

An Empirical Investigation of Impact Factors for the Profit Performance of Regional Life Insurance Market in China

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Abstract Due to several factors different regions in China have formed a diversified life insurance market. We employ a panel data of 30 provinces and municipalities from 2005 to 2011 and apply a model based on the structure-conduct-performance (SCP) hypothesis to analysis the factors that influence the performance of making profit for life insurance companies. The result reveals that the SCP hypothesis is not supported in the life insurance market of China. Although the SCP Hypothesis is not supported, the factors that influence the profit performance in different provinces are GDP, the return rate of investment and the policy reform variable.

Keywords Structure-Conduct-Performance Hypothesis, Market Structure, Profit Analysis, Impact Factors, China life insurance market.

JEL Classification C31, D42, G22, L25

Introduction

The structure-conduct-performance (SCP) hypothesis is the main theoretical framework in the industrial organization theory, and it is mainly applied to analyze the relationships shared by the market structure, enterprise conduct and performance.

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The industrial organization theory is included in the applied economic theory. It is generated in the 1930's and gradually developed. The main idea of this theory is applying microeconomic theory to analyze the relationships of competition as well as monopoly among the market, industry and enterprises. Since generated, the SCP hypothesis has gained much attention from international scholars, and it has been applied in insurance market. However, using this theory to analyze the relation of insurance market structure and performance in China is still under development, and there are still many valuable researches to do.

As the world's biggest developing country, China has experienced a rapid development in the life insurance industry in recent decades. However, in the progress of this rapid development, many problems have been exposed. One of the most important problems is that the low degree of performance of making profit for life insurance companies is not consistent with the rapid development. Another important problem is that the life insurance market has some apparent regional characteristics that the degree of development of life insurance companies is quite different from province to province. This significant difference may result from several impact factors, such as economy, policy, population, geography and so on. We want to find the factors that causing this phenomenon. Therefore, the purpose of this paper is to analyze the impact factors for the performance of making profit, especially to check the relation of market structure and performance in life insurance market of China from the perspective of industry organization theory. If there exists such a logical relation, then we can improve the performance of life insurance companies in China by optimizing the market structure. Also we can explain the significance difference among provinces by analyzing the impact factors. Although there is some research about the validity of SCP hypothesis, but almost all using data of some companies or some provinces, while the analysis of the effects of the whole market structure on the performance is neglected. Therefore we will fill this gap and test the validity of the SCP hypothesis in the range of whole China systematically with all the provinces.

To test the validity of SCP hypothesis systematically and find out the impact factors for the performance of making profit of regional insurance market in China, we employ a panel data including records of all the life insurance companies in 30 provinces and municipalities in China¹ from 2005 to 2011. The result shows that the SCP hypothesis is not supported in the life insurance market of China. The life insurance market in China is highly centralized but it is not the consequence of competition. The performance of making profit for life insurance companies has an obvious regional character and it is significant influenced by several factors.

¹ We don't include Hong Kong, Taiwan and Macao because of the characteristic which comes from some regulations difference in those markets. Besides we exclude Tibet because of the incompleteness of the data.

Literature Review

The development of the SCP hypothesis can be summarized as two main stages: one is the traditional industrial organization theory that is supported by researchers of the Harvard school, Chicago school, Neo-Austrian school, etc. The other one is the new industrial organization theory generated after the 1970s. As the representatives of the Harvard school, Bain (1951) completely and systematically discussed the theoretical frame of the industrial organization theory for the first time and put forward three basic concepts of the modern industrial organization theory: market structure, conduct and performance. The Harvard school and Chicago school hold different opinions on the relationship of market structure, conduct and performance. The Harvard school emphasized the effect of market structure on conduct and performance, and concluded that there exists a one-way causal relationship of the structure, conduct and performance. The internal mechanism is that the degree of market concentration determines the conduct of enterprises, and the latter determines the performance of enterprises. The representatives of the Chicago school are Stigler, Demset and Brozen. They believe that the performance of enterprise itself plays the crucial role: different performance of enterprises has formed the various market structures and it is concluded as the Efficient-structure (ES) hypothesis². The enterprises with highly efficient performance can constantly enlarge their market share, and eventually lead to the market structure of high degree of concentration. Therefore, no matter the Harvard school or the Chicago school, they both regard the SCP hypothesis as the main theoretical framework, and the divergence is that they review the causal relationship between S, C and P differently.

In the aspect of empirical researches, both international and domestic literatures have enlightened our idea and methodology. Choi and Weiss (2005) analyzed the relationships of structure, conduct and performance in the US property-liability insurance market and they found support for the ES hypothesis of the Chicago school. They believed that the regulation agency should pay more attention to the performance of enterprises instead of the market structure. Pope and Ma (2008) tested the applicability of the SCP hypothesis in the international non-life insurance sector. They found that the expectations associated with the SCP hypothesis were supported when the level of liberalization were low. However, if the markets were highly liberalized, the presence of foreign competitors significantly changed the dynamics of nonlife insurance markets.

In the domestic literatures, Chen (2007) analyzed the relationship between market structure and performance in insurance market, both life insurance market and property insurance market using data of 15 life insurance companies and 14 prop-

2 As Nat Pope and Yu-Luen Ma (2008) suggested the ES hypothesis had enjoyed significant support in the banking literature and to a lesser degree in the insurance literature. Thus, we limit our discussion in this article to test the SCP hypothesis but would further investigate the ES hypothesis in the later research.

erty insurance companies which have the biggest market shares in the time period from 2002 to 2005. She drawn the conclusions that the insurance markets in China were high monopoly markets, and the high degree of concentration and low efficiency of performance were the main characteristics of the industries. Thus the SCP hypothesis was not supported in both life and property insurance market in China. Because of some political factors, the ES hypothesis was not supported either. Wang (2007) also proved that neither the SCP hypothesis nor the ES hypothesis was supported in the insurance market of China applying data of 22 companies with the biggest market shares in the time period from 1999 to 2004. Zhong (2009) tested the applicability of the SCP hypothesis thesis in the life insurance market of China including data of all the life insurance companies in 2006 and data of three life insurance companies in the time period from 1998 to 2007. The first conclusions he got was that life insurance market of China was classified into the highest degree of monopoly market, and it was the high degree of monopoly market that caused the imbalance of development in different provinces in China. Secondly, the relation between market structure and performance was a two-way interactive relationship, and the core of this relation was the market structure. Finally, from the macro level, market structure was the main factor that influenced the public performance in life insurance market in China; from the micro level, the ES hypothesis was supported in China's life insurance market. The above articles focus on the analysis for several insurance companies in the range of whole country; there are no researches consider the case with all provinces in China. Therefore, we fill the gap of in this area.

The rest of this paper is organized as follows. We introduce the basic model in SCP hypothesis and explain the variables in this paper in Section 2. Section 3 is about the data and empirical model, and Section 4 is the result of empirical analysis. At last, we summarize this paper in Section 5.

Variable Declaration

A regression model introduced by Berger (1995) can be used to test both the SCP hypothesis and ES hypothesis, which is given as follows:

$$\Pi_i = f(\text{CONC}_n, \text{MS}_i, \text{X-EFF}_i, \text{S-EFF}_i, Z_i) + u_i \quad (1)$$

where Π_i is the dependent variable representing the performance and usually measured by return on asset (ROA), return on equity (ROE), or price, etc. CONC_n is an index measures the degree of market concentration. MS_i stands for the market share of each market participant. X-EFF_i and S-EFF_i are efficient variables, and the former one is the efficient variable that is influenced by management, techniques and such factors of an enterprise, the latter one is determined by the scale of the enterprise. Z_i represents a group of control variables related to the market, such as

the statue of market demands, the operation cost, the barriers to entry the market, etc. To test the SCP hypothesis analysis in the international insurance market, the paper of Pope and Ma (2008) proposed an adapted version based on model (1). They use the profit margin, which is proposed by Cowling and Waterson (1976), as a new variable for measuring the performance of insurance companies. The profit margin is defined as:

$$PROFIT = \frac{Premiums - Losses - Expenses + Investment}{Premiums} \quad (2)$$

$$= 1 - Loss Ratio - Expense Ratio + Return on Investment$$

Pope and Ma (2008) used the (1-loss ratio) to measure the profit because of the data deficient since lack of data for expense ratio and return on investment. Besides, they added several control variables: degree of liberal, level of regulation, threat of substitution, economic factor and book of business to the basic model and delete the variable of MS for market share of each market participant for their model is market based but not companies based. Based on the model of Pope and Ma (2008) and the available data of Chinese case, we delete the variable representing the threat of substitution. And since we focus on life insurance companies, the variable for books of business is deleted as well. Also since the whole insurance market in China is under the same regulation, we will not include this part. Meanwhile we add the variable of the population structure for representing the demand of life insurance, as well as the investment control variables, which we think it might have effect on the profit of life insurance market. Therefore we will use the profit margin as the dependent variable for measuring the performance, and use Herfindahl-Hirschman Index, Degree of Liberal, Economy, Population Structure, Investment control variables and a dummy variable for policy as the independent variables. The detail explanation of the variables is given as follows.

PROFIT: Performance of making profit

Following Pope and Ma (2008), we also use the profit margin for measuring the performance of the life insurance companies. Since we can have the data for the expenses and investment, we will include the expenses and investment part in the calculation of the profit margin. Here we give the definition of the dependent variable: profit margin for the life insurance company and it is calculated as follow:

$$profit = \frac{premiums - Losses - Expenses + Investment}{premiums} \quad (3)$$

$$= 1 - loss ratio - expense ratio + return on investment$$

We calculate the profit margin for each life insurance company in every regional market, and apply the weighted mean for measuring the profit of each market. The reason for using weighted mean is that the life insurance companies with different premium incomes contribute differently to the whole market profit margin. The weight we use is calculated as following:

$$\text{Weight} = \frac{\text{Premium income of each life insurance}}{\text{Total premium income of all life insurance companies}} \quad (4)$$

Herfindahl-Hirschman Index (HHI): Degree of market concentration

The degree of market concentration is the fundamental factor of the market structure, and it reflects the degree of competition and monopoly of the market. There are several commonly used indicators, such as the concentration ration (CR), HHI, Lorenz curve, etc. In this paper, we choose HHI to reflect the market structure as it is a good index to measure the market concentration and usually adopted by the government department and economists. HHI is calculated as follows:

$$HHI = \sum_{i=1}^N \left(\frac{X_i}{X} \right)^2 = \sum_{i=1}^N S_i^2, S_i = \frac{X_i}{\sum_{i=1}^n X_i} \quad (5)$$

where X_i stands for premium income for each life insurance company of each province; N stands for the number of all life insurance companies of each market³. S_i means the premium income share of each life insurance company. HHI varies from 0 to 1, and the bigger the index is, the deeper the degree of concentration and monopoly is.

Foreign competitors (FC): Degree of liberal

As a factor of reflecting the degree of liberal of the market, Pope and Ma (2008) found that the presence of foreign competitors significantly influences the performance of insurance market. In China, although the foreign life insurance companies showed poor performance compared to local companies in the past ten years, they had a certain degree of impact on the domestic market. Therefore, we introduce an independent variable that is measured by the proportion of premium income earned by foreign competitors (full foreign invested insurance companies) to the total premium income of each market and it is calculated as follows:

$$FC = \frac{\text{Premium income of foreign life insurance companies}}{\text{total premium income of all life insurance companies}} \quad (6)$$

³ Herfindahl-Hirschman Index calculates 50 competitors with the largest market share. If the number of competitors in the market is less than 50, then N is the number of the actual competitors.

Economy (ECON)

Economy is one of the most important factors that determines the consumption capacity and insurance demand of people. In general, the more developed the economy of a region is, the greater the life insurance demand. In this paper, we choose the logarithmic form of GDP (Econ) to measure this variable. The reason of taking the logarithmic form is to normalize the data and make the explanation more meaningful.

Population Structure (PS)

As we know, China has stepped into the aging society, and the burden of the aging population will continue to increase in the following decades. People of old age will face the risk of losing the income resource, which stimulates the demand for life insurance in some degree. Therefore, in this paper, we add a variable measuring the structure of population (PS), which can be considered as the source of demand for the life insurance. The computation of this variable is as follows:

$$Population = \frac{Population\ over\ the\ age\ of\ 65}{Total\ population} \quad (7)$$

Deposit Rate (DR) and Investment Return Rate (IRR)

A significant portion of profits in life insurance companies comes from the investment, especially the long-term fund of life insurance companies that lead to the investment income accounts for a large part of their total profit. In china, the main channels for insurance fund to invest are stock market and bond market. Also bank deposit is another method for life insurance companies to deal with their premium incomes. As a result, therefore the control variables which measure the return rate of stock market, bond market as well as bank deposit should be included in the model. But the return rate of bond market has strong correlation with the return rate of the bank deposit, so we do not include it in the model. Therefore we use one-year deposit interest rate of central bank and the average price earnings ratios of Shanghai Composite Index to measure return rate of deposit and investment respectively.

Dummy Variable (DUM): Policy Reform

In 2006, the China's Ministry of Finance promulgated *The New Accounting Standards*⁴, and the range of application covers insurance industry. According to the new standards, some important accounting issues have been changed, such as the confirmation of premium incomes. Therefore we introduce a dummy variable representing policy reform for the consideration that the New Accounting standards may have influence on the performance of making profit of life insurance compa-

4 All the public companies in China are required to execute the New Accounting Standards. It is noteworthy that The New Accounting Standards basically realized the convergence with International Financial Reporting Standards.

nies. We set it equals to 0 for the year 2005 and 2006, while it equals to 1 after 2006.

Data and Empirical Methodology

The data we have are from various resources. The data of premium, losses, expenses, investment income are obtained from the website of insurance regulation commission in each province and Insurance Statistic Yearbook. We acquire the population data from the Demographic Yearbook. The data of GDP is gained from the website of National Bureau of Statistics. And the return rate related data comes from some relevant articles. We have the data of 30 provinces and municipalities over the time period from 2005 to 2011. For some missing data⁵, we use the interpolation method to generate them. In the stage of data preprocessing and analysis, we make the descriptive statistics of the data. There are total 210 observations and the descriptive statistically analysis of the original panel data is showed in Table 1 below.

Table 1 Descriptive Statistic of original panel data

	PROFIT	HHI	FC	ECON	PS	DR	IRR
Mean	-0.022707	0.282517	0.027185	8.961.524	0.090781	0.027129	0.267714
Median	0.061200	0.258400	0.000400	9.052.700	0.089000	0.025200	0.216000
Maximum	0.351900	0.694000	0.297900	1.088.200	0.144000	0.035000	0.592000
Minimum	-3.481.100	0.091200	0.000000	6.297.700	0.053000	0.022500	0.134000
Observations	210	210	210	210	210	210	210
CrossSections	30	30	30	30	30	30	30

Table 1 shows the descriptive statistic of the data of all the provinces from 2005 to 2011. As we can see, the value of profits margin for some provinces range from negative value to positive value, and the values are quite different from province to province, as well as the tendency during the study period. The largest value of profit margin from 2005 to 2011 among 30 provinces and municipalities is that of Xinjiang province with 35.19% in 2007, while the smallest value is that of Shandong province with -348.11% in 2006. Besides, the largest average value of profit margin from 2005 to 2011 is that of Ningxia province with 21.28%, while the smallest average value is that of Shandong province with -141.97%.

⁵ The data of profit margin for Qinghai province in 2009 is missing for the reason that the website of insurance regulation commission of Qinghai does not provide the data for that year, we could not find them in other ways, neither. Therefore we use the interpolation method to generate them.

Figure 1 Weighted Average Profit Margin dynamic data of 6 Provinces

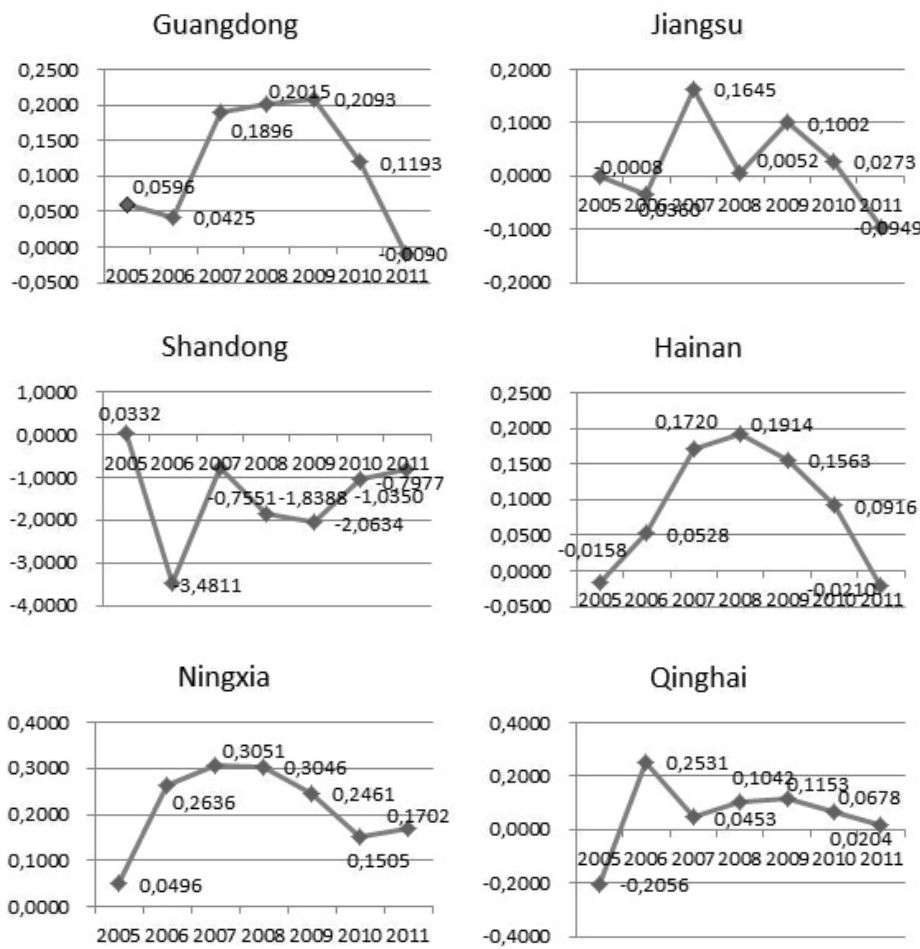


Figure 1 above is weighted mean profit margin dynamic data of 6 chosen provinces and the principles of choosing those 6 provinces are based on the ranking of GDP: Guangdong, Jiangsu and Shandong provinces are the top 3 of highest GDP, while Hainan, Ningxia and Qinghai are the last 3 in GDP. As we can see in Figure1, from 2005 to 2006 provinces with lower GDP all show an increase of the value, while provinces with higher GDP all show a decrease. Also after 2006 the value of provinces with lower GDP all have tendency of decreasing and the decreasing rate is relatively stable, while the value of other three provinces are fluctuate. Consider other provinces, contrary to our expectation, the value of profit margin in some other economically developed provinces, such as Beijing and Shanghai, is also relatively low and fluctuate compared to some economically less developed provinces. Therefore, we speculate that there exists a relation between the degree of performance and degree of economic development and the correlation is negative.

Figure 2 HHI dynamic data of 6 Provinces

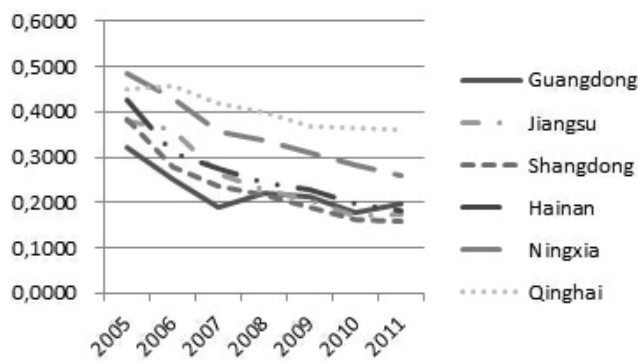
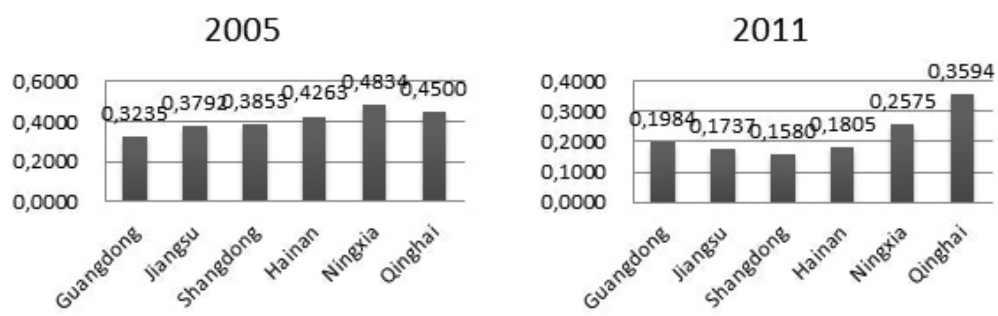


Figure 3 Column charts of HHI for 6 provinces



As the most important independent variable, from Table1 and Figure2 we can see that the values of HHI continue to decline during the time period from 2005 to 2011 for almost all the provinces. The greatest value of HHI from 2005 to 2011 is 69.40% of Inner Mongolia and the smallest mean is 9.12% of Beijing. Although the decline trend is similar, the value of HHI for provinces is quite different. As we can see in Figure3, the value of Qinghai province in 2011 is even greater than that of Guangdong province in 2005. According to the criterion set by Department of Justice of United State to judge the degree of concentration for a certain industry, the life insurance markets of China are classified into high oligopolistic type II and low oligopoly type I⁶. The data show that the life insurance market of China is highly centralized, especially in the economically less developed provinces. Also the degree of concentration varies from province to province, and the difference is quite big which means obvious difference exists among market structure of life insurance

6 Department of Justice of United State set the criterion to judge the degree of concentration as: if $HHI=1$, the market is classified into high oligopolistic type I; if $0.3 \leq HHI < 1$, the market is classified into high oligopolistic type II; if $0.3 \leq HHI \leq 0.18$, the market is classified into low oligopoly type I; if $0.1 \leq HHI \leq 0.18$, the market is classified into low oligopoly type II; if $0.1 \leq HHI \leq 0.14$, the market is classified into competitive market type I; if $HHI \leq 0.1$, the market is classified into competitive market type II.

for different provinces.

From Table1, we can also get the information that the variable FC, the degree of liberal is generally low and also varies from province to province. There are 19 provinces with 0 premium income earned by foreign companies in 2005, and 11 provinces with 0 premium income earned by foreign companies in 2011. The provinces without foreign life insurance companies are generally distributed in the Midwest and Southwest. These provinces have not been opened to foreign insurance companies for as long as some southeast provinces have, and the markets of these provinces seem have less attraction to foreign investment. In conclusion, the life insurance of regional market in China is highly centralized and lowly liberally, especially in the economically less developed provinces.

The model in this paper can be written as follows:

$$\begin{aligned} PROFIT_{p,t} = & \alpha_p + \beta_1(HHI)_{p,t} + \beta_2(FC)_{p,t} + \beta_3(ECON)_{p,t} \\ & + \beta_4(PS)_{p,t} + \beta_5(DR)_t + \beta_6(IRR)_t + \beta_7(DUM)_t + C + \varepsilon_{p,t} \end{aligned} \tag{8}$$

where PROFIT_{p,t} is the profit of companies of province p at year t as defined in (3), HHI stands for the concentration rate of each market; FC is the proportion of premium income earned by foreign life insurance companies to the total premium income earned by all life insurance companies in each market; ECON is the natural logarithm of GDP for each province; PS measures the proportion of population over 65 years old; DR and IRR are the control variables for return rate of bank deposit and stock market: one-year deposit interest rate of central bank and average price earnings ratios of Shanghai Composite Index respectively. According to the preliminary analysis and economic common sense, we speculate the relation of variables as follows:

Table 2 Expected signs of variables

Variable	HHI	FC	ECON	POPULATION	DR	IRR	DUM
PROFIT	+	±	—	±	—	±	+

Empirical Results

Before doing regression, several tests of panel data model are taken. First of all, in order to avoid the problem of multi-colinearity, we do the correlation analysis of the independent variables. The results show that the coefficients of independent variables are not statistically significant at 5% level, which indicate that there are no statistically significant relations among them. Secondly, since our data includes both time series data as well as panel data, so we should use the cross-section fixed

model theoretically. We do the test of Redundant Fixed Effect, and the result verifies that cross-section fixed model is preferable than pooled model. The results of the empirical analysis are report in Table 3 below. Besides, since generally there exists heteroscedasticity in cross-section data, therefore we apply cross-section weights method to eliminate it.

The results of the empirical analysis are report in Table 3 where two models are presented. Model 2 makes the assumption that an AR (1) as a covariance structure of error terms, while Model 1 does not make that assumption. As we see, the value of Durbin-Watson test for model 2 is acceptable which means no autocorrelation exists. Also the coefficient of AR (1) is statistically significant. Therefore, we use the coefficients from Model 2 to illustrate the regression results. The weighted goodness of fit for Model 2 is 0.787278, which means the goodness of fit in this paper is acceptable. The significance of equation is tested by F-statistic and its value is 14.20369 as showed. And the equation is statistically significant at the level of 1%. The significance of coefficient is measured by t- statistic. As we see, variables of ECON, DI, IRR and DUM are statistically significant at the level of 1%.

Table 3 Parameters Estimates from the Cross-section fixed panel data model

Variable	Model 1		Model 2	
	Cross-Section Fixed Effect		Cross-Section Fixed Effect with AR(1) Error Structure	
	Coefficient	t-test Prob.	Coefficient	t-test Prob.
INTERCEPT		0.9056		0.0158
HHI		0.1378		0.1950
FC		0.9024		0.9588
ECON		0.7939		0.0185
PS		0.4158		0.1944
DR		0.0000		0.0000
IRR		0.0000		0.0002
DUM		0.0000		0.0000
AR(1)				0.0017
Weighted R-squared	0.723061		0.787278	
Unweighted R-squared	0.537295		0.705395	
F-statistic	12.54687		14.20369	
Durbin-Watson stat	2.143853		1.843164	

Note: Cross-section fixed intercepts are omitted from the table. ***indicates statistically significance at 1% level.

As we can see in Table 4, the coefficient of HHI is not statistically significant which means that the degree of concentration has no significant relation with profit, therefore the SCP hypothesis is not supported in the life insurance market of China. We can explain this result that the highly concentration rate of life insurance market in China is not the consequence of competition, but the result of some political reasons and phenomenon left over from the past. Therefore, the highly centralized market structure does not lead to a high profit rate of enterprises.

The coefficient of FC is not statistically significant. Although Pope and Ma (2008) found that when the market is highly liberalized, the presence of foreign competitors significantly influence the domestic market, in this paper, the result show that the presence of foreign competitors has no remarkable impact on the life insurance market of China.

The coefficient of ECON is statistically significant and the coefficient is negative. The result is consistent with the analysis of the descriptive statistic, which shows that the markets with lower GDP have a better performance of making profit. The reason for explaining this result may be that the markets with lower GDP have a bigger space for developing and a relative faster speed of development in recently years, therefore, they show a better performance of making profit compared to those relatively high developed markets such as Beijing, Shanghai and Guangzhou which have constructed for many more years. What's more, the more developed markets may undertake much more risk either domestic or international, which leads to the bigger fluctuation in the performance of making profit. Thus this may be a clue for the insurance companies who want to open new business in some region of China, and it also confirms that the west and north of China have a great market potential for insurance.

The coefficient of PS is not statistically significant. The variable of PS measures the proportion of population over 65 years old and we thought the population structure might affect the demand for life insurance products, and then affect the performance of making profit. However, the results show that no significant relation exists between population structure and performance.

The coefficient of DR is statistically significant and it represents one-year deposit interest rate of central bank. As we know, the insurance fund is usually divided into two main parts: deposit and investment, and investment incomes account for a large part of profit for life insurance companies in China. The coefficient of DR is negative which conforms to principles of economics. The more insurance fund life insurance companies deposit into banks, the less they could invest in stock market. Also the interest rate of bank has a positive relation with the amount of deposit. Therefore, it is reasonable that the one-year deposit interest rate of central bank has a negative relation with the performance of making profit for life insurance companies. The coefficient of IRR is statistically significant and the coefficient is positive. It represents the average price earnings ratios of Shanghai Composite Index. It has

a positive influence on profit and the result is quite consistent with the reality that the stock market is a main channel for long-term life insurance fund to invest. The higher the return rate is, the better the performance of making profit.

The coefficient of Dummy variable for policy reform is statistically significant and the coefficient is positive. The result means that the New Accounting Standards do have some positive effect on domestic insurance market. Therefore, it is better for the Regulatory Administration to establish normative standards in order to regulate the industry as well as improve performance of making profit for enterprises.

In conclusion, the result of regression shows that the SCP hypothesis is not supported in the life insurance market of China. As it is verified in other scholars' articles, for example, Chen (2007) and Wang (2007) proved in their thesis that the SCP hypothesis was not supported in the insurance market of China by test with data of insurance companies of top market share. The reasonable explanation may be that the highly centralized life insurance market in China is not the consequence of competition, but the result of some politic reasons and phenomenon left over from the past. And also the highly centralized market structure does not lead to a high profit rate of enterprises. Besides, according to the result of regression, several factors influence the profit: the logarithmic form of GDP, one-year deposit interest rate of central bank, the average price earnings ratios of Shanghai Composite Index as well as the dummy variable for policy reform. Since one-year deposit interest rate of central bank, the average price earnings ratios of Shanghai Composite Index as well as the dummy variable for policy reform are all time series data, according to the results of regression, the main factor that influence the performance of making profit for life insurance companies in different provinces is economy. However, contrary to our expectation, the degree of economic development has negative relation with performance of making profit. The result can be explained, but it may also be influenced by the time period we choose.

Conclusion

This paper tests the validity of the SCP hypothesis in the life insurance market of different provinces in China. We apply the model based on the SCP hypothesis and employ a panel data that includes data of 30 provinces and municipalities over the time period of 2005 to 2011 to analysis the factors that influence performance of making profit for life insurance companies. The results reveal that the SCP hypothesis is not supported in life insurance market of China. The life insurance market in China is highly centralized, while it is not the consequence of competition. The performance of making profit for life insurance companies also has an obvious regional character and they are significant influenced by several factors: the logarithmic form of GDP, one-year deposit interest rate of central bank, the average price earnings ratios of Shanghai Composite Index as well as the dummy variable

for policy reform.

It would be interesting to introduce the variable of efficiency to test whether the ES hypothesis is supported in China's market or not. However, it needs to choose deliberately to generate a proper proxy variable to measure the operate efficiency of the insurance companies. Our future work will continue to explore this topic and try to include the efficiency variable in the model. Hopefully the result of this paper may have the inspiration for subsequent studies and ideas for both regulators and operators of enterprises.

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