

Research Article

An Empirical Analysis of Social Capital and Household Insurance Purchases in the Context of the Internet of Things: Evidence from China

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Received 23 May 2022; Revised 2 June 2022; Accepted 8 June 2022; Published 20 June 2022

Academic Editor: Praveen Kumar Reddy Maddikunta

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The Internet of Things has entered customers' everyday lives around the globe and transformed business models across industries. This environment brings opportunities for insurers: to develop new products, open new distribution channels, and extend their role to include prediction, prevention, and assistance. Although the Chinese insurance business ranks second in the world, the participation rate of residents in the insurance market still lags far behind that of other countries. In Chinese society, where "guanxi" is omnipresent, social capital has a profound influence on household activities. However, there is a lack of research linking social capital and household insurance purchases. Based on a dataset from the 2017 China Household Finance Survey (CHFS), this article examines the impact of social capital on household insurance purchases in China. A new social capital indicator is constructed by incorporating online interaction into the measurement of household social capital. The results of the Probit and Tobit model analysis indicate that social capital has a significant positive impact on both the probability and the proportion of household insurance purchases. The results remain robust after changing the model, measurement, and sample of the study, and using instrumental variables. This article provides new evidence for the relationship between social capital and household insurance purchases, and enriches the research perspective on insurance purchasing decisions.

1. Introduction

The insurance industry plays an important role in the stable development of China's economy and society. Since its resumption in 1980, China's insurance industry has developed rapidly. The average annual growth rate of the premium scale has reached 25.8%, and the total premium scale ranks second in the world. In 2020, the total assets held by the insurance industry reached 23.3 trillion yuan and provided risk protection amounting to 8,810 trillion yuan. Although the insurance premium scale has achieved rapid growth, the development of China's insurance industry still has a long way to go from the perspective of insurance depth and insurance density, which are two indicators for measuring the quality of the insurance industry. In 2020, China's insurance depth was 4.5% and its insurance density was \$502, far lower than the world averages of 7.3% and \$687, respectively. The low participation rate of households in the

insurance market, which is only 16.2% according to the data of CHFS, is an important factor hindering the development of China's insurance industry. The household is the basic unit of economic activities, and its decision-making behavior has an important impact on the economy. Therefore, improving households' insurance purchasing decisions and promoting their participation in the insurance market hold great significance for the sustainable development of the insurance industry.

A few basic facts about the determinants of household insurance purchasing are already well known. It is believed that household wealth [1] and the individual characteristics of residents, such as their age, gender, education level, and risk awareness [2–4] are the main determinants affecting insurance purchases. In the traditional theory of demand for insurance, consumer decision-making is a rational selection process based on cost and utility, which ignored the social factors that influence individual decision-making. Since the proposal of the concept of social capital, researchers have paid attention to the role of social capital in individuals' decision-making. It has been recognized that people's decision-making on economic activities is not independent but greatly influenced by social factors [5]. However, few studies have analyzed the relationship between social capital and residents' insurance purchases. China is a traditional "guanxi"-oriented society [6], and "guanxi" plays an indispensable role in almost all aspects of residents' daily lives. This article considers the possibility that household insurance purchases in China are influenced by social capital. As "guanxi" is mostly held by households, social capital may have an important impact on household insurance purchases.

The practices of China's insurance industry have confirmed this point. For a long period of time, due to residents' insufficient understanding of insurance, their weak awareness of risk prevention, and misleading insurance agents, the premium scale of insurance companies in China has largely derived from the social relations of agents, such as relatives, friends, neighbors, and colleagues, who have brought much more business than other sales channels.

This article employs a dataset from the 2017 China Household Finance Survey (CHFS) and investigates the relationship between social capital and household insurance purchase decisions by a Probit model and a Tobit model. Compared with the prevailing literature, this article makes the following contribution. First, this article departs from the mainstream of previous research and provides a new theoretical explanation for household insurance purchases from the perspective of social capital, and enriches related research on household insurance purchasing decisions. Second, in the context of the frequent use of smartphones and the Internet, the social capital generated by online interactions is taken into account to make the measurement of social capital more accurate, which the previous literature has rarely addressed. Third, the research of this article provides a policy perspective for the government to promote the high-quality development of the insurance industry.

2. Literature Review and Research Hypothesis

The concept of social capital comes from sociology and has rich connotations. For a long period of time, due to different research purposes and research fields, scholars have had different interpretations of social capital and have not reached consistent conclusions. The French sociologist Bourdieu was the first to formally propose the concept of social capital. He believed that social capital is the sum of the resources owned and potentially owned by the members of a certain social network.

Based on the interpretations of social capital in the current literature, this article defines social capital as the resources obtained by individuals through participation in social networks. Individuals interact in social networks based on trust and then generate social norms and improve their own welfare. Social networks, trust, and participation constitute the three dimensions of social capital, among which the most important is social networks, which play the role of a carrier of social capital, helping network members obtain information and resources. Social interaction is the main way of realizing social capital.

Social capital significantly contributes to sustainable development and is indispensable for economic growth and human well-being. In the last years, the function and influence of social capital have been analyzed from many different aspects by researchers, and a wealth of findings have been obtained, such as the impact of social capital on economic performance [7], household external financing [8], innovation [9], entrepreneurship [10, 11], health [12], and happiness [13]. There are relatively few studies on the relationship between social capital and insurance purchases, and no consistent conclusions have been reached. Pasini and Millo [14] argued that social capital reduced the occurrence of moral hazards and thus increased residents' demand for non-life insurance. Shi et al. [15] showed that social interactions could promote households' purchase of life insurance products based on the data of the Chinese Household Income Survey. Some researchers study the link between social capital and social health insurance, and found that social capital could significantly promote residents' participation in social health insurance [16-18].

Although the literature provides a foundation for research, the prevailing studies on the impact of social capital on insurance purchases still have the following deficiencies: first, the representation of the social capital indicator is relatively singular, often analyzed only from one dimension of social capital, and is not measured from the overall perspective. Second, in the context of smartphones and online social interaction, current studies have failed to include social capital formed by online social interaction. Third, existing literature mainly focuses on social health insurance, but the relationship between social capital and household commercial insurance purchases has not been proved. The lack of such discussion in previous studies provides space for the research presented in this article.

Based on the analysis above, the following hypotheses are proposed:

- H1: Social capital can increase the probability of household insurance purchases.
- H2: Social capital can increase the proportion of household insurance purchases.

3. Methodology

3.1. Data. The data used in this article come from the Survey and Research Center for China Household Finance of Southwestern University of Finance and Economics. The center conducted the fourth CHFS in the form of a questionnaire in 2017. The samples are widely distributed and highly representative, including data from 40,011 households in 29 provinces (cities and districts) and 1,428 communities in China. In this article, missing and invalid variables are eliminated. The sample of respondents younger than 16 years old and total household income less than 800 yuan are excluded, and the outliers are winsorized. At last, 31,296 observations were retained after processing.

3.2. Definition of the Variables

3.2.1. Explained Variable. Household insurance purchases are the explained variable studied in this article. This explained variable is defined from two perspectives and is divided into two variables for analysis.

The first is the probability of insurance purchases. Based on the questionnaire, this article defines the probability of household insurance purchases if at least one member of the surveyed household has purchased commercial insurance (excluding motor vehicle insurance; the same below), the household is considered to have purchased insurance.

The second is the proportion of insurance purchases. The proportion of households' insurance purchases is measured by the ratio of insurance premium expenditures to household income.

3.2.2. Explanatory Variable. Social capital is the core explanatory variable of this article. Constructing a reasonable social capital indicator is the premise of and key to this article. Due to the richness of social capital connotations and the differences in indicator dimensions, accurately measuring social capital has been a difficult problem in the relevant literature. Scholars in different research fields have great differences in their measurement of social capital. Based on the definition of social capital above and current studies, this article comprehensively measures social capital from three dimensions: social networks, trust, and participation. Based on questionnaire data and the current literature, appropriate variables are selected to measure the three dimensions of social capital, as shown in Table 1. The ratio of household expenditure on gifts, entertainment, communication, transportation, and tourism to total household expenditure and online social networking is used to represent social networks. With the development of the social economy, online interaction has become an important method of social interaction in China, and the resulting online social interaction is closely related to the social capital of a household, which should be included in the measurement range of household social capital. The level of trust is represented by items in the questionnaire. In China, affiliation with the Communist Party expands one's social connections and makes more resources accessible [15, 19]. Therefore, whether the respondent is a party member and whether he or she has a job is used to indicate participation.

The nine variables selected above are used for factor analysis, and a comprehensive social capital indicator, SC, is constructed as the core explanatory variable. The Kaiser–Meyer–Olkin (KMO) value is greater than 0.6, and Bartlett's test of sphericity has passed, proving the feasibility of factor analysis. Based on the results in Table 2, the first three factors are used to measure social capital in accordance with the principle that the cumulative contribution rate is greater than 80%. Based on the factor loads in Table 3, SC is constructed by the regression method, and its linear transformation is carried out to control the range from 0 to 100 for further analysis. Furthermore, the samples were categorized into low, medium, and high groups based on social capital tertiles, and the corresponding explained variables are shown in Table 4. As seen from the table, there are significant differences in insurance purchases among the three types of households. As the social capital level improves, the probability and proportion of household insurance purchases increase. The probability and proportion of insurance purchases by households with high social capital levels are significantly higher than those by households with low social capital levels.

3.2.3. Control Variables. To eliminate the possible regression bias caused by other factors and to more accurately analyze the impact of social capital on household insurance purchases, this article refers to the relevant literature and selects two types of control variables: household characteristic variables and individual characteristic variables. The definitions of the main variables are shown in Table 5.

3.3. Descriptive Statistics of the Variables. Based on the descriptive statistics in Table 6, the average level of social capital in the full sample is 23.96. The average level of social capital of households with insurance is 33.31, which is much higher than that of households without insurance. In the full sample, the number of households who have purchased insurance accounts for approximately 16.2%, and the proportion of premium expenditure in household income is approximately 7% on average. These results indicate that the participation rate and participation depth of households in the insurance market are low. In the subsample with insurance, the average age of the respondents is lower than that of the subsample without insurance, while the respondents in insured households are mostly female, and the education level, health status, risk attitude, family size, and various economic indicators are higher than those of uninsured households.

3.4. Models

3.4.1. The Impact on the Probability of Insurance Purchases. The Probit model is set to test the influence of social capital on the probability of insurance purchases:

$$Pr(insur = 1) = \Phi(\alpha + \beta \cdot SC + \delta \cdot X + \varepsilon), \quad (1)$$

where insur represents the binary variable of whether insurance has been purchased. The value is 1 when at least one family member has purchased insurance and 0 otherwise. SC stands for social capital and is the core explanatory variable. X is the control variables.

3.4.2. The Impact on the Proportion of Insurance Purchases. Since the premium expenditure of households without insurance is 0 and the proportion of insurance purchases is subject to data interception, the Tobit model is constructed to test the influence of social capital on the proportion of insurance purchases:

| TABLE 1: Composition of the variables in each dimension of social capi | tal. |
|--|------|
|--|------|

| Variable | Definition |
|------------------------------|---|
| Dimension 1. Social networks | |
| Gift expenditure ratio | The ratio of household expenditure on gifts to total household expenditure in the previous year |
| Entertainment expenditure | The ratio of household expenditure on culture and entertainment to total household expenditure in the |
| ratio | previous year |
| Communication expenditure | The ratio of household expenditure on communication to total household expenditure in the previous |
| ratio | year |
| Transportation expenditure | The ratio of household expenditure on transportation to total household expenditure in the previous year |
| ratio | The full of nousehold experiance on transportation to four nousehold experiance in the previous year |
| Tourism expenditure ratio | The ratio of household expenditure on tourism to total household expenditure in the previous year |
| Social networking on the | 1 if the household uses the Internet to socialize and 0 otherwise |
| Internet | I in the household uses the interfact to socialize and o outclivise |
| Dimension 2. Trust | |
| Trust | Does the respondent trust people whom he/she does not know? 1 if very trusting or relatively trusting and 0 if not trusting |
| Dimension 3. Participation | |
| Party member | 1 if the respondent is a member of the Communist Party and 0 otherwise |
| Job | 1 if employed and 0 otherwise |

TABLE 2: Results of factor analysis.

| Factor | Eigenvalue | Variance contribution rate | Cumulative contribution rate |
|----------|------------|----------------------------|------------------------------|
| Factor 1 | 1.0891 | 0.5049 | 0.5049 |
| Factor 2 | 0.4350 | 0.2649 | 0.7699 |
| Factor 3 | 0.1830 | 0.1115 | 0.8813 |
| Factor 4 | 0.0750 | 0.0457 | 0.9270 |
| Factor 5 | 0.0591 | 0.0360 | 0.9630 |
| Factor 6 | 0.0383 | 0.0233 | 0.9864 |
| Factor 7 | 0.0222 | 0.0135 | 0.9999 |
| Factor 8 | 0.0005 | 0.0003 | 1.0002 |
| Factor 9 | -0.0003 | -0.0002 | 1.0000 |

TABLE 3: KMO test results and factor loads.

| Factor | KMO test results | Factor 1 | Factor 2 | Factor 3 |
|-----------------------------------|------------------|----------|----------|----------|
| Gift expenditure ratio | 0.4838 | 0.0417 | 0.5199 | 0.3321 |
| Entertainment expenditure ratio | 0.6500 | 0.5555 | 0.0841 | 0.4068 |
| Communication expenditure ratio | 0.5566 | 0.0828 | 0.3225 | 0.5062 |
| Transportation expenditure ratio | 0.6251 | 0.4639 | 0.4297 | -0.0394 |
| Tourism expenditure ratio | 0.5810 | 0.3345 | -0.3460 | 0.0662 |
| Social networking on the Internet | 0.5962 | 0.6006 | -0.0314 | -0.0698 |
| Trust | 0.5649 | 0.0316 | -0.0230 | 0.5227 |
| Party member | 0.6446 | 0.1746 | -0.1683 | 0.1199 |
| Job | 0.5851 | 0.2398 | 0.5482 | -0.0666 |
| Full sample | 0.6021 | | | |

TABLE 4: Descriptive statistics of social capital based on tertiles.

| Social capital level | Probability of insurance purchases (%) | Proportion of insurance purchases (%) |
|--------------------------------|--|---------------------------------------|
| Low level of social capital | 6.76 | 0.40 |
| Medium level of social capital | 14.00 | 0.90 |
| High level of social capital | 27.90 | 1.95 |

| Variable | Definition |
|---------------------------|---|
| Household characteristi | c variables |
| Household income | Natural logarithm of household income |
| Household assets | Natural logarithm of household assets |
| Household | Natural logarithm of household consumption |
| consumption | |
| Social security | 1 if respondents and their spouse have enrolled in social security and 0 otherwise |
| Family size | Number of family members |
| Individual characteristic | c variables |
| Age | Age of the respondent |
| Age squared | Age squared/100 |
| Gender | 1 for female and 0 for male |
| Marriage | 1 if married and 0 otherwise |
| Education | 1 if college degree or above and 0 otherwise |
| Health | 1 if health status is "excellent" or "very good" and 0 otherwise |
| Pick attitudo | 1 if the respondent chooses "high-risk and high-return projects" or "slightly high-risk and high-return projects" |
| RISK attitude | and 0 otherwise |
| Happiness | 1 if "very happy" or "happy" and 0 otherwise |

TABLE 5: Control variable definitions.

| Table 6: | Descriptive | statistics | of | the | variables | • |
|----------|-------------|------------|----|-----|-----------|---|
|----------|-------------|------------|----|-----|-----------|---|

| Variable | | Full sample | | | Subsample without insurance | | Subsample with insurance | | | |
|----------------------------------|-------|-------------|--------|--------|-----------------------------------|-------|-----------------------------|--------|------|--------|
| | Obs. | Mean | Sd. | Median | Min | Max | Obs. | Mean | Obs. | Mean |
| SC | 31296 | 23.96 | 16.51 | 21.44 | 0 | 100 | 26224 | 22.15 | 5072 | 33.31 |
| Insurance purchase | 31296 | 0.160 | 0.370 | 0 | 0 | 1 | 26224 | 0 | 5072 | 1 |
| Proportion of insurance purchase | 31296 | 0.0100 | 0.0400 | 0 | 0 | 0.320 | 26224 | 0 | 5072 | 0.0700 |
| Age | 31296 | 53.53 | 14.68 | 54 | 18 | 97 | 26224 | 54.80 | 5072 | 46.95 |
| Age squared | 31296 | 30.81 | 15.65 | 29.16 | 3.24 | 94.09 | 26224 | 32.19 | 5072 | 23.66 |
| Gender | 31296 | 0.490 | 0.500 | 0 | 0 | 1 | 26224 | 0.480 | 5072 | 0.540 |
| Marriage | 31296 | 0.840 | 0.360 | 1 | 0 | 1 | 26224 | 0.840 | 5072 | 0.870 |
| Education | 31296 | 0.180 | 0.390 | 0 | 0 | 1 | 26224 | 0.160 | 5072 | 0.320 |
| Health | 31296 | 0.480 | 0.500 | 0 | 0 | 1 | 26224 | 0.460 | 5072 | 0.570 |
| Risk attitude | 31296 | 0.100 | 0.300 | 0 | 0 | 1 | 26224 | 0.0900 | 5072 | 0.150 |
| Happiness | 31296 | 0.710 | 0.460 | 1 | 0 | 1 | 26224 | 0.710 | 5072 | 0.700 |
| Social security | 31296 | 0.970 | 0.170 | 1 | 0 | 1 | 26224 | 0.970 | 5072 | 0.960 |
| Family size | 31296 | 3.150 | 1.500 | 3 | 1 | 15 | 26224 | 3.100 | 5072 | 3.420 |
| Income | 31296 | 10.81 | 1.240 | 11.01 | 6.69 | 13.39 | 26224 | 10.70 | 5072 | 11.38 |
| Assets | 31296 | 12.77 | 1.880 | 13 | 0 | 17.22 | 26224 | 12.60 | 5072 | 13.62 |
| Consumption | 31296 | 10.68 | 0.830 | 10.73 | 8.41 | 12.69 | 26224 | 10.60 | 5072 | 11.11 |

$$y^* = \alpha + \varphi \cdot SC + \lambda \cdot X + \varepsilon, \ Y = \max(0, y^*),$$
 (2)

where y^* is the latent variable and y is the proportion of insurance purchases. SC represents social capital, and X represents the same control variables as in Model (1).

4. Results and Discussion

4.1. Baseline Regression

4.1.1. Results of Regressing Social Capital on the Probability of Insurance Purchases. Model (1) tests the influence of social capital on the probability of household insurance purchases, and the regression results are shown in Table 7. Columns (1), (2), and (3) are the regression results of not adding control variables, adding household characteristic variables, and adding all control variables, respectively. As can be seen

from the regression results, social capital has a significant positive impact on the probability of household insurance purchases, regardless of whether control variables are added, and it is significant at a 1% level. Hypothesis 1 is verified.

The variables measuring household wealth (household income, household assets, and household consumption) have a positive impact on the probability of insurance purchases, which is consistent with the conclusions of most studies. Larger households are more likely to purchase insurance, which may be because households with more members have more responsibilities with regard to support and a greater need for insurance to mitigate risk. From the perspective of age, the probability of household insurance purchases first increases and then decreases in an inverted U-shaped distribution with increasing age, and middle-aged households are the most likely to purchase insurance. Households with higher levels of education are more likely

TABLE 7: Regression results of the impact on the probability of insurance purchases.

| Variable | (1) | (2) | (3) |
|-----------------|--------------------|-------------------------|--------------------------|
| SC | 0.0052*** (0.0001) | 0.0034*** (0.0001) | 0.0023*** (0.0002) |
| Social security | | -0.0101 (0.0110) | -0.0032 (0.0110) |
| Family size | | 0.0090^{***} (0.0014) | 0.0054^{***} (0.0015) |
| Income | | 0.0142*** (0.0023) | 0.0154^{***} (0.0023) |
| Assets | | 0.0144*** (0.0015) | 0.0155*** (0.0015) |
| Consumption | | 0.0470*** (0.0032) | 0.0410*** (0.0033) |
| Age | | | 0.0106^{***} (0.0010) |
| Age squared | | | -0.0001^{***} (0.0000) |
| Gender | | | 0.0208^{***} (0.0040) |
| Marriage | | | -0.0047 (0.0064) |
| Education | | | 0.0181*** (0.0055) |
| Health | | | -0.0059(0.0042) |
| Risk attitude | | | 0.0181^{***} (0.0061) |
| Happiness | | | 0.0018 (0.0044) |
| Observations | 31296 | 31296 | 31296 |

Note. (1) The table reports the marginal effect. (2) * p < 0.1, ** p < 0.05, *** p < 0.01. (3) Unless otherwise specified, these notes apply to the following tables.

to purchase insurance. There is a positive correlation between risk attitude and insurance purchases, i.e., people with a higher risk tolerance are more likely to purchase insurance. One of the reasons may lie in the reverse causality between insurance purchases and risk attitude, i.e., households with insurance are more prepared for future risk-sharing, and they are more willing to choose high-risk projects to achieve high returns when making investment decisions.

4.1.2. Results of Regressing Social Capital on the Proportion of Insurance Purchases. The analysis above demonstrates that an increase in social capital can improve the probability of household insurance purchases. The next step is to study whether differences in household social capital cause differences in the proportion of household insurance purchases. Model (2) tests the influence of social capital on the proportion of insurance purchases, and the regression results are presented in Table 8. Columns (1), (2), and (3) are the regression results of not adding control variables, adding household characteristic variables, and adding all control variables, respectively.

The results show that social capital can significantly increase the proportion of household insurance purchases, i.e., when other variables are controlled for, households with a higher level of social capital will spend a higher proportion of household wealth on insurance purchases. Hypothesis 2 is verified. The regression results of other control variables are basically consistent with the regression conclusions of Model (1); thus, they are omitted from Table 8.

4.2. Robustness Checks. To further verify the regression results, the following robustness checks are performed on the models in this article, and the results are shown in Tables 9 and 10.

First, the model used for baseline regression is changed from the Probit model to the Logit model, and the explained variable of the Tobit model is changed. In the original Tobit model, the proportion of households' insurance purchases is measured by the ratio of insurance premium expenditure to household income. In this part, it is changed to the ratio of insurance premium expenditure to household assets. As can be seen from Table 9, whether the Probit model is replaced by the Logit model or the explained variables of the Tobit model are replaced, the conclusions obtained are consistent with the conclusion of baseline regression, which proves the robustness of the models.

Second, the observations of older respondents are removed. The average age in the baseline regression sample is 53. In fact, the household respondents may not necessarily be the decision-makers with regard to household economic activities and decisions, especially in the case of older respondents in larger households. In this article, older respondents are excluded from the full sample to obtain more robust results. The sample range is narrowed to households with respondents aged over 18 and less than 60. Regression is performed on Model (1) and Model (2) based on the alternative samples, and as can be seen from Table 10, the conclusion is consistent with that based on the original sample.

4.3. Endogeneity Analysis. In the model above, the explained variable, social capital, may adversely affect insurance purchases, leading to endogeneity problems in the model. For example, households that have purchased insurance are more likely to exchange insurance information with others through social interaction, thus improving the level of household social capital. To overcome such problems of endogeneity, this article selects two instrumental variables, i.e., the average social capital level of the community other than the household and the type of mobile phone that the respondent uses, to reestimate the model.

Regarding the first instrumental variable, because households living in the same community have a certain similarity in terms of income, life, and work, the average social capital level of the community other than the household is correlated with the social capital level of the household but uncorrelated with the insurance purchases of the household, meeting the requirements of instrumental variables.

| Variable | (1) | (2) | (3) |
|-------------------|--------------------|------------------------------------|-------------------------|
| SC | 0.0035*** (0.0001) | 0.0026**** (0.0001) | 0.0002^{***} (0.0000) |
| Control variables | No | Household characteristic variables | Yes |
| Observations | 31296 | 31296 | 31296 |

TABLE 8: Regression results of the impact on the proportion of insurance purchases.

TABLE 9: Regression results of the robustness checks: alternative model and measure.

| Variable | Logit (1) | Tobit (alternative measure) (2) |
|-------------------|--------------------|------------------------------------|
| SC | 0.0023*** (0.0002) | 0.0002*** (0.0000) |
| Control variables | Yes | Yes |
| Observations | 31296 | 30298 |

TABLE 10: Regression results of the robustness checks: alternative sample.

| Variable | Probit (1) | Tobit (2) |
|-------------------|--------------------|--------------------|
| SC | 0.0025*** (0.0002) | 0.0003*** (0.0000) |
| Control variables | Yes | Yes |
| Observations | 20340 | 20340 |

| TABLE 11: Regression results of the instrumental variables. | | |
|---|--------------------|--------------------|
| Variable | IV-probit (1) | IV-tobit (2) |
| SC SC | 0.0277*** (0.0037) | 0.0052*** (0.0006) |
| Control variables | Yes | Yes |
| F-statistic | 1906.28 | 1906.28 |
| Wald test | 21.61*** | 31.09*** |
| Observations | 31296 | 31296 |

Regarding the second instrumental variable, mobile phones are currently the main tool used to establish and develop social relationships, while smartphones are an important channel for households to participate in social networks and carry out social interaction. The type of mobile phone used by the respondent is highly correlated with the level of social capital of the household but uncorrelated with household insurance purchases, which means that it can be used as an instrumental variable of household social capital. Based on the items in the questionnaire, a value is assigned to the type of mobile phone used by the respondent. That is, the value is 2 if "smartphone (used for online shopping, social chat, etc.)" is selected, 1 if a nonsmartphone is selected, and 0 if no mobile phone is selected. The results of the endogeneity analysis are shown in Table 11.

According to the results, the Cragg–Donald test of instrumental variables was conducted on the samples, and the F-statistic estimated at the first stage was much larger than the critical value of the weak instrumental variables 16.38. It indicates that there are no weak instrumental variables in using "type of mobile phone" and "the average social capital level of the community other than the household", and the two instrumental variables are effective instrumental variables. Both model (1) and model (2) passed the Wald test at the significance level of 1%, rejecting the hypothesis that variables do not exist endogeneity, indicating that endogeneity does exist, and adopting the instrumental variable method is appropriate, so endogeneity needs to be considered. Since the number of instrumental variables was larger than that of endogenous variables, the over-identification test was carried out, and the *P* value was 0.2599, greater than 0.1, so the null hypothesis that all instrumental variables were exogenous could not be rejected. Therefore, there was no over-identification problem and the model was correctly set. According to the regression results reported in Table 11, after using instrumental variables, the regression results obtained by using IV-Probit and IV-Tobit models are consistent with the regression results of explanatory variables in the Probit model and Tobit model. Social capital is positively correlated with the probability and proportion of household insurance purchases at the significance level of 1%.

5. Conclusions

This article uses factor analysis to construct a social capital variable that includes three dimensions, and analyzes the impact of social capital on household insurance purchases with the Probit and Tobit Model. The main conclusions of this article are as follows.

The baseline regression results show that social capital has a significant positive impact on the probability and proportion of household insurance purchases, which helps increase the participation rate of households in the insurance market. After changing the model, measurement and sample of the study, and using instrumental variables, the regression results of the model are still robust. Household characteristics such as better household wealth, larger family size, higher education level, middle-aged, and risk preference will promote the purchasing of commercial insurance.

The research presented in this article provides an empirical basis for formulating relevant policies. First, the government should strengthen information disclosure and its supervision of insurance companies to prevent the diffusion of false information in the market, and create external conditions for establishing trust. It is important to promote residents' insurance education to raise their awareness and understanding of insurance. Second, by perfecting insurance laws and regulations, insurance agents' sales behavior should be standardized so that the industry's image could be improved and households' trust in insurance could be enhanced. Third, a harmonious community culture should be constructed. Households could be encouraged to improve their community participation and interaction, using various new online channels to improve their level of social capital, making insurance a necessary risk prevention tool for Chinese households, and enhancing the sustainable development of the insurance industry.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

The author declares no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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