Analysis of the Factors Affecting the Development of Commercial Health Insurance in China

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Keywords: commercial health insurance; regression analysis; panel data

Abstract: This article analyzes the factors affecting the supply and demand of commercial health insurance, with an empirical research on the factors influencing the development of Chinese commercial health insurance, and uses EVIEWS software to perform a regression analysis on health insurance related data from 2000 to 2014. Increase in urban per capita disposable income: The increased depth of commercial health insurance and the increasing number of people covered by urban basic medical insurance can boost commercial health insurance premiums; while the increase in per capita health costs is negatively related to the development; annual GDP, education expenditure per capita, government expenditure in health expenditure and commercial health insurance.

1. Introduction

Since the 1980s, commercial health insurance has begun to rise. Until the end of the 20th century, with the reform of social health insurance, commercial health insurance has a broader development space. In 2014, the General Office of the State Council issued a proposal on accelerating the development of commercial health insurance. In China, it has ushered in a historic development opportunity. How to seize this favorable opportunity, improve its level of development, and ushering in a new stage of commercial health insurance development in China is an important issue facing society and insurance companies. Subject: In view of this, it is necessary to analyze the factors that influence the development of commercial health insurance.

Zhu Minglai, Shang Ying (2011) summarized the empirical research on the demand for commercial health insurance in China, and attributed the factors affecting the demand for this insurance to health status, education level, income level and compulsory social insurance, etc. Liu Fangfang Wang Xiuhua (2010) Research shows that the reason for promoting the development of commercial health insurance is the increasing in per capita disposable income of Chinese urban residents and the strengthening of insurance awareness. Wang Wenjing, Peng Rong, Wang Tong (2015) Panel data of provinces and cities, build a fixed effect model, and analyze factors Affecting the commercial health insurance needs. This shows that the demand is on the rise, but there are significant regional differences. The proportion of basic medical insurance participation 、 the balance of per capita deposits and education expenditure per capita have a good impact on premium income, and the per capita hospitalization expenses on commercial health insurance premiums. Income has a negative effect。

At present, most of the literature in China uses theoretical and quantitative methods for analysis from different perspectives, but there is no systematic summary of the range of influencing factors to be studied, which is basically based on experience and historical literature. This article looks at the supply and demand in the commercial health insurance market. Starting from the relationship, analyze the influencing factors, and then study the relevance of affecting commercial health insurance.

2. Empirical Analysis

2.1. Analysis of supply factors

Currently, companies operating commercial health insurance can be divided into three categories in terms of form: first, the life insurance company adopts the form of additional life insurance; second, the life insurance company division, each life insurance company has set up a health insurance department, and formed professional talents Team; Third, property and liability insurance companies, while providing property and liability insurance, also provide health insurance services.

First, the product is the key to competition. Second, health insurance risks involve complex factors such as incidence of illness and medical costs. The requirements for professional technology are higher.

2.2. Analysis of demand factors.

The development of commercial health insurance is inseparable from the increase in demand. In the short term, residents 'consumption propensity is roughly a quantitative one. The most decisive factor in demand is disposable income. Residents' insurance awareness, including risk awareness. Education level. Many factors, such as cultural traditions and religious beliefs, affect the development of commercial health insurance. The social medical level mentioned here mainly refers to two aspects: medical expenses and the coverage of social medical insurance. The stronger the people's demand for commercial health insurance, if the coverage of social medical insurance is wide enough and the degree of protection is high, it will also guide the design of health insurance by insurance companies. Demographic factors include the increasing trend of population aging, changes in the population distribution, and changes in the structure of the income population.These factors will lead to diversification of residents' health insurance. Personalized demand. The aging of the social population will lead to demand for service health insurance. The increase will expand the real needs and service areas of health insurance. The change in the distribution of social populations will lead to an increase in the demand for protection insurance. The middle- and high-income groups will pay more attention to their health conditions, which will also bring new demand for health insurance.

2.3. Variable selection

To stabilize the data and reduce the size of the data, this paper has performed logarithmic processing on all data, that is, the following variables are the results after logarithmic processing.

The dependent variable Y :is premium from commercial health insurance. based on the previous supply and demand analysis and considering the availability of data, this chapter selects 7 explanatory variables that can be quantitatively analyzed.

X_1 :Commercial health insurance insurance depth, used to represent residents' insurance awareness

X_2 :The total annual GDP is used to indicate the level of national economic development and the consumption environment of insurance.

X_3 :Per capita disposable income of urban residents.Using urban per capita income to indicate the level of income of buyers.

X_4 :Education expenditure per capita is used to indicate people's education level.

X_5 :People covered by urban basic medical insurance can represent the coverage of social medical insurance.

X_6 :Health costs per capita, which represent the risks and costs of disease。

X_7 :Share of government expenditure in health care is used to indicate the level of social medical insurance development in China。

2.4. Data source

The time intervals of the above variables are from 2000 to 2014. The data used in this chapter are from the China Statistical Yearbook of relevant years.

2.5. Empirical analysis

In this paper, Eviews 5.1 software is used to estimate and regression analysis the relevant variables using the least squares estimation method. Check whether there is a co-integration relationship between them, and then test and modify the model, including multicollinearity, heteroscedasticity and autocorrelation, and finally obtain the optimal model.

First make the data a second order difference to make it a stationary sequence.

In order to analyze whether there is a co-integration relationship between the annual premium income Y of the commercial health insurance and the respective variables, an OLS regression method is first for predictive regression models.

Table 1: OLS regression

Variable	Coefficient	Std.Error	t-Statistic	Prob.
C	4.797593	13.46902	0.356195	0.7322
X2	0.086721	0.012329	7.033797	0.7322
X3	-2.127346	1.152340	0.647557	0.5379
X4	2.831595	2.215016	1.278363	0.2419
X5	-0.92769	0.290466	-0.319378	0.7588
X6	-1.192009	0.940192	-1.267836	0.2454
X7	0.022143	0.027362	0.809254	0.4450

R-squared	0.996069	Mean dependent var	5.917484
S-Adjusted R-squared	0.992138	S.D. dependent var	0.963866
S.E. of regression	0.085467	Akaike info criterion	-1.776857
Sum squared resid	0.051132	Schwarz criterion	-1.399230
Log likelihood	21.32642	F-statistic	253.3729
Durbin-Watson stat	2.797251	Prob(F-statistic)	0.000000

In order to test the stationarity of the regression residuals, an ADF test with no intercept term and no trend term is performed on the residual sequence. The results are shown in Figure 2.

Null Hypothesis: ET has a unit root

Exogenous: None

Lag Length: 0(Automatic based on SIC, MAXLAG=3)

Table 2**:** ADF test

	t-Statistic	Prob.*
Augmented Dickey-Fuller test ststistic	-6.152768	0.0000
Test critical values: 1%level	-2.740613	
5%level	-1.968430	
10%level	-.1.604392	

*Mackinnon(1996)one-sided p-values

The residual sequence does not have a unit root and is a stationary sequence, but the t and P values are not ideal. X_3 The sign of the coefficient is not in line with the actual. Therefore, the model is tested for multicollinearity, heteroscedasticity and autocorrelation tests, and the results confirm the existence of severe multicollinearity. Stepwise regression is used to test and solve the problem of multicollinearity. Y fore $X_1, X_2, X_3, X_4, X_5, X_6, X_7$ Regression results. Which added X_3 Equation of $\overline{R^2}$ The largest as X_3 Basic, successively add other variables and gradually regression, the results are shown in Table 1:

Table 3: Stepwise regression result

	X1	X3	X4	X5	X6	R2 correction
X1 X3 X5 X4	0.0787 (0.0000)	-2.1798 (0.4423)	2.5290 (0.2910)	0.0264 (0.9263)		0.9911
X1 X3 X5 X6	0.0693 (0.0000)	2.3308 (0.0397)		0.2561 (0.0923)	-1.0204 (0.1760)	0.9917

Using the white test to determine whether there is heteroscedasticity in the modified model.
Test Equation:
Dependent Variable :RESID^2
Method:Least Squares
Date:12/26/15 Time:19:10
Sample:1 15
Included observations:15

Table 4: White Heteroskedasticity Tset

F-statistic	14.46017	Probability	0.066449
Obi*R-squared	14.82908	Probability	0.250917

Variable	Coefficient	Std.Error	t-Statistic	Prob.
C	-8.242806	12.23715	-0.673589	0.5700
X1	0.188021	0.133018	1.413504	0.2931
X1^2	0.000523	0.000173	3.029172	0.0939
X1^3	-0.058719	0.34652	-1.694516	0.2323
X1^5	0.016734	0.007616	2.197265	0.1591
X1^6	0.028500	0.023911	1.191884	0.3556
X3	2.716588	4.602375	0.590258	0.6148
X3^2	-0.376629	0.443342	-0.849523	0.4851
X3*X5	0.519969	0.443825	1.171562	0.3621
X3*X6	0.034510	0.240244	0.143646	0.8989
X5	-0.775120	1.527061	-0.507589	0.6622
X5^2	-0.234913	0.148484	-1.582077	0.2544
X6	-0.591502	2.198981	-0.268989	0.8131

R-squared	0.988605	Mean dependent var	0.005152
Adjusted R-squared	0.920238	S.D. dependent var	0.010123
S.E. of regression	0.002859	Akaike info criterion	-9.158335
Sum squared resid	1.63E-05	Schwarz criterion	-8.544692
Log likelihood	81.68752	F-statistic	14.46017
Durbin-Watson stat	2.477060	Prob(F-statistic)	0.066449

Can be seen from the figure $nR^2 = 0.988605 \times 15 = 14.8291$ Known by white test, in $\alpha = 0.05$ Lower threshold $\chi^2_{0.05}(12) = 21.0261$ Comparing χ^2 Statistics and critical values, because $nR^2 = 14.8291 < \chi^2_{0.05}(12) = 21.0261$ All accepted null hypotheses indicate that the model does not have heteroscedasticity

From the above revised regression model, we know $DW = 1.997$ Check the DW statistics table. Knowing that, $d_L = 0.685, d_U = 1.977$ In the model, $d_U < DW < 4 - d_U$ Obviously there is no autocorrelation in the model.

2.6. Model conclusions

The results show that the increase in urban per capita disposable income: the depth of commercial health insurance and the number of urban basic medical insurance are positively related to commercial health insurance premiums; per capita medical costs are negatively related to it; the annual GDP, per capita education outlay, the ratio of government outlay in health expenditure and

the development of commercial health insurance are less obvious.

3. Discussion and Consideration

As urban basic medical insurance increases, so does the commercial health insurance premium. Social medical insurance has not only played a role in promoting commercial health insurance. On the one hand, the government's subsidy advantage in social security contributions has squeezed business the development. on the other hand, commercial health insurance is also strengthening cooperation with social medical insurance, thereby strengthening its own influence, expanding customer resources, and developing health insurance products that complement social medical insurance. In addition, with the current improvement of China's social security system, the nature of financial subsidies for social insurance has made more people choose social insurance. However, we should also see the limited nature of social insurance compensation. Commercial health insurance should grasp the characteristics of social insurance. Pay attention to the potential health insurance needs of middle- and high-income classes, design health insurance products that meeting the needs of the upper middle income class, and promote their own development.

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