMB (Li, 2005). In recent 10 years, Chinese disaster losses have become the third largest in the world and just less than Japanese and American. "According to domestic and foreign experiences, disaster losses will become bigger along with the quick development of economics and the continuous increase of economical density", Li Xueju, the minister of the Ministry of Civil Affairs of the People's Republic of China (MCAPRC) said that.

According to Li, in 2005, there were 1796 people died, 461 people disappeared, more than 15 million people transferred, more than one million houses collapsed, more than 183 billion RMB direct economical losses till 11th of Nov.

More than 70% cities, half population, 75% industrial and agricultural production distribute in the areas with serious meteorologic, geological and oceanic disaster. Disaster is restricting the development of social economics very much (China View, 2005).

According to the statistics from the MCAPRC, before 1990, Chinese annual average losses due to natural disaster were more than 60 billion RMB. After 1990, the losses became larger and larger because of the increasing in flood's frequency and bound. For example, the direct economical losses due to the large flood in 1998 were 250 billion RMB.

Earthquake is another huge disaster for China. According to historical data, in 20th century, the only two super earthquakes that caused more than 0.2 million people dead were all in China. In 1920, the 8.5 degree earthquake that happened in Ningxia caused 0.234 million people die. In 1976, the Tangshan huge earthquake caused 0.242 million people dead. Further, about 55% of the dead people due to earthquake are in China. In last century, China had 9 times 8- degree earthquake and 100 times 7-7.9 degree earthquake. Excluding Zhejiang and Guizhou, Chinese provinces all experienced 6- degree earthquake. Further more, Chinese earthquakes are with fleet epicenter, high intensity, big energy and strong damage. Especially, in earthquake areas, there are many large and middle cities and assets.

More than 70% of the twenty cities that have more than one million people are in earthquake areas. And the old houses and engineering establishments that were built without considering about anti-earthquake factors even could not withstand the 5 degree earthquake. In recent 30 years, Chinese buildings' anti-earthquake ability has been improved very much while there is big distance between city and country. And the high armored concrete building is very popular in big city and increases the difficulty of anti-earthquake.

China is nearby the Pacific. According to experts' opinions, there is much probability for storm tsunami and earthquake tsunami. Including the threat from tsunami, the southeast costal area of China is also under the threat of storm tide. And China is one of those three countries that suffer from storm disaster most seriously. The first seriously one and the second are respectively America and Bangladesh. China is nearby the northwest area of the Pacific. And that area is a typhoon frequent-happening area. About 1/3 of the global typhoons are in that area. On 30th August, 1992, the super storm tide caused by typhoon 16 passed through the costal area from Fujian province to Hebei province and made 227 people dead and 6 billion RMB direct economical losses. The 18 times storm tide in 2004 caused 49 people dead and more than 5.2 billion RMB direct economical losses (Xiong, 2005).

In Dec. 1989, the 44th General Assembly decided the second Wednesday of every October as International Day for Natural Disaster Reduction. The topic for 2005 is "Strengthen the Ability of Disaster Reduction through Financial Methods and Insurance Network" (China View, 2005).

Huge disaster risk's happening probability is very low, but its damage power is uncalculated. So in general, against huge disaster is a great burden for individual persons and enterprises as well as the government. Aim at that, the president of China Insurance Regulatory Commission claims that insurance can play a very important role in disaster defending, losses reduction, people's lives and property safeguarding and living level improving because of its special function in economical compensating and disaster defending and reduction (Xiong, 2005).

4.2 Disaster insurance in developed countries

(1) English disaster insurance

In Britain, the government does not take charge of

flood disaster insurance. On the contrary, the risk of flood is covered by family or enterprise property insurance supplied by the commercial insurance companies. The insureds can freely choose the insurance company in the insurance market while the insurers realize separating risk by reinsurance. The main reason for English commercial insurance companies to supply flood insurance is that English government established a series of anti-flood establishments in flooded area and made the flood risk possible to be insured. Rightly because of the assistance from government, the people have high insurance consciousness while insurance companies have some certain benefit. And then, the flood insurance has developed very well. Recently, the insurance rate of English flood insurance is already 80%. In the autumn of 2000, there was the biggest rain in Britain for the past 270 years. The insurance losses were as high as 2.3 billion pounds (Xiong, 2005).

(2) American disaster insurance

Though America has relative more floods and cyclones, she has most self-contained insurance system in the world. In 1968, American congress divided the flood river channels into flood areas and non-flood areas by law. And prescribed that there would be no any building in the former areas. There could be buildings in the latter areas. But those builds must be with flood insurance. According to related law, the earthquake, tsunami and collapse risk that are related with flood should be covered by insurance payment. Further, the federal flood insurance fund has been increased from 4 billion dollars to 10 billion dollars. Presently, American flood insurance has already covered twenty thousand possible flooded areas around the whole country. And there are 2.6 million people hold the flood insurance policy. 40% of American property insurance is related with huge disaster risk. The carrying out of flood insurance plan has produced huge social benefit. In 2004, there were 4 times cyclones in American Caribbean area. And the losses were 56 billion dollars almost half of which were insurance claim. The Chief Executive of Florida that suffered most from cyclone thought that Florida and its people were saved by American perfect disaster insurance system and huge insurance payment (Xiong, 2005).

(3) Japanese disaster insurance

There are many earthquakes in Japan. Since the

1990s, Japan has established one crisis management system for all kinds of crises such as earthquake, tsunami and so on. At the same time, Japan considers disaster prevention as important as disaster dealing. As soon as the crisis happens, the huge disaster insurance system will be started. According to the law about earthquake insurance which published in 1966, the tsunami, fire and burying caused by earthquake and volcanic eruption have to be involved in insurance claim. At the same time, the huge disaster reinsurance is mainly based on the assistance from the government. Since 1997, the Tokyo Marine and Fire Insurance Co., Ltd and Tokyo Disney Resort have floated several billion dollars huge disaster securities to separate huge disaster risk. In 2004, Japan suffered from 9 times strong typhoon and once 6.9 degree earthquake that caused more than 20 billion dollars insurance payment (Xiong, 2005).

4.3 The deficiency of Chinese disaster insurance

Because of the inadequate development in the research on huge disaster insurance, the property insurance companies only involve flood risk as especial additive insurance. And considering about the operation steadiness, insurers exclude the insurance related with earthquake and tsunami that also concerned by people very much.

Chinese are less of insurance consciousness while some kinds of huge disaster risk are not insured. So the sufferers can only depend on the national almsgiving, social contribution and self-rescuer. In the blowout accident happened in Chongqing City in 2003, insurance claim is only 20 million RMB. And the disaster losses caused by the super flood in 1998 were more than 248 billion RMB while the related insurance claim was only 3 billion RMB. Insurance's function in disaster reduction is far from enough.

China has long been using national finance to prevent and reduce disaster losses. The huge disaster risk is totally burdened on national finance. That disaster prevention and reduction system based on national free almsgiving are becoming more and more unsuitable for the development of society and economics along with the development of the economical system and reforming-and-opening. The basal principles for national finance budget is that it should be decided according to the future spending while huge disaster risk is random and unknowable. One side, it is very difficult for finance to get enough capital for huge disaster losses in very

short time. On the other hand, the sudden and huge spending of finance will cause finance deficit. In recent years, Chinese natural disasters have become more and more frequent. National almsgiving ability is not enough for post-disaster almsgiving and rebuilding. And further more, under this kind of disaster prevention and reduction system, the potential sufferers will not get insurance before disaster and just depend on national almsgiving after disaster. That is conflict with market economics system. According to experts' opinions, Chinese government should gradually establish Chinese own huge disaster defending system through the method that consists of government and market behaviors based on international experience and Chinese realities (Xiong, 2005).

4.4 The measures for developing disaster insurance

(1) Making the law of disaster insurance

Presently, the related laws for anti-flood and anti-earthquake have already existed in China. Those two laws are very meaningful for anti-disaster while not enough because of the foothold is different. For example, the anti-flood law only states that the government should encourage and assistant flood insurance while the anti-earthquake law only mentions that enterprises and individuals are encouraged to attend earthquake insurance. They both don't mention the establishing integrated huge disaster ensuring system. So Disaster Insurance Law should focus on establishing huge disaster ensuring system through legislative methods. At the same time, it should be carried out along with anti-flood law and anti-earthquake law to establish Chinese huge disaster insurance system and carry out huge disaster insurance operation (Xiong, 2005).

(2) Pre-disaster governmental intervention

The governmental intervention in huge disaster insurance can strengthen huge disaster capital, encourage commercial operation in huge disaster risk and lighten the burden on national finance. And the governmental assistance can promote commercial insurance companies to insure huge disaster risk and play an important role in post-disaster payment. At the same time, with the governmental support, the pressure for commercial insurance companies to burden huge disaster risk will be lightened properly while the belief for them to insure huge disaster risk will be increased comparatively (Xiong, 2005).

(3) Establishing huge disaster insurance fund

As one important part of social salvation fund, huge disaster fund mainly consists of national finance budget, civil alms and social contributing. Huge disaster insurance fund is operated closely and managed professionally by the fund company with high credit. The role of huge disaster insurance fund in separating and dealing huge disaster risk will become more and more important along with its investment, value increasing and development (Xiong, 2005).

(4) Founding public-private partnership for risk mitigation

As people's present knowledge, the potential disaster risk for one individual family does be related with many other persons or organizations such as neighbors, banks from that this family got loan, mortgage lenders, local government, government and so on. Once the family suffers from the losses due to disaster, the benefit of all the related persons and organizations will be affected indirectly. This point is especially true for Chinese case. Because there is not advanced insurance system in China. The disaster losses will directly affect the economical ability of one family. This will be a bad news for related agents, especially for local government and government. Because giving expiation is the certain duty for them in general.

Additionally, according to some research, the capacity of the insurance market is not enough for catastrophic losses. That is true even in America (Cummins et al., 2002). As for Chinese case, the situation maybe is more serious. One hand, the total assets of insurance industry is far from enough compared with global standard. On the other hand, the insurance rate of disaster losses is not adequate. Especially considering that Chinese losses from disaster is the third largest in the world.

Sometimes, one family will make some measures or buy some insurance for disaster risk if they have enough time and money. This point is especially important for the poor in China such as farmers and regular workers. For this case, all the related persons and organizations should do their best to help or promote the poor to do some positive actions for risk mitigation and recovery.

Because of above reasons, we need public-private partnership for risk mitigation and recovery in China. We will discuss the future work on how to carry out the

public-private system for risk mitigation and recovery.

(5) Floating huge disaster risk securities

Floating huge disaster insurance securities is to raise huge disaster risk reserve from advanced capital market, transfer huge disaster risk from insurance market to capital market and strengthen insurance industry's ability to resist huge disaster risk. Huge disaster insurance securities are transferable and valuable. It is related with some certain huge disaster insurance operations while the raised capital is only for compensating responding losses. Accordingly, its return rate will be decided by the related huge disaster insurance's profit ratio (Xiong, 2005).

5. Public-private partnership

5.1 The potential means for public-private partnership

There are several forms for combining public efforts with private ones to make risk mitigation and recovery more efficient and cheap (Kunreuther, 2001).

(1) Integrated mitigation group

That group should consist of all the related persons and organizations such as victims, insurers, related re-insurers, banks, victims' neighbors, neighbors' insurers, related re-insurers, neighbors' banks and government. As we mentioned above, one individual disaster risk will affect many direct and indirect victims. All the potential victims should pay their attention and efforts on how to improve all the possible measures against disaster risk. For example, the government should do its best to remind the related mortgage lenders, banks, insurance companies and local government that the probable disaster and corresponding losses. That will be very helpful, especially in China, for promoting all efforts focus on risk-against. As we know, in China, government has relative more knowledge for disaster probability and losses compared with insurance companies and regular people. So the government has the duty to make the civilian aware of the necessary need to develop and get disaster insurance.

In other case, government, local government, banks and insurance companies can make a good environment for establishing civilian risk-against cooperation. And the purpose of this cooperation is to accumulate enough money from some individuals who live in some area threatened by some potential disasters. They can use the

common money to buy one or several sheets of insurance. Once the disaster happens to some individual belongs to this cooperation, he or she can get the insurance claim. This kind of risk-against mean is quite suitable for Chinese farmers if they can get the efficient support from government, local government and banks.

(2) Monetary assistance and prompting for the poor

As always, monetary factor is the most important reason why people do or do not do something. It is also true for disaster prevention and recovery. Actually, it is not true that the poor do not want disaster insurance and prevention. They have their own utility functions for making daily decisions. Because they are poor, so they think there are some things are more important than getting disaster insurance and prevention. If government and banks can give some reductions on tax or interest and the monetary benefit from those reductions are more than the fee to get disaster insurance and prevention, the poor will be interested in doing some positive actions on that. Actually, Chinese government has already done the similar actions such as lighten the burden on the farmers for the purpose of promoting them to keep planting rice. But the effect is not so great because of some problems related with system, policy and implementing.

(3) Governmental re-insurance

The government is always the most powerful insurer and re-insurer, especially for disaster risk insurance. The government has relative more knowledge and information about disaster risks while it has relative more money and agents for carrying out disaster insurance and re-insurance. So the government is the key part in public-private partnership for disaster risk mitigation and recovery, especially for re-insurance. For example, Lewis and Murdock (1996) developed a proposal that the federal government offer catastrophe reinsurance contracts, which would be auctioned annually. The Treasury would auction a limited number of excess-of-loss (XOL) contracts covering industry losses between \$25 billion and \$50 billion from a single natural disaster. Insurers, re-insurers, and state and national reinsurance pools would be eligible purchases.

5.2 The future work for developing public-private partnership

Blanchard-Boehm et al. (2001) have found that people's desire to buy insurance will be affected by the

following factors.

- (a) Compliance to governmental laws and rules and professional advice on disaster risk
- (b) Attitude to risk
- (c) Personal understanding about disaster (probability and losses) *
- (d) Care on disaster *
- (e) Awareness about the deficiency of government assistance *
- (f) Economics (including the ways to balance costs and benefits) *
- (g) Experience through disaster

The factors with ‘*’ can be adjusted by public efforts such as monetary support and policy improvement from government, banks and insurance companies. By some related theories such as Development Microeconomics, we can study above several potential public-private partnership forms for Chinese disaster mitigation based on considering Chinese local detailed situations and the factors influence public and private desires to invest into disaster losses reduction.

We have to face the problem how to separate potential benefit between all partners such as victims, insurance companies, banks and government if we want to make the public-private partnership practical. For example, in one civilian risk-against cooperation, how to persuade the insurance companies to supply several families with one sheet of insurance, how to calculate and separate the insurance claim when cooperation’s total losses are enough for activating claim but individual loss is not enough and how to separate the insurance claim from one common sheet of insurance when the total losses are more than one sheet of claim. Another instance is the case related with monetary assistance and prompting for the poor. It will be very important that how calculate the tax or interest reductions based on considering the benefit of government, banks and poor families.

If we can not solve above ‘how to’, the idea to establish public-private partnership will just be the idea.

And the Development Microeconomics focuses on how the collective and the individual affect each other’s benefit and choice in developing countries such as China and so on. So we can expect some positive improvement on Chinese public-private risk-against partnership by using Development Microeconomics. We can combine the theory and the potential public-private means to make some models and test them one by one based on Chinese detailed cases or scenes. After that, we can choose the best public-private mean or make new better one for Chinese disaster risk mitigation and recovery.

6. Disaster risk securities

6.1 The development of huge disaster risk securities

The climate is becoming more and more uncertain and destructive. The insurance industry has to face the increasing affect and harm from the rising natural risk. For insuring huge disaster risk, according to experts’ opinions, developing huge disaster insurance securities and transferring risk to capital market is an important method for separating huge disaster risk.

According to related reports, there have been more than 12 billion dollars insurance securities of which 2/3 are related with huge disaster insurance in capital market since 1994. The first insurance security is the earthquake bond floated by Japan in 1984, though it was quite different from modern normal securities. After that, Chicago Mercantile Exchange Inc. floated huge disaster futures, options and bonds in 1992 (Li, 2005).

6.2 The benefit of huge disaster risk securities

Huge disaster insurance securities have been developed very well in advanced countries because it can effectively separate and transfer risk. China can and should learn much experience from that.

According to experts’ opinions, huge disaster bond can extend re-insurers’ ability, improve investors’ chances, separate investment risk and decrease credit risk. Based on the ample money in capital market and the successful experience of asset securitisation in insurance industry, we can transfer huge disaster risk from insurance market to capital market. That can solve the problem of capital lack for insuring huge disaster risk, shorten the mature cycle of huge disaster insurance operation, make insurance industry more involved in capital market and make them develop together.

There is imbalance in insuring ability. One hand,

traditional insurance products' premium income is declining because of homogeneity while insuring ability is relative overmuch. On the other hand, there is a big lack in some policy insurance products such as huge disaster insurance.

The total losses due to the super flood in 1998 were about 248 billion RMB while the related insurance payment was only 3 billion RMB. And according to related statistical data, the insurance payment that Hunan province got in the flood happened in 2005 was only 3 million RMB while direct economical losses were as much as 2.6 billion RMB. The insurance rate is only 0.12%. The big distance between insurance payment and economical losses stands for the ensuring and compensating from insurance is far from enough.

In the traditional manners, reinsurance has no the ability to separate the huge disaster risk completely. And in general, the commercial insurance companies do not want to insure huge disaster risk. But we have to break the bottle-neck. Because insurance industry has to do adequate contributing for forming concordant society through supporting the society with ensuring and economical compensating if insurance industry want a further development.

As mentioned above, developing huge disaster risk securities can lighten pressure for huge disaster risk reinsurance, extend insurance capital resources, transfer and separate huge disaster risk, enlarge insurance operation extension and increase insuring ability (Li, 2005).

6.3 The future work for developing disaster risk securities

Along with Chinese present detailed situations, we will face the following obstacles on our way to develop disaster risk securities.

- (a) Adequate laws and statutes;
- (b) Advanced capital market;
- (c) Prompting system for insurers and insureds;
- (d) Professional credit evaluating organization;
- (e) Complete disaster database;
- (f) Disaster risk securities' pricing.

According to above obstacles, we can do some meaningful work as follows.

(1) Designing the prompting system based on expected utility theory

As mentioned above, the consciousness of insurance is far from adequate. This fact blocks the development of Chinese disaster risk mitigation and recovery. How to improve the enthusiasm of people and insurance companies for disaster risk insurance is the bottle-neck of the whole Chinese disaster insurance system. There are some meaningful researches about prompting system. Some researchers argue that we can consider the government as resident A with the complete information and knowledge about disaster risk and higher subjective probability (which is considered by the government as necessary for the commercial insurance company or insured to establish and carry out one efficient disaster insurance system) for risk while consider the commercial insurance company or insured as resident B with limited information and knowledge on disaster risk and lower subjective probability for risk. And the subjective probability of resident B can be affected by that of resident A through regular interaction (such as periodic discussions, official presentations, exhibits on disaster experience and so on). According to this idea, our designing for the prompting system could focus on some kind of model for studying how to accurately describe that affecting process and how to make it more efficient and quick.

(2) Establishing the complete disaster risk database

Every market's development depends on two basic factors: supply and demand. For Chinese disaster risk security market, the supply is more urgent than the demand. And the supply has to be based on securities' pricing. Without the appropriate pricing, the supplier can not decide supplying or not. Further, the demander can not decide buying or not. So the pricing of the disaster risk securities is the key point for the whole market. According to Financial Engineering, we have to get the data about disaster risk probability, loss amount and insurance claim possibility if we want to price the disaster risk securities by rule and line. So we get the most basic factor for developing Chinese disaster risk security market: disaster risk database whose establishing depends on the effort of government, local government,

professional organizations, insurance companies and individuals. Naturally, we can expect that we will learn some useful and meaningful experiences from those countries with advanced disaster risk security market such as America and Japan. How to apply these present experiences properly and effectively into developing of Chinese disaster risk database will be a very challenging and meaningful job.

7. Conclusions

The main purpose of this paper is to summarize problems and find potential solutions for Chinese disaster insurance. Based on above discussion, public-private partnership maybe is the most meaningful potential choice. Because China is still a developing country even she has gotten very outstanding performance in economical development. And the less of money and the lack of insurance consciousness are the main obstacles that block the developing of disaster insurance. That means poverty and neglect of collective benefit are the bottleneck for disaster risk mitigation and recovery. The pattern of public-private partnership can give adequate solution for those two key points because its original purpose is to combine public factors with private efforts into disaster insurance investment and activities. Additionally, we will use development economics as the analyzing theory when we apply public-private pattern into Chinese detailed situations. We can forecast one practical and meaningful result from that combination because development economics focuses on how to model and solve public-private decision problems in developing countries like India and China.

As a beneficial complementarity, at the same time, we can think about use game theory and expected utility theory to model how to prompt individuals' and organizations' desire to care and invest disaster risk mitigation and recovery. This point is especially important for the peasants that hold the largest potential demand of disaster insurance.

At last, we should have the foresight for the future development of disaster risk security market. Considering that, we have to begin to establish corresponding disaster risk database from now on. Then we will have a great beginning for disaster risk security

market in the coming future.

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中国保険市場に関するレビュー：災害保険を主として

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要旨

市場の拡大、競争の激化、保険会社の統合化など近年中国の保険市場は大きな発展を遂げた。しかし同時に、急激に発展する保険市場には、低い収益率や、潜在需要の実需への転換の失敗、社会保険の不足など機能が不十分な点も多い。本稿ではまず、一般的な中国の保険市場における機会と問題点をまとめ、それに対する方策を提示する。さらに、中国の災害保険に焦点をおき、その重要性、不足の現状、システムの問題、および現在取り組まれている施策を議論する。最後に著者らの今後の研究の可能性について述べる。

キーワード: 中国保険市場、災害保険、官民パートナーシップ、災害リスク証券