Analysis on Factors Affecting Life Insurance Demand in China

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ABSTRACT

Since the reform and opening-up, China's economy has enjoyed a good momentum of development and comprehensive national strength has been increased day by day. With the economic development and the improvement of people's consumption level, the demand market for life insurance products has also developed rapidly. However, compared with the overall economic development speed of China, China's life insurance demand market still needs to be further explored. Therefore, it is of great practical significance to study and analyze the factors influencing the demand for life insurance. This article adopts the method of combining theoretical analysis and empirical model analysis to conduct research, systematically introduces and summarizes the research results in China, and meanwhile introduces some life insurance demand theories, such as the motivation and development prospect of life insurance demand, so as to provide theoretical support for the analysis below. Then using linear regression analysis to demonstrate the influencing factors of China's life insurance demand in detail. The specific data is from 2011 to 2019, and the analysis tool is mainly SPSS. The article identifies factors that lead to variations in life insurance demand. Important factors are found to be the price of life insurance, national income, inflation, government spending on social security [7], also, epidemic situation should be taken into account.

Keywords: *life insurance, insurance demand, regression analysis*

1. INTRODUCTION

As the guarantee of people's life and property, life insurance products are favored by people. According to Swiss reinsurance company Sigma magazine, the per capita life insurance premium in industrialized countries reached 1425 dollars in 2009, while it was only 49 dollars in emerging countries. Although China's life insurance industry has resumed development since 1982, and the total premium income of life insurance has increased from 1.59 million yuan to 699.14 billion yuan in 2008, China's per capita life insurance premium was less than 600 yuan until 2008. So China's life insurance industry is still in its infancy. It is of far-reaching significance to analyze and study the factors that influence China's life insurance demand market. On the one hand, the development of China's life insurance industry is not mature. In order to promote the long-term development of China's life insurance industry, it is necessary to find out what factors are playing a role and what kind of role they are playing. On the other hand, foreign scholars have been studying this field for decades, while China's research is

still in the stage of exploring and learning. Therefore, finding out these factors will provide positive guidance for the development of China's life insurance industry, and hope to be conductive to the effective formulation and implementation of life insurance policies. This article adopts the method of combining theoretical analysis and empirical model analysis to conduct research, systematically introduces and summarizes the research results in China, and meanwhile introduces some life insurance demand theories, so as to provide theoretical support for the analysis below. Then using linear regression analysis to demonstrate the influencing factors of China's life insurance demand in detail.

2. MEANING AND DEMAND MOTIVE OF LIFE INSURANCE

Life insurance is an insurance contract signed between the policyholder and the insurer, with the life and body of the insured as the subject matter of insurance.[1] Within the time specified in the insurance contract, if the insured has an insured accident as stipulated in the insurance contract, such as death,

disability, disease, etc., the insurer shall pay the insured amount to the insurance beneficiary.

The motive of life insurance demand emphasizes the life cycle savings plan and the bequest motive. Life cycle savings plan means that people save at work so that they can maintain original consumption level after retirement. The bequest motive is that people accumulate wealth at work in order to provide a legacy for future generations. From the perspective of life cycle savings plan, life insurance is purchased at the early stage of life cycle to ensure stable cash flow in the future. From the perspective of bequest motive, the purchase of life insurance is a transaction in which the buyer, as the head of a family, takes the interests of his dependants into account.

3. DEVELOPMENT PROSPECT OF LIFE INSURANCE DEMAND

Since the reform and opening-up, China's economy has achieved unprecedented development, with a substantial increase in GDP and a full development in the insurance industry. The premium income of life insurance increased from 869.6 billion yuan in 2011 to 2398.2 billion yuan in 2020, with a compound annual growth rate of 11.93%. (Source: China Banking and Insurance Regulatory Commission). However, there is still a big gap between China's life insurance industry and the economic development. Looking forward to the future, the development prospect of life insurance industry is attractive. The main driving forces include: huge population size, fast aging trend and high saving rate; sustained economic development and increasing residents' income; policy and regulation support; the strengthened consciousness of risk guarantee; the collapse of the lifelong welfare system; the improvement of investment environment. Specifically, for example, China will inevitably face the acceleration of social population ageing, and the main contradiction brought by ageing is that the supply of pension security is not adequate to meet the demand, therefore, it is urgent to introduce commercial endowment insurance to reverse the increasingly severe endowment situation. So it can be seen that China's life insurance market has huge development space and potential.

Below is the table of life insurance premium income.

Table 1. Statistical table of life insurance premium income 2011-2019

(Source: China Statistical Yearbook)

Year	2011	2012	2013	2014	2015
Life insurance premium income (hundred million yuan)	9560.2	9958.1	10741.1	12690.4	15859.3
Year	2016	2017	2018	2019	
Life insurance premium income (hundred million yuan)	21638.3	26036.3	26256.9	29628.4	

4. BASIC FACTORS AFFECTING LIFE INSURANCE DEMAND

4.1. Life insurance price

Assuming other conditions remain unchanged, the demand for life insurance is negatively correlated with its price. The price of life insurance rises, then the demand for life insurance falls. When life insurance premium income is used as a measure of life insurance demand, the opposite change of life insurance demand and life insurance price can be described by the price elasticity of life insurance demand. The price elasticity of life insurance demand refers to the ratio of the percentage change of life insurance demand (life insurance premium income) to the percentage change of life insurance price.

According to its value, the price elasticity of life insurance demand includes price inelasticity and price elasticity, price perfectly inelasticity and price perfectly elasticity, and price unit elasticity. Whether life insurance demand is price elasticity or price inelasticity depends on whether the absolute value of price elasticity of life insurance demand is between 0 and 1 or greater than 1. Different life insurance has different price elasticity, and the same life insurance may be different under different conditions. Furthermore, whether life insurance is a necessity or a luxury makes price elasticity of life insurance demand different. As people regard life insurance as a necessity or a luxury, it is closed related to the national economic development and residents' income. Therefore, the impact of life insurance price on demand should be comprehensively analyzed in combination with economic development, income level and inflation.

4.2. Macroeconomic variables

4.2.1. Economic Development Level (GDP).

Since GDP is an important economic indicator of a country, it can usually be used as an indicator variable of a country's production capacity. Therefore, the study of the relationship between life insurance demand and national economic development is generally converted to the discussion of the relationship between life insurance demand and GDP.

Mark J. Browne's and Kihong Kim's (1993) research shows that there is a positive correlation between life insurance demand and GDP.[2] In measuring the impact of economic development level on life insurance demand, GDP should be selected to reveal the impact of economic development level on the total premium income of China's life insurance industry, as shown in the table below.

Table 2. Statistical table of GDP 2011-2019 (Source: China Statistical Yearbook)

Year	2011	2012	2013	2014	2015
GDP (hundred million yuan)	487940.2	538580.0	592963.2	643563.1	688858.2
Year	2016	2017	2018	2019	
GDP (hundred million yuan)	746395.1	832035.9	919281.1	990865.1	

By referring to 3.1 and 4.1, then using SPSS Statistics [6] to do regression analysis between life insurance premium income and GDP, the following regression equation is obtained.

life insurance premium income= 14134.438 + 0.045 GDP

$R^2 = 0.949$ F = 129.737

And passed the significance test at 1% significance level.

The regression equation shows that there is a highly positive correlation between the premium income of China's life insurance industry and the level of economic development, and the improvement of the level of economic development drives the development of life insurance industry. This is also in line with the conclusion that the level of economic development has a positive impact on life insurance demand revealed by

Mark J. Browne's and Kihong Kim's (1993) research results.[2]

4.2.2. Residents' Income Level (GDP per capita).

Levin's (1995) research shows that there is a positive correlation between life insurance demand and GDP per capita.[4]

In measuring the impact of residents' income level on life insurance demand, to avoid the incomparable defect of absolute quantity index, relative quantity index such as GDP per capita should be selected to reveal the impact of residents' income level on the total premium income of China's life insurance industry, as shown in the table below

Table 3. Statistical table of GDP per capita 2011- 2019

(Source: China Statistical Yearbook)

Year	2011	2012	2013	2014	2015
GDP per capita (yuan)	36302	39874	43684	47173	50237
Year	2016	2017	2018	2019	
GDP per capita (yuan)	54139	60014	66006	70892	

By referring to 3.1 and 4.2, then using SPSS Statistics [6] to do regression analysis between life insurance premium income and GDP per capita, the following regression equation is obtained.

life insurance premium income= 16025.425 + 0.655 GDP per capita

$R^2 = 0.947$ F = 126.052

And passed the significance test at 1% significance level.

The regression equation shows that there is a highly positive correlation* between the premium income of

China's life insurance industry and the income level of the residents. The improvement of the income level of the residents drives the development of the life insurance industry, which means that the residents form a strong ability to pay through the sustained high-speed economic growth, and then induces the real demand for life insurance security and financial investment, Finally, it forms a strong support for the development of China's life insurance industry. This is also in line with the conclusion that the level of residents' income has a positive impact on life insurance demand revealed by Levin's (1995) research results.[4]

4.2.3. Inflation Level (CPI).

The impact of inflation on life insurance demand is mainly manifested in three aspects: the impact on the price of life insurance products, the impact on the level of residents' income and the substitution impact through other indirect variables.

Firstly, life insurance premium and insured amount are paid in monetary form, and premium is paid before insured amount is compensated. Therefore, the impact of inflation on the premium is relatively small, but the impact on the insured amount is large. The premium paid by the policyholder in the absence of inflation is higher than that in the presence of inflation, and higher prices generally reduce demand for life insurance.

Secondly, when inflation occurs, real income growth is lower than nominal income growth, further, when inflation rate is higher than nominal income growth rate, real income growth rate becomes negative. A decline in consumers' real income, as described above, with a positive correlation between income and demand for life insurance, will lead to a decrease in demand for life insurance. Thirdly, because of the existence of the mechanism of comparative interest, people tend to choose the financial instrument with a higher return when they choose various financial assets. There is substitution effect among financial instruments: inflation causes the return rate of life insurance products to decrease, while the return rate of other financial products remains unchanged or increases, then substitution effect reduces life insurance demand. Therefore, inflation has a restraining effect on life insurance demand.

Mark J. Browne's and Kihong Kim's (1993) research and Minzhe Chen's (1996) research show that there is a negative correlation between life insurance demand and inflation level.[2]

In measuring the impact of inflation on the demand for life insurance, the most well-known indicator of inflation CPI can be used to reveal the impact of inflation on the total premium income of China's life insurance industry, as shown in the table below.

Table 4. Statistical table of CPI 2011-2019 (Source: China Statistical Yearbook)

Year	2011	2012	2013	2014	2015
CPI	105.4	102.6	102.6	102.0	101.4
Year	2016	2017	2018	2019	
CPI	102.0	101.6	102.1	102.9	

By referring to 3.1 and 4.3, then using SPSS Statistics [6] to do regression analysis between life insurance premium income and CPI, the following regression equation is obtained.

life insurance premium income= 279149.445 + (2547.123) CPI

$R^2 = 0.145$ F = 1.192

The regression equation shows that the premium income of China's life insurance industry is negatively correlated with the inflation level. This is also in line with the conclusion that the level of inflation has a negative impact on life insurance demand revealed by Mark J. Browne's and Kihong Kim's (1993) research results.[2]

4.3. Social and Institutional Factors

4.3.1. Traditional Culture.

Culture affects people's values, lifestyle and consumption habits, so culture affects people's attitudes

towards death and risk. In China, family members are closely related. Traditional culture emphasizes "filial piety first". The prevention of risks is often used for family self-protection. The younger generation supports the older generation. Such a traditional cultural concept often makes the formation of insurance consciousness take a long process.

4.3.2. Educational Level.

The education level refers to the length of education of the dependants in the family. In a country, the longer people have been educated, the greater the demand for life insurance. On the other hand, the improvement of the overall education level of a country's residents may lead the country to want to reduce the probability of risk occurrence, so as to pay more attention to the necessity of life insurance.

Truett, Dale B's and Truett, Lila J's (1990) research shows that there is a positive correlation between life insurance demand and educational level.[5]

4.3.3. Social Security.

There is a positive correlation between social security and commercial life insurance demand, then the increase of national expenditure on social security will lead to the increase of commercial life insurance demand. This is because if the country's expenditure on social security increases, it means that the country's economic strength has developed to a certain extent, and the fiscal revenue has increased, it can provide financial expenditure for the government to increase the expenditure on social security. In addition to the basic services provided by social security, with the increase of people's income, life insurance products are needed to meet the higher security needs.

4.4. Demographic Variables

The impact of demographic variables on the demand for life insurance is mainly reflected in the dependency ratio, average remaining life, family composition and so on. Dependency ratio measures the impact of family economic burden on life insurance demand. To a certain extent, it can also represent the impact of average remaining life and family composition on life insurance demand. Theoretically, the main purpose of life insurance is to protect the dependants from financial difficulties when the main income source of the family leaves unexpectedly. This is in line with the research results of Campbell (1980).[3] Therefore, when a family has more dependants, the demand for life insurance is stronger.

5. LIFE INSURANCE DEMAND UNDER EPIDEMIC

5.1. Life insurance for covid-19

"Coronavirus disease 2019" (covid-19) began to spread all over the world last year. It was caught off guard and had a strong momentum. First, a specific life insurance product for covid-19 is introduced. It is "Taikang Love Insurance" launched by China Taikang life-insurance company. Its liability is divided into two categories: accidental death insurance and accidental disability insurance. The expansion responsibilities are also divided into two categories: one is the death of the insured due to infection with covid-19. The other is the disability of the insured due to infection with covid-19. The insurance period is one year, the premium is 100 yuan per policy, and the basic insured amount is 200000 yuan per policy. This life insurance specifically states that the diagnosis or suspected infection of covid-19 before the policy comes into effect does not belong to the scope of expansion responsibilities.

5.2. Impact of epidemic situation on life insurance demand

Since COVID-19 came without any warning, some people temporarily bought "Taikang Love Insurance" out of fear of the epidemic. Then the author will explore the impact of the epidemic on the demand for life insurance, including the impact during the epidemic (short-term impact) and the impact after the epidemic was controlled (long-term impact).

It is inevitable that most industries have been hit by COVID-19, and insurance industry is no exception. Life insurance products are usually in addition to the basic living needs of customers, and demand rigidity is relatively low. Therefore, customers tend to buy life insurance products only under the circumstances of relatively well-off economic conditions, relatively sufficient purchase demand. In the process of covid-19 spreading, residents stay at home and pay more attention to the changes of covid-19 situation, the supply of basic living materials and personal safety and prevention. For some life insurance products with higher amount, the purchase demand is relatively reduced or delayed. Among them, small and medium sized enterprises may be more seriously affected, and the shortage of funds caused by the shutdown and production reduction of enterprises will directly tighten the insurance demand of this group at the present stage, especially the demand for wealth management products. In addition, the customer age structure of the existing life insurance products also has an impact on the product demand. During covid-19 period, most of the offline business is transferred to online business, and the acceptance of the older customer group is low, because the purchase demand of this group will also be weakened. The result is that life insurance demand is obviously weakened.

After the end of the epidemic, residents' awareness of life insurance has been improved unprecedentedly. Referring to "severe acute respiratory syndrome" (SARS) event in 2003, the epidemic began in December 2002 and spread during the Spring Festival period. By June 2003, the epidemic was under control, and life insurance premiums increased rapidly by 55% from the previous month. According to the data, in 2003, health insurance monthly premium income from February to June year-on-year growth rate is respectively 121.3%、36.7%、70.1%、309.3%、265.3%. (Source: China Insurance News)

According to the results of SARS, after the end of the epidemic, the residents' awareness of life insurance has been unprecedentedly improved, because the substantial growth of life insurance premium income means that the residents' demand for life insurance has increased significantly. The spread of the epidemic makes the public feel the threat of the disease to health and economic growth, and the residents' awareness of

life insurance is awakened. In addition, a number of insurance companies timely launch special emerging SARS insurance and related services to meet the public demand for insurance.

6. CONCLUSION

The sustainable development of economy, the increase of residents' income, the improvement of education level and the increase of the number of dependants in the family will strongly promote the development of life insurance industry. Among them, residents' income determines people's purchasing ability of life insurance products. Life insurance premium income is directly proportional to both GDP per capita and GDP. However, inflation will slow down the development of the life insurance industry. The sharp increase of inflation will devalue the future real income of the insurance policy and reduce people's expectation on life insurance benefits. Therefore, the demand for life insurance has the opposite trend with the level of inflation. In addition, the analysis shows that the epidemic will also affect the demand for life insurance. In the short term, the demand for life insurance of residents will decrease, but in the long term, it will increase with the enhancement of residents' awareness of life insurance. The long-term and short-term effects of the epidemic on demand for life insurance are not the same. Since the epidemic is uncontrollable, it is not among the basic factors affecting the demand for life insurance, but it should still be taken into account when talking about the influencing factors of the demand for life insurance.

AUTHORS' CONTRIBUTIONS

This paper is independently accomplished by the author.

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REFERENCES

[1] P. Booth, R. Chadburn, S. Haberman, D. James, Z. Khorasanee, R. H. Plumb, and B. Rickayzen. Modern actuarial theory and practice, second edition. Journal of Risk and Insurance, 73(4), 2004. 2

[2] Mark J. Browne and Kihong Kim. An international analysis of life insurance demand. The Journal of Risk and Insurance, 60(4):616–634, 1993. 4, 5, 6, 7

[3] RITCHIE A. CAMPBELL. The demand for life insurance: An application of the economics of uncertainty. The Journal of THE AMERICAN FINANCE ASSOCIATION, 35(5):1155–1172, 1980. 8

[4] Levin. Demand for health insurance and precautionary motives for savings among the elderly. Journal of Public Economics, 57(3):31–42, 1995. 5, 6

[5] Dale B Truett and Lila J Truett. The demand for life insurance in mexico and the united states: A comparative study. The Journal of Risk and Insurance, 57(2):321–328, 1990. 7

[6] Chuanhua Yu. Spss and statistical analysis. Beijing Electronic Industry Press, 2007. 5, 6, 7

[7] Fangjie Zhang. An empirical analysis of the economic factors affecting the devel- opment of china's insurance industry. The Journal of Quantitative and Technical Economics, (3):25–31, 2004. 1