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The effect of trust and information on household risky financial investments

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ABSTRACT

The effect of trust on household risky financial investments was investigated using a recently developed measure of trust radius. Using data from the 2018 China Family Panel Studies, we show that trust affected both the household decision to invest and the amount of risky investments. These effects were inverted U-shaped. Also, we found that the perceived importance of information from traditional media sources moderated this effect, such that higher importance of information turned the effect of trust on risky investments from inverted U-shaped into U-shaped. The effect of trust was significant only for wealthier households and for households in regions with more inclusive financial development. Several robustness checks and endogeneity analyses corroborated our results. Implications for policy making are included.

1. Introduction

Portfolio theory implies that households should have risky financial assets in their portfolio to achieve optimal growth in household wealth (Merton, 1969). However, this is not the case with most families' actual investments. Several studies have shown that there is a limited participation puzzle in risky household investment behavior, indicating substantial forgone returns of not making such investments (Campbell, 2006; Cui & Zhang, 2021; Guiso et al., 2008; Mankiw & Zeldes, 1991). In 2019, 52.6 percent of U.S. households directly or indirectly owned stocks (Aladangady et al., 2023). However, Liu et al. (2024), using data from five waves of the China Family Panel Studies (CFPS), showed that only 6% of households possessed risky financial assets, which was relatively low compared with developed countries. To explain the limited participation puzzle, many factors influencing household participation in risky financial markets have been investigated, including individual and family factors, such as age (Fagereng et al., 2017), education (Campbell, 2006), personal capacity (Grinblatt et al., 2011), household income and wealth (Berkowitz & Qiu, 2006), insurance (Angrisani et al., 2018), financial education (Zhu & Xiao, 2022), financial literacy, and housing value (Zou & Deng, 2019). In addition, social and cultural factors, including social capital, have attracted significant attention (Jiang et al., 2022).

Social capital comprises all social resources of an individual or household. Putnam et al. (1994) showed that the core components of social capital include three dimensions: social trust, social norms, and social networks. Among these, trust is a key component of social capital. Ma (2024) showed that social trust positively affects the probability of holding risky financial assets and their share in total wealth. Financial contracts are trust-intensive which means that a transaction depends not only on the enforceability of the contract, but also on people's trust (Guiso et al., 2004). Guiso et al. (2004) showed that it is because households trust risky financial markets that they participate in, to receive a certain return on investment in future periods, and to recover their capital. Households are willing to invest if they believe that financial markets are fair and they can obtain risk-equivalent returns on their investments (Guiso et al., 2008). A higher level of trust means that households have confidence in listed companies and regulators, which in turn leads to expectations of less fraud in financial markets and higher returns on investment, thus reducing information costs and making households more willing to invest in risky assets (Li, 2006).

However, higher trust is not always better. Cui (2013) used the experimental approach to find an inverted U-shaped relationship between investor trust and investment returns in an experimental financial market. Butler et al. (2016) found that individuals with average trust had the highest income. Jiang and Lim (2018) distinguished between "most of the time" and "always" trusting households. They found that "most of the time trusting" households are most conducive to improving their repayment performance and increasing their net wealth but "always trusting" households are prone to be gullible and to take on debt that is unfavorable to the lender, leading to a higher likelihood of debt default and poorer repayment performance.

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To explain the low participation of Chinese household in the risky investment market, our study focuses on the measurement of trust and its impact on household risky financial investments. In previous studies the concept of "generalized trust" has commonly been used, measured by the question of whether most people can be trusted. However, some have argued that people think differently about "most people" when it comes to answering this question (Sturgis & Smith, 2010). Some may think of people in their immediate social environment, whereas others may think of a wider social circle, for example, foreigners or social media. In this context, trust research should consider both the level and intensity of trust, as well as the radius and scope of trust (Delhey et al., 2011; Fukuyama, 2002; Hu, 2017; Van Hoorn, 2014).

Trust radius is a measure of trust which implies different trust levels in people at different "social distance" from the trustor. In financial markets, the size of the trust radius may directly affect the types of markets, financial institutions and products that investors are willing to invest in. A larger trust radius implies that investors are more willing to try new financial products and services and participate in a wider range of market transactions. Conversely, a smaller radius of trust may limit the scope of investor participation, making them more inclined to choose familiar and less risky financial products and services. Thus, trust radius may explain the limited participation puzzle in financial markets better than the level of trust. However, empirical research on the concept of trust radius is still lacking. In view of this omission, this paper uses data from the 2018 CFPS to calculate trust radius, and to explore its impact on risky financial investments.

We further contribute to the literature in the following ways. First, we use trust radius to measure trust in other people. Our study shows that trust may increase people's participation in financial markets. Second, we found nonlinear effects of trust on risky financial investments. Finally, we estimate the moderating role of the investors' perceived importance of various information channels.

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature and develops hypotheses. Section 3 explains the theoretical and empirical models and describes the data. Section 4 reports the empirical analysis. Section 5 concludes.

2. Theory and hypotheses

2.1. Social trust and trust radius

The concept of trust originated in psychology and has evolved into a multidisciplinary concept (Weiss et al., 2021). As a desirable type of social capital, trust can be a lubricant for economic transactions (Arrow, 1974; Fehr, 2009), contributing to overall social well-being. In economics, there are two main explanations of trust. First, trust is a social mechanism that reduces transaction costs. In financial transactions, trust is the investors' belief that they are not being cheated (Sapienza et al., 2013). People's lack of trust leads to the inability of society to develop effective and low-cost contract enforcement mechanisms (North, 1990). Second, trust implies a tendency to cooperate, thus facilitating transactions (Thompson, 2018). Fukuyama (2001) argued that trust is a prerequisite for cooperation. It has also been argued that in societies where trust is relatively high, people tend to maximize social efficiency through cooperation, whereas mutual suspicion may lead to a Prisoner's-Dilemma-type of inefficiency (Coleman, 1994; Putnam et al., 1994). Regardless of the interpretation of trust, trust is considered as a desirable type of social capital contributing to overall social well-being.

Social trust is commonly categorized into generalized trust and specific trust. The former refers to taking people with whom one has a non-blood relationship or with whom one is unfamiliar as the object of trust, while the latter takes blood relatives or close friends as the object of trust (Fukuyama, 2001; Putnam, 2000). However, this approach examines trust only in terms of the level of trust and neglects the scope or radius of trust. In fact, social trust is only effective within a certain range and depends on a certain circle of people. Social trust considering only the level of trust would be limited by the scope of an individual's perceived social environment, thus leading to measurement bias. For example, Delhey et al. (2011), using data from the fifth round of the World Values Survey (WVS) found that China's general trust level was the second highest, but when calculating the trust radius to adjust for the original general trust, China's general trust ranking dropped by 10 per cent indicating that the actual general trust of Chinese people was lower than the directly measured value.

Fukuyama (2001) was the first to introduce both the level of trust and the trust radius to explain social trust. In his view, the trust radius comprises the range of people with whom individuals are willing to cooperate, and the average radius of the circle of trusted people varies across societies. The trust radius reflects the extent to which people may co-operate with unfamiliar people. The broader the trust radius, the more inclusive people's circle of cooperation is, the more inclined they are to cooperate with heterogeneous groups, and to share valuable information and knowledge with others (Delhey et al., 2011; Ding et al., 2015; Hu, 2017). Also, a broader trust radius reduces the perception of social conflict (Lee & Suh, 2019). Fei et al. (1992) showed that China's human relationships are based on blood, geographic, and kinship ties, which are manifested in a "differential pattern" of decreasing affinity, in which case it would be reasonable to use the trust radius to measure social trust. Summarizing, the broader the trust radius, the easier it is to trust people who are more socially distant, such as strangers.

However, the measurement of trust radius is rather complicated, and possibly for this reason little empirical research using trust radius has been conducted. Although Delhey et al. (2011) proposed a method to assess trust radius by the difference between in-group and out-group trust, this approach is just suitable for international comparative and cross-cultural studies and not for the study of individual differences (Hu, 2017; Lim et al., 2021). Hu (2017) proposed a gradient-based measure to express trust radius in terms of the rate of change in the level of trust with decreasing strength of relationships with different trust objects. This approach has been operationalized (Hu, 2017; Lim et al., 2021) and allows for the integration of differential trust patterns in China, providing new ideas for explaining the limited participation puzzle in China's financial markets.

2.2. The impact of trust on investment behavior

A growing body of literature incorporates trust into the analytical framework of economics. At the macroeconomic level, trust plays a role in the economic development of a country (Algan & Cahuc, 2010; Zak & Knack, 2001), the volume of trade between countries and GDP (Fehr, 2009), and the development of financial markets, including investments (Guiso et al., 2008). At the microeconomic level, trust favors the expansion and accelerated development of enterprises (Bloom et al., 2012), residents' borrowing and improvement of their repayment performance (Karlan et al. 2009; Van Bastelaer & Leathers, 2006), and gathering of household wealth (Jiang & Lim, 2018).

Only few studies have attempted to study the impact of trust on financial market participation. Guiso et al. (2004) used electoral turnout and blood donations as indicators of social capital at the province level in Italy, showing that areas with higher social capital had a higher probability of households investing on the stock market. Guiso et al. (2008), using Dutch, Italian, and cross-country data, also showed that the lack of trust in society decreased a household's likelihood of participating in the stock market and holding stocks. Georgarakos and Pasini (2011) showed that the effect of trust on household stock market participation was greater in countries with low stock market participation and low levels of trust compared to those with high stock market participation and high levels of trust. Li (2006), using data from China, showed that high levels of trust stimulate people to invest on the stock market. Cui and Zhang (2021) found that trust only positively affects participation of households with above-median wealth and below-median financial knowledge. El-Attar and Poschke (2011) found

that households with less trust invest more in housing and less in financial assets, in particular risky ones.

Most studies employed measures of generalized trust in assessing the relationship with risky investments. Since China has been characterized as a society with a narrow trust radius (Fukuyama, 2002), the measurement of generalized trust in this country is likely to reflect trust in an individual's immediate social environment rather than in a wider social circle, the latter being typically associated with financial transactions with agents and institutions on the stock market. For this reason, we expect trust radius to be related to risky household investments. Furthermore, in our case, trust radius seems preferable to experimental measures of trust (e.g., Fehr, 2009), which are commonly elicited in laboratory settings with a specific group of participants. Section 3.2.2 shows empirical evidence for the relationships between generalized trust and trust radius with specific trust in parents, neighbors, and strangers, supporting our argument.

Hypothesis 1. *A broader trust radius increases risky household investments.*

Most studies have assumed linear relations of trust with household financial behavior, and studies of non-linear effects of trust are still scarce. Skilton and Dooley (2010) found that excessive trust may pose certain risks. Although transaction parties may trust each other more in this case, blind trust may simultaneously lead to a lack of necessary oversight and checks between the parties and is likely to induce opportunistic behavior by the participants. Butler et al. (2016) indicated that when the level of trust is low, an appropriate increase in trust increases an individual's chances of making a profit, thus increasing economic income. However, when the level of trust exceeds a certain value, economic income decreases with an increase in trust, because too high a level of trust also increases the chances of being cheated.

Hypothesis 2. *Excessive trust radius reduces household risky investments.*

2.3. Information and risky financial investments

Merton (1987) stated that one of the important bases for investors to make investments is the amount and weight of information. Investors need information before making financial decisions to reduce the costs resulting from information asymmetry (Qadan & Zaua'bi, 2019). Investors always need to rely on certain channels to obtain information about financial markets, otherwise they may not invest (Hong et al., 2004). Wozniak (1993) showed that the number of investor information channels is significantly related to their level of information acquisition. Also, different investors tend to choose different channels as their main way of information transmission and acquisition. With the growing role of information, studies have begun to pay attention to the impact of social interaction, the Internet, newspapers, television, and other information channels dealing with financial markets and asset choices. Klibanoff et al. (1998) explored the impact of news in the *New York Times* on closed-end state funds showing that the emergence of breaking news influences investment demand and affects the price elasticity of assets. Liu et al. (2014) similarly concluded that news media coverage attracts investor attention and increases long-term investor demand for newly listed stocks. Guiso and Jappelli (2005) suggested that the probability of an individual's participation in an investment is correlated with the amount of information received, and the probability of learning about the existence of the financial asset. Bogan (2008) further suggested that the use of computers and the Internet, in addition to reducing transaction costs, makes stock market information more readily available to residents, thereby reducing information costs and promoting stock market participation. Others have suggested that families may acquire information about capital markets through social interactions, e.g., word-of-mouth and observational learning, or at least learn the basic operating methods and thus make similar investment decisions (Brown et al., 2008; Hong et al., 2004; Li et al., 2022). Peng et al. (2022) showed that people who are interested in financial information increase their proportion of stock holding. However, excessive social trust may lead to a lack of motivation of households to scrutinize the information they receive. Also, Speier et al. (1999) argued that information overload occurs when the input information exceeds the investor's processing capacity, which may further reduce the quality of decision making and limit the participation of households in financial markets. Thus, the importance of information may moderate the effect of trust on stock market participation.

Hypothesis 3. *The importance of information moderates the effect of trust radius on investment in risky assets.*

3. Method

3.1. Data

We employed data from the CFPS, which is a nationwide, large-scale, representative, multidisciplinary social tracking survey covering 95% of the total population of the country (excluding Hong Kong, Macao, and Taiwan), conducted by the China Social Science Survey Centre of Peking University, and targeting all members of the sampled households. We used information reported by the household financial respondent, who was most familiar with and could answer questions on the family's economic conditions. The survey, which has been conducted six times since 2010, focuses on the economic and non-economic well-being of the Chinese population, and includes a variety of research topics such as economic activity, access to education, family relationships, family dynamics, population migration, and physical and mental health. As some issues, such as risk attitudes, were only mentioned in the 2018 questionnaire of CFPS, and the 2018 survey is the most recent one providing a relatively complete measure of risky financial assets, we used the data from this year. Based on the needs of our study, we retained households with age of the financial respondent of the household of 20 years or higher and 70 years or less and left out those with invalid or missing values in the key variables. Finally, a total of 10,757 valid observations were retained, and the basic sample characteristics are shown in Table 1.

Table 1
Sample statistics.

Name	N	Mean	SD	Min	Max
RA holding	10,757	0.061	0.239	0.000	1.000
RA ratio	8,615	0.030	0.133	0.000	1.000
Radius	10,757	0.574	0.121	0.000	1.000
Traditional	10,748	2.104	0.951	1.000	5.000
Television	10,757	3.248	1.381	1.000	5.000
Internet	10,752	2.945	1.639	1.000	5.000
Interpersonal	10,751	2.722	1.309	1.000	5.000
Age	10,757	47.563	12.959	20.000	70.000
Male sex	10,757	0.525	0.499	0.000	1.000
Education	10,757	8.449	4.568	0.000	23.000
Health	10,757	0.836	0.370	0.000	1.000
Married	10,757	0.852	0.355	0.000	1.000
Pension	10,757	0.773	0.419	0.000	1.000
Rural	10,757	0.726	0.446	0.000	1.000
Risk	10,757	2.287	1.807	1.000	6.000
Elderly ratio	10,757	0.190	0.303	0.000	2.000
Children ratio	10,757	0.052	0.115	0.000	1.000
Log-Income	10,757	10.943	1.074	0.000	16.030
Log-Assets	10,757	12.478	1.550	1.792	17.741
Log-Debt	10,757	3.817	5.339	0.000	15.483
Family size	10,757	3.670	1.889	1.000	21.000
House	10,757	0.859	0.348	0.000	1.000
East region	10,757	0.426	0.494	0.000	1.000
Middle region	10,757	0.289	0.453	0.000	1.000
West region	10,757	0.286	0.452	0.000	1.000

3.2. Measurements

3.2.1. Risky investments

The dependent variables of this study were the holding of risky financial assets of households (RA holding) and the proportion of risky investments to total financial assets (RA ratio). Risky financial asset holding was measured by the question: "Does your family own any financial products, for example stock, fund, government bonds, trust products, foreign exchange products and so on?" The answer equaled 1 if the household held risky financial assets, and 0 otherwise.[1] The risky asset ratio was calculated by dividing the amount of risky financial assets by the total amount of financial assets. Total financial assets included fixed-term deposits, savings, risky financial assets, and the total amount that individuals or institutions owed the household, excluding housing value.

3.2.2. Trust

The core independent variable of interest in this paper was trust radius (Radius), which was measured by the question: "How much do you trust the following people (family, neighbors, strangers, Americans, local government, doctors)?" Answers for each of these categories ranged from 0 (*distrustful*) to 10 (*very trustworthy*). The social distance of trusted groups of people was then calculated using item response theory (IRT), and trust radius was measured by calculating an individual's trust gradient (decline of trust) between specific groups at different social distances (see Hu, 2017). Following the IRT results, the categories were limited to family, neighbors, and strangers. Finally, trust radius was normalized by subtracting the minimum trust value from the trust radius and dividing by the range (see Hu, 2017), leading to values between 0 and 1. So, a high trust radius indicated a broad range of trust, that is a low trust gradient. See Appendix A for the exact calculation.

Table D1 in Appendix D shows a moderate relationship ($r = 0.31$) between our measure of trust radius and a measure of generalized trust in the CFPS data, indicating that these measures were statistically different. Also, generalized trust was only moderately correlated with specific trust in parents, neighbors, and strangers, whereas the measure of trust radius was increasingly correlated with specific trust in these groups, reflecting the nature of the latter measure.

3.2.3. Control variables

Individual demographic variables included the financial respondent's age, sex (1=*male*, 0=*female*), years of education, marital status (1=*married*, 0=*otherwise*), health status (1=*healthy*, 0=*unhealthy*), having retirement security (1=*yes*, 0=*no*), hukou[2] (1=*rural*, 0=*urban*), and confidence about the future (5-point scale, ranging from 1=*not confident at all* to 5=*very confident*). Risk preference (Risk) was based on responses to five money gambles converted into a 6-point scale, ranging from 1(*risk aversion)* to 6 (*risk preference*) (see Appendix B).

Household variables included family income, household total assets, household debts (all converted into logarithms), household demographics (family size, the ratio of elderly and the ratio of children), and house ownership (1=*yes*, 0=*no*). In addition, a region-level variable was included (east-, middle- and west of China).

3.2.4. Moderator variables

The importance of information was expected to moderate the effect of trust on risky investments. We analyzed the perceived importance of six information channels, i.e., newspapers, cell phone text messaging, radio, the Internet, television, and other people (Interpersonal) by Confirmatory Factor Analysis (see Appendix C). Based on the results the information importance scores of newspapers, radio, and cell phone texting formed one factor with roughly equal loadings, which we named traditional media (Traditional). Consequently, we took the average of the importance scores for the latter type of channels. The other information importance scores appeared to be unrelated to each other and were considered separately in our analysis.

3.3. Model

Since holding risky financial assets was a binary variable, we used the Probit model to explain the probability of holding risky financial assets, summarized in Eq. (1):

$$RA\ holding_i^* = \beta_0 + \beta_1 Radius_i + \beta_2 Radius_i^2 + \beta_x X_i + \varepsilon_i \tag{1}$$

$$RA\ holding_i = \begin{cases} 1, RA\ holding_i^* > 0 \\ 0, RA\ holding_i^* \le 0 \end{cases}$$

where $RA\ holding_i$ denotes whether the household invested in risky financial assets. $Radius_i$ denotes the trust radius, X_i represents both individual, household, and district level variables, and ε_i is the disturbance term.

Since the household risky asset ratio to total financial assets was a value between 0 and 1 and had many values that took the value of 0, we used the Tobit model to estimate the effect of household trust on household asset allocation, summarized in Eq. (2):

$$RA\ ratio_i^* = \beta_0 + \beta_1 Radius_i + \beta_2 Radius_i^2 + \beta_x X_i + \varepsilon_i \tag{2}$$

$$RA\ ratio_i \begin{cases} RA\ ratio_i^*, \ RA\ ratio_i^* > 0 \\ 0\ , RA\ ratio_i^* \le 0 \end{cases} \#$$

where $RA\ ratio_i$ equals the ratio of the amount of risky financial assets to total financial assets. $RA\ ratio_i^* > 0$ denotes a positive share of risky assets. The other variables were similar as in the Probit model.

The moderating effects of information importance were modeled as follows:

$$Y = \beta_0 + \beta_3 Z + (\beta_1 + \beta_4 Z) Radius_i + (\beta_2 + \beta_5 Z) Radius_i^2 + \beta_x X_i + \varepsilon_i \tag{3}$$

where Y equals $RA\ holding_i$ or $RA\ ratio_i$, and Z denotes the moderator variable. The other variables were similar as in the Probit model.

4. Results

4.1. Descriptive statistics

In our sample, 80.08% of households participated in the financial market, so almost 20% of households did not even have savings or deposits. Table 1 shows sample statistics for the variables of interest; only 6.09% in our sample reported that they invested in risky financial products at the survey time.

It seemed that Chinese households tended to put money in their saving accounts rather than invest in risky financial products (Cui & Zhang, 2021; Peng et al. 2022). The average age of the financial respondents in our sample was 48 years, with slightly more males than females. Most financial respondents were married, mostly of rural origin, and had low risk appetite. On average, households consisted of about four members, and most households owned their houses.

We divided the sample into two groups, above (or equal to) and below the median trust radius, respectively. The difference in holding risky financial assets between the narrow trust radius group (4.45%), and the broad trust group (7.63%) was significant according to a Chi-

[1] CFPS data do not separate government bonds from financial assets. As reported in Jia et al. (2025), bonds represent only 0.29% of Chinese household financial assets, which has little effect on our results.

[2] China's hukou (household registration) system is a government-run registry that ties education, health care, and other public services to citizens' registered residences.

square test ($p<0.001$). Also, the difference between the average risky investment ratio in the narrow trust radius group (2.25%) and the broad radius group (3.70%) was significant according to a *t*-test ($p<0.001$). Both results were consistent with Hypothesis 1.

4.2. Baseline regression

Table 2 shows the results of the baseline regression. Columns 1 and 3 examine the trust effect on risky market investments. We evaluated the main effects of trust radius while excluding the squared trust radius from the regressions in Columns 1 and 3 of Table 2 (see Wurm & Reitan, 2025). We found that trust radius had a positive effect on household risky financial asset holding, but not on the proportion of risky financial assets to total financial assets, partially confirming Hypothesis 1.

Table 2
Effects of trust on household risky financial assets.

	RA holding		RA ratio	
	(1)	(2)	(3)	(4)
Radius	0.448*	5.043**	0.224	3.053*
	(0.205)	(1.951)	(0.128)	(1.272)
Radius^2		−3.756*		−2.309*
		(1.579)		(1.021)
Age	0.002	0.002	0.002	0.003
	(0.003)	(0.003)	(0.002)	(0.002)
Male sex	−0.012	−0.015	−0.018	−0.019
	(0.050)	(0.050)	(0.031)	(0.031)
Education	0.071***	0.070***	0.041***	0.040***
	(0.009)	(0.009)	(0.006)	(0.006)
Health	−0.005	−0.005	−0.016	−0.014
	(0.081)	(0.081)	(0.050)	(0.050)
Married	−0.147*	−0.151*	−0.110*	−0.111*
	(0.074)	(0.075)	(0.046)	(0.046)
Pension	0.289***	0.288***	0.188***	0.187***
	(0.081)	(0.081)	(0.051)	(0.051)
Hukou	−0.448***	−0.453***	−0.291***	−0.293***
	(0.053)	(0.053)	(0.036)	(0.036)
Risk	0.006	0.008	0.004	0.005
	(0.014)	(0.014)	(0.009)	(0.009)
Elderly ratio	−0.141	−0.143	−0.117	−0.117
	(0.104)	(0.104)	(0.064)	(0.064)
Children ratio	0.130	0.141	0.028	0.035
	(0.225)	(0.225)	(0.140)	(0.139)
Log-Income	0.165***	0.164***	0.087**	0.087**
	(0.050)	(0.049)	(0.030)	(0.029)
Log-Assets	0.417***	0.417***	0.241***	0.241***
	(0.030)	(0.030)	(0.019)	(0.019)
Log-Debts	−0.019***	−0.019***	−0.006*	−0.006*
	(0.005)	(0.005)	(0.003)	(0.003)
Family size	−0.082***	−0.082***	−0.049***	−0.049***
	(0.020)	(0.020)	(0.013)	(0.013)
House	−0.706***	−0.706***	−0.403***	−0.404***
	(0.090)	(0.090)	(0.056)	(0.056)
Middle region	−0.109	−0.111	−0.086*	−0.087*
	(0.059)	(0.059)	(0.037)	(0.037)
West region	−0.207**	−0.212**	−0.153***	−0.155***
	(0.073)	(0.074)	(0.046)	(0.046)
Constant	−8.867***	−10.208***	−5.079***	−5.902***
	(0.490)	(0.789)	(0.295)	(0.506)
N	10,757	10,757	8,615	8,615
Pseudo. R^2	0.337	0.338	0.312	0.314

Note: Standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

We further estimated the nonlinear effects of trust in Columns 2 and 4 by adding the squared trust radius to the regression. These results suggest that the effect of trust radius on risky asset holding and risky asset ratio was inverted U-shaped, as expected. At narrow trust radius values, trust was positively correlated with investment in risky assets. After the inflection point (0.67 for risky asset holding and 0.66 for the risky asset ratio), trust radius and risky investments were negatively related, confirming Hypothesis 2. Excessive trust may be defined as a trust radius value exceeding the inflection point. Calculations show that 22.28% of our sample exhibited excessive trust in decisions regarding risky investment participation, while 26.96% demonstrated excessive trust in risky asset allocation. Based on Wurm and Reitan (2025), we assumed that mean-centering was not necessary when estimating nonlinear and interaction effects.

Education was positively associated with both participation in the risky financial market and the ratio of risky financial assets since education may improve an individual's understanding, information processing, and analytical skills in financial markets (Zhu & Xiao, 2022). Households with higher income and wealth, and people who had pension were more likely to participate in the risky financial market and invested in it more, while households with debt, more family members, and owning a house, were less likely to participate in risky financial markets and held smaller proportions of risky assets.

Being married had a negative effect on risky investments. Possible reasons for this are the prevalence of risks in married households due to consumption rigidities and income fluctuations (Xiao, 2018), in which case investments in risky financial assets may be reduced. The effect of Hukou—the official registered location of living—shows that people living in a rural area were less likely to invest in risky assets. As compared with the east region of China, those who lived in the west and middle of the country were less likely to participate in the risky financial market, and those who lived in the west were less likely to own a greater proportion of risky financial assets. A possible explanation may be that in the cities and the east of China there may be more openness to the outside world, and the financial market may be more developed such that people had more chance and opportunity to invest in risky financial assets.

4.3. Perceived importance of information

To explore the moderating effects of information, we classified information channels into four categories: traditional media (newspapers, radio broadcasting, mobile text messages), Internet, TV, and interpersonal channels (see Appendix C). As a first step, we included all information importance variables simultaneously. Only the perceived importance of traditional media had a significant moderating effect on the relationship between trust and risky investments (see Columns 1 and 2 in Table 3). In the second step, we only included traditional media as a moderator. Again, the interactions of traditional media importance with the trust variables were significant (see Columns 3 and 4 in Table 3). The interactions of importance of the other information channels with the trust variables were not significant when included separately (see Table D3 of Appendix D).

Furthermore, the interaction term of trust radius and traditional media showed a significant negative coefficient, while the interaction term between squared trust radius and traditional media showed a significantly positive coefficient, indicating a change in the shape of the trust-investment relationship, confirming Hypothesis 3. At the highest level of perceived information importance, with a small radius of trust,

Table 3
Moderation effect of information channels.

	RA holding (1)	RA ratio (2)	RA holding (3)	RA ratio (4)
Radius	13.884	9.029	15.202***	10.808***
	(7.439)	(4.662)	(4.502)	(2.965)
$Radius^2$	−10.908	−7.032	−11.453**	−8.154***
	(6.115)	(3.788)	(3.569)	(2.329)
Radius*Traditional	−4.940*	−3.714*	−4.467**	−3.409**
	(2.339)	(1.573)	(1.664)	(1.158)
$Radius^2$*Traditional	3.803*	2.817*	3.376**	2.563**
	(1.862)	(1.238)	(1.285)	(0.889)
Radius*Television	−1.108	−0.566		
	(1.543)	(0.997)		
$Radius^2$*Television	0.736	0.383		
	(1.255)	(0.801)		
Radius*Internet	0.078	0.359		
	(1.447)	(0.898)		
$Radius^2$*Internet	0.147	−0.188		
	(1.198)	(0.735)		
Radius*Interpersonal	2.391	1.240		
	(1.462)	(0.930)		
$Radius^2$*Interpersonal	−1.893	−0.948		
	(1.178)	(0.740)		
Traditional	1.511*	1.162*	1.386**	1.074**
	(0.716)	(0.487)	(0.526)	(0.368)
Television	0.337	0.165	−0.051*	−0.031*
	(0.462)	(0.302)	(0.020)	(0.012)
Internet	0.043	−0.059	0.136***	0.082***
	(0.426)	(0.268)	(0.021)	(0.013)
Interpersonal	−0.758	−0.414	−0.032	−0.024
	(0.443)	(0.285)	(0.021)	(0.013)
Constant	−13.084***	−7.748***	−13.602***	−8.374***
	(2.283)	(1.448)	(1.484)	(0.982)
N	10,741	8,603	10,741	8,603
Pseudo R^2	0.352	0.328	0.351	0.327

Note: Standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

households more often held risky assets and invested proportionally more, while households invested less at low levels of perceived information importance. At higher levels of trust radius, risky investments were higher, but for investors who found information very important, investments were lower. Moreover, at very high levels of trust, the impact of information importance was small.

The perceived importance of traditional media changed the effect of trust on financial market participation (Column 3 in Table 3) from an inverted U-shape to a natural U-shape as the perceived importance of information increased (see Fig. 1). The locations of the inflection points, and the intersections of the curves (around trust radius values of 0.50 and 0.83, respectively), were similar for each level of perceived information importance. About 29.47% of households were before the first curve crossing, while only about 1.93% were after the second curve crossing. Almost 68.76% of households were between the two crossings, where the moderating effect of information importance was almost absent.

Table 4
Robustness tests.

	Amount	RA holding	RA ratio
Panel A: Changing the dependent variable into the amount of risky financial investments			
Radius	75.470**		
	(28.086)		
$Radius^2$	−56.333*		
	(22.714)		
Control variables	Yes		
N	10,757		
Pseudo R^2	0.187		
Panel B: Changing the sample age range into 25–60 years			
Radius		5.738**	3.311*
		(2.309)	(1.495)
Radius2		−4.252*	−2.491*
		(1.856)	(1.192)
Control variables		Yes	Yes
N		8,022	6,483
Pseudo R^2		0.343	0.318
Panel C: Changing the independent variable into trust in strangers			
Trust		0.130***	0.083***
		(0.034)	(0.021)
$Trust^2$		−0.016**	−0.011***
		(0.005)	(0.003)
Control variables		Yes	Yes
N		10,757	8,615
Pseudo R^2		0.340	0.315

Note: In Panel A, we took the logarithm of the dependent variable. Standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

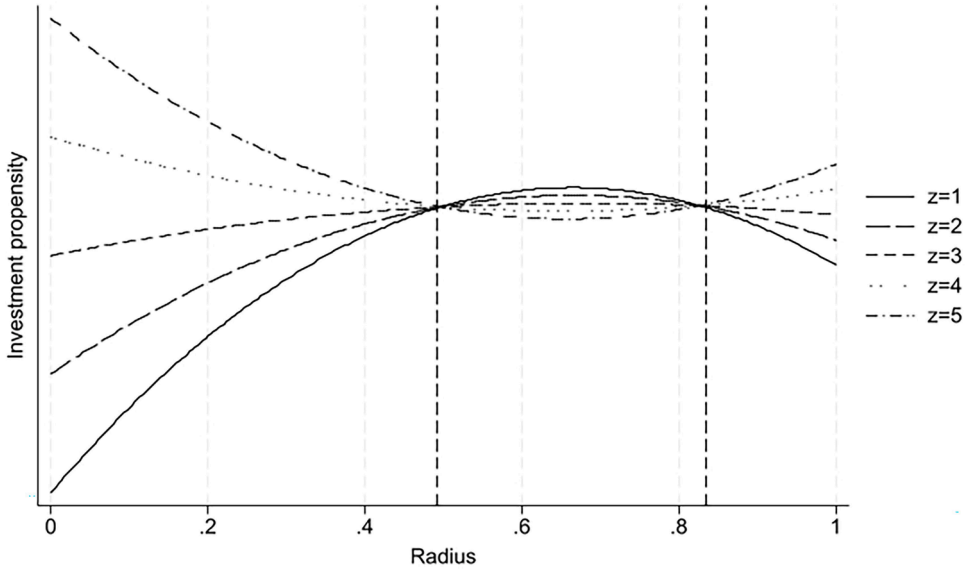

Fig. 1. Effects of trust radius on household risky investment holding for different levels of information importance from traditional media. *Note. z* indicates the value of the perceived importance of information from the traditional media channels on the 5-point scale.

Table 5
Instrumental variable test.

	RA holding	RA ratio
Radius	176.024**	123.307*
	(67.208)	(55.612)
$Radius^2$	−139.565*	−98.015*
	(54.451)	(45.404)
F-value for the instrument	28.90	24.17
P-value of Wald test of exogeneity	0.0046	0.0036
Control variables	Yes	Yes
N	8,515	6,696

Note: Standard errors in parentheses.
*p < 0.05, ** p < 0.01, *** p < 0.001

4.4. Robustness of results

The robustness of the results has been assessed in three different ways. First, we changed the way we measured the holding of risky financial assets by using the amount of household investment in risky financial assets. The results were consistent with the previous section in that trust had a positive effect on the amount of household risky financial assets and this result was nonlinear (Table 4, Panel A).

Second, we limited the sample to financial respondents aged 25–60 years old since in China people over the age of sixty may retire (Table 4, Panel B). The results were similar as those shown in Table 2.

Third, we followed Ma (2024) using only trust in strangers (people met for the first time) measured on a 10-point scale, ranging from 1= (*distrustful)* to 10 (*very trustworthy*). Table 4 panel C shows the results, which were again similar as those in Table 2. The results of these robustness checks confirmed the existence of a non-linear relationship between social trust and risky financial investments. [3]

4.5. Instrumenting trust radius

The relationship between social trust and household risky financial asset holding may have a reverse causal interpretation because the experience of investing in risky assets may also build trust. To examine this possible endogeneity, we used the average level of trust (the relevant survey question read: "How much do you trust people you meet for the first time?") in the district as an instrumental variable. On the one hand, Alesina and Ferrara (2002) showed that a person's trust tends to be correlated with the level of trust of people around them, and that trust among residents is the result of social interactions. So, the district and county average trust levels were highly correlated with our core explanatory variables. On the other hand, the level of trust in the district did not have a significant effect on household risky market participation. To ensure the exogeneity of the instrumental variable, we removed the data with a sample size of less than 40 in the districts and counties and finally obtained 8,515 observations from 24 provinces. Table 5 shows the instrumental variable regression. The Wald test was significant, indicating that the trust radius may be endogenous, thus warranting the use of the instrumental variable. Our variables have also passed the weak instrumental variable *F*-test, and the results of the second-stage regression were consistent with the benchmark regression, suggesting that our results remained robust after dealing with endogeneity. This indicated that trust indeed facilitated households' participation in risky financial markets as well as the proportion of risky financial assets held, and that this effect was nonlinear.

[3] Following a suggestion by one of the reviewers, we also conducted robustness tests by replacing the trust radius with trust in parents and trust in neighbors (see Table D2 in Appendix D). The results lack the level of significance as in trust in strangers, reflecting the low relevance of these groups in explaining stock market behavior.

Table 6
Heterogeneity analysis by wealth group.

	RA holding		RA ratio	
	Low wealth (1)	High wealth (2)	Low wealth (3)	High wealth (4)
Radius	−3.326	8.252***	−3.869	4.983***
	(2.569)	(2.173)	(2.861)	(1.309)
P-value of coefficient difference	0.003		0.000	
$Radius^2$	2.900	−6.311***	3.192	−3.835***
	(2.088)	(1.765)	(2.270)	(1.056)
P-value of coefficient difference	0.003		0.000	
Control variables	Yes	Yes	Yes	Yes
N	5,378	5,379	4,026	4,589
Pseudo R^2	0.289	0.278	0.261	0.263

Note: We tested the differences in the coefficients between the groups by bootstrapping 1000 times. The *p*-values of coefficient differences show that the differences between the two groups were significant. Standard errors in parentheses.
* p < 0.05, ** p < 0.01, *** p < 0.001

4.6. Heterogeneity

4.6.1. Trust, wealth, and risky financial market participation

We estimated the differential role of trust radius across households with different levels of wealth. Since there were certain thresholds for participation in financial markets, trust radius might have no effect for household with low levels of wealth. We divided our sample into two groups, low and high wealth, using the median as the boundary, and tested the effect of the trust radius between the two groups. Table 6 shows the results. Columns 1 and 3 show results for the low-wealth group and Columns 2 and 4 show results for the high-wealth group. We only found significant effects in the high wealth group. For wealthy households, entry restrictions were less likely to be binding, and trust may have become more important, but for low-wealth households, the fixed cost of participating in risky markets may have been the main reason for participation. This result highlighted that wealth was a necessary condition for market participation. Trust might influence a person's decision to participate only if entry costs are affordable. Our results were similar to Cui and Zhang (2021) and Ma (2024).

4.6.2. Trust, digital infrastructure, and risky financial market participation

The impact of social trust on risky investment may be different in areas with different levels of financial development. Therefore, we used the Peking University Digital Inclusive Finance Index to construct a categorical variable for digital inclusion development (Institute of Digital Finance, 2019). We ranked the level of digital financial inclusion development in different provinces, with the top ten being the high-level group, the middle ten being the medium-level group, and the remainder being the low-level financial inclusion development group.[4] Table 7 shows the effect of trust on household holdings of risky financial assets and the share of household risky financial assets at different levels of digital infrastructure. The nonlinear effect of social trust on risky asset holdings was significant only in areas where digital infrastructure was well developed. Approximately 13.99% of households in the high-level provinces participated in the risky financial market, while only 4.24% and 3.10% of households in the middle- and low-level provinces did so.

[4] The high-level group includes Shanghai, Beijing, Zhejiang, Fujian, Jiangsu, Guangdong, Hubei, Tianjin, Chongqing and Hainan; the middle-level group includes Shandong, Anhui, Sichuan, Liaoning, Jiangxi, Henan, Shaanxi, Guangxi, Hunan and Shanxi; the low-level group includes Inner Mongolia, Hebei, Heilongjiang, Yunnan, Ningxia, Jilin, Guizhou, Xinjiang, Tibet, Gansu and Qinghai.

Table 7
Heterogeneity analysis by digital infrastructure level.

	RA			RA ratio		
	High	Medium	Low	High	Medium	Low
Radius	9.896***	1.561	0.318	6.465***	0.457	−0.587
	(2.900)	(3.142)	(3.702)	(1.735)	(2.193)	(2.286)
P-value of coefficient difference between high and medium group	0.049			0.024		
P-value of coefficient difference between high and low group	0.039			0.015		
Radius^2	−7.528**	−0.824	−0.659	−5.009***	−0.188	0.295
	(2.371)	(2.510)	(2.985)	(1.413)	(1.729)	(1.825)
P-value of coefficient difference between high and medium group	0.047			0.024		
P-value of coefficient difference between high and low group	0.065			0.021		
Control variable	Yes	Yes	Yes	Yes	Yes	Yes
N	2,617	4,928	3212	2,272	3,963	2,380
Pseudo R^2	0.292	0.330	0.293	0.268	0.310	0.282

Note: We tested the differences in the coefficients between the groups by bootstrapping 1000 times. The *p*-values of coefficient differences shows that the differences between the two groups were significant.
Standard errors in parentheses.
*p < 0.05, ** p < 0.01, *** p < 0.001

Possibly, the low participation in risky financial markets in provinces with less developed digital infrastructure had resulted in small sample variances thus making it difficult to detect the effect of trust. A high level of digital infrastructure enhanced trust impact, likely due to an abundance of information and experience with other financial services within the infrastructure. Conversely, lack of information and market inefficiency may have suppressed the effects of trust at medium- and low-level infrastructure, resulting in minimal risky financial market investments.

Table D3 in Appendix D did not show significant moderation effects of the importance of information from the Internet channel with the trust radius variables. However, the information importance of Internet was measured regardless of having access to Internet, thus neglecting the possibility of moderation depending on Internet access. We further considered whether the regional digital infrastructure level (as a proxy for Internet access) has affected this relationship. The rationale is that Internet channels could play a more prominent role in reducing information frictions in regions with less-developed digital infrastructure, whereas in regions with medium and higher developed infrastructure, such effects may be less pronounced. Table D4 shows the results of heterogeneity analysis across three different levels of digital infrastructure. However, the moderating role of perceived information importance of the Internet channel remained statistically insignificant across all three groups, thus refuting the possible dependency of information importance on information access. A reason could be that investors make investment decisions more based on financial literacy or social networks rather than the Internet channel in regions with medium or low digital infrastructure.

Table 8
Heterogeneity analysis by level of risk preference.

	RA holding		RA ratio	
	High risk preference (1)	Low risk preference (2)	High risk preference (3)	Low risk preference (4)
Radius	2.182	9.199**	1.774	5.013**
	(2.613)	(2.894)	(1.682)	(1.911)
P-value of coefficient difference	0.041		0.118	
Radius^2	−1.251	−7.439**	−1.203	−4.019**
	(2.102)	(2.347)	(1.341)	(1.546)
P-value of coefficient difference	0.025		0.098	
Control variables	Yes	Yes	Yes	Yes
N	4,667	6,090	3,818	4,797
Pseudo R^2	0.306	0.379	0.288	0.347

Note: Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

4.6.3. Trust, risk preference, and risky financial investment

To study heterogeneity of trust effects across different risk preference groups, we split the sample into risk averse and risk seeking groups. Approximately half of the observations had a risk preference score equal to 1, representing low risk preference while those with a score higher than 1 represented the high-risk-preference group.

Table 8 shows that in the low-risk-preference group, trust radius had a significant effect on risky investment. However, the difference between the two groups was only significant for risky asset holding. This indicates that families with high risk preference were less affected by trust in their stock market participation and for households with low risk preference trust was a key force to overcome the initial psychological threshold to invest in risky assets.

5. Discussion and implications

Our study contributes to both the theory and practice of household risky investments. Theoretically, it provides a partial explanation for the limited participation puzzle in financial markets. We show that the effect of trust on risky financial investment is nonlinear. Specifically, investors' trust in others affects both their decision to participate and the size of their investment. However, excessive trust makes people trust others too much, making it more difficult for them to make investment decisions or to invest without analyzing them, possibly leading to losses and, consequently, to a lower level of investments.

Grouping our sample by different levels of wealth and digital financial development, we find that while there is a facilitating effect of trust on investment in risky assets, this effect is only significant in the high-wealth group and in the high-digital-financial-development group. This finding has important implications for the government. Trust may only work in the high-wealth group because in the low-wealth group, even if they trust the risky financial market, they face higher liquidity constraints and risky market entry thresholds (Cui & Zhang, 2021; Guiso et al., 2008; Ma, 2024). In addition, digital financial inclusion is characterized by low cost, wide coverage, and high efficiency, which may significantly reduce transaction costs and investment barriers, making it easier for people to access financial services, and expanding the scope of financial services as well as financial accessibility (Bourreau & Valletti, 2015; Lu et al., 2021; Tang, 2022; Yue et al., 2022).

One of our key findings is that perceived information importance moderates the effect of trust on risky investments. However, we only found a moderating effect of information obtained from traditional

information channels, whereas the moderating effect of information obtained from the Internet was not significant. Possible explanations are that those who rely on traditional channels may be less familiar with digital technology and rely more on traditional information mechanisms, whereas Internet information users are likely to be more diverse and the information they obtain from digital channels is more fragmented, rendering the moderating effect insignificant. The facilitating effect of trust seems to diminish at higher levels of perceived importance of traditional information channels (at the low end of trust) and even shifts from an inverted U-shape to a positive U-shape when the importance or information reaches a certain level. For people with high but not excessive trust radius—about 69% of the sample—the impact of information importance on the trust effect on risky asset holding was not significant. Even for people with excessive trust radius—about 2% of the sample—the impact of information on the effect of trust was small. Notably, the group with relatively low trust—about 30% of the sample—and low importance of information, an increase in trust may significantly increase their risky investments.

Our study has important implications for government policy. Steinhardt and Delhey (2020) argue that there is a trust crisis in China's modernization process. Fraud in financial markets and lagging or absent financial regulation may adversely affect investor confidence and market stability (Khanna et al., 2015). An increase in trust may significantly increase household risky investments. Therefore, measures such as improving the legal system may be considered when formulating policies for financial market development to increase overall trust in society. However, lagging or lack of financial regulation may adversely affect investor confidence and market stability (Gande & Lewis, 2009; Khanna et al., 2015). In addition, the government may conduct targeted interventions. For example, for high-wealth households and those in areas with high levels of digital financial inclusion, trust enhancement is particularly important at a time when the biggest barrier to participation in risky financial markets may no longer be information asymmetry or barriers to entry in financial markets. For other households, financial market access thresholds and information asymmetry may still be a key issue for the government to address. Finally, the government may stimulate investor education activities to improve investors' financial literacy and risk awareness, such that they can better understand market risks to make rational investment decisions, rather than simply relying on trust, while broadening investor information channels to help families understand risky financial products and rules of participation, helping more families to make risky investments and optimize asset portfolio allocation.

The results of this study are also relevant for private companies and financial institutions. Although the impact of trust varies across groups, in general trust tends to increase risky investments. An increase in the trust radius of financial respondents implies that households are more willing to try and accept new financial products and services, which may directly expand the potential customer base of financial institutions. It is therefore desirable for financial intermediaries to ensure that they provide clear, detailed and easy-to-understand information on financial products, including key elements such as risk levels, expected returns and fee structures. This helps customers to fully understand the product features, make informed investment decisions and enhance their trust in financial institutions and listed companies. In addition, there is a "guilt-by-association" effect of trust (Steinhardt, 2012), in which people's trust in a certain individual comes not only from their judgment of the individual itself, but also from their judgment of the "organization" to which the individual belongs (Dee et al., 2011; He et al., 2016). Therefore, listed companies should regularly publish financial reports, provide major events and other information, while also strengthen internal regulation and supervision of information disclosure, to ensure the truthfulness, accuracy and timeliness of the information, to prevent false information and insider trading and other behaviors to harm the interests of investors, to avoid the loss of investor trust.

6. Conclusion and limitations

In China, where individual investors are the majority, it is particularly important to study the impact of trust on risky investments. Individual investors' trust includes both trust in information published by the government or stock exchange markets, which is institutional trust, and trust in information obtained by word-of-mouth such as family and friends, which involves interpersonal trust. In previous studied, trust is mostly measured by generalized trust, a measure that cannot encompass all trust. We calculated the radius of trust using the measure of Hu (2017) and Lim et al. (2021), showing that trust radius facilitated household risky investments (Cui & Zhang, 2021; Guiso et al., 2008; Ma, 2024).

Our research has several limitations. Due to database limitations, we did not have access to data on different types of risky assets, and therefore there was no way to test the role of trust radius in investments in different types of risky financial assets.

Risk preference was not significantly related to risky investments. This result is similar to Guiso et al. (2008). One possible reason is that risks include both the financial risk of losing money and the socio-emotional risk of being betrayed (Alós-Ferrer & Farolfi, 2019; Bohnet & Zeckhauser, 2004). In financial investments, investors may be more concerned with risks arising from information asymmetry or fraud, which may influence their investment decisions, rather than just financial risks. The fact that our measure of risk preference focuses only on financial losses may also explain why risk preference was not significant in our study. It may also explain why the effect of trust on risky asset holding differed between high and low risk-preference groups. In addition, our data are restricted by the CFPS data structure, which does not separate government bonds from financial assets. However, we believe this limitation has minimal impact on our results.

Third, China's stock market, once for a long time an approval system, has changed to a registration system in recent years, which has relaxed the threshold for companies to go public and increased the risk and cost of investment.[5] However, the data we used is from 2018, and the Chinese stock market only formally implemented the policy registration system in 2019, and the full implementation of the registration system started in 2023; therefore, there is no way for us to test the effect of the trust radius after the implementation of this policy. Further research may be conducted in the future when newer and more comprehensive data are available.

CRediT authorship contribution statement

Li Jia: Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Conceptualization. **Yi Yuan:** Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Yuxuan Dong:** Methodology, Conceptualization. **Gerrit Antonides:** Writing – review & editing, Supervision, Methodology, Investigation, Conceptualization.

[5] Under the vetting system, the China Securities Regulatory Commission (CSRC) will comprehensively scrutinize a number of aspects of a company, such as its financial position, business model, market prospects, etc., to ensure that only companies that meet the requirements are allowed to make public offerings. Under the approval system, companies are still required to submit relevant materials in order to go public, but the focus of the CSRC's review has shifted to the adequacy and truthfulness of information disclosure rather than the assessment of corporate value.

Appendix A. Measurement of trust radius

We adopted the idea of Hu (2017) and used the improved measurement scheme of Lim (2021) to measure trust radius. Hu (2017) measured trust radius in two steps. The first step uses Item Response Theory (IRT) to measure the Strength of Interpersonal Ties (SIT) reflecting the relative social distances of individuals in the social environment for the entire sample and the second step calculates RT (Trust Radius) using OLS regression of trust on the SITs for each individual.

First Step: Calculation of SIT

We measured SIT with IRT to examine the relative "distance" between objects (Hu, 2017). Since the IRT model with a multi-category response structure would introduce complex information, we followed Hu's approach, recoding the level of trust measured on the 0–10 scale into 0 and 1 (using 0=0–5; 1=6–10).

CFPS includes six questions about trust (How much do you trust your parents, your neighborhood, Americans, cadres, doctors, and people you meet for the first time, i.e., strangers). We compared two IRT models: the one-parameter logistic model (1-PL model) and the two-parameter logistic model (2-PL model). The item characteristic curves (ICC) in Fig. A1 show the probability of trusting each group at each level of "difficulty" to trust this group. The "difficulty" to trust a group equals the SIT and is associated with the 50% probability of trusting this group. ICCs further to the right-hand side of the figure refer to less-trusted groups. In the 2-PL model the ICCs of several items cross, thus preventing a single ordering of the six items. One way to get a consistent ranking is removing the Americans, cadres, and doctor groups. The other way is removing the neighbors and Americans groups.[6] Here, we choose the first way to calculate trust radius based on two main considerations. Since this method is relatively new, we chose our groups to resemble the ones in Hu (2017) using family, neighbors, those known personally, and people they meet for the first time. The second reason is that due to China's "guanxi" culture of relationships, Chinese people do not have a clear view of local officials and doctors. In the absence of direct relational bonds with cadres or doctor, trust cannot be built (Song et al., 2012).

The results and BICs for 1-PL and 2-PL were very close and the relative social distances were not much different for the two models. We chose the simpler 1-PL model to calculate the trust radius. For example, in the 1-PL. model, the relative social distance between parents and neighbors equaled $(-0.575) - (-2.346) = 1.771$.

Table A1
Estimated strength of interpersonal ties (SITs).

Object	1-PL Model	2-PL Model	Social distance	SIT
(1) Parents	−2.346(0.038) ***	−2.419(0.088) ***	/	1
(2) Neighbors	−0.575(0.016) ***	−0.607(0.024) ***	1.771	2.771
(3) Strangers	1.700 (0.028) ***	1.715(0.050) ***	4.046	5.046
BIC	34,422.22	34,432.29	/	/
N	13,149	13,149	/	/

Note: Standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

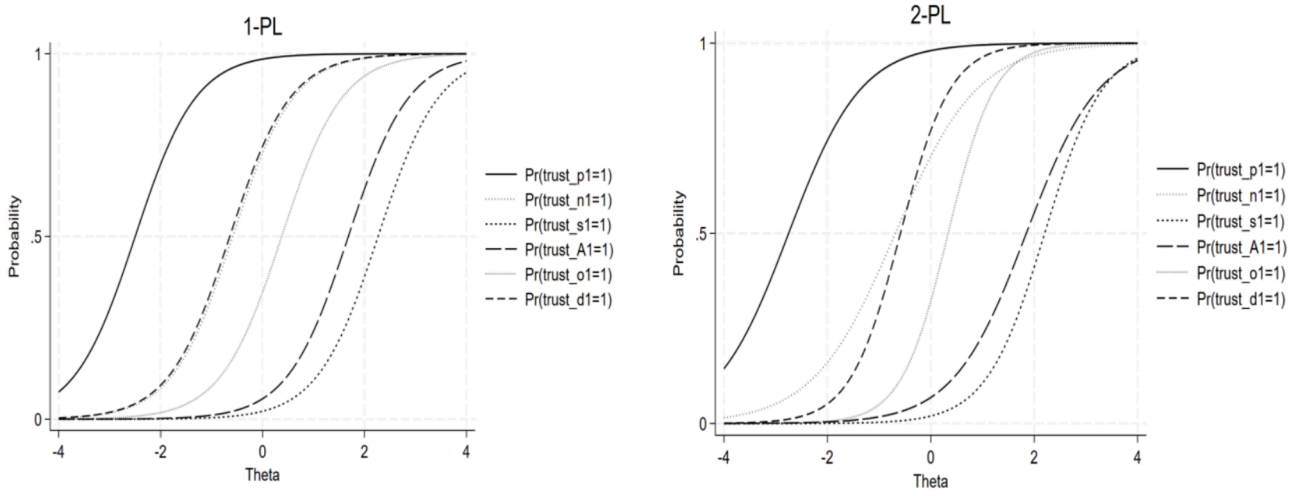

Fig. A1. Item characteristic curves for 1-PL and 2-PL estimates.

Second Step: calculation of trust radius (TR)

We estimated the TR for each individual by regressing the reported trust (at the 10-point scale) on the SITs of the three social objects. Calculating TR with OLS regression, we used Lim's (2021) improved approach on Hu (2017). Hu (2017) controlled for the trustworthiness of core family members in the OLS regression. In contrast, Lim (2021) considered the regression line's origin as the point of closest social distance at which individuals had the highest level of trust, i.e., using OLS regression with a fixed intercept equal to the maximum level of trust. This approach avoided the crossing of OLS curves due to different levels of trust in core family members. The slope of the OLS regression was the radius of trust, and since the slope was negative, we subtracted it from the minimum radius value in the sample, and dividing by the sample range (Hu, 2017), to scale the TR between zero and one.

First, referring to Lim (2021), the SIT of parents was set equal to 1. Then the others were sorted by relative social distance (see Table A1). Next, we performed OLS estimation with fixed intercepts at the maximum value of 10: $Y = \alpha + \beta * SIT$, with α equal to 10 and β the trust radius x. Finally, we standardized the trust radius: [x-min]/[max-min].

Appendix B. measurement of risk preference

The risk preference question read: "In the following questions, there will be a series of comparisons between two choices. Which one will be your choice?" Each of the items included receiving an amount for sure, and a gamble (see Table B1). Risk preference was calculated following Zhang & Gu (2020), as shown in Figure B1.

TABLE B1
Questions about risk preference.

Item1	Receive 100 yuan; Flip a coin. Receive 200 yuan if it is head; otherwise, receive nothing.
Item2	Receive 80 yuan; Flip a coin. Receive 200 yuan if it is head; otherwise, receive nothing.
Item3	Receive 50 yuan; Flip a coin. Receive 200 yuan if it is head; otherwise, receive nothing.
Item4	Receive 120 yuan; Flip a coin. Receive 200 yuan if it is head; otherwise, receive nothing.
Item5	Receive 150 yuan; Flip a coin. Receive 200 yuan if it is head; otherwise, receive nothing.

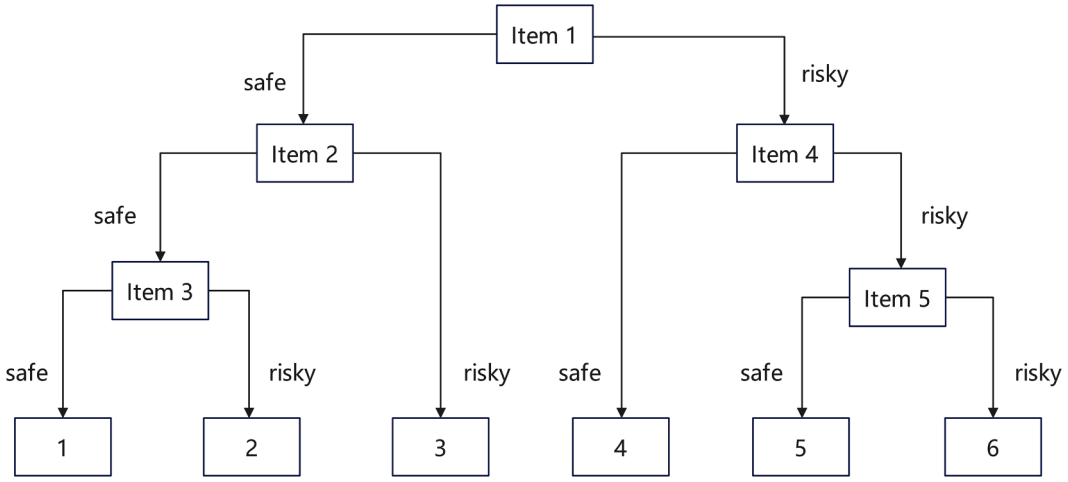

Fig. B1. Calculation of risk preference. Note. The boxes at the bottom of the figure show the risk preference scores associated with the answers to each item.

Appendix C. measurement of information importance

The information importance question read: "Please value the importance of the below channels obtaining information based on your actual situation," answered on a 5-point importance scale *(1=very unimportant, 5=very important)*. Table C1 shows the question items. A confirmatory factor analysis with four factors was conducted, yielding a Standardized Root Mean Square Residual of 0.057. Although other fit measures indicated inadequate fit, we took the mean scores of items 1–3 as indicating information importance of traditional media and kept the other information importance measures separate in our analysis.

Table C1
Factor analysis of information importance items.

Questionnaire items	Factor loadings
1. How important are newspapers and magazines in obtaining information?	0.714
2. How important is radio broadcasting in obtaining information?	0.784
3. How important is mobile text messaging in obtaining information?	0.822
4. How important is Internet in obtaining information?	a
5. How important is TV in obtaining information?	b
6. How important is hearing from others in obtaining information?	c

Note. a, b, and c refer to separate factors.

Appendix D. additional analyses

Table D1 shows correlations between our measure of trust radius and generalized trust. Generalized trust was measured by the survey question "In general, do you think that most people are trustworthy, or it is better to take greater caution when getting along with other people?" If the respondent answers that "most people are trustworthy", we took the value 1; otherwise, 0.

Table D1
Correlations between radius, generalized trust, and specific trust.

	Radius	Generalized trust	Trust parents	Trust neighbor	Trust stranger
Radius	1				
Generalized trust	0.313***	1			
Trust parents	0.241***	0.089***	1		
Trust neighbor	0.601***	0.304***	0.288***	1	
Trust stranger	0.902***	0.228***	0.045***	0.218***	1

Table D2
Robustness test using parents and neighbors.

	RA (1)	RA ratio (2)	RA (3)	RA ratio (4)
Trust_parents	0.126	0.078		
	(0.143)	(0.068)		
Trust_parents^2	−0.008	−0.005		
	(0.009)	(0.005)		
Trust_neighbors			0.145*	0.073
			(0.073)	(0.048)
Trust_neighbors^2			−0.012*	−0.006
			(0.006)	(0.004)
Control variables	Yes	Yes	Yes	Yes
Constant	−9.181***	−5.271***	−9.040***	−5.149***
	(0.723)	(0.386)	(0.537)	(0.327)
N	10757	8615	10757	8615
Pseudo R^2	0.336	0.312	0.337	0.313

Note. Standard errors in parentheses.
*p < 0.05, ** p < 0.01, *** p < 0.001.

Table D3
Moderation effects of information channels (television, internet, and interpersonal).

	RA holding (1)	RA ratio (2)	RA holding (3)	RA ratio (4)	RA holding (5)	RA ratio (6)
Radius	5.727	2.659	11.365*	7.024*	2.634	2.275
	(5.190)	(3.317)	(4.853)	(3.176)	(3.977)	(2.494)
Radius^2	−5.235	−2.436	−8.249*	−5.183*	−1.743	−1.685
	(4.336)	(2.729)	(3.909)	(2.537)	(3.245)	(2.010)
Radius*Internet	−0.127	0.097				
	(1.267)	(0.789)				
Radius^2*Internet	0.337	0.034				
	(1.052)	(0.647)				
Radius*Television			−2.177	−1.388		
			(1.279)	(0.838)		
Radius^2*Television			1.559	1.010		
			(1.029)	(0.669)		
Radius*Interpersonal					0.753	0.178
					(1.319)	(0.809)
Radius^2*Interpersonal					−0.630	−0.143
					(1.063)	(0.642)
Traditional	−0.028	−0.011	−0.026	−0.010	−0.028	−0.011
	(0.032)	(0.020)	(0.032)	(0.020)	(0.032)	(0.020)
Television	−0.051*	−0.032*	0.670	0.422	−0.050*	−0.031*
	(0.020)	(0.013)	(0.388)	(0.256)	(0.020)	(0.013)
Internet	0.093	0.015	0.138***	0.084***	0.136***	0.083***
	(0.373)	(0.235)	(0.021)	(0.013)	(0.021)	(0.013)
Interpersonal	−0.033	−0.025	−0.033	−0.025*	−0.248	−0.078
	(0.021)	(0.013)	(0.021)	(0.013)	(0.400)	(0.249)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−10.268***	−5.640***	−12.464***	−7.201***	−9.668***	−5.673***
	(1.601)	(1.030)	(1.607)	(1.052)	(1.271)	(0.804)
N	10741	8603	10741	8603	10741	8603
Pseudo R^2	0.350	0.325	0.350	0.326	0.349	0.325

Note. Standard errors in parentheses.
* p < 0.05, ** p < 0.01, *** p < 0.001.

Table D4
Moderation effects of internet information importance: heterogeneity analysis by digital infrastructure level.

	RA holding			RA ratio		
	High (1)	Medium (2)	Low (3)	High (4)	Medium (5)	Low (6)
Radius	8.683	8.269	3.656	5.365	2.009	1.600
	(6.686)	(10.941)	(11.314)	(4.250)	(6.797)	(6.800)
Radius2	−6.530	−9.751	−3.447	−4.046	−3.289	−1.423
	(5.475)	(9.684)	(9.501)	(3.438)	(5.910)	(5.550)
Radius_Internet	0.185	−1.042	−0.825	0.191	−0.067	−0.549
	(1.761)	(2.495)	(2.651)	(1.090)	(1.517)	(1.569)
Radius2_Internet	-0.128	1.650	0.685	−0.160	0.474	0.429
	(1.435)	(2.185)	(2.207)	(0.880)	(1.308)	(1.273)
Internet	0.077	0.195	0.381	0.021	−0.016	0.248
	(0.530)	(0.700)	(0.775)	(0.331)	(0.432)	(0.471)
Television	−0.068*	−0.037	−0.010	−0.036*	−0.029	0.001
	(0.030)	(0.034)	(0.042)	(0.017)	(0.022)	(0.025)
Traditional	−0.061	0.023	−0.084	−0.014	0.007	−0.058
	(0.048)	(0.054)	(0.071)	(0.027)	(0.036)	(0.042)
Interpersonal	−0.036	−0.023	−0.051	−0.039*	−0.007	−0.026
	(0.032)	(0.034)	(0.047)	(0.018)	(0.023)	(0.027)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−11.613***	−10.261**	−10.320**	−6.408***	−5.056*	−5.501**
	(2.160)	(3.176)	(3.348)	(1.359)	(1.991)	(2.068)
N	2605	4925	3211	2263	3960	2380
Pseudo R^2	0.306	0.346	0.306	0.281	0.328	0.295

Note. Standard errors in parentheses.
* p < 0.05, ** p < 0.01, *** p < 0.001

Data availability

CFPS is an existing dataset

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