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Beyond Rational Choice: Social Interaction and Financial Market Participation in Later Life

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Abstract: Using pooled 2019 and 2021 China Household Finance Survey data on 8,650 adults aged 60–95, this study shows that social interaction is positively associated with participation in risky financial markets. We estimate Probit models and Karlson–Holm–Breen (KHB) decompositions, followed by IV-Probit estimates using a leave-one-out community average social interaction index. Supplementary IV-Lasso and Double Machine Learning estimators with cross-fitting corroborate these results, suggesting that this association is unlikely to be driven by unobserved confounding. The KHB decompositions further reveal that the association operates through two distinct channels: objective financial literacy and, most strongly, risk preference, which accounts for 81.71% of the total effect in its separate decomposition; evidence for subjective financial literacy is weaker, and community heterogeneity shows no indirect effect. These findings suggest that social embeddedness in later life shapes financial behaviour through informational and risk-preference pathways, with implications for financial inclusion policies targeting older adults, subject to the limitations of the proxies and instrumental variable assumptions.

Keywords: Chinese older adults, financial behaviour, endogenous interaction, mediation analysis, machine learning

Introduction

The financial market in contemporary China has become a critical arena where macroeconomic growth intersects with individual family welfare. Active investment in formal financial markets not only enhances household property income but also serves as a pivotal mechanism for wealth accumulation and resource mobilization across the life course. As China undergoes rapid population aging, the demographic weight and economic resources of older adults have expanded dramatically, fueling a surging demand for wealth management and financial services (Yuan et al., 2022). Consequently, understanding how older individuals allocate their assets has become central to active aging research. Yet, a stark puzzle persists: despite growing financial aspirations among the "young-old" cohort, older adults remain disproportionately concentrated in low-yield, low-risk products like bank deposits, largely constrained by digital barriers and restricted information channels (Ayyagari & He, 2017; Boyle et al., 2012; Yuan et al., 2022).

Traditional economic frameworks, rooted in the permanent income hypothesis (Friedman, 1957) and life-cycle theory (Modigliani, 1966), typically attribute older adults' cautious investment patterns to individual-level parameters, such as cognitive decline, limited financial literacy, or formal risk-aversion metrics (Finke et al., 2017; Wang & Hanna, 1997). This atomistic view conceptualizes the aging consumer as an isolated rational actor navigating market frictions alone. However, such an individualized model largely overlooks the social-structural matrix within which financial behaviors are embedded. In transitional societies like China, economic transactions do not occur in a social vacuum. Instead, they are deeply intertwined with relational networks, community trust, and informal institutions, particularly among older adults (Toepoel, 2013). As older adults seek to maintain active social lives and age in place (Gilleard et al., 2007), their everyday financial decisions are inevitably reshaped by their immediate social interactions (Luong et al., 2011; Zhang & Zhang, 2015).

Empirical evidence increasingly highlights the rise of the “friend-circle wealth management” phenomenon in China (Liang & Guo, 2015). Unlike younger, digitally savvy investors who rely on independent online research, older adults often turn to friends, relatives, and neighbors to acquire financial knowledge and advice. Within these tightly knit networks, sustained social interaction not only stimulates cognitive vitality and offsets age-related learning decline (Adams et al., 2011), but also lowers informational barriers. Word-of-mouth exchanges of personal investment experiences carry higher relational trust than professional marketing, facilitating a more positive cognitive evaluation of risky financial instruments (Ellison & Fudenberg, 1995). Despite these rich sociological observations, existing quantitative literature often treats social interaction as a monolithic covariate, failing to untangle its distinct endogenous pathways, such as information transmission, social norms, and emotional utility, or to establish rigorous causal directions.

This study investigates the relationship between social interaction and risky financial market participation among older Chinese adults from a structural embeddedness perspective. We pool observations from the 2019 and 2021 CHFS, construct a consumption-based proxy for social interaction, and estimate Probit and KHB models. IV-Probit and Double Machine Learning (DML) using a community-level leave-one-out instrument provide additional evidence under the instrument validity assumptions.

This study connects informal social relations with older adults' participation in risky financial markets. The baseline association is positive and survives instrumental-variable and machine-learning robustness checks. Separate KHB decomplications provide evidence for an objective financial literacy pathway and a risk-preference pathway—the latter accounting for 81.71% of the total effect in its separate decomposition—while evidence for the subjective financial literacy proxy is weaker and the community heterogeneity proxy shows no significant indirect effect. These patterns are consistent with information-sharing and risk-preference explanations, though the survey proxies do not identify peer learning or emotional utility directly, and a non-

significant heterogeneity pathway cannot establish a transition away from collectivist norms. In doing so, the study contributes evidence on how informal relational networks may mitigate informational and cognitive frictions in later-life financial decisions, with implications for financial inclusion and active aging in transitioning economies, while retaining these interpretive limits.

Literature Review and Research Hypothesis

Theoretical and Empirical Foundations of Late-Life Financial Participation

Understanding financial market participation in later life has traditionally been the domain of neoclassical economics. According to Modigliani's (1966) life-cycle hypothesis, individuals make economic decisions by rationally distributing consumption and savings over their entire lifespan to maximize multi-period utility. A key corollary of this framework is that risk-asset allocation exhibits a "hump-shaped" trajectory, peaking around retirement and declining sharply thereafter (Fagereng et al., 2017). This late-life retreat from risky assets, often termed the investment aging puzzle, is empirically well-documented and typically attributed to shifting structural constraints. Upon retirement, the transition to fixed pension incomes reduces older adults' capacity to absorb financial shocks, thereby elevating absolute risk aversion (Jagannathan & Kocherlakota, 1996). This vulnerability is further compounded by rising digital barriers in fintech, cognitive decline, and anticipated late-life healthcare expenditures (Ayyagari & He, 2017; Boyle et al., 2012; Finke et al., 2017).

However, behavioral economics and economic sociology challenge this purely rationalist view by introducing the social embeddedness of economic behavior (Granovetter, 1985; Hong et al., 2004). Rather than operating in social isolation, economic agents are profoundly influenced by social interactions, that processes through which actors alter their preferences, cognitive schema, and behavioral choices via interpersonal communication (Manski, 2000). Empirical literature consistently demonstrates that robust social networks

positively correlate with stock market entry (Nguyen & Nguyen, 2020). For older adults, who are particularly vulnerable to institutional isolation, informal networks centered on spouses, neighbors, and friends serve as critical conduits for financial mobilization (Ostrovsky-Berman & Litwin, 2019).

Endogenous interaction refers to mutual influence between individual decision-making behaviour and reference groups, which has relied on Manski's (2000) tri-partite taxonomy: endogenous effects (peer-to-peer mutual influence), contextual effects (the exogenous influence of group characteristics), and correlated effects (similar behaviors arising from shared backgrounds or environments). Limited by their professional knowledge, individuals often find it difficult to verify the authenticity of stock market rumours and tend to spread rumours through mutual discussions and exchanges to reduce uncertainty (Duflo & Saez, 2002). Contextual interaction manifests as the one-way impact of external characteristic changes in reference group members on the behaviour of investment individuals, also known as the demonstration effect (Hardie, 2020). Correlation effects manifest in the fact that decision-making regarding risky financial asset investment within a group often relies on common characteristics rooted in similar backgrounds. However, this approach may encounter endogeneity issues as individuals with distinct traits are not randomly assigned to a community and may share similarities due to group characteristics or comparable environments. Quantitatively, scholars have focused on isolating endogenous interactions while controlling for contextual and correlated confounding variables, often by constructing regional instrumental variables or employing household demographic controls (Brown et al., 2008).

while existing studies establish a general empirical link between social interactions and financial participation, they suffer from two major limitations. One is that there is a lack of comprehensive analysis on path mechanism that fails to demonstrate the distinct relational pathways through which peers exert influence. The other one is that the existing literature largely overlooks the unique social-structural transition of contemporary China, where older adults navigate a dual pressure of rapid population aging and accelerated

financial digitalization.

To address these gaps, this study examines the mechanism of endogenous interaction within the unique context of transitional China. We deconstruct late-life social interaction into three theoretically distinct pathways: word-of-mouth information dissemination, the psychological utility of shared topical communication, and social norm conformity (He & Li, 2020). By doing so, we shift the analytical lens from passive, structural-functional compliance to an agentic, relational coping framework.

Word-of-Mouth Information Transmission and Digital Coping

Due to data availability and indicator ambiguity, the analysis of affective interaction pathways has been limited in depth and accuracy, with no determination of their directional impact on individual behaviour. To explore the direction of comprehensive social interaction's impact on financial market participation, it is necessary to consider the net effect after multiple mechanisms are stacked. Therefore, this discussion focuses on endogenous interaction levels divided into three channels: word-of-mouth, common topic pleasure, and social norm.

Facing the uncertainty and information asymmetry of the financial market, the timely acquisition of effective information and improvement of financial literacy are the foundations and prerequisites of individual financial decision-making. However, older adults in China face severe digital exclusion and structural barriers when attempting to access formal financial institutions. In this context, informal social networks function as localized, relation-based information clearinghouses.

Through frequent social interactions, older individuals with higher financial literacy disseminate their knowledge to peers via informal, colloquial word-of-mouth communication. This peer-to-peer transmission significantly reduces information asymmetry, lowers the search and cognitive costs associated with complex financial instruments, and translates abstract financial jargon into culturally accessible narratives (Ellison &

Fudenberg, 1995). Rather than being passive victims of the digital divide, older adults engage in collective, agentic coping by leveraging social capital to reconstruct their cognitive understanding of financial risk. Thus, we propose:

Hypothesis 1 (H1): *Endogenous interactions positively influence older adults' risky financial market participation through the channel of word-of-mouth information transmission.*

"Common Topic Pleasure" as Emotional Consumption

Beyond mere information transmission, late-life social interaction carries profound psychological and emotional significance. Under the lens of active aging and the aging-in-place framework (Gilleard et al., 2007), retirement often triggers a contraction of formal social roles, leaving older adults vulnerable to social isolation and a diminished sense of belonging. In response, older individuals actively seek out emotional consumption, which means that the conscious mobilization of relational ties to generate psychological well-being and emotional resonance.

When older adults engage in collective discussions regarding financial investments, the exchange of experiences generates a unique form of psychological effect - common topic pleasure (He & Li, 2020). Sharing investment successes or commiserating over losses within a trusted circle of acquaintances fosters emotional solidarity and mutual cognitive validation. This shared emotional space demystifies the intimidating, cold rationality of financial markets, reducing the subjective aversion and anxiety typically associated with risky financial assets. By transforming investment decisions into a medium for active social play and emotional connection, social interactions reshape older adults' subjective risk thresholds. Consequently, the following hypothesis is proposed:

Hypothesis 2: *Endogenous interactions positively influence older adults' participation in risky financial markets through the psychological utility of shared topical communication (common topic pleasure).*

Traditional Social Norms and Relational Conformity

Finally, within the traditional social-structural framework of Chinese society, characterized by Fei's (1992) "differential mode of association" (*chaxugeju*), interpersonal relationships are governed by deep-seated expectations of relational conformity and collective norms. In the communities, social trust is maintained through mutual observation, emulation, and adherence to shared behavioral standards. Under this normative framework, participating in financial markets can be driven by a desire for social conformity or collective alignment. Older adults may observe and replicate the investment behaviors of their peers to maintain community integration, foster cooperation, and preserve their social reputation within local networks (DiMaggio & Powell, 1983).

However, this conventional structural-functionalist view is increasingly challenged by the profound individualization of Chinese society (Yan, 2009, 2018). As contemporary older adults transition from passive structural embeddedness to the active construction of reflexive life meaning, their alignment with community patterns may no longer be driven by rigid moral policing, but modified by neo-familism and agentic self-efficacy (Yan, 2018).

To test whether traditional normative conformity still holds leverage over late-life financialization in contemporary China, or if it has indeed been superseded by individualized agency, we follow the classical sociological paradigm to formulate a baseline expectation for the empirical verification. Therefore, we hypothesize:

Hypothesis 3 (H3): *Endogenous interactions positively influence older adults' participation in risky financial markets through the channel of social norm conformity.*

Methods

Data Source and Sample Selection

The empirical analysis uses the 2019 and 2021 waves of the China Household Finance Survey (CHFS), conducted by the Survey and Research Center for China Household Finance at Southwestern University of Finance and Economics. The CHFS collects household financial, demographic, and socioeconomic information through a stratified sampling design. This study pools the two waves as repeated cross-sectional observations rather than estimating an individual fixed-effects panel model.

Household, individual, and non-questionnaire files are first merged within each survey year using the household identifier and, where applicable, the individual identifier. Variables are processed separately for 2019 and 2021 before the two annual datasets are appended. Age is calculated as the survey year minus birth year, and respondents aged 60–95 are retained. Records with missing responses in the financial asset items used in screening, invalid financial attention, literacy or risk-preference responses, missing control variables, non-positive income, or invalid household assets are excluded following the accompanying replication code. The social interaction index is constructed by PCA in the pooled sample. Observations with an undefined leave-one-out instrument remain in the baseline sample but are omitted from the IV estimations.

The final baseline sample contains 8,650 observations: 5,552 from 2019 and 3,098 from 2021. Of these, 7,212 report no risky financial assets and 1,438 report risky financial assets. The IV-Probit and IV-Lasso estimations use 8,532 observations because the leave-one-out community instrument is undefined for 118 observations.

Variables

Dependent Variable: Risky Financial Market Participation

The dependent variable, risky financial market participation (risk_asset), indicates whether the respondent's household holds any financial assets included in the operational definition. It equals 1 if the household reports stocks (d3101 = 1), funds (d5102 = 1), financial wealth management products (d7109 = 1), or a non-empty response other than the survey's no-holding code "7788" in the other-financial-products item (d7113). It otherwise equals 0 after the specified missing-response filters. The indicator therefore follows these CHFS questionnaire items rather than a separately constructed list of derivatives or trust products.

Independent Variable: Social Interaction Index

We construct a consumption-based social interaction index (social_interact), following the expenditure-proxy approach of Li et al. (2019). Seven household expenditure items are used: transportation, communication, entertainment, leisure travel, education and training, social ceremonies, and festive gifts. Monthly transportation and communication amounts are annualized as specified in the replication code; annual expenditure items retain their annual units. Each amount is transformed as ln(expenditure + 1), and PCA is applied to the pooled sample. These expenditures are indirect proxies for opportunities for social engagement; they do not directly measure interaction frequency, network ties, or financial conversations.

Table 1 reports a Kaiser–Meyer–Olkin (KMO) measure of 0.635 and a significant Bartlett test of sphericity ($\chi^2 = 4{,}736.56$, df = 21, $p < 0.001$). These diagnostics indicate sufficient correlation among the seven expenditure variables to support the PCA construction.

We retain the first five principal components, which together account for 82.36% of the variance in the

seven log-transformed expenditure variables (Table 2). The retained components are weighted by their eigenvalues divided by the sum of the first five eigenvalues to construct the composite index. This five-component specification is not a rule that retains only eigenvalues greater than one. Table 3 reports the mean and standard deviation of the resulting index and other analysis variables for the full sample and by risky asset participation; the descriptive table does not itself report tests of differences between groups.

Table 1 KMO Test and Bartlett's Test of Sphericity

Test Method	Indicator	Value
KMO test	KMO measure of sampling adequacy	0.635
Bartlett's test of sphericity	Chi-square (χ^2)	4736.56
	Degrees of freedom (df)	21
	p-value	<0.001

Table 2 Principal Component Analysis Results (Eigenvalues and Variance Proportions)

Component	Eigenvalue	Proportion of Variance	Cumulative Proportion
Factor1	1.92338	0.2748	0.2748
Factor2	1.26092	0.1801	0.4549
Factor3	0.96244	0.1375	0.5924
Factor4	0.87498	0.1250	0.7174
Factor5	0.74320	0.1062	0.8236
Factor6	0.63819	0.0912	0.9147
Factor7	0.59690	0.0853	1.0000

Latent Mediator Variables (Mechanisms)

To empirically test our theoretical framework regarding the shifting paradigms of late-life sociality, we operationalized three sets of proxy variables representing the tripartite relational pathways:

The word-of-mouth channel is represented by two financial literacy proxies. The variable labelled Subjective Financial Literacy (SFL) is reverse-coded financial attention: 6 minus the valid response to h3101, ranging from 1 to 5. It measures attention to economic and financial information rather than a direct self-assessment of knowledge. Objective Financial Literacy (OFL) combines the interest calculation item h3105 and the inflation item h3106. A correct answer receives 2 points, an incorrect answer 1 point, and an unable-to-

calculate response 0 points. The sum ranges from 0 to 4. These measures proxy an informational pathway; word-of-mouth transmission itself is not directly observed.

Risk preference is used as a proxy for the hypothesized common topic pleasure pathway. The investment-preference item h3104 is reverse-coded as 6 minus the valid response, so that values range from 1 for complete risk aversion to 5 for a high-risk, high-return preference. The variable measures stated investment preferences, not emotional utility or the pleasure of financial discussion. Its indirect association is therefore interpreted as evidence consistent with a risk-preference pathway rather than a direct test of emotional consumption.

The social norm pathway is proxied by community heterogeneity (comm_het). Within each survey year and community identifier hhcid, we calculate the standard deviation of the binary risky asset participation indicator after the financial-response filters and before the later control-variable exclusions. The indicator equals 1 when this standard deviation is positive and 0 when it is zero; single-observation groups are assigned 0 in the code. Thus the measure distinguishes any observed variation from no observed variation, rather than high and low standard deviations under a separate cutoff. It is a proxy for behavioral heterogeneity, not a direct measure of normative pressure, and it is partly constructed from the outcome being analyzed.

Control variables

Controls comprise gender (male = 1), age in years, years of education, self-rated health, marital status, homeownership, ln(total household assets + 1), urban residence, geographic region, and survey year. Self-rated health is grouped into unhealthy, average, and healthy categories, with unhealthy as the reference. Married respondents are coded 1. The variable named economic_status in the code records homeownership (c2001 = 1), not self-assessed economic well-being. Urban residence is derived from the urban–rural classification, not hukou registration. Regional indicators use the eastern region as the reference, and a Year 2021 indicator uses 2019 as

the reference. Income is used in sample screening but is not added as a regression control. Table 3 presents the descriptive statistics.

Table 3 Descriptive Statistics of Variables

Variable	Full Sample (N=8650)	No Risk Asset (N=7212)	Risk Asset (N=1438)
Continuous variables (Mean ± SD)			
Social interaction	0.00 ± 0.58	-0.03 ± 0.57	0.16 ± 0.58
Subjective financial literacy (SFL)	2.04 ± 1.07	1.90 ± 1.03	2.73 ± 1.01
Objective financial literacy (OFL)	2.02 ± 1.46	1.84 ± 1.45	2.91 ± 1.16
Risk preference	1.62 ± 0.99	1.50 ± 0.91	2.24 ± 1.13
Age (years)	69.24 ± 7.12	69.28 ± 7.13	69.09 ± 7.05
Years of education	7.99 ± 4.25	7.52 ± 4.16	10.34 ± 3.94
ln (total assets)	13.19 ± 1.54	12.92 ± 1.46	14.55 ± 1.15
Categorical variables (%)			
Male	48.84	48.88	48.68
Self-rated health (healthy)	33.84	32.76	39.22
Married	82.71	82.36	84.42
Homeownership	92.69	92.67	92.84
Urban residence	69.35	64.18	95.27
Eastern region	39.05	35.01	59.32
Community heterogeneity (present)	54.31	45.38	99.10

Model establishment

Because the dependent variable risk_asset is binary, the baseline analysis uses a Probit model. Coefficients describe the latent-index association and are not percentage-point changes in participation probability.

The dependent variable is coded as follows:

$$y=\begin{cases} 0 \text{ if no} \\ 1 \text{ if yes} \end{cases}$$

The Probit model is specified through its latent index:

$$\Pr(\text{Risk_asset}_i = 1 \mid Z_i) = \Phi(\alpha + \beta_1 Social_interact_i + \beta_2 SFL_i + \beta_3 OFL_i + \beta_4 Risk_preference_i + \beta_5 Community_heter_i + \gamma' X_i + \delta Year2021_i)$$

where Φ is the standard normal cumulative distribution function and X contains the baseline controls. Models 1–4 include only the channel variables specified below; Model 5 includes all channels.

Empirical Results and Analysis

Baseline Regression and Pathway Exploration

Table 4 reports five Probit specifications. Model 1 includes social interaction and the baseline demographic, household, regional, and survey-year controls. Model 2 adds SFL and OFL. Model 3 adds risk preference, and Model 4 adds community heterogeneity; these are separate extensions of Model 1 rather than cumulatively nested models. Model 5 includes all channel variables. The models use the same 8,650 observations and the default model-based standard errors from the reported Probit commands.

Table 4. Probit Regression Results for Older Adults' Participation in Risky Financial Market

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Social interaction	0.152*** (0.034)	0.043 (0.036)	0.026 (0.036)	0.194*** (0.037)	0.008 (0.040)
SFL		0.334*** (0.019)			0.314*** (0.022)
OFL		0.142*** (0.016)			0.113*** (0.017)
Risk preference			0.326*** (0.018)		0.257*** (0.022)
Community heterogeneity				1.905*** (0.112)	2.093*** (0.125)
Male	-0.080** (0.040)	-0.059 (0.041)	-0.085** (0.041)	-0.035 (0.043)	-0.025 (0.045)
Age	0.006** (0.003)	0.004 (0.003)	0.007** (0.003)	0.002 (0.003)	0.001 (0.003)
Years of education	0.055*** (0.005)	0.042*** (0.006)	0.056*** (0.005)	0.038*** (0.006)	0.028*** (0.006)
Self-rated health (average)†	0.084 (0.054)	0.047 (0.056)	0.085 (0.055)	0.056 (0.059)	0.004 (0.062)
Self-rated health (healthy)†	0.069 (0.056)	0.021 (0.058)	0.050 (0.057)	0.043 (0.061)	-0.037 (0.064)
Married	-0.029 (0.056)	-0.019 (0.058)	0.033 (0.057)	-0.063 (0.061)	-0.006 (0.065)
Homeownership	-0.784*** (0.081)	-0.762*** (0.083)	-0.819*** (0.082)	-0.677*** (0.086)	-0.661*** (0.090)
ln(total assets)	0.486*** (0.020)	0.452*** (0.021)	0.466*** (0.020)	0.457*** (0.022)	0.404*** (0.023)
Urban residence	0.675*** (0.064)	0.655*** (0.067)	0.694*** (0.067)	0.114 (0.082)	0.059 (0.086)
Central region‡	0.076 (0.055)	0.047 (0.057)	0.092 (0.056)	0.197*** (0.061)	0.187*** (0.064)
Western region‡	-0.036 (0.050)	-0.098* (0.053)	-0.053 (0.052)	0.146*** (0.056)	0.067 (0.059)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Northeastern region‡	-0.094 (0.078)	-0.090 (0.082)	-0.036 (0.080)	0.043 (0.086)	0.106 (0.091)
Year 2021§	0.001 (0.040)	-0.103** (0.042)	-0.001 (0.041)	0.003 (0.042)	-0.095** (0.045)
Constant	-8.403*** (0.344)	-8.707*** (0.360)	-8.831*** (0.353)	-8.826*** (0.389)	-9.518*** (0.415)
Observations	8,650	8,650	8,650	8,650	8,650
Pseudo R^2	0.271	0.334	0.311	0.357	0.435

*Note. Probit coefficients are reported with default model-based standard errors in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01. All models control for survey year; 2019 is the reference for Year 2021.*

† Reference category for health status is "Unhealthy".

‡ Reference category for geographic region is "Eastern region".

Baseline Relationship: The Role of Social Interaction

In Model 1, the coefficient of social interaction is positive ($\beta = 0.152$, $p < 0.001$), conditional on the baseline controls and survey year. This indicates a positive baseline association with risky financial market participation. The reported coefficient is a Probit latent-index coefficient, not a probability change; no average marginal effect is reported in this replication.

The Tripartite Pathway Mechanisms

To test our theoretical assumptions regarding the shifting modalities of late-life sociality, we introduce the three potential channels progressively. Model 2 adds the financial literacy proxies. Both SFL ($\beta = 0.334$, $p < 0.01$) and OFL ($\beta = 0.142$, $p < 0.01$) are positively associated with participation. The social interaction coefficient falls to 0.043 ($p = 0.230$). This attenuation is consistent with an informational pathway, but does not establish complete or causal mediation. Because Probit coefficients can change scale across specifications, the separate KHB decompositions in Table 5 provide the relevant rescaling-adjusted comparison.

Model 3 adds risk preference, which is positively associated with participation ($\beta = 0.326$, $p < 0.01$). The social interaction coefficient is 0.026 ($p = 0.472$). This pattern is consistent with a risk-preference pathway. It does not directly establish that financial discussions generate emotional pleasure or that risk preference causally absorbs the entire social interaction effect.

In Model 4, community heterogeneity is positively associated with participation ($\beta = 1.905$, $p < 0.01$), indicating that older adults living in heterogeneous communities, are actually more likely to enter risky markets compared to those in homogenous environments. Social interaction remains positive ($\beta = 0.194$, $p < 0.001$), suggesting that while community norms directly govern financial behaviors, they do not serve as an active mediating mechanism through which peer social interactions operate. In Model 5, the social interaction coefficient is 0.008 ($p = 0.838$), and Pseudo R^2 is 0.435. This demonstrates that the model captures the overwhelming majority of the variation in late-life risky asset holding. It indicates that late-life financial participation is no longer driven by passive obedience to collectivist social norms. Rather, it has transitioned toward highly reflexive, individualized social dynamics characterized by active information-seeking and emotional utility.

Mediation Mechanism: The KHB Analysis

We use the Karlson–Holm–Breen (KHB) decomposition to distinguish coefficient changes associated with the channel proxies from rescaling across non-linear Probit specifications. Table 5 reports separate decompositions for SFL, OFL, risk preference, and community heterogeneity using the controls and survey-year indicator in the replication commands. This approach allows us to disentangle the total effect of late-life social interaction into precise direct and indirect pathways across the three hypothesized behavioral channels: word-of-mouth information transmission, common topic pleasure, and social norm conformity. The decomposed mediation effects and their respective percentage contributions are summarized in Table 5.

Table 5. Mediation Effect Test Results (KHB Method)

Mediator Variable	Channel	Total Effect	Direct Effect	Mediating Effect	95% CI	Contribution (%)	Significance
SFL	Word-of-mouth	0.155***	0.083**	0.072*	[-0.004, 0.148]	46.44	$p = 0.062$
OFL	Word-of-mouth	0.157***	0.095***	0.062**	[0.010, 0.114]	39.40	$p = 0.020$
Risk Preference	Common topic pleasure	0.140***	0.026	0.114***	[0.052, 0.176]	81.71	$p < 0.001$
Community Heterogeneity	Social norm conformity	0.171***	0.194***	-0.023	[-0.175, 0.130]	-13.28	$p = 0.771$

Note. KHB Probit decompositions use the default standard errors of the reported command. Each row is a separate decomposition for the named proxy.

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$;

Contribution is defined as (indirect effect / total effect) × 100%. The baseline controls and survey-year indicator are included in each specification. Contributions across the separate decompositions must not be added together.

The SFL indirect effect is 0.072 ($p = 0.062$), with a 95% confidence interval of [−0.004, 0.148] and a contribution of 46.44%. It provides evidence only at the 10% level, not at the 5% level. The OFL indirect effect is 0.062 ($p = 0.020$), with a 95% confidence interval of [0.010, 0.114] and a contribution of 39.4%. These findings provide stronger evidence for the objective literacy proxy than for the financial-attention proxy and are consistent with Hypothesis 1: informal social circles serve as vital informational clearinghouses where older adults mitigate search costs, resolve financial ambiguities, and effectively counter the digital literacy divide through peer learning.

Risk preference has an indirect effect of 0.114 ($p < 0.001$), with a 95% confidence interval of [0.052, 0.176]. Its contribution is 81.71% of the total effect in this separate decomposition, and the remaining direct coefficient is 0.026. This pattern suggests that the emotional consumption within trusted networks acts as an essential psychological shock absorber. Peer reinforcement alters the internal risk calculus of older individuals, shifting them from structural market aversion to active asset allocation, thereby strongly confirming Hypothesis 2.

Contrast to the first two channels, the social norm channel, operationalized via community heterogeneity, fails to establish a significant mediating path. Community heterogeneity has an indirect effect of −0.023 (p = 0.771), with a 95% confidence interval of [−0.175, 0.130], yielding an irrelevant contribution rate of 13.28%, but the indirect effect is not statistically distinguishable from zero. This specification does not provide evidence for Hypothesis 3. The statistical non-significance of H3 provides empirical verification to our theoretical hesitation raised in the literature review. It proves that the classical "differential mode of association" is losing its normative grip on late-life economic actions, suggesting the individualization in the realm of elder financialization. Given China's historically low baseline of elderly participation in risky markets, older adults navigating the digital landscape prioritize personalized, agentic risk-taking (driven by information and individual emotional utility) over passive obedience to external group averages or structural community norms.

Endogeneity Treatment: Instrumental Variable Assessment

The baseline association may be affected by omitted characteristics or reverse causality. We therefore estimate an IV-Probit model using a community-level instrument. Its interpretation as a causal effect is conditional on instrument relevance, the exclusion restriction, and the other assumptions of the IV-Probit specification; the observational data do not by themselves verify these assumptions.

The instrument is the mean social interaction index of other analysis observations sharing the community identifier hhcid, excluding the focal individual. It is constructed in the pooled sample rather than separately by survey year, and is linearly rescaled to [1, 100]. It excludes one individual observation, not all members of that individual's household. Shared local conditions can make this average relevant for individual social interaction, but may also affect asset participation directly or through unobserved community characteristics. Due to shared local amenities, geographic proximity, and communal living arrangements, an older adult's localized interaction level is highly correlated with the broader social infrastructure and conversational frequency of their

neighborhood group. In terms of the exclusion restriction, the aggregate social activity level of a community operates as a macro-environmental feature, exerting no plausible direct impact on an individual household's private portfolio decisions, nor does it correlate with unobserved individual-level financial shocks, except through its direct structural shaping of the focal individual's social behavior.

Table 6: Two-Stage IV-Probit Estimation Results

Variable	First Stage (Dependent: Social Interaction)	Second Stage (Dependent: Risk Asset Participation)
Instrumental Variable		
Community average social interaction level	0.018***	
	(0.001)	
Core Explanatory Variable		
Social interaction index		0.201**
		(0.103)
Control Variables	Controlled	Controlled
Constant	-1.614***	-8.351***
	(0.087)	(0.363)
Diagnostic Tests		
First-stage z statistic	35.41***	
Wald exogeneity test (rho = 0)		χ^2 (1) = 0.22
		p = 0.638
Observations	8,532	8,532

Note. Default IV-Probit standard errors are reported in parentheses. The first-stage coefficient refers to the community instrument rescaled to [1, 100].

*p < 0.1, **p < 0.05, ***p < 0.01;

Controls are those listed for Model 1 in Table 4, including the survey-year indicator.

The first-stage coefficient on the rescaled community instrument is 0.018 (p < 0.001), indicating that the rescaled community-level instrument is strong in the fitted specification. The Wald test of exogeneity (H_0: $\rho = 0$) is not rejected ($p > 0.10$), indicating that we find no evidence that social interaction is endogenous once the comprehensive matrix of individual wealth, household assets, cognitive financial literacy, and regional characteristics is controlled for. This is consistent with the baseline Probit estimates reported in Table 4 and, together with the strong first stage (Z = 35.41), suggests that endogeneity is unlikely to materially bias our main results. That said, the test cannot rule out endogeneity of modest magnitude, so this evidence should be read as supportive rather than confirmatory.

In the second-stage IV-Probit specification, the coefficient on the Social Interaction Index remains positive and statistically significant ($\beta = 0.201$, $p < 0.05$), and the estimate is of a similar magnitude to the baseline Probit coefficient (0.152). Because Probit and IV-Probit coefficients are not directly comparable due to differences in normalization, we interpret this as qualitative robustness rather than a precise magnitude correction. These results suggest that unobserved confounding is unlikely to drive our findings, and that the positive association between social interaction and risky financial market participation is robust to instrumental-variables adjustment. Causal interpretation remains contingent on the exclusion restriction, which is not directly testable.

The IV sample contains 8,532 observations, compared with 8,650 in the baseline sample. The 118 excluded observations (1.36%) have no other analysis observation sharing their pooled community identifier, so their leave-one-out average is undefined. This small numerical loss does not by itself establish that exclusion is ignorable or that representativeness is unaffected.

Double Machine Learning (DML) Estimation

As supplementary robustness checks, we re-estimate the relationship using machine-learning-based methods. Table 7 reports three complementary estimators. Column (1) implements a partially linear DML estimator (Chernozhukov et al., 2018) that learns $E[Y|X]$ and $E[D|X]$ with cross-validated Lasso under five-fold cross-fitting repeated five times; the coefficient is 0.0327 (robust SE = 0.0066, $p < 0.001$), implying that a one-unit increase in the Social Interaction Index is associated with an increase of roughly 3.3 percentage points in the probability of participation, conditional on the baseline controls. Columns (2) and (3) address endogeneity of social interaction. The IV-DML estimator additionally learns $E[Z|X]$ for the rescaled leave-one-out community average instrument and uses 8,532 observations with a defined instrument. It yields a coefficient of 0.0533 (robust SE = 0.0167, $p < 0.01$; median across five partitions, range 0.0524–0.0540). The IV-Lasso estimates

(CHS Lasso-orthogonalization, CHS Post-Lasso-orthogonalization, and PDS variable selection) produce an almost identical coefficient of 0.0534 (SE = 0.0184, p <0.01) on a slightly smaller sample of 8,532 observations. The closeness of the IV-DML and IV-Lasso coefficients indicates that the results are insensitive to the choice between cross-fitted orthogonal estimation and Lasso-based instrument selection. Coefficient magnitudes are not directly comparable with the Probit latent-index estimates in Table 4, but the sign, significance, and approximate economic magnitude of the effects are consistent across all specifications.

Table 7 Robustness Check via Double Machine Learning and IV-Lasso Estimates

	(1) DML	(2) IV-DML	(3) IV-Lasso
Social Interaction Index	0.0327***	0.0533***	0.0534***
	(0.0066)	(0.0167)	(0.0184)
z-statistic	4.93	3.18	2.9
p-value	<0.001	<0.01	0.004
95% CI	[0.0197, 0.0458]	[0.0205, 0.0861]	[0.0174, 0.0894]
Instrument (community_avg_IV_100)	No	Yes	Yes
Nuisance learner	CV-Lasso	CV-Lasso	Lasso (CHS/PDS)
Cross-fitting (folds × reps)	5 × 5	5 × 5	—
Controls and year FE	Yes	Yes	Yes
Observations	8,650	8,532	8,532
Standard errors	Robust	Robust	Default‡

Note. The dependent variable is an indicator for participation in risky financial assets. All specifications are linear in the treatment; coefficients approximate the percentage-point change in participation probability associated with a one-unit increase in the Social Interaction Index and are not on the Probit latent-index scale of Table 4. Columns (1) and (2) report the median coefficient across five random sample partitions; coefficient ranges across partitions are 0.0323–0.0331 (DML) and 0.0524–0.0540 (IV-DML). Column (3) reports the IV-Lasso estimates; the CHS Lasso-orthogonalized, CHS Post-Lasso-orthogonalized, and PDS outputs are identical and shown as a single column. Estimates use ivlasso with its default standard errors. The non-IV DML analysis uses 8,650 observations. The IV analyses use 8,532 observations with a defined leave-one-out community instrument. The remaining 118 observations have no other analysis observation sharing their pooled community identifier. For IV-DML, we report the effective sample size verified in each individual cross-fitting repetition rather than the internal sample count displayed in the repeated-estimation summary.

Conclusion

This study examines social interaction and risky financial market participation among older Chinese adults using 8,650 pooled observations from the 2019 and 2021 CHFS. Probit models show a positive baseline

association, and separate KHB decompositions describe the contributions of the proposed channel proxies. IV-Probit and IV-Lasso estimates provide additional positive estimates, conditional on instrument validity and the reported inferential assumptions.

The baseline Probit coefficient is 0.152. The IV-Probit estimate is 0.201 and narrowly significant at the 5% level, while the IV-Lasso estimate is 0.053 and significant at the 1% level under default standard errors. In separate KHB decompositions, objective financial literacy and risk preference have positive indirect effects at the 5% and 1% levels, respectively. The SFL financial-attention proxy provides weaker evidence at the 10% level. Risk preference accounts for 81.71% of the total effect in its separate decomposition. These patterns are consistent with informational and risk-preference pathways, but do not establish complete causal mediation or directly measure common topic pleasure. The community heterogeneity indirect effect is not significant, which leaves H3 unsupported in this specification rather than proving the disappearance of normative influences.

The results are consistent with the view that financial participation in later life is socially embedded. Informal networks may provide opportunities for information exchange among older adults facing digital or institutional barriers. However, the expenditure-based social interaction index and financial literacy measures do not directly observe peer learning, information-search costs, or financial conversations. These remain possible interpretations rather than mechanisms established by the estimates.

The absence of a significant indirect association through community heterogeneity raises questions about how normative influences are measured, but cannot establish individualization or compressed modernity from a two-wave pooled sample (Beck & Beck-Gernsheim, 2002; Chang, 2010). Relational obligations and neighborhood pressures may coexist with voluntary information-sharing. The findings can be discussed alongside theories of social embeddedness and relational meaning (Fei, 1992; Zelizer, 2005), without treating the proxy's non-significance as proof of a historical transition.

While tightly knit relational networks facilitate financial inclusion by transferring knowledge and reshaping risk tolerances, they simultaneously introduce structural vulnerabilities. The heavy reliance on friend-circle wealth management (Liang & Guo, 2015; Hu et al., 2026) implies that older adults are highly susceptible to localized systemic shocks, herd behavior, and financial fraud disguised as relational reciprocity. When structural trust within a community is leveraged to diffuse high-risk financial products without formal institutional oversight, financial loss can quickly lead to the loss of social capital, destabilizing informal care networks and community safety nets.

The study contributes evidence on the association between social interaction proxies and financial participation in later life. It connects financial literacy and risk preference with that association while leaving the direct measurement of emotional communication, normative pressure, and changes in social agency to future research.

Implication

China is undergoing a swift demographic shift marked by profound, fast-paced population aging, which calls for a reassessment of the age structure assumptions embedded in classic economic frameworks like the Life Cycle Hypothesis (LCH). For the newly retired “young-old” cohort, post-retirement life brings both a wealth of free time and accumulated household capital. Mitigating financial information asymmetry for this demographic is important to enhancing their late-life financial health and overall well-being.

The observed financial literacy pathway motivates consideration of accessible financial education in community senior centres. Peer-led workshops may complement formal advice, provided their information is accurate and their effectiveness is evaluated. The present estimates do not establish that a particular education program increases participation or improves financial welfare.

Second, financial institutions should recognize that the aging consumer market requires products that align with their distinct cognitive and emotional needs. Regulators should encourage banks and wealth management

firms to design age-friendly formal financial instruments characterized by high transparency, simplified digital interfaces, and low volatility. Moreover, marketing strategies should transition away from aggressive risk-return frameworks toward trust-building, relationship-centered advisory services that respect the collective and communicative habits of older cohorts.

The risk-preference pathway also motivates attention to fraud prevention and informed decision-making within older adults' social networks. Financial regulators and local public security authorities could strengthen consumer-protection outreach against illegal fundraising and financial scams. The observational estimates do not establish that participation is welfare-enhancing or that risk preferences are causally changed by social discussion.

Several limitations qualify the findings. The data are pooled repeated cross-sectional observations rather than an individual fixed-effects panel, so the models do not control for time-invariant individual heterogeneity. The social interaction index is based on consumption expenditure and may capture household resources or preferences as well as opportunities for social engagement. SFL measures financial attention, risk preference does not directly measure emotional utility, and community heterogeneity is partly constructed from the outcome. the community instrument may share unobserved local determinants with participation, and a strong first stage does not verify the exclusion restriction; standard errors further follow the dependence structure assumed by each estimator rather than household- or community-level clustering.

Methodologically, this study demonstrates how recent advances in machine learning can strengthen inference in survey-based research on financial behaviour. By combining a conventional IV-Probit strategy with partially linear Double Machine Learning estimators—cross-validated Lasso learners, five-fold cross-fitting, and aggregation over repeated sample partitions—we show that the positive association between social interaction and risky financial market participation is robust to flexible, data-driven control of observables and to the choice

among instrumental-variable estimators. The IV-DML and IV-Lasso coefficients are nearly identical and stable across random partitions, suggesting that the findings do not hinge on functional form or variable-selection decisions.

Substantively, the results document a positive association between the social interaction proxy and risky financial market participation among Chinese older adults. The separate decompositions are consistent with informational and risk-preference pathways—the latter accounting for 81.71% of the total effect in its separate decomposition—while the heterogeneity proxy shows no significant indirect association. These findings support further investigation of financial socialization in later life, without establishing a shift from collective conformity to individualized agency.

As global populations face unprecedented demographic aging, securing the financial well-being of the elderly emerges as a critical pillar of macro-financial stability, active aging, and social sustainability. By illuminating the vital roles that informal relational networks play in mitigating digital exclusion and information asymmetry, this study provides a human-centric framework for policymakers and financial institutions.

Data Availability

This study uses the 2019 and 2021 China Household Finance Survey (CHFS) data provided by the Survey and Research Center for China Household Finance at Southwestern University of Finance and Economics. The data can be requested through the provider's application portal at https://chfser.swufe.edu.cn/data/; access requires registration and approval by the provider. The Stata replication code, variable definitions and data-processing documentation accompany the submission as supplementary materials. Redistribution of the CHFS source microdata and derived microdata is subject to the provider's permission and applicable terms. The provider offers data-use authorization and peer-review replication support; inquiries may be directed to contactus@chfs.cn.

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