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The Assessment and Supervision of China's Systemically Important Insurers

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Abstract

On July 19, 2013, the International Association of Insurance Supervisors (IAIS) announced the first list of Global Systemically Important Insurers (G-SII). Ping An Group, a China's insurance company, is the only insurer coming from the Asian-Pacific region. The entrance of Ping An brought wide attention and research on the problem of systemically importance in China. This research is studying the systemic importance of 9 insurance groups in China. Basing on the financial data of the 9 insurance groups, this paper calculates the weight using the Entropy Method, and ranks the 9 insurance groups by using the Index Method. Meanwhile, this paper comes up with some proposals for the assessment and supervision of China's Systemically Important Insurers to promote the stable development of the insurance industry and the whole financial system.

Key words: Systemically Importance；Indicator Method；Assessment and Supervision

INTRODUCTION

On July 19, 2013, the Financial Stability Board (FSB) announced the first list of Global Systemically Important Insurers (G-SII). There are nine insurance groups on the list. They are Prudential Financial，MetLife，American International Group，Allianz SE，AXA，AVIVA，Prudential，Generali and Ping An Group

Ping An Group, a China's insurance company, is the only insurer coming from the Asian-Pacific region. The entrance of Ping An demonstrates that with the rapid development of China's insurance market, some China's insurance companies are playing an important role in the global insurance industry. Moreover, it also reminds domestic regulators that in order to promote the steady development of insurance industry and maintain financial stability, assessment method of China's Systemically Important Insurers should be established.

With the rapid development of China's insurance market, some insurance companies are expanding their scale, complicating the business and having wide connection to other financial institutes. The development of these companies will infect the insurance industry even the whole financial system. China's insurance supervisors should design the assessment standard of China's systemically important insurers to identify the systemic importance of the insurers to guarantee the stable development of the insurance industry and the whole financial industry.

This paper refers to the assessment method of International Association of Insurance Supervisors and combines the real situation of China's insurance institutes to assess China's systemically important insurers basing on the Index Method. The arrangement of other parts of this paper is as follows: the second part is the Literature Review. This part introduces both

the method of studying the systemically important financial institutes and the method of International Association of Insurance Supervisors. The third part is the assessment of China's systemically important insurers. This paper uses the Entropy Method to calculate the weight of every index and adopts the Index Method to calculate the score of the sample to rank the 9 China's insurance groups. And the fourth part is the proposals for the supervision of China's systemically important insurers. Basing on the results, this paper comes up with some advices for the assessment and supervision. And the last part is the conclusion.

LITERATURE REVIEW

The Assessment Method of SIFIs

There are two main research method used to study the Systemically Important Financial Institutes, the Index Method and the Market Method respectively. The Index Method indicates that the international financial regulators set several indexes according to the understanding of the core features of the systemically important financial institutes. The principle of the Market Method is focusing on the risk management from different perspectives.

In October 2009, three international financial regulators International Monetary Fund (IMF), Financial Stability Board (FSB) and Bank for International Settlements (BIS) came up with the identification criterion and assessment method of SIFIs. There are three kinds of main indexes to assess systemically importance: size, substitutability and interconnectedness. Later, the index "global activity" is added up into the main indexes.

In July 2011, the Financial Stability Board (FSB) and the Basel Committee on Banking Supervision came up with aggregative indicator system to identify Global Systematically Important Banks. This system includes five main indexes: size, cross-jurisdictional activity, interconnectedness, substitutability and complexity.

In China, Zhang and Wu (2011) uses entropy evaluation method to determine the weight of indicators impacting the systematically important banks. They find out that size, complexity, substitutability and interconnectedness are the main indicators. The weights of complexity and interconnectedness are 22.7% and 64.1% respectively. The most important indicator of complexity is financial derivative assets and liabilities, and the most important indicator of interconnectedness is trading financial assets and liabilities.

Xiao and Liu (2012) use the assessment methodology of Basel Committee on Banking Supervision to assess and sequence systemically importance of 16 China's listed commercial banks. They are classified into 3 categories: the 5 nationalized banks are in the first category, the joint-stock commercial banks are in the second category and the city commercial banks are in the third category.

Ba and Gao (2012) come up with the assessment methodology of systemically important banks, which suits the development of China's banks. They use the methodology to assess 16 China's banks to find out that the systemically importance of the 4 nationalized banks (Bank of China, the Agricultural Bank of China, the Industrial and Commercial Bank of China, and the China Construction Bank) is much higher than the other commercial banks.

The Market Method is based on the model of risk management of the financial market. It assesses the Systemically important financial institutes in the respect of one's risk extent to the whole financial system. The Market Method has several analytical perspectives since there are

many indicators to assess the systematic risk. The Market Method includes Extreme Value Theory, CDS Spread and CoVaR.

The Assessment Method of International Association of Insurance Supervisors

The International Association of Insurance Supervisors chooses 5 main indexes and 18 sub-indexes. The 5 main indexes are size, global activity, interconnectedness, non-traditional insurance and non-insurance activities as well as substitutability. In the 5 main indexes, interconnectedness and the non-traditional insurance & non-insurance activities have the highest weights, respectively 40% and 45%. And the weight of the main indexes will be divided averagely by the sub-indexes. The specifics are as follows:

Table 1 The Index Assessment Methodology of Global Systematically Important Insurers

	Index	Weight (%)	Sub-index	Weight (%)
1	Size	5	Total assets	2.5
			Total revenues	2.5
2	Global activity	5	Revenues derived outside of home country	2.5
			Number of countries	2.5
3	Interconnectedness	40	Intra-financial assets	5.7
			Intra-financial liabilities	5.7
			Reinsurance	5.7
			Derivatives	5.7
			Large exposures	5.7
			Turnover	5.7
			Level 3 assets	5.7
4	Non-traditional insurance and non-insurance activities	45	Non-policy holder liabilities and non-insurance revenues from financial activities	6.4
			Derivatives trading	6.4
			Short term funding	6.4
			Financial guarantees	6.4
			Minimum guarantee on variable insurance products	6.4
			Intra-group commitments	6.4
			Extent of liquidity of insurance liabilities	6.4
5	Substitutability	5	Premiums for specific business lines	5

THE ASSESSMENT OF CHINA'S SYSTEMICALLY IMPORTANT INSURERS

This paper refers to the "Global Systemically Important Insurers: Initial Assessment Methodology" and considers the real situation of China's situation as well as the availability of the data to set up the assessment methodology of China's Systemically Important Insurers.

Index Selection

According to the International Association of Insurance Supervisors and the availability of data, the main indexes and sub-indexes are as follows:

Table 2 Index and Sub-index of Assessing China's Systemically Important Insurers

	Index	Sub-index
1	Size	Total asset
		Total revenue
2	Interconnectedness	Intra-financial asset
		Intra-financial liability
		Reinsurance
		Derivative
		Turnover
3	Non-traditional and non-insurance activities	Non-policy holder liabilities and non-insurance revenues from financial activities
		Short term funding
		Extent of liquidity of insurance
4	Substitutability	The earned premium

The 9 insurance groups have less business abroad, so this paper delete the index "Global Activity". The reasons of selecting the other indexes and sub-indexes are as follows:

1. Size: The importance of a single component for the working of the financial system generally increases with the amount of financial services that the component provides. It should be recognized, however, that in an insurance context size is a prerequisite for the effective pooling and diversification of risks. The index "Size" has two sub-indexes: one is total asset and the other is total revenue. Total asset is the straightforward indicator of size and it can use the data on balance sheet. Total revenue indicates the extent or scale of financial services of an insurer from a different angle. It is the sum of insurance gross premium earned, investment income, realized gains and losses, fees and commissions and other income.

2. Interconnectedness: Systemic risk can arise through direct and indirect inter-linkages between the components of the financial system so that individual failure or distress has repercussions around the financial system, leading to a reduction in the aggregate amount of services. It has 7 sub-indexes in the assessment methodology of Global Systematically Important Insurers. Since the data of Large Exposures and Level 3 Assets cannot be got, this paper deletes the two sub-indexes. This paper selects trading financial asset, redemptory monetary capital for sale, fixed time deposit, available-for-sale financial asset, held-to-maturity investment and lending funds in financial statement to calculate the value of Intra-financial asset. And this paper uses short-term borrowing, trading financial liability, financial assets sold for repurchase and borrowing funds to calculate the value of Intra-financial liability. Meanwhile, this paper uses the reinsurance premium in the financial statement to calculate the Reinsurance and the derivative financial asset in the financial statement to calculate the Derivative as well as the operating income in the financial statement to calculate the Turnover.

3. Non-traditional and non-insurance activities: These are potential drives of the systemic importance of insurers and thus have the greatest impact upon failure. This research selects 3 sub-indexes in this index. They are Non-policy holder liabilities and non-insurance revenues from financial activities, Short term funding and Extent of liquidity of insurance.

4. Substitutability: The systemic importance of a single component increases in cases where it is difficult for the components of the system to provide the same or similar services in the event of failure. This paper selects the earned premium to calculate it.

Weight of the Index

In order to set weight to these indexes and sub-indexes objectively, this paper uses the Entropy Method to calculate the weights of these indexes and sub-indexes. There are three steps when using the Entropy Method:

Normalizing the original data matrix. We regard the original data matrix with m indexes and n samples as $A = (a_{ij})_{m\times n}$. After normalizing, we get $R = (r_{ij})_{m\times n}$. As for the bigger in advance, the formula is

$$r_{ij} = \frac{a_{ij} - \min_j\{a_{ij}\}}{\max_j\{a_{ij}\} - \min_j\{a_{ij}\}} \qquad (1)$$

And when it comes to the smaller in advance, the formula is

$$r_{ij} = \frac{\max_j\{a_{ij}\} - a_{ij}}{\max_j\{a_{ij}\} - \min_j\{a_{ij}\}} \qquad (2)$$

Defining the entropy. In the problem with m indexes and n samples, the entropy of the index i is $h_i = -k\sum_{j=1}^{n} f_{ij}\ln f_{ij}$ and $f_{ij} = {r_{ij}}\Big/{\sum_{j=1}^{n} r_{ij}}$ as well as $k = {1}/{\ln n}$. When $f_{ij} = 0$, we have $f_{ij}\ln f_{ij}$.

Defining the entropy weight. After defining the entropy of the index i, we can get the entropy weight of the index i:

$$w_i = \frac{1-h_i}{m - \sum_{i=1}^{m} h_i} \ (0 \le w_i \le 1, \ \ \sum_1^m w_i = 1) \qquad (3)$$

This paper selects financial data of the 9 insurance groups in 2014. According to the related data, this paper calculates the weights by using the Entropy Method. The specifics are as follows:

Table 3The results of the weights by using the Entropy Method

	Index	Weight	Sub-index	Weight
1	Size	10%	Total asset	6%
2			Total revenue	4%
3	Interconnectedness	41%	Intra-financial asset	6%
4			Intra-financial liability	11%
5			Reinsurance	6%
6			Derivative	14%
7			Turnover	4%
8	Non-traditional and non-insurance activities	45%	Non-policy holder liabilities and non-insurance revenues from financial activities	7%
9			Short term funding	19%
10			Extent of liquidity of insurance	19%
11	Substitutability	4%	The earned premium	4%

We can see from the table that Interconnectedness and Non-traditional and non-insurance activities have the highest weights, respectively 41% and 45% which is close to the weights that setting in the Table 1.

RESULTS

We can get the score of the 9 insurance groups through the formula below:

$$Score_j = \sum_{i=1}^{11} f_{ij} \times w_i \,, (j = 1,\ 2,\ \cdots 9) \qquad (4)$$

The 9 insurance groups in China are People's Insurance Company of China, China Life Insurance Company, Ping An Group, China Reinsurance Group, Sunshine Insurance Group, China Taiping Insurance Group, China Pacific Insurance Group, Anbang Insurance Group and Huatai Insurance Group.

And the scores and the ranks are in the following table:

Table 4 The Systematically Importance of China's Insurers

	Insurer	Size	Interconnectedness	NTNI	Substitutability	Score
1	Ping An	0.0346	0.2156	0.4095	0.0079	0.6676
2	China Life	0.0309	0.0833	0.0234	0.0125	0.1501
3	People's Insurance	0.0134	0.0442	0.0066	0.0086	0.0729
4	China Pacific	0.0104	0.0263	0.0062	0.0052	0.0482
5	Taiping Insurance	0.0035	0.0275	0.0020	0.0020	0.0351
6	China Reinsurance	0.0029	0.0059	0.0011	0.0022	0.0121
7	Sunshine Insurance	0.0017	0.0040	0.0007	0.0010	0.0074
8	Anbang Insurance	0.0020	0.0016	0.0002	0.0002	0.0040
9	Huatai Insurance	0.0005	0.0016	0.0003	0.0003	0.0027

We can see from the result that the score of Ping An (0.6676) is much higher than the other insurance groups. This is why Ping An rather than other insurance groups appears on the list of the Global Systematically Important Insurers.

In comparison of the score of every single index, Ping An ranks first in three indexes (size, interconnectedness and NTNI). China Life and People's Insurance are the second and the third respectively. We can see this from the following charts:

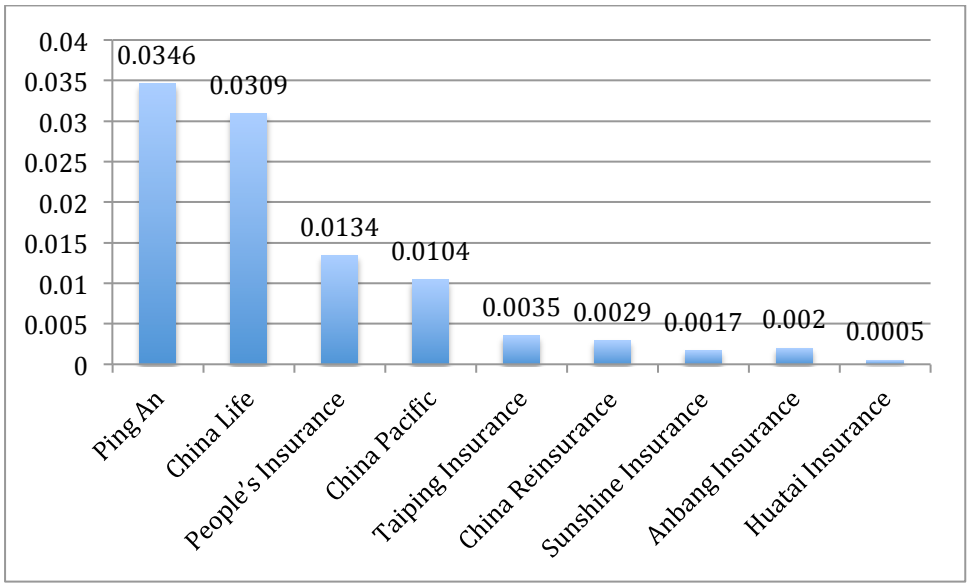


Chart 1 Comparison of Size of Insurance Groups

Ping An has complex business not limited to traditional insurance, and it has business contact with other financial institutes frequently. So the scores of interconnectedness and NTNI are much higher than the second and the third insurers.

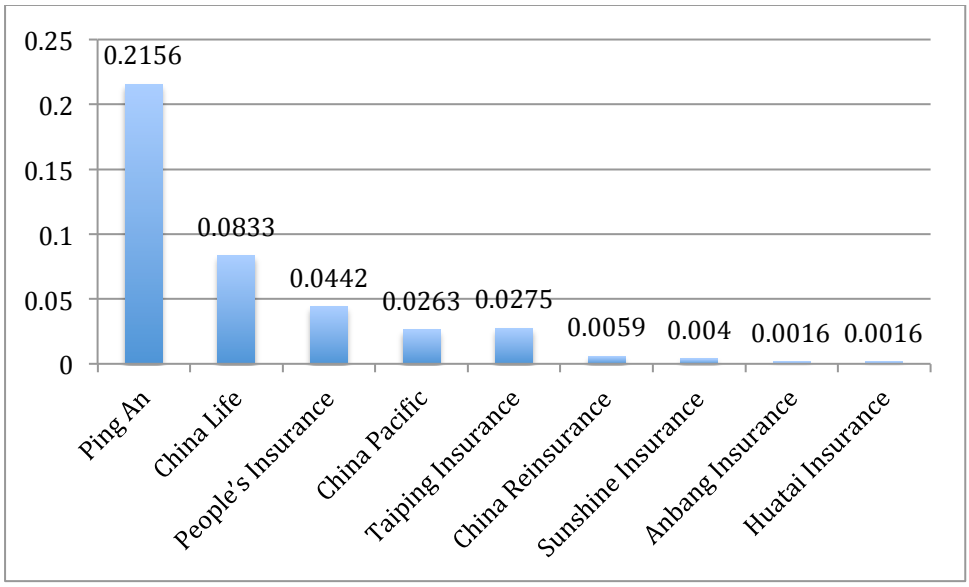
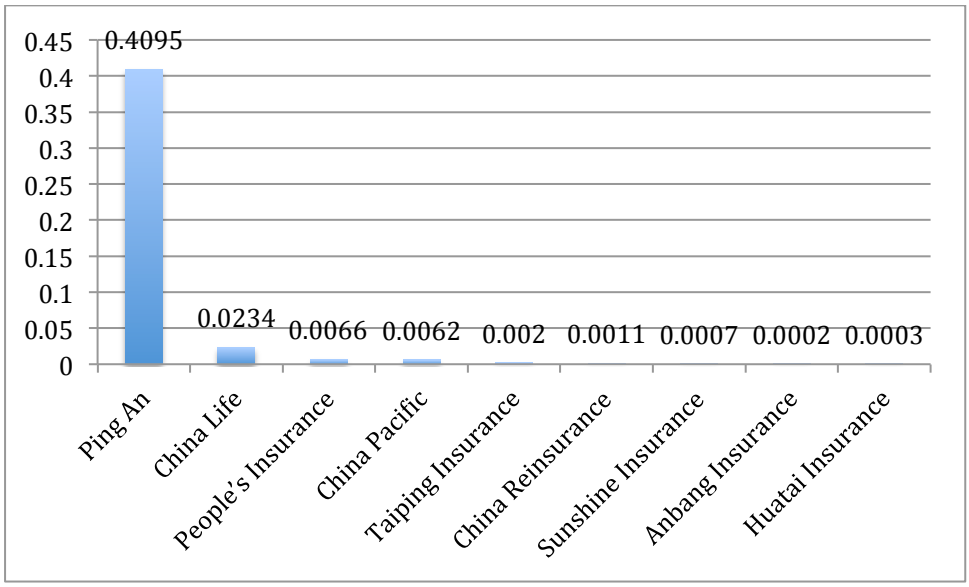


Chart 2 Comparison of Interconnectedness of Insurance Groups



As for the index of substitutability, China Life ranks first since it is the largest life insurance company in China.

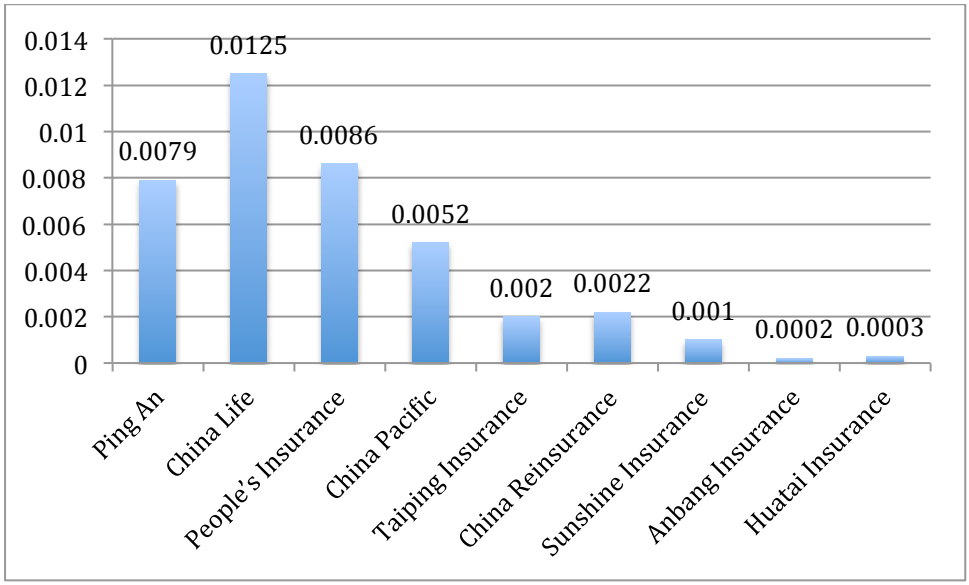


Chart 4 Comparison of Substitutability of China's Insurance Groups

POLICY PROPOSALS OF CHINA'S SIIS' ASSESSMENT AND SUPERVISION

The Assessment Methodology of China's Systematically Important Insurers

The first question of supervision of the G-SIIs is assessing and identifying the Systematically Important Insurers. The accuracy of the assessment methodology will exert huge influence on the effect of the supervision policy. Higher or lower assessment of systematically importance will exert adverse impact. So it is crucial to identify the Systematically Important Insurers accurately. We should take part in the supervision reform of international insurance industry actively and refer to the assessment method and policy measures of G-SII to set up the assessment method of China's SIIs.

First, we should establish the assessment method of national systematically important insurers in accordance with the situation of China's insurance industry. The assessment method should combine the Index Method of G-SIIs with the Market Method. Although both domestic and international researches of Systematically Important Insurers are less, we can also refer to the

researches about the assessment of Systematically Important Financial Institutes and Systematically Important Banks.

Second, data is the key when assessing the systematically important insurers and the lack of data is the main problem at the moment. The number of listed insurance companies is limited. There is not enough open data to use. We should set up a database to follow and update the assessment result of systematically important insurers.

Third, we should realize the deviation and serious consequences of assessing the systematically important insurers. Overestimation will increase the cost of the financial system while underestimation will reduce the effectiveness of the supervision. Since the systemic risk varies constantly, we should update the assessment method and assessment data now and again to reduce the negative effect on financial supervision.

Last, we should implement differential supervision basing on the extent of systematically importance of different insurance companies.

Policy Proposals for Supervision of China's Systematically Important Insurers

In order to reduce the moral hazard and negative externality when the systematically important insurers close down, International Association of Insurance Supervisors formulates the supervision policy of Systematically Important Insurers basing on the features of the Systematically Important Insurers.

International Association of Insurance Supervisors advises supervision departments of every country to adopt the following measures:

1. Strengthening supervision. Basing on the Insurance Core Principles, Key Attributes and the Common Frame, International Association of Insurance Supervisors comes up with measures of strengthening supervision. There are three items: First, the establishment and implement of systemic risk management plan; Second, strengthening liquidity plan and management. We should establishing the liquidity strategy and policy of risk management aiming at non-traditional and non-insurance activities and the interconnectedness of financial market; Third, to separate the non-traditional and non-insurance activities effectively. On the purpose of reducing the systematically importance, we should separate the non-traditional and non-insurance activities from the traditional insurance business and limit or prohibit some special business.

2. Disposing effectively. When disposing the Systematically Important Insurers effectively, stockholders and unsecured creditors should bear the losses to protect the profit of policyholders. And we should ensure that the Systematically Important Insurers without possibility of existing in the market to exit in an ordered way. The exit will bring no serious damage to the financial system or losses to the taxpayers.

3. Improving the ability of absorbing losses. The Global Systematically Important Insurers should have stronger ability of absorbing losses to cope with large risk in global range. In the view of improving insurers' ability of absorbing losses, International Association of Insurance Supervisors focuses on establishing supervision criterion of global solvency. International Association of Insurance Supervisors comes up with two methods: one is capital method and the other is balance sheet method. The capital method sets some proportion of supervision capital as supplementary capital. The

balance sheet method adds items inside and outside the balance sheet to calculate the supplementary capital.

With the rapid development of China's insurance industry, China's insurance companies will bring larger and larger impact to international insurance industry. Thus, it is necessary to refer to international supervision measures to strengthen the supervision of China's insurance companies.

First, identifying insures of systemically importance. Regulators should confirm the list of China's Systematically Important Insurers basing on the situation of China's insurance industry and the four indicators（size, interconnectedness, non-traditional insurance and non-insurance activities and substitutability）. If the range of Systematically Important Insurers is too wide, it will reduce the efficiency of financial supervision. However, if the range of Systematically Important Insurers is too narrow, it will threat the financial stability.

Second, strengthening supervision. China Insurance Regulatory Commission will follow and refer to the reform advice of international financial supervision institutes. Improving the supplementary capital and proportion of common stock to enhance insurers' ability of absorbing losses. As the core indicator, improving the ability of solvency can prevent the excessive market behavior and enhance the potential ability of absorbing losses to avoid the systemic risk. Establishing the strict supervision requirement and criterion in liquidity reserve. We should test the liquidity of non-traditional insurance and non-insurance activities with the systematically importance termly.

Third, Completing the requirement of information disclosure to improve the transparency of insurance market. Large insurance groups should publish the relationship of insurers and financial system, the relationship of departments of insurers and data of systemically importance. Meanwhile, a large insurance company should have the ability of offering information in short time which is an important part in recover from and dealing with the plan.

Last, establishing risk response mechanism of systematically important insurers. Setting the mechanism of burden sharing between creditors and stockholders. The stockholders and unsecured creditors should bear the losses to protect the profits of policyholders and taxpayers reaching the purpose of reducing moral hazard of insurers. Completing liquidation mechanism of systematically important insurers and introducing the bridge institutes. When one insurer faces up to business trouble, the bridge institutes take over the core business to ensure the ordered exit of systematically important insurers which avoids the systemic risk to the whole financial system.

CONCLUSION

With the development of China's insurance industry, China's insurers will step into the ranking of international market. There are more and more insurance companies appearing on the list of Systematically Important Insurers , which is an opportunity and a challenge. Our government should encourage and support China's insurers to join in the Global Systematically Important Insurers. This paper comes up with some supervision proposals for China's Systematically Important Insurers. China Insurance Regulatory Commission should make explicit requirement in strengthening supervision, information disclosure and effective disposal.

This paper tries to identify China's Systematically Important Insurers basing on the Index Method. However, since the lack of some data and limitation of the method, some questions need further discussion. Identifying the Systematically Important Insurers is a permanent job and I will make more researches in this respect to make more achievements.

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