

Financial Literacy and Commercial Insurance Participation Behavior

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Abstract: The COVID-19 outbreak in 2020 has highlighted the importance of commercial insurance, and residents' insurance participation has become a hot topic in academic research. This paper uses the data of the existing Chinese household financial data questionnaire to conduct factor analysis on residents' financial literacy, constructs variable indicators, and uses the Probit model to explore the possibility of financial literacy and commercial insurance for residential. The research results show that the residents' financial literacy level positively correlates with the purchase behavior of commercial insurance. With the improvement of financial level, residents take the initiative to participate in insurance. This paper provides a reference for better-prompting residents to purchase commercial insurance and develop the insurance market actively.

1. Introduction

Commercial insurance can support wealth creation and focus on people's well-being. People are under a lot of pressure and responsibility in today's society. Every family faces housing loans, car loans, children's education, elderly care, medical care, leisure and entertainment. It is difficult for the elderly to get sick. If a young person gets sick or has an accident, the entire family faces high medical expenses and continuous loss of income. The loss of property on both sides will bring a fatal blow to the family. Therefore, while working hard, people also need to plan insurance to provide themselves with a security guarantee.

During the tense period of the new crown pneumonia epidemic last year, as an economic shock absorber, commercial insurance not only provided strong economic support for patients and improved the resilience of economic development; as a social stabilizer, its important role was also played, reducing the impact of adverse effects caused by the epidemic. Of course, the benefits of purchasing commercial insurance can not only help the insured financially and relieve the financial pressure of the family in case of emergencies, but also force savings and form a lifelong financial plan for people, but most people have these benefits. People have not realized it yet. At present, the commercial insurance participation of Chinese residents is still relatively low. Under the background of rapid economic development, the gradual increase of residents' income and the continuous promotion of the government, the development speed of commercial insurance in China is still relatively slow. Therefore, the author believes it is necessary to explore the participation of residents in commercial

insurance.

On the other hand, in recent years, financial literacy has attracted the attention of various academic circles, and domestic scholars have also listed it as a key research object. Among them, Xu et al. confirmed that financial literacy positively affects the allocation of household financial assets and household investment and wealth management.^[1] However, the "Consumer" published in the 2019 Financial Literacy Survey and Analysis Report shows that the financial literacy level of consumers in China is generally low, and more than 60% of the residents are in a general or poor state. Financial literacy affects people's cognition of financial institutions and their participation in the purchase of financial products. Therefore, research on improving residents' financial literacy can promote residents' purchase of commercial insurance to a certain extent and increase their possibility of participating in insurance. In addition, among many household economic activities, one of the more important is to participate in the purchase of commercial insurance. There are many studies on the purchase of commercial insurance. However, at present, scholars in our country are not aware of the impact of financial literacy on residents' commercial insurance participation behavior. The research is still relatively small, and the research time is relatively late.

This paper firstly combs domestic and foreign research literature and further studies the relationship between financial literacy and residents' commercial insurance participation based on existing literature. Secondly, synthesizing scholars' understanding of financial literacy, this paper defines the concept of financial literacy. Then, the model variables are selected through the questionnaire survey, the model is analyzed, and the research conclusions are given. Finally, reasonable and feasible suggestions are given based on real-life situations. Therefore, the specific and main frame ideas of this paper are as follows: The first part first explains the theme and content of this paper, takes the relevant background of the two perspectives of commercial insurance and financial literacy as the starting point, elicits the research purpose and significance of this paper, and finally makes a technical route Figure; the second part is to introduce the literature research related to the topic selection, mainly to briefly sort out the topics related to financial literacy and commercial insurance at home and abroad; The literacy level is briefly analyzed, and the data related to residents' participation in insurance are mined from it, and the development of commercial insurance in China under the current epidemic situation is analyzed. The fourth part is an empirical study, briefly introducing the data sources and describing the variable indicators in detail. Then, a series of analyses and verification is carried out on the set model to give reasonable results. The last part is the conclusions and suggestions of this paper, mainly to briefly summarize the writing and research of this paper and give reasonable suggestions for better-allowing residents to participate in the purchase of commercial

2. Literature Review

2.1. Financial Literacy

Financial literacy is a relatively new term. So far, there is no unified definition of this term in academic fields at home and abroad, and different scholars have different understandings. Abreu pointed out the various information in the financial market.^[2] Reasonable and effective integration is financial literacy, and the preservation and appreciation of assets are realized based on personal financial literacy and financial skills. In 2011, the Organisation for Economic Co-operation and Development (OECD) considered that financial literacy refers to residents' awareness and mastery of financial literacy. Moreover, Atkinson and Messy clarified that financial literacy is not just about financial literacy but should also include attitudes, behaviors and skills.^[3] In addition, Lusardi and Mitchell jointly believe that financial literacy is the ability of consumers to make a series of economic-related abilities after self-digesting the economic information they have, such as financial planning

and pension arrangement decisions.^[4]

Based on the frontier literature, the definition of financial literacy in this paper refers to the comprehensive consideration of financial knowledge, attitudes, behaviors and skills possessed by residents and the ability to apply financial literacy to people's daily financial life. It is mainly aimed at researching residents' participation in commercial insurance.

2.2. Influencing Factors of Resident Commercial Insurance Participation

Showers and others analyzed the existing data in the United States and found that the age of the respondents, the family income level of the respondents, and the scale of funds were all significantly positively correlated with their insurance needs.^[5] Durlauf found in the research that residents' group activities will affect their participation in commercial insurance to a certain extent.^[6] At the same time, some relevant studies also believe that the higher the risk awareness of the insured, the more likely it is to stimulate their motivation to purchase commercial insurance. In addition, Allgood and Walstad found that families with high financial literacy have higher insurance awareness.^[7] With their assistance, families with lower literacy have a certain role in promoting the demand for commercial insurance such as health insurance and life insurance.

2.3. Financial Literacy and Residential Commercial Insurance Participation

OECD found through research that if a person's financial literacy level is relatively high, he will promote competition among market suppliers, thereby promoting the innovation of financial products and then promoting the development of the insurance industry.^[8] Second, those with higher financial literacy tend to allocate risky assets, and those with high financial literacy will invisibly encourage households to save^[4]. In addition, Gaudecker and others found that when investors' financial literacy level increases, they can also promote their investment in products in different fields and industries and diversify their investment risks.^[9] Murendo and Mutsonziwa also found that financial literacy level significantly impacts consumers' risk asset investment, and the direction is positive.^[10] Many domestic scholars have also found that improving financial literacy can improve residents' understanding of financial products, promote asset allocation, and improve personal financial assets. Finally, Sekita concluded that financial literacy could also improve the possibility of residents preparing for retirement through empirical analysis.^[11] It took New Zealand residents as the research object and investigated the relationship between financial literacy and retirement planning. Relationship, and through empirical research, found that there is no significant linear correlation between the two.

3. Analysis of the Current Situation of Financial Literacy and Resident Commercial Insurance Participation

3.1. Analysis of the Current Situation of Financial Literacy

Well-educated financial consumption that combines good education. It is the cornerstone of financial market stability. In order to better operate the financial market, it is necessary to understand the basic financial situation of Chinese consumers. Therefore, in 2017, the Central Bank released the "Consumer Financial Literacy Survey Report". Judging from the final data results, the financial literacy level of Chinese consumers is above average, with an average score of 63.71. In order to keep the data updated, two years later, the Central Bank once again conducted a questionnaire survey on consumer financial literacy. This time, more than 100,000 samples were collected nationwide, of which 750 were randomly selected from each municipality, or nearly 40,000. Financial consumers

are used as a sample to conduct a survey. The final survey results show that their financial literacy index is an average of 64.77, which is slightly higher than that in 2017. Although the increase is not very large, it is progressing as long as there is a little change.

Judging from the results of the answers to the questions about financial literacy knowledge, the overall situation is relatively optimistic, with more than half of the respondents answering correctly. However, there is a certain bias in the understanding of the respondents. From Table 1, we can see that the questions with a higher correct rate are related to banks and are closely related to consumer finance. Knowledge of the nature of consumption has a relatively low response rate, especially related to insurance topics. It can be seen from this that there is still much room for improvement in insurance knowledge. In order to make consumers accept the existence of insurance products and recognize the benefits of commercial insurance, they must do their homework to improve consumers' financial literacy.

Table 1: Resident financial literacy

Saving	Bank card	Loan	Credit	Investment	Insurance
62.01%	76.31%	54.38%	71.15%	54.77%	53.99%

Data source: Financial Literacy Survey Report (2019)

Financial literacy is undoubtedly an important factor affecting the demand for financial products, and lack of financial literacy is still one of the important reasons why most people cannot carry out wealth planning. From the financial demand distribution in Figure 1, we can see that the financial products that consumers are most interested in are bank cards, accounting for 36.72%, while the demand for insurance accounts for a lower proportion, accounting for 15.22%, which is 1 % of the demand for bank cards. Such a gap is also reasonable. Although China's insurance products appeared earlier than bank cards, China's bank cards became popular at the beginning of the 21st century, and the insurance industry did not bloom until 2020. In addition, the basic attributes of the two are different. Although the current insurance products also have the function of saving, in the subconscious of residents, the safety and reliability of bank cards are still much higher than that of insurance products, which is related to financial literacy knowledge—importance to residents.

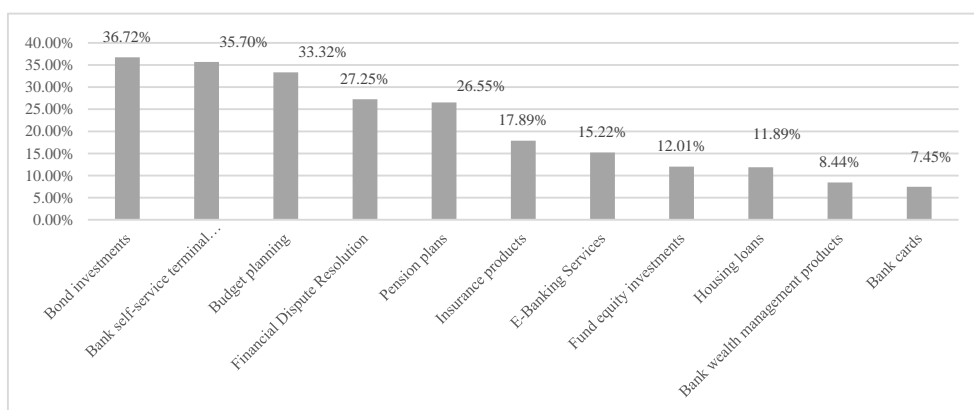


Figure 1: Financial demand distribution

The proportion is relatively low, whether it is related to insurance knowledge or the demand for insurance products. From an objective point of view, it shows that an important factor affecting consumers' participation in insurance purchases is the lack of understanding and demand for insurance. Just like people buy things in daily life, if they do not understand a product, they will naturally not buy it; The rice at home can still be eaten for half a year, and it will not go to buy. Therefore, our country still needs to increase insurance publicity, instill insurance awareness among residents, and start from the more acceptable way for residents, that is, the cultivation of their financial literacy.

3.2. Analysis of the Current Situation of Commercial Insurance Development Since the Epidemic

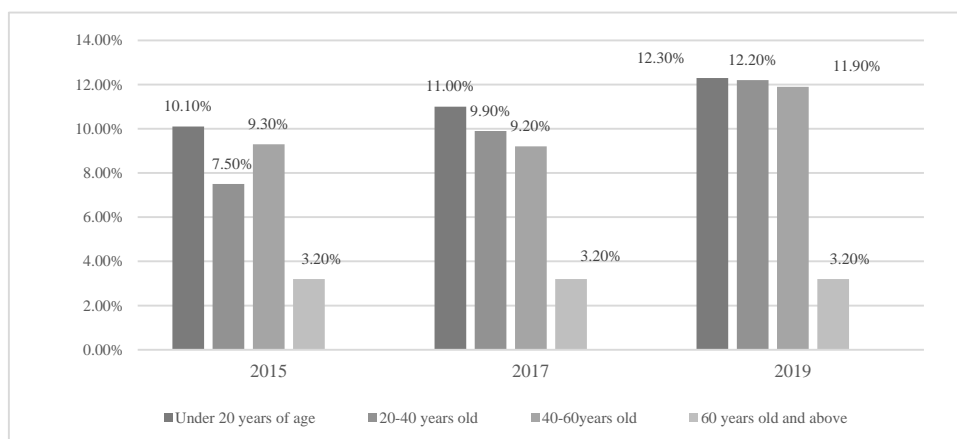
From Table 2, in recent years, insurance, as a virtual tool for daily protection and avoidance measures, has gradually increased the participation rate of commercial insurance, and residents' awareness in this regard has been further enhanced. According to the CHFS data in the China Household Wealth Index Research Report, nearly 11 % of the population purchased commercial insurance by 2019, double the number in 2011. From the data point of view, the number of people buying insurance is increasing, but in time, the insurance participation rate has only increased by half in eight years. This growth rate is not ideal in today's era of rapid economic development. Therefore, it is still necessary to improve the awareness of the whole people to participate in insurance.

Table 2: The proportion of people buying commercial insurance

2011	2013	2015	2017	2019
5.2%	7.8%	7.9%	8.8%	10.8%

Data source: CHFS 2017 Household Finance Survey

In addition, according to the research of Ant Group Research Institute (Figure 2), the number of people over 60 years old is significantly lower than those under 60 years old, and the proportion has hardly changed during the four-year period, which reflects the lack of awareness of insurance participation among older people. In addition, it can also be seen from the figure that members under the age of 20 are always the leading members of insurance coverage, indicating that residents do not realize the importance of ensuring the family's breadwinner. However, from the perspective of vertical comparison, this phenomenon has begun to ease, and the gap between the two sides is narrowing.

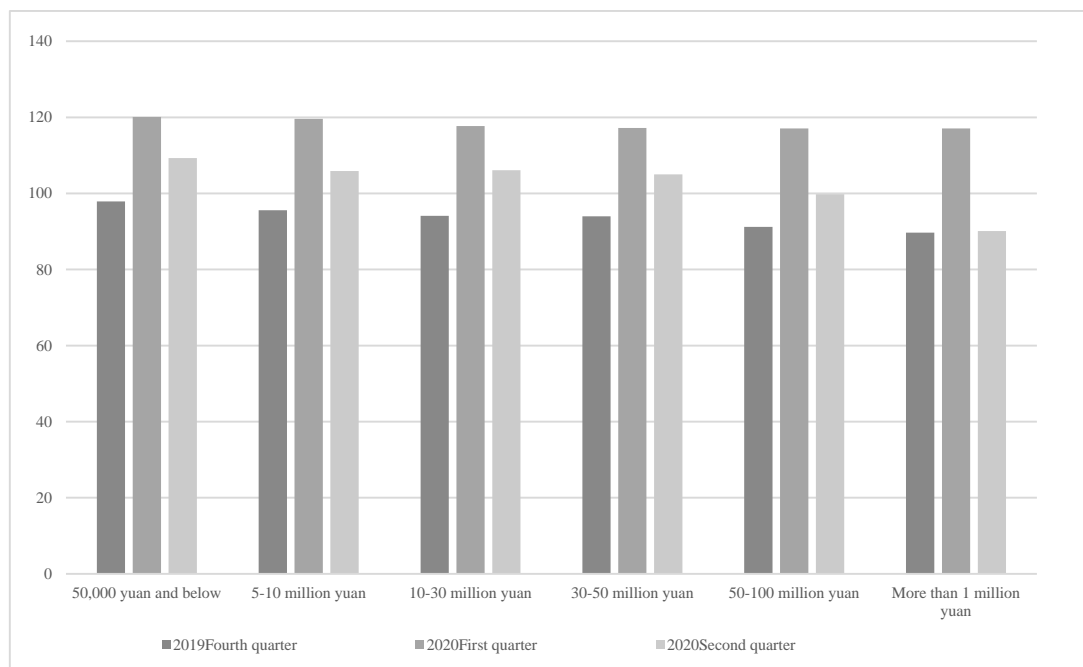


Data source: 2020 China Household Wealth Index Report

Figure 2: The proportion of commercial insurance purchased by different age groups in 2020

In 2020, although households' financial assets and income have been relatively reduced, households are more inclined to allocate assets, as shown in Figure 3. From the perspective of the first two quarters, compared with the fourth quarter of 2019, based on the level of various financial assets, the household commercial insurance purchase index in the first quarter of 2020 was higher, indicating that the epidemic caused the impact of this has a certain impact on household assets, especially in terms of medical care, health, and safety. It can be said that it has virtually promoted the allocation of commercial insurance assets. However, in the second quarter, our country's market operation gradually began to return to normal. The economy gradually improved, residents gradually relaxed their minds about life and health, the demand for medical care and health gradually decreased, and the household commercial insurance purchase index decreased accordingly. Therefore, judging

from this trend, as the household economy is expected to recover for some time in the future, residents will still increase their investment in commercial insurance in asset allocation, but the intensity will be slightly higher than that in the first two quarters of 2020. Therefore, in general, the willingness of households to allocate commercial insurance will cool down slightly.



Data source: 2020 China Household Wealth Index Report

Figure 3: Commercial insurance purchase intention index under various financial asset levels

In addition, the research institute has confirmed through empirical analysis that residents' willingness to invest in commercial home insurance increases with decreased financial assets and family income. It reflects from the side that when assets and income are not guaranteed, residents will realize that the importance of commercial insurance to families and self-protection leads to the configuration of commercial insurance. At the beginning of 2020, CCTV Finance Channel reported that insurance had become the most popular investment project for Chinese residents for four consecutive years. Insurance helps insured participants avoid risks and uses insurance after they have a sufficient understanding of insurance products. Investing is also a good option.

3.3. Summary

With the continuous growth of our country's economic strength and the improvement of people's living standards, the insurance awareness of the society is constantly awakening and improving. As an important risk transfer and financial planning tool in people's daily life and economic activities, insurance has been paid more and more attention to the role of a hedging tool in solving the whole life process from cradle to paradise. However, due to the generally low financial literacy of Chinese residents, commercial insurance, the "greatest invention of mankind", has not fully played its role. There are still many areas for improvement on commercial insurance's supply and demand sides. The research and development of commodities There is huge room for improvement in market operation, service improvement, the breadth and depth of supervision, and the application of new technologies. Combined with the epidemic, people's attitude towards commercial insurance has improved. For example, government-led "Suisuikang", "Bao Shangbao", and "Hui Medical Insurance" in various parts of Guangdong have won the hearts and minds of the people in full swing, so strengthening

financial literacy Research, including correct cognition, cultivating the financial literacy of the whole people, and using financial literacy to guide and regulate people's correct choice of financial instruments is not only of contemporary significance but also of broad social significance.

4. Data, Models and Variables

4.1. Data

This paper uses the existing and commonly used data, then briefly describes it; in terms of model setting, firstly, we search the Internet for empirical models suitable for this study and then refer to the previous literature. The model in this paper is processed, and finally, a more reasonable model with this paper is made.

The data selected in this paper are mainly from the relevant research literature of the Southwestern University of Finance and Economics, such as the data of the research institute's questionnaire survey on Chinese households in 2017. This data is authoritative and reliable; the data samples involve many regions. The survey involves a wide range of content, such as household assets issues, residents' information on consumption, insurance allocation, financial behavior and other aspects conducive to this paper's empirical research.

4.2. Model

Commercial insurance purchase decision can usually be divided into two parts, and one is whether there is a need to participate in the purchase of commercial insurance, which is the participation decision of this article; the second is whether to decide to buy a product, which is the purchase decision of this article. In the model set, this paper will use the Probit model to explore the impact of financial literacy on residents' commercial insurance participation behavior. The Probit model is:

$$Pro(Y = 1) = \alpha + \beta_1 Financial\ literacy_i + \beta_2 X_i + \varepsilon_i \quad (1)$$

Among them Y is whether the family participates in purchasing commercial insurance and whether the value is 0 or 1. If the value is 1, it has it; otherwise, 0); Financial literacy is the independent variable of financial literacy. If the value is 1, then yes; otherwise, it is 0; X is the control variable, including family assets, gender, age, marital status, etc.; ε is the number of random errors and obeys normal distribution.

4.3. Variable

This paper mainly discusses whether there is an inevitable connection between financial literacy and residents' participation in insurance. There may be many factors involved. However, due to the limitations of the data collection in this paper, the method in this paper is based on the existing CHFS survey data. Select relevant issues for detailed treatment, and then use the obtained indicators as the variable indicators of this article and explain them.

4.3.1. Arguments

This paper mainly wants to explore the relationship between residents' financial literacy and insurance, so the success or failure of constructing financial literacy indicators is particularly important. However, the level of financial literacy cannot be obtained directly subjectively. Therefore, this paper uses the method of Lusardi and Mitchell to construct financial literacy indicators to construct the indicators of this paper.^[12] Therefore, the financial literacy level of residents in this paper is determined by the relevant questions answered by the respondents. Reflect on the situation.

2017 China Household Finance Questionnaire The survey designed some Questions and answers involving financial literacy. Based on the existing data, the correct rate of three questions is mainly selected as the indicator to measure the level of financial literacy in this article, namely the interest rate calculation of the respondents, the Understanding of inflation, the understanding and identifying the investment risks of different financial products, the results presented in Table 3 below are the answers to the above three questions. From the statistical results in Table 3, it can be seen that, for the interviewed users, whether in terms of interest rate calculation, understanding of inflation or investment risk identification of funds, stocks, insurance and other wealth management products, the correct rate of their answers is the same. Less than half of the population. Among them, the correct rate of understanding of inflation is only 16.39%, and the correct average rate of the three questions is 31.02%. The number of people who said they did not know or could not calculate the three questions accounted for half of the effective respondents, indicating that they lack awareness and understanding of these issues.

Table 3: Descriptive statistics for financial literacy answer questions

	Correct	Incorrect	Don't know/can't figure it out
Interest rate calculation	32.04%	18.23%	49.73%
Understanding of inflation	16.39%	25.73%	57.88%
Investment Risk Identification	44.65%	14.78%	40.57%

In order to better determine the level of financial literacy, this paper uses the factor analysis method to re-analyze the above data to improve the construction of this indicator. Based on the above analysis, the next direction of factor analysis mainly starts from the respondents' knowledge and understanding of the relevant financial concepts involved in the problem and the respondents' knowledge of basic economic arithmetic issues. Calculate ability. A person's calculation ability is often linked to his understanding ability. If he does not understand the problem itself, does not know the formula involved in the economic term, or knows the formula but does not understand the meaning of its formation, then the greater the error rate that occurs in the calculation process. Therefore, to enrich the experimental basis, this paper involves dummy variables. There are six dummy variables, with two different values for each question. The settings are as follows: whether the respondent can understand the question is used as the first dummy variable to examine the comprehension ability. The second dummy variable is whether the result of the respondents' calculation is correct, which measures their computing power. If the calculation is correct, the value is 1, and the error is 0. This paper uses the iterative principal factor method to conduct factor analysis on the six variables constructed by residents' financial literacy.

4.3.2. Dependent Variable

The dependent variable of this paper is the decision to purchase commercial insurance, and it is judged whether the residents have the possibility of purchasing commercial insurance according to whether their family members have commercial insurance. How to determine whether a resident has commercial insurance purchase behavior the judgment given in this article is as follows. If at least one person in a resident family has commercial insurance, and the commercial insurance is purchased by the respondent himself or his family, it is considered that the resident has the purchase behavior of commercial insurance. Secondly, different insurance products have different insurance premium standards, and there will also be different insurance premiums in the same insurance type. For example, it is also an education financial insurance, with a starting investment of 50,000, 100,000, and 300,000. Therefore, the questions about premium expenditure in the questionnaire will be used as the basis for the consumption level and risk preference of residents' commercial insurance in this

paper. Table 4 shows respondents' participation in-home business insurance in the sample.

Table 4: Residential family business insurance participation

	Number of people	Participation Rate
Commercial insurance	1622	7.7 %
No commercial insurance	19439	92.3 %
Total	21061	100.00%

Table 4 shows that among the many valid respondents, more than 90% have not purchased any commercial insurance, and among those who have purchased commercial insurance, 3% have purchased life insurance, and 2% purchased health insurance (see Table 5). Judging from the total data, the overall proportion of respondents' commercial insurance holdings is only 7.7 %. From this data, it can be seen that the degree of participation in household commercial insurance of Chinese residents is not ideal.

Table 5: Participation in commercial insurance by type of insurance

	Number of people	Proportion
Life	57	3.50%
Healthy	36	2.25%
Other	24	1.45%
Life and Health	6	0.35%
Life and health	2	0.06 %
Life, health and others	1	0.06 %
Health and other	76	0.06%

4.3.3. Other control Variables

Table 6: Control variable selection

Symbol	Name	Define
Gender	Respondent's gender	Males are assigned a value of 1, and females are assigned a value of 0.
Age	Respondent's age	Respondent's chronological age in 2017.
Age2	Respondent's age squared	Respondents' age squared in 2017
Edu	education level	No schooling, primary school, junior high school, high school, technical secondary school or vocational high school, college or vocational school, undergraduate, postgraduate, and doctoral students are assigned 1-9, respectively.
Married	marital status	Married is assigned a value of 1, and unmarried is assigned a value of 0.
Health	Health status	The health status is very good, good, and one is assigned, and good, fair, and bad are assigned 0.
Work	Is there a job	Assigned to 1 if there is work, 0 otherwise.
Familysize	family size	The total number of respondents' households.
Risk_L	risk appetite	Respondents assigned a value of 1 for risk preference and 0 otherwise.
Risk_D	risk aversion	Respondents assigned a value of 1 for risk averse and 0 otherwise.
Ln_Asset	log of total household assets	Take the natural logarithm of total household assets.
Total_Income	total household income	Real gross household income.

In addition to experimental factors, other variables may affect the experimental results. Therefore, the control variables selected in this paper include respondents' gender, age, age squared, education level, marital status, health status, whether they have a job, and risk attitude. Demographics of

respondents. In addition, family characteristics variables, including family size, total family assets (take the natural logarithm), and total family income, are controlled. The specific settings of these control variables are shown in Table 6.

5. Descriptive Statistical Analysis

After all, variables are set, comprehensive descriptive statistics are performed, and missing data are eliminated. The final detailed results are shown in Table 7. It can be seen from the sample that the proportion of households participating in commercial insurance and the average score of financial literacy are 0.05 and 0.42, respectively, which are both at low levels, and the standard deviation of financial literacy is close to 0.7, indicating that the level of financial literacy among different households is still relatively low. There is a relatively large gap. In addition, 88.3% of the respondents were from male households, and 90% of respondents were married; 21.1% of the respondents were in good health, and 83.4% of the respondents had jobs, which shows that when families are involved. When it comes to financial problems, men, married families, and office workers are more interested. Next, 9.1% of the respondents are risk-averse, and 74.5% of the respondents are risk-averse. Judging from the proportion of this indicator, the acceptance of financial products by most respondents may be relatively low, so it seems that residents' rejection of commercial insurance for complex products is also reasonable. Finally, the average age of the respondents is 54 years old, the youngest is 17 years old, and the oldest is 113 years old; the average education level of the respondents is junior high school; the average family size of the sample is about four people, and the average logarithm of the total family assets is 11.686, which is lower than that of the whole population in sample level.

Table 7: Descriptive statistics for sample variables

Variable	N	Mean	SD	Min	Max
Literacy	17705	0.420	0.694	0	3
Fortor	1 7705	-0.0134	1.1244	-0.145	2.142
Gender	17705	0.883	0.322	0	1
Age	17705	53.938	12.308	17	113
Age2	17705	3060.83	1368.35	289	12769
Edu	17705	2.495	0.979	1	7
Married	17705	0.900	0.300	0	1
Health	17705	0.211	0.408	0	1
Work	17705	0.834	0.372	0	1
Familysize	17705	3.929	1.845	1	19
Risk_L	17705	0.091	0.287	0	1
Risk_D	17705	0.745	0.436	0	1
Ln_Asset	17705	11.686	1.431	0	16.8112
Total_Income	17705	36838.7	58145.5	0	1524600
Business_insurance	17705	0.050	0.219	0	1

6. Analysis of Regression Results

6.1. Basic Regression Results

In order to test whether there is a certain correlation between residents' financial literacy and their participation in commercial insurance, this paper estimates the corresponding model. The detailed regression results of the Probit model are shown in Table 8.

Table 8: The impact of financial literacy on commercial insurance participation

	(1)	(2)
	Business insurance	Business insurance
Literacy	0.009 *** (0.003)	
Factor		0.014*** (0.004)
Controls	Yes	Yes
N	17705	17705
Pseudo R ²	0.074	0.068

Note: *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively. The average marginal effect is reported in the table, and the standard deviation of the marginal effect is in brackets. All regression results control for regional fixed effects. Only the estimated results of financial literacy are reported in this table, and the regression results of other control variables are not reported.

It can be seen from the table that after excluding samples with missing data and controlling for all respondent characteristic variables, family characteristic variables and regional factors, the regression results of financial literacy and financial literacy factors are all significant at the 1% level. It shows that financial literacy significantly and positively impacts residents' commercial insurance participation. This is contrary to the conclusion of current research but is consistent with the research results of OECD and others. ^[8] Those with higher financial literacy levels can analyze financial product information and are more able to analyze financial product information. In terms of wealth management, rational allocation of financial products can increase the possibility of competition among market suppliers to a certain extent, thereby promoting the innovation of financial products and making insurance one of the financial products that residents relatively easily accept.

6.2. Endogenous Test

Considering the endogenous problem between financial literacy and resident commercial insurance participation, we select the community's average financial literacy level, excluding the family as an instrumental variable of financial literacy for a two-stage estimation. Table 9 reports the second-stage regression results of the two-stage least squares estimation. The DWH test results are reported at the bottom of Table 9. The results show that the endogeneity hypothesis is rejected at the 1% level, which means that endogeneity problems exist between financial literacy and resident commercial insurance participation. In addition, the one-stage estimated F value in this sample is 109.45, which is significantly larger than the critical value of 16.38 at the 10% bias level ^[13]; the instrumental variable t value is 27.96, indicating that there is no weak instrumental variable problem, indicating that as an instrumental variable of financial literacy, it is appropriate to select the average level of financial literacy in the community, excluding the family itself. Finally, the results of the second-stage estimation using instrumental variables show that higher financial literacy will help improve the possibility of residents' commercial insurance participation.

Table 9: Endogenousness between financial literacy and commercial insurance participation

	(1)	(2)
	Business insurance	Business insurance
Literacy	0.301** (0.122)	
Factor		0.215*** (0.072)
Controls	Yes	Yes
N	17705	17705
One-stage F value	109.45	142.13
Instrumental variable t value	27.96	19.14
Wald test (p-value)	3.16*** (0.000)	5.18*** (0.000)

Note: *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively. The average marginal effect is reported in the table, and the standard deviation of the marginal effect is in brackets. All regression results control for regional fixed effects. Only the estimated results of financial literacy are reported in this table, and the regression results of other control variables are not reported.

6.3. Robustness Check

In order to give the estimation results of this paper a certain degree of credibility, this section will conduct robustness tests from the following two aspects. First, use respondents' correct answers to interest rate calculation, inflation and venture capital questions to estimate commercial insurance participation. The regression results are shown in Table 10. It can be seen from this that respondents correctly answering these three questions can improve their commercial insurance participation, among which the results of venture capital have a particularly significant and positive impact on residents' commercial insurance participation, and it is significant at the 1% level. Investment in financial products is bound to be accompanied by certain risks. Because the market changes at any time, these financial products' expected return on investment cannot be accurately calculated. Commercial insurance is a typical example. For example, buying health insurance and major disease insurance can only be said to buy insurance for your uncertain health and safety issues in the future. Therefore, the impact of investment risk issues on commercial insurance is still relatively large.

Table 10: Robustness test 1

	(1)
	Business insurance
Interest rate calculation questions answered correctly	0.093 (0.064)
Inflation question answered correctly	0.012 (0.068)
Venture capital questions answered correctly	0.193*** (0.068)
Controls	Yes
N	17705
Pseudo R ²	0.075

Note: *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively. The average marginal effect is reported in the table, and the standard deviation of the marginal effect is in brackets. All regression results control for regional fixed effects. Only the estimated results of financial literacy are reported in this table, and the regression results of other control variables are not reported.

Next, considering that respondents in different industries have different levels of financial literacy, the financial literacy of respondents in the financial industry will normally be higher than those outside the industry, and in promoting the development of the financial market, those who are

engaged in or have engaged in Respondents in the financial industry may be more favorable and more willing to understand and purchase financial products. Therefore, if the sample contains data from the financial industry, the results may be biased when using the model for data analysis. Therefore, before estimating, it is necessary to exclude the sample of households engaged in the financial industry from the original sample, and the final regression results are shown in Table 11. From the table, we can see that, after excluding the samples with a high correlation with the results, the impact of financial literacy on commercial insurance participation is still positive and significant, which is not much different from the above research results consistent.

Table 11: Robustness test 2

	(1)	(2)
	Business insurance	Business insurance
Literacy	0.009*** (0.003)	
Factor		0.013*** (0.004)
Controls	Yes	Yes
N	17705	17705
Pseudo R ²	0.075	0.145

Note: *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively. The average marginal effect is reported in the table, and the standard deviation of the marginal effect is in brackets. All regression results control for regional fixed effects. Only the estimated results of financial literacy are reported in this table, and the regression results of other control variables are not reported.

7. Conclusions

With the help of the 2017 China Household Finance Survey (CHFS) data, this paper analyzes the impact of financial literacy on residents' commercial insurance participation behavior from a micro level. The final empirical research results show that the overall financial literacy of residents is not optimistic, the average is low, and it is still below the medium level. At the same time, in commercial insurance, residents who have not purchased commercial insurance still account for the majority. Although the insurance participation rate is not ideal, our country's commercial insurance market still has much room for development. In the relationship between the two, there is a certain correlation, and the impact is significant and positive. For residents, the higher the level of financial literacy, the more active the behavior of purchasing commercial insurance. In order to exclude the influence of disturbance items on the model results, this paper also conducts an endogeneity test and robustness test. The results show that the level of financial literacy does help to improve the possibility of resident commercial insurance participation.

As a part of asset allocation, investment in commercial insurance will, of course, have certain risks. Only with certain financial literacy can residents have the ability to obtain, analyze, screen and measure information related to insurance participation—the risks and benefits of participating. Secondly, commercial insurance needs to be developed according to the specific needs of the people, such as residents' needs for health products, pension products, and value-added service products. In order to follow the pace of the country and the government, the insurance industry needs to continue to reform, innovate and make progress. However, the solution to the problems in the current research on financial literacy in China is to strengthen education, not only to carry out theoretical research in colleges and universities but also to carry out popular education in primary and secondary schools; to strengthen relevant education for commercial insurance practitioners, aiming to comprehensively improve The financial literacy of practitioners is conducive to providing more professional services; it is necessary to strengthen the education and training of the financial literacy of the public so that

they can use professional knowledge to choose financial instruments better and serve their better life; more importantly, it is necessary to strengthen the government. The training and improvement of the financial literacy of staff in the financial sector and related industries make it more scientific, efficient and standardized to guide people's financial behavior. Improve the environment for the financial literacy of the whole people to promote China's commercial insurance to play a greater role.

Establish an online free financial knowledge-sharing platform to reduce the cost for residents to learn financial knowledge. In order to improve the level of residents' financial literacy, financial institutions should take the initiative to launch free financial knowledge-sharing platforms to unblock residents' access to financial knowledge information and, through the development of online video education, allow residents to easily and quickly learn financial knowledge and financial information based on the mobile Internet. It can be divided into modules to understand the knowledge about commercial insurance from shallow to deep, and it can also enable people to communicate and learn from each other. This method can promote feelings between people, encourage each other to learn, and reduce the risk of residents' cost of learning. Secondly, everyone's receiving ability is different, and there will be some differences to some extent. In establishing a popular sharing platform, the knowledge system should simplify the complex and make it easy to understand. This makes it easier for residents to receive the information and knowledge points.

Set up an offline financial education alliance to improve residents' learning initiatives. In addition to online and offline, some public welfare groups can gather people with rich financial knowledge and use spare time, such as holidays, to carry out financial education in insurance in a targeted manner. This method can answer residents' questions about difficulties in finance and can also help residents improve their financial literacy level, thereby increasing their insurance participation rate. In carrying out financial and insurance education, due to the differences in the financial literacy level of people with different educational levels, the publicity work should formulate different activity plans according to residents with different educational levels and risk attitudes. To strengthen the popularization of financial literacy by carrying out different forms of financial education and publicity, especially for those who have only received compulsory education or have a low educational level, we should focus on publicizing the basic knowledge of finance, the explanation of basic concepts and the popularization of commonly used financial vocabulary.

Actively shape a healthy and perfect insurance market. Poor economy, low understanding of commercial insurance, and distrust of insurance institutions will cause residents not to take the initiative to buy commercial insurance or to be unwilling to buy commercial insurance. On the one hand, actively promote and publicize the knowledge of commercial insurance, and present the application of different commercial insurance types and their usage rules vividly and clearly to residents so that residents can more easily receive useful information points and choose products suitable for themselves or their families. Increase the participation rate in the commercial insurance market. On the other hand, before residents apply for insurance, insurance institutions or insurance practitioners must inform them of the risks and perform their obligations. For example, let the insured understand as much as possible that insurance is only to avoid unknown risks, not a complete guarantee, just like no one is perfect, do not have the mentality of "buying insurance and maliciously applying for insurance", "not afraid of going out with insurance". Safety is a blessing, so residents should be reminded that in addition to insurance to help them avoid risks, they should also pay more attention. Secondly, the government can also appropriately intervene in the insurance market, regularly or irregularly supervising insurance companies so that they can regulate themselves, thereby indirectly reducing residents' distrust of insurance institutions.

Residents should actively learn financial knowledge to improve their financial literacy level. A thousand words, it is better to accept it yourself. No matter how much government publicity and insurance agencies promote, the final decision on whether to buy commercial insurance depends on

the residents themselves. Therefore, residents themselves must have a certain amount of action. In such a developed Internet era, residents are provided with more convenient and multi-faceted channels to learn about economics and finance, especially in insurance. If residents are willing and active in understanding financial knowledge and insurance products, learn common sense concepts related to finance and knowledge related to insurance claims, and digest them to make up for their lack of financial literacy. In the long run, residents will be more likely to accept insurance products, discover the benefits of insurance, and gradually change their concept of insurance, thereby increasing their enthusiasm for participating in commercial insurance and making their accidents, pensions, health, and death. Have a better financial situation to face it calmly and add security.

Strengthen innovation and accelerate the development of community insurance services. Ordinary residents with average economic conditions need not life insurance with high premiums but practical and economical insurance, such as the "high-altitude parabolic insurance" that has been hotly discussed in recent years. There are a large number of communities in China. Suppose we want residents to accept the sales of commercial insurance generally. In that case, we can start from the community and build insurance service offices to provide secondary employment opportunities for retired middle-aged people who live in the community and have insurance industry experience—transforming into the patron saint of community safety so that the core value of insurance can truly be brought into play, which can be deepened, refined and reassured. Service personnel should have various stepping stones (such as travel, accident, medical, and short-term savings insurance) and can also combine financial group resources, such as credit cards and small loans. If cooperating with hypermarkets, it can be linked with various physical items. Modern people's sense of alienation is getting worse and worse, and they even feel distant from insurance salespeople. However, if one of them is a neighbor and can see the insurance service premises day and night, people in the community will be happy to communicate with them and accept the insurance policy brought services.

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