Does Trust Improve Commercial Insurance Participation Behavior?

Lei Yu[1], Xinlong Yang[2(✉)], Jue Wang[3], and Yumeng Yang[1]

[1] Xi'an University of Technology, Xi'an, China
[2] Shenzhen Institute of Information Technology, Shenzhen, China
`yangxinlong@sziit.edu.cn`
[3] Jiangsu University, Zhenjiang, China

Abstract. Based on data from the China Family Panel Studies micro-social survey, this paper empirically analyzes the influence of trust on commercial insurance participation. The results demonstrate that trust significantly enhances the probability and extent of commercial insurance participation. Moreover, the research findings further support the relationship between trust and commercial insurance participation. Heterogeneity analysis reveals that trust is more prominent in promoting participation among families residing in cities and towns with lower education levels. Mechanism analysis indicates that trust facilitates the purchase of commercial insurance by increasing family income. This paper's research introduces a novel perspective to the influencing factors affecting commercial insurance participation, emphasizes the importance of trust, and reinforces the development of the social credit system to foster the healthy growth of the commercial insurance market.

Keywords: Trust · Commercial Insurance Participation · Instrumental Variables

1 Introduction

In recent years, China's multi-level social security system has been continuously improved, and commercial insurance can not only play an important supplementary role in the process of social security system construction and development, but can also replace the function of social security to a considerable extent. According to the need of sustainable development of social security system, we should respect the market rules of commercial insurance, leave the corresponding space for the development of commercial insurance, and take effective policy measures to promote it (Xu 2010). In 2017, the Opinions on Accelerating the Development of Commercial Pension Insurance proposed that the development of commercial pension insurance is important for improving the multi-level pension protection system, promoting the multi-level and diversified development of the pension service industry, coping with the trend of population aging and new changes in employment patterns, further protecting and improving people's livelihood, and promoting social harmony and stability. The Opinions of the State Council of

the Central Committee of the Communist Party of China on the Key Work of Comprehensive Promotion of Rural Revitalization in 2022" points out that the state is required to increase insurance protection and optimize and improve the "insurance+futures" model. This shows that commercial insurance has become increasingly irreplaceable in meeting the diversified protection needs of the nation and maintaining social stability.

Combined with the current good development opportunities facing the commercial insurance market, the development of the existing commercial insurance market is still in need of improvement. According to the 2018 China Urban Family Wealth and Health Report, the participation rate of life insurance for households is 14.0%, health insurance for households is 10.2%, and other commercial insurance for households is 5.7%. This data shows that although some of our households are aware of participating in commercial insurance, the overall participation rate of commercial insurance is low. 2019 Swiss Re released a sigma report stating that the insurance density in China is US$430, ranking 46th in the world, with a difference of US$388 from the world average; The difference between the depth of insurance and the world average depth level is 2.93%, 4.3%, which shows that the development of commercial insurance market in China is still very lagging behind.

Since the reform and opening up, China has entered a period of social transition from a planned economy to a market economy, during which the imperfect development of the market economy and the poor quality of market traders themselves have led to a serious trust deficit problem. This problem is reflected in the insurance field: the lack of trust between insurers and policyholders, which leads to the disruption of the normal order of the insurance market and affects the normal conduct of commercial insurance transactions.

It can be seen that it is an important issue to study how to effectively increase the participation rate and involvement in commercial insurance from a trust perspective. The main contributions of this paper focus on the following three aspects: First, the existing literature has mostly studied the influencing factors of commercial insurance participation from the perspectives of household economic status, household structure and demographic characteristics, and social factors. Second, in order to obtain reliable and valid estimation results, this paper utilizes micro social survey data and uses instrumental variables to overcome the endogenous problem in the model. Third, this paper constructs a mediating effect model of trust acting on commercial insurance participation behavior through household income in order to reveal the intrinsic transmission mechanism and the path of action of commercial insurance participation.

2   Literature Review

2.1   Researches on Factors Affecting Commercial Insurance Participation Behavior

With the opening of China's financial market, commercial insurance has emerged as a crucial pillar in the country's protection system, enhancing people's well-being and improving their quality of life (Wang 2010). The development of commercial insurance serves as a valuable complement to the social security system, effectively alleviating the pressure on government social security (Zhao 2007). Currently, the existing literature on

the factors influencing commercial insurance participation mostly focuses on two areas: Demographic characteristics, such as gender (Liu and Chen 2002), education level (Abu Bakar et al. 2012), lifestyle (Yadav and Sudhakar 2017), and financial literacy (Lin et al. 2017), have been identified as factors that impact commercial insurance participation behavior. Additionally, larger family sizes have been associated with a higher likelihood of insurance purchases (Dash and Im 2018).

Family economic status also plays a significant role in residents' decisions regarding commercial insurance participation. The level of household wealth, for example, influences the consumption of commercial insurance, as higher wealth levels are linked to more excellent knowledge of commercial insurance, more vital investment awareness, and a higher willingness to purchase such insurance (Yang and Liu 2019). Moreover, increasing household income has been shown to enhance the participation rate of commercial insurance (Showers and Shotick 1994). In Taiwan, the probability of purchasing insurance varies across regions, with households in northern Taiwan having higher odds of owning private insurance compared to non-northern households. Urban and town households are also more likely to have private insurance than rural villages (Liu and Chen 2002).

Furthermore, socioeconomic factors (Yadav and Sudhakar 2017), product prices, and promotion have been identified as influencers of the probability of insurance purchases (Esau 2015). He and Li (2009) noted that higher levels of social capital promote residents' insurance purchases, and increasing social interaction among residents have related to a higher propensity to purchase commercial insurance (Durlauf 2004). In Lithuania, monetary factors primarily influence insurance consumption decisions (Ulbinait et al. 2013).

2.2 Related Studies on Trust

As an indispensable part of human life, trust permeates all aspects of social life in a natural and self-explanatory form. Since the 1970s, the study of trust from the perspective of economic sociology has gradually entered the Western academia. The concept of trust is too general and richly structured, and there is still no universally accepted definition among Western economists. One of the more classic ones is Fukuyama's definition of trust in his book Trust: The Creation of Social Morality and Prosperity - based on the norms shared by members of a community and the role of individuals belonging to that community to expectations of normal, honest, and cooperative behavior among members. Other scholars have also argued that trust is the moral basis for maintaining a well-functioning market economy (Zhang and Ke 2002).

Trust, as an integral part of social capital, plays an increasingly important role in the economy and society as a whole. From a macro perspective, social trust is increasingly seen as a non-economic determinant of economic development, and its positive impact on the economic sphere of social life has been demonstrated by many studies, which is an incentive for new research initiatives examining the level of social trust, as the findings may be crucial for local policy-making.

Mularska-Kucharek and Brzeziński (2016) obtained that regions with high social trust have the highest level of development through research and analysis; high trust is a booster for trade development, low trust is a stumbling block for trade development, and

trust between two countries (regions) will be beneficial to the sustainable development of bilateral trade. Chen and Qi (2022) concluded cost economics theory that the level of trust affects the size of export trade by influencing the size of transaction costs to affect the size of export trade based on transaction, with higher trust generating a trade creation effect and lower trust generating a trade barrier effect, while trading partner trust significantly affects the size of China's agricultural export trade; Bloom et al. (2012) argue that regions with high trust and strong rule of law are able to sustain large firms and industrial sectors that require decentralization. Moreover, considering the size and industry of these regions, these firms also have a higher degree of empowerment, and among subsidiaries of multinational companies, trust is important for countries with high bilateral trust, increasing the likelihood of delegation.

At the micro level, Song and Wang (2010) found that inter-firm trust and learning have a positive effect on both buyer's and seller's innovativeness through survey data of 194 mainland Chinese firms. There is a positive interaction between trust and learning. Moreover, there are interactions and complementarities between them; firms in emerging markets often face corruption and institutional weaknesses in their environment, and despite these challenges, trust can help employees to be more productive, while at the same time, firms that build trust among their employees may be more capable of dealing with the challenges posed by corruption and uncertain institutional environments (Sánchez and Lehnert 2018); Trust increases overall productivity through two channels: first, trust facilitates redistribution among firms, as CEOs can delegate more decisions, thus allowing more efficient firms to grow; second, trust complements the adoption of new technologies, thus increasing productivity technological change within firms during periods of rapid growth (Bloom et al. 2012); trust promotes inter-agent cooperation plays an important role, especially in credit lending activities. Trust building has attracted considerable research interest, and gift giving has been shown to be one of its main drivers. Through their study, Zhang et al. (2020) found that gift-giving mainly contributes to building trust at the individual level rather than at the community level. In turn, individual and community trust can facilitate access to informal and formal sources of credit, respectively. In addition, personal trust facilitates access to informal loans for consumption and medical expenses, but not for production; an increase in the level of community trust increases household risk tolerance and risk tolerance, as evidenced by a significant increase in the proportion of household financial risk assets (Zang and Wang 2017); Moderate trust maximizes household income. On the one hand, the heterogeneity of people's trustworthy beliefs, combined with individuals' tendency to infer beliefs about others from their own levels of trustworthiness, may produce a non-monotonic relationship between trust and income. Highly trustworthy individuals who believe that others are like them tend to form overly optimistic beliefs that lead them to take too many social risks, be deceived more frequently, and ultimately perform less well than those who happen to have trustworthiness levels close to the population average. On the other hand, low trustworthiness types form beliefs that are too conservative and thus avoid being cheated, but often pass up lucrative opportunities and therefore underperform China is entering an aging society where the emotional health of older adults is increasingly important and social trust is an important factor affecting the emotional health of rural older adults. Trust in family members, trust in friends, and

trust in neighbors all have significant positive effects on the emotional health of older adults (Chen and Zhu 2021).

So what are the factors that affect trust? The use of the Internet can increase the level of social trust by facilitating offline socialization and improving interpersonal satisfaction, and also decrease the level of social trust by affecting users' perceptions of social justice, but the diverse information of the Internet did not decrease the level of social trust due to increased cognitive disagreement (Wang and Zhou 2019); Shi et al. (2016) found that taking educational resources as an example resource grabbing stems from the insufficient supply of public resources, and the level of distrust among people is then increased; factors such as rapidly advancing urbanization and uncertain external environment can cause a decrease in social trust (Zeng and Liu 2021).

In the process of marketization, on the one hand, the competition between people reduces the trustworthy people's expectations of humanity, and on the other hand, the market development is not yet sufficient to protect the trustworthy people, which ultimately leads to the existence of marketization's inhibiting effect on trust (Xin 2019); the transportation facilities in a certain region are perfect, on the one hand, this means that the cost of people's interactions will decrease, which will in turn promote the interpersonal interactions; on the other hand the logistics and information flow within the region and between the region and other regions will increase, which will eventually increase the trust level of people in the region; the more state agency workers in a region's population, the less trustworthy the region is, in the case of excessive power and irregular behavior of officials, the more officials in a population, the more frequent the policy changes, the more uncertain the market environment, and thus the less trust people have in that region (Zhang and Ke 2002).

Fukuyama (1995) believes that the division between low-trust and high-trust societies is based on the different cultural conditions of each region, and in his opinion our country is a typical low-trust society based on blood relations. In the process of insurance transactions, at the time of the initial signing of the insurance contract, it is actually a guaranteed promise issued by the insurer to the insured, and whether the insurer is required to fulfill its promise is not known until several years later. This unique feature of the insurance transaction determines that the insurance business is based on insurance credit, and the insurance industry cannot develop healthily if it loses its credit base.

The existing literature on the influencing factors of commercial insurance participation mainly focuses on social interaction, financial literacy, and household economic status, but there is little literature on the influence of trust on commercial insurance participation decision from the perspective of trust. Therefore, this paper analyzes the mechanism of trust and commercial insurance participation behavior from a new perspective-trust, relying on domestic authoritative databases, and provides corresponding theoretical basis and reference suggestions for the construction of social credit system and the development of commercial insurance in China.

3 Theoretical Analysis and Research Hypothesis

Based on the concept of information asymmetry, trust is beneficial to economic activities because it reduces the cost of gathering information and effectively facilitates transactions between people, between firms and firms, and between firms and individuals.

Compared with high-trust societies, low-trust societies rely more on formal institutions to ensure the enforcement of contracts, and in some countries, trust among people works to some extent as a substitute for formal institutions if the government is unwilling or unable to provide strong organizational or regulatory systems to safeguard citizens' interests (Xu 2005).

Therefore, we propose the hypothesis that

H1: Trust is an important influencing factor for commercial insurance participation. The higher the level of trust the higher the probability of commercial insurance participation and the level of participation.

The existing literature suggests that a moderate level of trust can increase the income level of families (Mo and Ye 2021), while an increase in family income will be more supportive of families' decision to participate in commercial insurance (Showers and Shotick 1994).

Therefore, we formulate the hypothesis:

H2: The increase in household income plays a facilitating role in the trust promotion process of commercial insurance participation.

4   Empirical Analysis

4.1   Data and Variables

This paper collects the data from the 2018 China Family Panel Survey Studies (CFPS), which covers 25 provinces, municipalities, and autonomous regions. The survey includes demographic, social information, household investment, and other data from more than 16,000 households, providing robust data support for studying commercial insurance participation behavior from a trust perspective.

Explanatory Variables. We have use five explanatory variables complied from the CFPS, "*How much do you trust your parents? How much do you trust your neighbors? How much do you trust strangers? How much do you trust your local government officials? How much do you trust your doctor?*" There are eleven levels of responses from very distrustful (0) to very trustful (10). This paper generates five explanatory variables accordingly: trust in parents (*TP*), trust in neighbors (*TN*), trust in strangers (*TS*), trust in cadres (*TC*), and trust in doctors (*TD*). Finally, this paper sums up the respondents' trust in five different groups of people to obtain the core explanatory variable *trust*.

Dependent Variables. This paper examines two critical explanatory variables: participation in commercial insurance and the amount of premiums spent on commercial insurance. The CFPS posed the following question regarding commercial insurance participation: "*In the past 12 months, how much did your household spend on commercial insurance (e.g., commercial health insurance, auto insurance, family property insurance, commercial life insurance, etc.)?*" In this study, we treat commercial insurance participation (*CIP*) as a binary variable, using responses more significant than 0 to indicate participation (set to 1). In contrast, responses of 0 indicate non-participation (set to 0). Furthermore, we employ the natural logarithm of the amount spent on commercial insurance to measure the extent of commercial insurance participation (*CIPE*).

Control Variables. This paper has controlled for a series of factors that influence commercial insurance participation behavior, including individual-level, household-level, and regional-level factors, such as age, gender of household head (*gender*), marital status (*married*), educations level (*edu*), hukou, physical condition (*Phys_cond*), social security (*Soc_sec*), family size(*Fmly_sz*), household debt(*debt*), urban(*urban*), net family income (*NFI*), household net worth (*HNW*), social interaction (*SI*), eastern region (*eastern*), western region (*western*), per capita GDP of the household (*GDPper*) (Butler et al. 2016; Sánchez and Lehnert 2018; Chen and Zhu 2021).

Descriptive Statistics. Based on the sample statistics presented in Table 1, it is evident that approximately 42% of the households in the sample purchased commercial insurance, while around 58% did not participate in commercial insurance. The average premium expenditure for purchasing commercial insurance is RMB 2,949 per year, accounting for approximately 3.7% of household income. The mean for trust variables in different categories are as follows: trust in parents is 9.508, trust in neighbors is 6.764, trust in strangers is 2.430, trust in cadres is 4.888, and trust in doctors is 6.574. Summing these values across the five categories yields a mean of 30.16 for the trust variable. It indicates the presence of a trust structure among the Chinese population, characterized by a "differential order pattern". Regarding demographic characteristics, the average age of household heads is 49 years, with 55.7% being male. Among the respondents, 79.3% are married, and 60.7% have rural household registration (*hukou*). 75.5% report good health, while 72.7% have social security coverage. Furthermore, 52% of the sample households have an elementary school or lower education. Regarding family size, the majority consists of three or four members. Regarding economic status, the average net household income is 79,323 yuan per year, and the average net asset value is 966,539 yuan. Among the sampled households, 63.9% reside in urban areas, and 33.5% have debts.

4.2 Model

This paper investigates the effect of trust on commercial insurance participation behavior using the Probit model, which is specified as shown in Eq. (1):

$$Y = \alpha Trust + X\beta + \varepsilon \tag{1}$$

In this paper, the dependent variables, namely commercial insurance premium expenditure, fall under limiting dependent variable. Hence, we utilize the Tobit model to estimate the impact of trust on the extent of commercial insurance participation, and the model is specified as shown in Eq. (2):

$$Y^* = \alpha Trust + X\beta + \varepsilon \quad Y = max(0, Y^*) \tag{2}$$

Table 1. Descriptive Statistics of Variables.

Variables	Obs.	Mean	Std. Dev.	Min	Max
CIP	6,608	0.416	0.493	0	1
Ln(premium)	6,608	3.445	4.154	0	11.51
Trust	6,608	30.16	6.445	0	50
TP	6,608	9.508	1.118	0	10
TN	6,608	6.764	1.925	0	10
TS	6,608	2.430	2.202	0	10
TC	6,608	4.888	2.530	0	10
TD	6,608	6.574	2.276	0	10
Age	6,608	49.38	14.27	19	97
Age^2/100	6,608	26.41	14.66	3.610	94.09
Gender	6,608	0.557	0.497	0	1
Married	6,608	0.793	0.405	0	1
Edu	6,608	1.688	0.801	1	3
Hukou	6,608	0.607	0.488	0	1
Phys_cond	6,608	0.755	0.430	0	1
Soc_sec	6,608	0.727	0.445	0	1
Fmly_sz	6,608	3.509	1.815	1	17
Debt	6,608	0.335	0.472	0	1
Urban	6,608	0.639	0.480	0	1
Ln(NFI)	6,608	10.88	1.194	0	12.90
Ln(HNW)	6,608	13.02	1.299	0	16.01
Ln(SI)	6,608	7.540	1.056	0	11.00
Eastern	6,608	0.470	0.499	0	1
Western	6,608	0.208	0.406	0	1
Ln(GDPper)	6,608	20.18	0.408	19.59	21.14

5   Estimation Results

5.1   Trust and Commercial Insurance Participation

Table 2 presents the estimation results of the impact of trust on the probability of commercial insurance participation. Column (1) of Table 2 shows that trust positively affects commercial insurance participation behavior with a coefficient of 0.0055 and is significant at the 5% level. One possible explanation for these results is that the higher the level of trust in the community, the higher the trust in the market and, therefore, the higher the recognition of the products and the various services offered by commercial insurance companies and the more likely they are to purchase commercial insurance.

Columns (2)–(6) in Table 2 present the effects of trust in different groups on commercial insurance participation behavior. Among them, trust in parents and trust in neighbors demonstrate significant effects with coefficients of 0.0263 and 0.0177, respectively, both significant at the 10% and 5% levels. It can be attributed to the fact that kinship and familiarity, such as trust in parents and neighbors, help reduce the information acquisition cost associated with commercial insurance, thereby increasing the probability of participation. Furthermore, trust in strangers also significantly affects the probability of commercial insurance participation with a coefficient of 0.0242, significant at the 1% level. Initially, people tend to be cautious about strangers and may be less inclined to participate in commercial insurance based on common sense. However, in the competitive insurance market, insurance agents strive to earn customer trust by showcasing their professional expertise, successful claim cases, and attentive services. As customers become more receptive to objective evidence and exceptional skills demonstrated by these agents, trust in strangers significantly shapes the probability of commercial insurance participation. Columns (5)–(6) indicate that trust in cadres and doctors does not significantly affect the probability of commercial insurance participation. Media over-involvement and unbiased reporting increases the lack of understanding between doctors and patients and the distrust of specialists and doctors. Consequently, people's skepticism towards experts and doctors has grown, eroding the foundation of trust. Therefore, trust in doctors and trust in cadres do not significantly affect the probability of commercial insurance participation (Shen 2007).

5.2   Trust and the Degree of Commercial Insurance Participation

The estimation results of trust on the degree of commercial insurance participation are shown in Table 3. Column (1) of Table 3 indicates that trust has a significant positive effect on commercial insurance premiums with a coefficient of 0.0316 and is significant at the 10% level. One possible explanation for these results is that the higher the level of trust in the community, the higher the trust in the market and, therefore, the higher the recognition of the products and the various services offered by commercial insurance companies and the more likely they are to spend more money on insurance.

Columns (2)–(6) in Table 3 present the effects of trust in different groups on commercial insurance participation behavior. Among them, trust in parents and trust in neighbors demonstrate significant effects with coefficients of 0.0207 and 0.112, respectively, both significant at the 5% levels. It can be attributed to the fact that kinship and familiarity, such as trust in parents and neighbors, help reduce the information acquisition cost associated with commercial insurance, thereby increasing the amount of insurance purchased. Furthermore, trust in strangers also significantly affects the commercial insurance premium expenses with a coefficient of 0.140, significant at the 1% level. Initially, people tend to be cautious about strangers and may be less inclined to participate in commercial insurance based on common sense. However, in the competitive insurance market, insurance agents strive to earn customer trust by showcasing their professional expertise, successful claim cases, and attentive services. As customers become more receptive to objective evidence and exceptional skills demonstrated by these agents, trust in strangers significantly increases the amount of commercial insurance premiums. Columns (5)–(6) of Table 2 indicate that trust in cadres and doctors does not significantly affect the

Table 2. Trust and Commercial Insurance Participation

	(1)	(2)	(3)	(4)	(5)	(6)
Trust	0.0055**					
	(0.0027)					
TP		0.0263*				
		(0.0157)				
TN			0.0177**			
			(0.0089)			
TS				0.0242***		
				(0.0082)		
TC					0.0027	
					(0.0068)	
TD						0.0006
						(0.0076)
Age	0.0860***	0.0854***	0.0849***	0.0862***	0.0855***	0.0854***
	(0.0102)	(0.0102)	(0.0102)	(0.0102)	(0.0102)	(0.0102)
$Age^2/100$	−0.0992***	−0.0984***	−0.0983***	−0.0990***	−0.0987***	−0.0985***
	(0.0100)	(0.0100)	(0.0100)	(0.0100)	(0.0101)	(0.0100)
Gender	−0.0445	−0.0424	−0.0460	−0.0575	−0.0411	−0.0412
	(0.0350)	(0.0349)	(0.0351)	(0.0354)	(0.0349)	(0.0350)
Married	0.255***	0.254***	0.252***	0.257***	0.255***	0.255***
	(0.0536)	(0.0536)	(0.0536)	(0.0537)	(0.0536)	(0.0536)
Edu	0.0902***	0.0944***	0.0931***	0.0849***	0.0946***	0.0952***
	(0.0254)	(0.0252)	(0.0252)	(0.0256)	(0.0253)	(0.0252)
Hukou	0.0556	0.0603	0.0543	0.0587	0.0591	0.0593
	(0.0440)	(0.0439)	(0.0440)	(0.0439)	(0.0439)	(0.0440)
Phys_cond	0.0599	0.0642	0.0615	0.0657	0.0668	0.0682
	(0.0422)	(0.0420)	(0.0421)	(0.0420)	(0.0422)	(0.0421)
Soc_sec	−0.0148	−0.0127	−0.0126	−0.0119	−0.0128	−0.0122
	(0.0389)	(0.0389)	(0.0389)	(0.0389)	(0.0389)	(0.0389)
Fmly_sz	0.0437***	0.0443***	0.0436***	0.0449***	0.0438***	0.0438***
	(0.0111)	(0.0111)	(0.0111)	(0.0111)	(0.0111)	(0.0111)
Debt	0.238***	0.236***	0.238***	0.238***	0.237***	0.237***
	(0.0369)	(0.0369)	(0.0369)	(0.0369)	(0.0369)	(0.0369)
Urban	0.0225	0.0179	0.0197	0.0178	0.0195	0.0187
	(0.0430)	(0.0430)	(0.0430)	(0.0429)	(0.0430)	(0.0430)
Ln(NFI)	0.170***	0.171***	0.171***	0.168***	0.171***	0.171***
	(0.0328)	(0.0326)	(0.0327)	(0.0324)	(0.0327)	(0.0327)

Table 2. (*continued*)

	(1)	(2)	(3)	(4)	(5)	(6)
Ln(HNW)	0.269***	0.269***	0.269***	0.267***	0.269***	0.269***
	(0.0247)	(0.0248)	(0.0247)	(0.0246)	(0.0248)	(0.0248)
Ln(SI)	0.210***	0.208***	0.210***	0.210***	0.209***	0.209***
	(0.0310)	(0.0309)	(0.0309)	(0.0309)	(0.0309)	(0.0309)
Eastern	−0.0619	−0.0642	−0.0609	−0.0627	−0.0612	−0.0612
	(0.0460)	(0.0460)	(0.0460)	(0.0460)	(0.0460)	(0.0460)
Western	−0.103**	−0.0982**	−0.0996**	−0.108**	−0.103**	−0.103**
	(0.0494)	(0.0495)	(0.0495)	(0.0494)	(0.0494)	(0.0494)
Ln(GDPper)	−0.201***	−0.194***	−0.197***	−0.205***	−0.201***	−0.201***
	(0.0635)	(0.0637)	(0.0635)	(0.0634)	(0.0635)	(0.0635)
_cons	−5.558***	−5.790***	−5.561***	−5.333***	−5.409***	−5.412***
	(1.206)	(1.224)	(1.205)	(1.200)	(1.202)	(1.203)
Pseudo R^2	0.1835	0.1834	0.1835	0.1840	0.1831	0.1831
N	6,608	6,608	6,608	6,608	6,608	6,608

Note: Standard deviations are in parentheses and ***, **, and * indicate significant at the 1%, 5%, and 10% levels, respectively. The marginal effects estimated by the Probit model are reported in the table. The same as below

probability of commercial insurance participation. Media over-involvement and unbiased reporting increases the lack of understanding between doctors and patients and the distrust of specialists and doctors. Consequently, people's skepticism towards experts and doctors has grown, eroding the foundation of trust. Trust in doctors and cadres does not significantly affect commercial insurance premium expenses.

5.3 Robustness Test

To confirm the reliability of the estimation results, we present robust estimations by the replacing model. Considering that factors such as omitted variables and two-way causality can cause bias in the estimated coefficients, making a possible endogeneity problem between trust and commercial insurance participation behavior. This section utilizes the instrumental variables approach to address potential endogeneity problems between trust and commercial insurance participation behavior. On the one hand, improved transportation in certain areas reduces interaction costs, thereby decreasing the cost of human interaction and promoting mutual trust between people. Moreover, enhanced logistics and information flow within and between regions can increase individuals' trust, ultimately improving overall regional trust (Zhang and Ke 2002). Additionally, income is a vital indicator of individual socioeconomic status. Hu (2006) noted that regions with higher per capita income tend to exhibit higher levels of trust. On the other hand, provincial transportation facilities (*TF*) and disposable income (*DI*) are not directly related to commercial insurance participation. Therefore, it is appropriate to utilize these variables as instrumental variables for analyzing commercial insurance participation behavior.

The results of the endogenous test are presented in Table 4, and we can draw three conclusions from the estimates of the models. Firstly, both instrumental variables exhibit

Table 3. Trust and Commercial Insurance Premium Expenses

	(1)	(2)	(3)	(4)	(5)	(6)
Trust	0.0316* (0.0166)					
TP		0.207** (0.0992)				
TN			0.112** (0.0557)			
TS				0.140*** (0.0496)		
TC					0.0021 (0.0424)	
TD						−0.0011 (0.0470)
Cntl_Var	Yes	Yes	Yes	Yes	Yes	Yes
_cons	−34.18*** (7.227)	−36.35*** (7.354)	−34.26*** (7.227)	−32.96*** (7.213)	−33.40*** (7.217)	−33.39*** (7.223)
Pseudo R^2	0.0757	00757	0.0757	0.0758	0.0755	0.0755
N	6,608	6,608	6,608	6,608	6,608	6,608

a significant and positive influence, with coefficients of 0.0081 and 0.576, respectively. These coefficients are significant at the 5% level, aligning with our expectations. Secondly, in the non-identifiability test, the Wald tests for endogeneity were 5.18 and 5.79, respectively, rejecting the null hypothesis of no endogeneity at the 5% confidence level. Thus, trust is significantly associated with commercial insurance participation. Moreover, the models passed the over-identified test with p-values of 0.6415 and 0.03131, respectively. These results do not reject the null hypothesis "H0: all instrumental variables are exogenous," suggesting that the instrumental variables selected in this study are indeed exogenous. In the test for weak instrument robustness, the p-values of Wald chi-square tests are 5.12 and 5.55, both significant at 5%. Therefore, the null hypothesis "H0: endogenous variables are not correlated with instrumental variables" should be rejected. These findings indicate that the instrumental variables chosen in this study do not suffer from weak instrument bias. Thirdly, after dealing with possible endogeneity problems, the trust variable still maintains a 10% significant positive influence on commercial insurance participation behavior. The result is consistent in the baseline model.

5.4 Mechanism Analysis

Further research analysis reveals that moderate trust can optimize residents' income (*Fmly_incm*) (Mo and Ye 2021). As the income level increases, more households can

Table 4. Results of Robustness Test

	(1) IV-Probit	(2) IV-Tobit
Trust	0.0881** (0.0389)	0.5670** (0.2407)
TF	0.0878*** (0.0153)	0.0878*** (0.0153)
DI	0.0001*** (0.0000)	0.0001*** (0.0000)
Cntl_Var	Yes	Yes
_cons	−8.0527*** (1.7250)	−50.5147*** (10.6846)
t ratio of TF	5.74	5.74
t ratio of DI	2.98	2.98
Wald Chi2	5.18**	5.79**
Overid	0.6415	0.3131
Weakiv	5.12**	5.55**
Pseudo R^2	0.0419	0.0419
N	6,608	6,608

support the decision of household participation in commercial insurance. This paper utilizes the Bootstrap resampling technique to test the significance of household income. This approach helps to further dissect the mechanism of the role of trust in commercial insurance participation. The test results are presented in Table 5. The role of trust in influencing the likelihood of commercial insurance participation is significant. The mediation interval for the effect of household income on trust regarding commercial insurance participation is [0.000176, 0.0005605]. Importantly, this interval does not contain 0, indicating the presence of a mediation effect, which passes the 1% significance test.

Table 5. Results of Bootstrap Mediating Effects Test- CIP

	Observed Coef.	Boostrap Std. Err.	Z	BootLLCI	BootULCI
Indirect effect	0.0003656	0.0000976	3.74	0.000176	0.0005605
Direct effect	0.00191	0.0008372	2.28	0.0002234	0.0034423
Total effect	0.0022756	0.0008348	2.73	0.0006072	0.0038087

The results data in Table 5 shows that household income plays a positive mediating role in the relationship between trust and commercial insurance participation. In other words, trust facilitates households' purchase of commercial insurance by increasing household income, thus confirming hypothesis H2. The paper proposes a potential explanation for this observation: a moderate level of trust enables households to optimize their income. As a result, households with better financial situations can more support decision-making behaviors related to participating in commercial insurance.

This paper also employs the Bootstrap resampling technique to test the significance of household income, further analyzing the mechanism of the role of trust in the degree of participation in commercial insurance. The mediation interval for the effect of household income on trust regarding commercial insurance premium expenses is [0.001633, 0.0054832]. Importantly, this interval does not contain 0, indicating the presence of a mediation effect, which passes the 1% significance test. The test results are presented in Table 6.

Table 6. Results of Bootstrap Mediating Effects Test-CIPE

	Observed Coef.	Boostrap Std. Err.	Z	BootLLCI	BootULCI
Indirect effect	0.0035202	0.0009508	3.70	0.001633	0.0054832
Direct effect	0.0163943	0.0070008	2.34	0.0030481	0.0304358
Total effect	0.0199145	0.0069953	2.85	0.0066436	0.0337174

6 Conclusions

Based on data from the China Family Panel Studies micro-social survey, this paper empirically analyzes the influence of trust on commercial insurance participation behavior, which serves as a valuable addition to the existing research on the factors influencing commercial insurance participation. Moreover, it provides a necessary reference for developing the commercial insurance market. The findings of this paper reveal two key points: firstly, an increase in trust positively influences the purchase of household commercial insurance, and secondly, higher levels of trust are associated with greater depth of residents' participation in commercial insurance. In order to deal with endogeneity issues, this paper further supports these findings by employing a two-stage instrumental variable approach.

The policy implications derived from this study are as follows: First, insurance practitioners should enhance their professionalism and cultivate a culture of integrity to bolster public trust in the industry. Second, the government should establish a social credit system rooted in morality and supported by legal measures while strengthening supervision to reduce trust violations within the insurance industry. It will foster the healthy development of China's insurance sector. Third, the government should actively shape a positive social environment by promoting and encouraging integrity-based social values.

References

Abu Bakar, A., Regupathi, A., Aljunid, S.M., et al.: Factors affecting demand for individual health insurance in Malaysia. In: BMC Public Health, vol. 12, no. 2, p. 1. BioMed Central (2012)

Bloom, N., Sadun, R., Van Reenen, J.: The organization of firms across countries. Q. J. Econ. **127**(4), 1663–1705 (2012)

Butler, J.V., Giuliano, P., Guiso, L.: The right amount of trust. J. Eur. Econ. Assoc. **14**(5), 1155–1180 (2016)

Chen, H., Zhu, Z.: Social trust and emotional health in rural older adults in China: the mediating and moderating role of subjective well-being and subjective social status. BMC Public Health **21**, 1–13 (2021)

Chen, H., Qi, C.: The trade effect of trust: evidence from agricultural trade between China and its partners. Sustainability **14**(2), 729 (2022)

Dash, G., Im, J.: Determinants of life insurance demand: evidences from India. Asia Pac. J. Adv. Bus. Soc. Stud. **4**(2), 86–99 (2018)

Durlauf, S.N.: Neighborhood effects. In: Handbook of Regional and Urban Economics, vol. 4, pp. 2173–2242 (2004)

Esau, E.Y.R.: Factors affecting consumer purchase decision on insurance product in PT. Prudential Life Assurance Manado. Jurnal EMBA Jurnal Riset Ekonomi Manajemen Bisnis Dan Akuntansi **3**(3) 2015

Fukuyama, F.: Trust: the Social Virtues and the Creation of Prosperity. The Free Press, New York (1995)

He, X.Q., Li, T.: Social interaction, social capital and commercial insurance purchase. Financ. Res. **02**, 116–132 (2009)

Hu, R., Li, J.Y.: The composition and influencing factors of urban residents' trust. Society (06), 45–61 (2006)

Lin, C., Hsiao, Y.J., Yeh, C.Y.: Financial literacy, financial advisors, and information sources on demand for life insurance. Pac. Basin Finance J. **43**, 218–237 (2017)

Liu, T.C., Chen, C.S.: An analysis of private health insurance purchasing decisions with national health insurance in Taiwan. Soc. Sci. Med. **55**(5), 755–774 (2002)

Mo, W.Q., Ye, B.: The, "moderate" level of trust and economic income growth. Labor Econ. Res. **9**(05), 121–144 (2021)

Mularska-Kucharek, M., Brzeziński, K.: The economic dimension of social trust. Eur. Spat. Res. Policy **23**(2), 83–95 (2016)

Sánchez, C.M., Lehnert, K.: Firm-level trust in emerging markets: the moderating effect on the institutional strength-corruption relationship in Mexico and Peru. Estudios Gerenciales **34**(147), 127–138 (2018)

Shen, X.P.: Expert systems in the vision of modernity. Learn. Explor. **02**, 43–47 (2007)

Shi, Y.P., Li, X.R.: Public resources and social trust: taking compulsory education as an example. Econ. Res. **51**(05), 86–100 (2016)

Showers, V.E., Shotick, J.A.: The effects of household characteristics on demand for insurance: a tobit analysis. J. Risk Insur., 492–502 (1994)

Song, H., Wang, L.: Does inter-firm learning and trust promote firm innovativeness? Front. Bus. Res. China **4**(2), 262–282 (2010)

Ulbinaite, A., Kucinskiene, M., Le Moullec, Y.: Determinants of insurance purchase decision making in Lithuania. Inzinerine Ekonomika **24**(2), 144–159 (2013)

Wang, W.T., Zhou, J.Y.: Internet and social trust: micro evidence and influence mechanism. Finance Trade Econ. **40**(10), 111–125 (2019)

Wang, W.: The development of commercial insurance and the construction of social security system in China. Popul. Econ. **06**, 54–58 (2010)

Xin, Z.Q.: Marketization and interpersonal trust change. Adv. Psychol. Sci. **27**(12), 1951–1966 (2019)

Xu, F.Q.: The evolution and reconstruction of the relationship between commercial insurance and social security. J. Renmin Univ. China **24**(02), 95–104 (2010)

Xu, S.F.: Trust, social capital and economic performance. Learn. Explor. **05**, 222–225 (2005)

Yadav, C.S., Sudhakar, A.: Personal factors influencing purchase decision making: a study of health insurance sector in India. Bimaquest **17**(1-A) (2017)

Yang, L., Liu, Z.X.: The impact of financial literacy on household commercial insurance consumption decisions–an analysis based on the China Household Finance Survey (CHFS). Consum. Econ. **35**(05), 53–63 (2019)

Yu, J.Y.: Analysis of the causes of lagging commercial insurance in China. Enterp. Technol. Dev. **29**(07), 88–108 (2010)

Zang, R.H., Wang, Y.: Social trust and investment in risky financial assets of urban households-an empirical study based on CFPS data. J. Nanjing Audit Univ. **14**(04), 55–65 (2017)

Zeng, X.L., Liu, Z.M.: Rapid urbanization and social trust-an empirical study based on comprehensive social survey data in China. Contemp. Finance Econ. **07**, 13–23 (2021)

Zhang, T., Liu, H., Liang, P.: Social trust formation and credit accessibility—evidence from rural households in China. Sustainability **12**(2), 667 (2020)

Zhang, W.Y., Ke, R.Z.: Trust and its explanation: a cross-province survey analysis from China. Econ. Res. **10**, 59–70 (2002)

Zhao, X.Z.: The role of commercial insurance in the social security system. Financ. Econ. **04**, 17–18 (2007)