Analysis of Modern Economic Management Based on Home Commercial Insurance Purchase Data

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Abstract. Nowadays, in the context of technology empowerment, the improvement of office efficiency in all walks of life provides a source of power for the rapid development of the economy. In order to protect its own rights and interests and maximize economic benefits, the commercial insurance industry has developed well and steadily in recent years. Taking commercial insurance as the starting point, this paper discusses the modern economic management analysis of commercial insurance. Based on the CFPS survey data and with the help of the ridge regression regression model, this paper investigates the factors that affect households' willingness to purchase commercial insurance from the perspective of household expenditure. The study found that: (1) In the annual expenditure of a family, different types of expenditures have a certain correlation with the expenditure on purchasing commercial insurance, among which the food expenditure has the highest correlation with the commercial insurance expenditure. (2) There is a certain correlation between the consumption of beauty, tourism, education and training and the purchase of commercial insurance. (3) The degree of correlation between medical expenditure and the purchase of commercial insurance is not significant. Based on the research results and other perspectives, this paper puts forward the following suggestions for the development of commercial insurance: use big data to achieve "private customization"; refer to foreign experience, increase innovation; face up to the development gap, and rationally control the country.

Keywords: Commercial Insurance · Economic Management · Household Expenditure · Correlation Analysis

1 Introduction

Commercial insurance refers to the form of insurance operated by professional insurance companies for the purpose of profit-making through the conclusion of insurance contracts.

With the rapid economic growth and the improvement of people's overall living standards, my country's commercial insurance market has made great progress. Premium income has grown from 460.0 million yuan since the insurance business resumed in 1980

to 4,264.5 million yuan in 2019. However, compared with the mature insurance market in foreign countries, my country's commercial insurance market still has huge development potential. Among them, the purchase of family commercial insurance has a significant correlation with financial knowledge and income level [1]. In order to study the factors that affect commercial insurance participation and provide better recommendations for insurance companies and the government, this paper conducts a correlation study on various factors of "household spending" through a ridge regression model.

2   Hypothesis and Theoretical Analysis

Most of existing studies are based on the weighted results of multiple variables and carry out model analysis on them. The research fields focus on cultural, economic and social aspects. This paper mainly focuses on the level of household expenditure, regards the purchase of commercial insurance as an expenditure, and studies the correlation of household expenditure on commercial insurance in other aspects. In this regard, this paper makes the following two assumptions.

2.1   Hypothesis

It is assumed that in addition to household spending, other factors will not have an impact on the purchase intention of commercial insurance.

Suppose a family's expenditure can be divided into "basic variables" and "advanced variables" according to the purpose, while the purchase of commercial insurance belongs to "advanced variables". The hypothesis is based on Maslow's theory of needs.

2.2   Theoretical Analysis

The research method of this paper is relatively simple, mainly using regression equation to study the dependent variable under the influence of multiple independent variables. In theory, linear regression can be used for the treatment of continuous dependent variables, but after calculation, the multicollinearity between some important variables is relatively large, so the ridge regression model is selected. The partial estimation regression method is essentially an improved least squares estimation method, which is a more realistic and reliable regression method to obtain regression coefficients at the expense of losing some information and reducing accuracy.

3   Samples, Variables, and Models

3.1   Samples and Data Sources

The data used in this article are from the CFPS 2018 survey data. CFPS is a national household survey conducted by the China Social Science Survey Center of Peking University. The CFPS sample covers more than 160 county-level units and more than 640 village-level units in 25 provinces/cities/autonomous regions across the country, with a total of more than 16,000 households.

Table 1. Classification and meaning of variables

variable type	variable name	Variable meaning
key variable	fp514	In the past year, the commercial insurance expenditure of the observed households
Basic control variable	food	food spending
	fp407	rent expenses
	eec	Cultural, educational and entertainment expenses
	other	other consumer spending
	fp511	medical expenses
Advanced control variable	fp509	Expenditures on durable furniture for households in the past year
	fp510	Education and training expenditure of the observed households in the past year
	fp513	Beauty expenditure of the observed households in the past year
	fp517	Social contribution expenditure of the observed households in the past year
	fp503	Tourism expenditure of the observed households in the past year

3.2 Variable Construction

For the convenience of research, according to Hypothesis 1 and Hypothesis 2, the 10 control variables are divided into "basic variables" and "advanced variables". It can be seen that the number of samples producing the amount of the "advanced variable" is smaller than that of the "basic variable" (Table 1).

3.3 Econometric Model

It has been explained in the theoretical research section that the correlation results between variables can also be obtained through the basic regression model, but when the robustness test is carried out, the measured variance inflation factor is relatively large (Table 2), and the three vifs are all greater than 10. It shows that the model does not deal with the multicollinearity problem well. Therefore, this paper chooses the ridge regression regression model.

4 Empirical Results and Analysis

4.1 Regression Results

Descriptive (Table 2) analysis of variables and ridge regression results (Table 3) were obtained directly by using the correlation regression measurement software stata 16.

Table 2. Descriptive analysis of the main variables

variable name	number of observations	Mean	minimum	maximum value
fp514	14,218	2084.855	−8	100000
food	14,109	19968.71	0	480000
fp407	14,218	123.3712	−8	15000
eec	14,017	6634.546	0	306000
other	14,081	1292.06	0	501000
fp511	14,218	5674.453	−8	380000
fp509	14,218	1541.271	−8	250000
fp510	14,218	4693.889	−8	300000
fp513	14,218	735.1203	−8	60000
fp517	14,218	119.227	−8	50000
fp503	14,218	1595.933	−8	200000

Table 3. Ridge regression results

fp514	Coef.	z	P > z	sig
food	.0526107	20.47	0.000	***
fp407	−.0560321	1.11	0.266	
eec	.3264519	7.29	0.000	***
other	.0078976	0.45	0.654	
fp511	.0004468	−0.52	0.601	
fp509	.029623	2.94	0.003	***
fp510	−.2714818	−6.34	0.000	***
fp513	.4617723	11.91	0.000	***
fp517	.5127522	3.6	0.000	***
fp503	−.237447	−6.26	0.000	***

4.2 Result Analysis

In the results, whether it is significant mainly depends on column P. If the value of P is less than 0.05, it means that the self-scalar has a significant effect on the dependent variable. If the value of P is greater than 0.05, it means that there is no significant effect. Coef means that every time x_i increases by one unit, the value of the probability of occurrence and probability of non-occurrence of y increases from the description of the above variables and the regression results.

4.2.1 P-Value

Coef means that every time xi increases by one unit, the value of the probability of occurrence and probability of non-occurrence of y increases from the description of the above variables and the regression results. It can be seen that when the confidence level is 95%, the variables fp407 (rent expenditure), other (other consumption) Expenditure), the P value of fp511 (medical expenditure) is greater than 0.05, indicating that these three variables have little correlation with key variables, while the P values of the remaining variables are all lower than 0, indicating a certain degree of correlation with key variables.

4.2.2 Z-Value

By comparing the z values, the strength of the association can be seen, the higher the absolute value of z, the higher the strength of the association. It can be seen from the results that the degree of correlation with "family commercial insurance expenditure" is from high to low: food (food expenditure), fp513 (beauty expenditure of the observed family in the past year), eec (cultural, educational and entertainment expenditure), fp510 (In the past year, the education and training expenditures of the observed households), fp503 (in the past year, the observed households' tourism expenditures), fp517 (in the past year, the observed households' social donation expenditures), fp509 (in the past year, the observed expenditure on durable goods for furniture of the target household). Among them, food expenditure has the highest degree of correlation.

5   Conclusion and Suggestion

Before conducting the research, this paper sets up two hypotheses. Under the condition that the hypotheses hold, the following conclusions can be drawn from the above data.

5.1   Conclusion

In the annual expenditure of a family, different types of expenditures have a certain correlation with the expenditure on purchasing commercial insurance, among which the food expenditure has the highest correlation with the commercial insurance expenditure. The main body of commercial insurance is an insurance company, whose operation is mainly for profit, and it is necessary to obtain the maximum profit to ensure that the insured enjoys the greatest degree of economic security. Because of its profitability, it can be considered a product. Commercial insurance is different from social insurance with the characteristics of universality, security, mutual assistance, compulsory, and welfare. The purchase of commercial insurance requires family members to consider income, various expenditures, and the cost-effectiveness of the type of insurance. Insurance is to avoid risks, but if even basic life is unsustainable, families will hardly consider purchasing commercial insurance. It is not difficult to conclude that regardless of other factors, if a family's food expenditure accounts for a relatively high proportion of all expenditures, its living conditions are relatively low, the expenditure on purchasing commercial insurance is also relatively small, and the willingness to purchase insurance and other financial products is also relatively high. Low; if a family's food expenditure

accounts for a relatively low proportion of all expenditures, its living conditions are relatively good, the expenditure on purchasing commercial insurance is relatively large, and the willingness to purchase insurance and financial products is also relatively high.

5.2 Related Recommendations

Under the increasingly intensive policy incentives and guidance in recent years, commercial insurance consumption is showing a continuous improvement in the acceptance of the masses, younger generation, expansion from coastal developed first-tier cities to inland second-tier cities, the gradual release of the commercial insurance potential of middle and high-income groups, women's Five major trends including accelerated increase in insurance participation rate.

5.2.1 Use Big Data to Realize "Private Customization"

By making reasonable use of big data such as Taobao purchase records and billing types, insurance companies can analyze different consumers. On the basis of not violating laws and regulations, grasp the consumer psychology and consumer behavior of consumers, so as to promote products. New-age insurance products need to keep pace with the times. Data shows that commercial insurance consumption is showing a younger trend, and the post-90s generation has gradually become the main force in purchasing commercial insurance. According to statistics, nearly 30% of the post-90s have purchased endowment insurance for themselves, and have begun to lay the foundation for the endowment plan after 30 years. Commercial insurance for young people, in addition to "risk avoidance", commercial insurance has gradually become a rational cognition of life planning and wealth allocation. Therefore, insurance companies need to carry out a certain "private push". While paying attention to high-end consumers, we should also pay attention to expanding the consumer market and looking for sinking customers. The government needs to improve the income distribution system and popularize financial knowledge to increase the enthusiasm of residents to participate in commercial endowment insurance [2].

5.2.2 Referring to Foreign Experience, Increase Innovation

Learn from foreign experience and increase innovation. The foreign insurance market is relatively mature, and some innovative insurance types continue to emerge. If insurance companies want to expand their business sectors, they can innovate in different areas of insurance. Whether it is personal insurance, life insurance, property insurance, you can refer to foreign experience. For example, the relatively developed "enterprise insurance" in foreign countries provides protection for enterprises. It functions similarly to auto insurance, life insurance, and health insurance. Designed to prevent emergencies such as natural disasters, fires, accidents, deaths, etc., that may have economic consequences for the business. But innovation is not the introduction of new types of insurance, but should also focus on insurance management innovation companies, insurance product portfolio innovation and other innovations. With reference to foreign experience, you can pay attention to some domestic commercial insurance companies that have performed

well in different fields, such as Hartford, whose business characteristics are the combination of general liability insurance, corporate property insurance and corporate property insurance through BOP. Another example is National Insurance, whose business features the flexibility to nest other insurance products within general liability coverage. Domestic insurance companies should also strive to improve their own business level, expand the scope of underwriting, broaden the types and scale of business underwriting, and properly manage the difficulty in obtaining insurance and claiming compensation [3].

5.2.3 Facing the Development Gap, the State Should Manage and Control it Reasonably

China's commercial insurance market is the second largest in the world, and can be regarded as a ballast for national economic and social stability. Among them, the compound annual growth rate of commercial health insurance in the past ten years has exceeded 28%, and it will exceed 700 billion in 2020. Under the national strategic framework of "Healthy China", the insurance industry actively participates in health management, becoming a new engine and growth point for the industry to take off again. The data shows that the current density of my country's third pillar commercial insurance is only 339.74 yuan per person. In the United States, the third-pillar individual retirement account (IRA) has an endowment insurance density as high as $1,258.7 per person. In 2020, the depth of pension insurance in my country is only 0.48%. This compares to 2.3% commercial insurance penetration for third-pillar IRAs in the United States. In addition to promulgating relevant laws and regulations, the state and relevant departments should focus on promoting system reform and rationally controlling commercial insurance in different aspects. Participating in the management of commercial insurance can effectively make up for the lack of capacity of the current social security agencies, meet the needs of professional services, personnel and capital allocation, provide high-quality services for insured persons, realize resource sharing, ability promotion and risk management and control, and ensure medical insurance. The fund operates stably. The synergistic effect between the two is greater than the substitution effect. A government-led and market-operated handling service system should be gradually formed. Assist social security agencies in cost control. In areas where social security and commercial insurance agencies cooperate more fully, the effect of cost control is often better. At the same time, it should actively promote investment in medical service institutions to build their own integrated medical service system.

6 Summarize

To sum up, as a financial product, commercial insurance's willingness to consume is affected by different factors [4]. Insurance companies can formulate relevant sales strategies through relevant research results. In order to make the entire insurance industry develop steadily, insurance companies and relevant state departments need to work together. The research in this paper has some deficiencies, only the correlation is discussed, and there is no further in-depth research. For example, assuming that spending

on beauty, travel, education and training, and commercial insurance are considered different types of goods, is there a positive relationship between spending on beauty, travel, education and training and purchasing commercial insurance? Or is there a positive correlation at a certain income level and a negative correlation below that income level? Relevant conclusions and assumptions are also subjective and are for reference only. I hope this article can provide some help to insurance companies, and I also hope that my country's insurance industry will develop in a more perfect, diversified and efficient direction.

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