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The Impact of Peer Effect on Household Savings: Evidence from China

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Abstract: Understanding the factors that influence household savings behavior is essential for promoting economic sustainability and enhancing financial stability, especially in transitional economies like China. We propose a two-way fixed effects model to investigate the relationship between peer savings and individual household savings within the same community using the China Labor-force Dynamics Survey (CLDS) data, covering the period from 2012 to 2018. We further propose two moderate factors, social security and social capital, to explore the effect on household savings. The results indicate that peer savings within the same community significantly raise individual household savings, as a 1% increase in peer savings is associated with a 59.8% increase in household savings. Further, we evaluate that the peer effect in rural areas is 4.7% higher than in urban areas, 13% higher in wheat- than in rice-growing regions and 4.6% higher in small than in big community. Overall, these findings highlight the importance of social interactions and contextual heterogeneity in shaping household savings, offering policy insights to strengthen financial resilience and support sustainable development.

Keywords: Household savings; Peer effect; Difference aversion; Social trust; Economic growth.

1. Introduction

Savings and consumption constitute fundamental components of macroeconomic growth dynamics [1, 2]. China has long exhibited an exceptionally high household saving rate, which has supported rapid capital accumulation and sustained economic expansion since the reform and opening-up [3]. However, as China transitions toward a development model increasingly reliant on domestic demand, persistently elevated household savings have become a structural constraint on consumption growth [4, 5]. Despite multiple rounds of policy efforts aimed at stimulating consumption, China's gross saving rate has remained around 50% since 2006, substantially exceeding the global average. Meanwhile, household consumption remains relatively subdued compared with both high-income and many middle-income economies. The coexistence of rising household deposits and weak consumption growth has therefore generated what many scholars describe as a "high-saving puzzle" [6].

A large body of literature has attempted to explain China's persistently high household savings. One prominent strand emphasizes precautionary motives. Households may increase savings to hedge against income uncertainty, health expenditures, pension reforms, or macroeconomic shocks [7-9]. A second strand focuses on structural and demographic factors, including income inequality [10, 11], lifecycle dynamics and ageing [12-14], and housing market conditions [15, 16]. A third line of research highlights financial development and financial literacy as key determinants of saving behaviour [17, 18]. While these perspectives provide valuable insights, they share a common assumption: households are treated as largely independent decision-makers who adjust savings in response to income, risk, and institutional incentives.

However, economic decisions are rarely made in isolation. In societies characterized by dense interpersonal networks and strong relational norms, individual behaviour may be systematically shaped by social interaction and comparison [19-21]. A growing body of research documents the presence of peer effect across a wide range of economic activities, including land transfer [22] and financial investment decisions [23]. From the perspective of social preference theory, individuals derive utility not only from absolute outcomes but also from relative standing and payoff comparisons. When households care about their position relative to peers, observed differences in financial preparedness may generate behavioural responses beyond standard precautionary motives.

Despite the well-established role of peer effect in other domains, empirical evidence on peer effect in household saving behaviour remains limited. Existing studies in China primarily emphasize informal risk-sharing within social networks, suggesting that stronger social ties may reduce savings by providing mutual insurance [24, 25]. Yet this interpretation captures only one side of social interaction. Peer relationships may also generate competitive or imitative dynamics. If households experience discomfort from falling behind their neighbours in terms of financial security, higher observed peer savings may induce additional saving as a form of defensive competition. Under such a mechanism, social interaction may reinforce rather than mitigate high aggregate saving rates.

This paper advances a competitive peer-effect explanation for China's persistently high household savings. We develop a two-way fixed effects model grounded in social preference theory in which household utility depends not only on absolute savings but also on savings relative to peers. The model shows that under difference aversion, higher peer savings induce households to increase their own savings in order to maintain relative standing. Moreover, the magnitude of this effect depends on the availability of alternative risk-sharing mechanisms: when households enjoy stronger access to social security systems or possess richer social capital

networks, the incentive to engage in competitive saving weakens. Empirically, we test these predictions using four waves (2012–2018) of the China Labor-force Dynamics Survey (CLDS), constructing an unbalanced panel of more than 40,000 household observations. Peer savings are measured as the average saving level of other households within the same community, excluding the focal household. The empirical results reveal a robust and statistically significant positive association between peer savings and household savings after controlling for demographic characteristics, financial conditions, and regional fixed effects. Further analysis shows that social security participation and social capital significantly attenuate this peer effect, providing evidence consistent with the proposed moderating mechanisms.

This study makes three main contributions. First, it introduces a competitive peer-effect mechanism to explain how savings within the same community significantly shape individual household saving decisions, thereby extending traditional precautionary and lifecycle frameworks. Second, using nationally representative CLDS panel data from 2012 to 2018, it provides micro-level evidence that a 1% increase in peer savings is associated with a 59.8% increase in household savings, with stronger effects observed in rural areas, in wheat-growing regions and in big community. Third, it demonstrates that social security participation and social capital act as moderating factors that attenuate the peer effect. Together, these findings offer a socially embedded explanation for China's high household savings and highlight the importance of contextual heterogeneity in shaping saving behaviour.

The remainder of this paper is structured as follows. Section 2 reviews the literature on household savings and peer effects, develops the theoretical framework, and proposes hypotheses. Section 3 describes the data sources, variable construction, and empirical methodology. Section 4 investigates the correlations among key variables and presents the main empirical results. Section 5 discusses the moderating mechanisms and heterogeneity. Finally, section 6 concludes with a summary and further discussion.

2. Literature Review and Theoretical Framework

2.1. Literature Review

2.1.1. Household Savings

Research on household savings has developed along several major strands. The first strand builds on the life-cycle and permanent income hypotheses, which model saving as an intertemporal optimisation decision. Under this framework, households smooth consumption over their lifetime in response to income expectations and demographic transitions. Empirical applications to China suggest that demographic structure, ageing, and pension reforms play important roles in shaping saving behaviour. For example, Modigliani and Cao (2004) [26] argue that China's high savings can be partly interpreted through a life-cycle lens, especially when rapid demographic transition interacts with incomplete social insurance systems. Similarly, Curtis et al. (2015) [13] and Cao and Wang (2022) [14] show that demographic patterns contribute substantially to aggregate saving dynamics, while Kim et al. (2024) [27] provide updated evidence on the role of population ageing.

A second stream emphasizes precautionary motives under income and expenditure uncertainty. In the buffer-stock saving tradition [28], households accumulate assets to self-insure against shocks. Applying this logic to China, Chamon and Prasad (2010) [7] document rising urban saving rates associated with increased income uncertainty and pension reforms. More recent studies highlight specific risk factors, including environmental risk [29] and urban household precautionary motives [30]. Levhari and Mirman (1977) [31] further show theoretically that uncertainty about lifetime horizon can raise optimal saving. However, empirical evidence also reveals heterogeneity: Filipski et al. (2019) [32] find that severe shocks may instead induce present-biased consumption responses.

A third line of research focuses on structural and financial determinants. Financial development has been linked to an inverted U-shaped relationship with aggregate saving [17], while access to finance and asset markets affects household saving and portfolio allocation [33, 34]. Income distribution is another key factor: Chu and Wen (2017) [10] and Shen et al. (2022) [11] argue that inequality shapes aggregate saving behaviour through heterogeneous marginal propensities to save. Housing markets also matter, as mortgage debt and house prices influence saving and consumption decisions [15, 35].

Despite these advances, existing explanations primarily rely on individual optimisation under risk, demographic transition, or financial constraints. Relatively less attention has been paid to socially embedded determinants of saving behaviour. While studies acknowledge that China's institutional environment and social security expansion may moderate precautionary motives [8, 9], the literature rarely examines how households' saving decisions respond to the observed behaviour of others within their social environment. This gap motivates the incorporation of peer interaction mechanisms into the analysis of household saving behaviour.

2.1.2. Peer Effect

Research on peer effects studies how individual behaviour responds to the behaviour, characteristics, or outcomes of others within a reference group. A foundational contribution is Manski (1993) [36], who formalized the "reflection problem," distinguishing endogenous, exogenous, and correlated social effects and highlighting identification challenges in social interaction models. Building on this framework, Brock and Durlauf (2001) [37] developed interaction-based models that allow multiple equilibria and social multiplier effects, showing how individual optimisation can generate aggregate behavioural clustering. These theoretical advances establish that peer behaviour can enter individual utility or constraint sets directly, rather than operating solely through prices or formal institutions.

Empirical identification of peer effects has relied on both quasi-experimental and experimental strategies. Sacerdote (2001) [38] uses random roommate assignments to identify peer influences in academic performance, while Duflo and Saez (2003) [39] exploit workplace-level randomised information interventions to show that retirement plan participation spreads through social networks. Hong et al. (2004) [40] demonstrate that social interaction increases stock market participation, providing early evidence that financial decisions are socially embedded. More recently, Golsteyn et al. (2021) [41] show that peer personality traits affect academic outcomes, reinforcing the idea that peer environments shape economic behaviour through social comparison and norm formation mechanisms.

Within household economic behaviour, peer effects have been documented primarily in consumption and financial participation rather than in saving per se. Bertrand et al. (2000) [42] show that welfare participation exhibits strong network effects. Bhattacharya and Yu (2008) [43] discuss how social dynamics can contribute to financial bubbles. In the Chinese context, Zhou (2014) [24] finds that kinship networks affect household savings rates, suggesting informal risk-sharing mechanisms. Yang et al. (2021) [25] show that social networks mitigate consumption volatility aftershocks. However, these studies mainly interpret networks as insurance channels rather than as arenas for competitive comparison.

A complementary theoretical perspective emphasises social preferences and inequality aversion. Fehr and Schmidt (1999) [44] and Bolton and Ockenfels (2000) [45] propose models in which utility depends on relative payoff positions. Under such frameworks, individuals may increase effort or accumulation not only for absolute gain but also to avoid falling behind others. When applied to household finance, this implies that observed peer savings may generate competitive saving incentives. In China's relational society [19, 46], where social proximity and community interactions remain salient, such mechanisms may be particularly pronounced. Yet, despite extensive documentation of peer effects in education, labor supply, and financial participation, rigorous empirical investigation of peer effects on household saving levels remains limited. This gap motivates the present study's competitive peer-effect explanation for China's persistently high household savings.

2.2. Theoretical Framework

In The Theory of Moral Sentiments, Adam Smith argued that individuals care not only about their interests but also derive utility from the happiness of others, making it a necessary condition for their well-being. Building on this, the social preference theory posits that individuals' utility is shaped by their payoffs and the disparity between their and others' payoffs [44, 45]. Bhattacharya and Yu (2008) [43] further show that individual investors' utility depends on absolute wealth and relative wealth, reflecting a preference for social comparison. In the Chinese context, the traditional adage 'concern for inequality over scarcity' also reflects this difference in aversion. Accordingly, it can be indicated that household utility is influenced by both absolute savings and relative savings—peer savings.

Building on the utility framework for household human capital investment proposed by Guo and Qu (2022) [47], the current work examines the underlying mechanism of household savings under the assumption of complete information. It is hypothesised that there are two representative households, designated here as i and j, within the economy. Let U denote household utility, h represent the household's risk prevention capability (where h = f(s, X)), s denote the current savings rate, Z represent household social security, and X denote household characteristics. The household utility derived from savings is specified by the functional form shown in Equation (1):

$$\begin{aligned} U_i &= \ln\left(h_i - \gamma h_j + C\right) - s_i \\ U_j &= \ln\left(h_j - \gamma h_i + C\right) - s_j \end{aligned} \tag{1}$$

In this equation, γ denotes the degree to which a household responds to the risk-prevention capability of its peers, and C is a sufficiently large constant that ensures the utility function yields a meaningful value. The economic implications of equation (1) are threefold. First, a higher savings rate s enhances a household's risk-prevention ability h, thereby increasing utility. Second, the parameter γ captures the household's degree of difference aversion. In line with the social preference theory, it is assumed that $\gamma > 0$, reflecting the idea that greater disparities in savings between a household and its peers reduce the household's perceived utility. Third, increasing s implies reducing the disposable income available for consumption, which imposes disutility. The household's risk prevention capability h is further specified in Equation (2):

$$\begin{aligned} h_i &= f(s_i,\ X_i) \\ &= \alpha s_i + \beta X_i + \varepsilon_i \\ h_j &= f\left(s_j,\ X_j\right) \\ &= \alpha s_j + \beta X_j + \varepsilon_j \end{aligned} \tag{2}$$

Among them, α captures the effect of the household savings rate on its risk prevention capability, X denotes household characteristics, β measures the impact of household characteristics on risk prevention capability, and ε is a random error term. Each household chooses its savings rate s to maximise utility. As X is fixed for a given household, equations (1) and (2) together imply that the utility maximisation problem for household i and household j can be transformed into the form expressed in Equation (3):

$$\begin{aligned} &\underset{s_i}{Max}\, U_i = \ln\left(h_i - \gamma h_j + C\right) - s_i \\ &\underset{s_j}{Max}\, U_j = \ln\left(h_j - \gamma h_i + C\right) - s_j \\ &S.T.\quad \begin{matrix} h_i = \alpha s_i + \beta X_i + \varepsilon_i \\ h_j = \alpha s_j + \beta X_j + \varepsilon_j \end{matrix} \end{aligned} \tag{3}$$

Taking the first-order derivatives of the utility function yields equations (4) and (5):

$$s_i = \gamma s_j - \frac{\beta}{\alpha} X_i + \frac{\gamma\beta}{\alpha} X_j - \frac{1}{\alpha}\varepsilon_i + \frac{\gamma}{\alpha}\varepsilon_j + 1 - \frac{C}{\alpha} \tag{4}$$

$$s_j = \gamma s_i - \frac{\beta}{\alpha} X_j + \frac{\gamma\beta}{\alpha} X_i - \frac{1}{\alpha}\varepsilon_j + \frac{\gamma}{\alpha}\varepsilon_i + 1 - \frac{C}{\alpha} \tag{5}$$

It is important to note that although ε_i and ε_j are assumed to be independent in Equation (2), the joint error terms in equations (4) and (5), represented by $-\frac{1}{\alpha}\varepsilon_i + \frac{\gamma}{\alpha}\varepsilon_j$ and $-\frac{1}{\alpha}\varepsilon_j + \frac{\gamma}{\alpha}\varepsilon_i$, are not independent. This interdependence implies that clustered standard errors are required for the model to be consistently estimated.

In equations (4) and (5), the parameter γ captures both the direction and magnitude of the effect of peer savings on a household's saving behaviour. The assumption $\gamma > 0$ in Equation (1) suggests the presence of a behavioural complementarity in household savings, driven by the negative externalities associated with peer savings. Even the most comprehensive social security systems cannot fully insure households against all risks. For instance, during major public safety shocks, households with greater savings are more likely to access scarce coping resources, such as higher-quality medical care, sufficient food, and secure shelter, thus minimising their exposure to adverse outcomes. In contrast, households with limited savings may be unable to access such resources and face disproportionately severe consequences. Anticipating this, households may compete through increased savings to avoid being disadvantaged during crises. Based on

this logic, the first hypothesis is proposed: H1: Peer savings will positively boost household savings; specifically, household savings tend to increase as peer savings rise.

In addition to using savings to smooth risks, individual households may also rely on social security systems and seek assistance from others during difficult times. The savings behaviour of peer households can influence an individual household's savings decisions. Such influence may be observed through macro-level indicators, such as the Financial Statistics Yearbook and the Financial Statistics Bulletin, which reflect broader savings trends. Accordingly, the household's risk prevention capability $h_i = f(s_i, \mathrm{h}_j, Z_i, X_i)$. Specifically, by observing macroeconomic data, households may anticipate that support from social security systems or peers is available in times of hardship, thereby strengthening their perceived ability to cope with risks. Thus, the household's risk prevention capability is specified in Equation (6):

$$\begin{aligned} h_i &= f(s_i, \mathrm{h}_j, Z_i, X_i) \\ &= \alpha s_i + \rho h_j + \lambda Z_i + \beta X_i + \varepsilon_i \\ h_j &= f(s_j, \mathrm{h}_i, Z_i, X_j) \\ &= \alpha s_j + \rho h_i + \lambda Z_j + \beta X_j + \varepsilon_j \end{aligned} \tag{6}$$

In this context, $0 < \rho < 1$, denotes the extent of support a household can receive from peer households, while λ captures the effect of social security on a household's risk-prevention capability. A higher expected level of external support—whether from peers or institutional arrangements—corresponds to a stronger household's risk prevention capability. The household's risk prevention function can be further simplified and expressed as Equation (7) through basic derivation:

$$\begin{aligned} h_i &= \frac{\alpha s_i + \rho\alpha s_j + \rho\lambda Z_j + \rho\beta X_j + \rho\varepsilon_j + \lambda Z_i + \beta X_i + \varepsilon_i}{1-\rho^2} \\ h_j &= \frac{\alpha s_j + \rho\alpha s_i + \rho\lambda Z_i + \rho\beta X_i + \rho\varepsilon_i + \lambda Z_j + \beta X_j + \varepsilon_j}{1-\rho^2} \end{aligned} \tag{7}$$

The utility maximisation problems of household i and household j can thus be reformulated as Equation (8):

$$\begin{aligned} &\underset{s_i}{Max}\, U_i = \ln(h_i - \gamma h_j + C) - s_i \\ &\underset{s_j}{Max}\, U_j = \ln(h_j - \gamma h_i + C) - s_j \\ S.T.\ &h_i = \frac{\alpha s_i + \rho\alpha s_j + \rho\lambda Z_j + \rho\beta X_j + \rho\varepsilon_j + \lambda Z_i + \beta X_i + \varepsilon_i}{1-\rho^2} \\ &h_j = \frac{\alpha s_j + \rho\alpha s_i + \rho\lambda Z_i + \rho\beta X_i + \rho\varepsilon_i + \lambda Z_j + \beta X_j + \varepsilon_j}{1-\rho^2} \end{aligned} \tag{8}$$

Taking the first-order derivative yields equations (9) and (10):

$$\begin{aligned} s_i = 1 + \frac{\gamma-\rho}{1-\gamma\rho} s_j - \frac{\lambda}{\alpha} Z_i + \frac{\lambda(\gamma-\rho)}{\alpha(1-\gamma\rho)} Z_j - \frac{\beta}{\alpha} X_i + \frac{\beta(\gamma-\rho)}{\alpha(1-\gamma\rho)} X_j - \\ \frac{1}{\alpha}\varepsilon_i + \frac{\gamma-\rho}{\alpha(1-\gamma\rho)}\varepsilon_j + \frac{\rho^2-1}{\alpha(1-\gamma\rho)} \end{aligned} \tag{9}$$

$$\begin{aligned} s_j = 1 + \frac{\gamma-\rho}{1-\gamma\rho} s_i - \frac{\lambda}{\alpha} Z_j + \frac{\lambda(\gamma-\rho)}{\alpha(1-\gamma\rho)} Z_i - \frac{\beta}{\alpha} X_j + \frac{\beta(\gamma-\rho)}{\alpha(1-\gamma\rho)} X_i - \\ \frac{1}{\alpha}\varepsilon_j + \frac{\gamma-\rho}{\alpha(1-\gamma\rho)}\varepsilon_i + \frac{\rho^2-1}{\alpha(1-\gamma\rho)} \end{aligned} \tag{10}$$

The preceding derivation assumes that each household possesses complete information. However, this assumption is unlikely to hold [47]. Accordingly, the parameter γ is restricted to the interval $\gamma \in (0, 1)$. By comparing the term $(\gamma - \rho)/(1 - \gamma\rho)$ in equations (9) and (10) with γ in equations (4) and (5), Equation (11) can be derived:

$$\frac{\gamma-\rho}{1-\gamma\rho} < \gamma \tag{11}$$

If the number of members enrolled measures a household's participation in social security, a higher level of participation implies a stronger capability to smooth risks through external support, thereby reducing the household's incentive to save [8, 9]. Under such conditions, Equation (11) suggests that the positive effect of peer savings on household savings may be attenuated. Similarly, if a household's social capital is proxied by the number of individuals from whom it can obtain local support, greater social capital also implies stronger access to informal risk-sharing mechanisms, and thus lower saving motivation [48]. Therefore, Equation (11) indicates that the positive effect of peer savings is likewise weakened when accounting for household social capital. Based on the above, the second hypothesis is proposed: H2: Social security and social capital serve as mitigating channels through which the effect of peer savings on household savings is transmitted. Specifically, both mechanisms weaken the positive effect of peer savings on household saving behaviour.

3. Data and Methodology

3.1. Data

The data employed in this study are drawn from the China Labor-force Dynamics Survey (CLDS), conducted by Sun Yat-sen University. Covering 29 provinces, municipalities, and autonomous regions in China (excluding Hong Kong, Macao, Taiwan, Hainan, and Tibet), the CLDS is a nationally representative, biennial longitudinal survey targeting the labor force. It provides comprehensive individual, household, and community data, supporting empirical investigations in labor economics and public policy. The study utilises publicly available CLDS data from four survey waves (2012, 2014, 2016, and 2018). It constructs a three-level unbalanced panel dataset (individual–household–community) using the household identifier as the matching key. Data cleaning involved the following steps: (1) excluding households with negative or missing expenditure; (2) excluding households with missing income; (3) excluding households lacking information on the household head or primary decision-maker; and (4) excluding households with missing community-level identifiers. After cleaning, the dataset contains 43,008 valid individual observations. Due to partial missingness in control variables, the final sample size varies across empirical models.

3.2. Variable Construction

3.2.1. Dependent Variable

Household savings. The current paper's primary measure of household savings is the ratio of total annual household income to total annual household expenditure. Economically, a higher ratio indicates that the household's income exceeds its spending by a larger margin, implying a greater savings capability. To ensure robustness, an alternative measure is also constructed following Chamon and Prasad (2010) [7], Kłopocka (2017) [49], Staal (2023) [50] and Zeng et al. (2023) [51]. Specifically, household savings are redefined as the proportion of net income (i.e., total income minus total expenditure) relative to total income. This net income ratio is a complementary indicator of household saving behaviour, particularly useful in the robustness checks.

3.2.2. Explanatory Variable

Peer savings. Following the approaches of Deng et al. (2019) [8], Golsteyn et al. (2021) [41], and Guo and Qu (2022) [47], peer savings in this paper are measured as specified in Equation (12). Specifically, peer savings are defined as the average savings of all other households within the same community (village), excluding the household under observation:

$$Peer\ savings_i = \frac{\sum_{j\neq i}^{j} Household\ savings_j}{j-1} \quad (12)$$

3.2.3. Control Variable

Drawing on prior research on household financial behaviour—including the effects of bubbly housing price [35], ageing and insurance [52], and social networks [25]—this paper controls for household head characteristics (e.g., age and gender), household-level attributes (e.g., average age and dependency ratio), and village-level factors (e.g., disaster exposure and geographic location). The definitions and measurements of these variables are summarised in Table 1.

Table 1. Descriptive statistics

Variables	Definitions	Mean	SD
Household savings	The ratio of annual household income to total expenditure	1.628	2.448
Peer savings	Mean savings of other households in the same village/community	1.530	0.944
HeadAge	Age of household head	53.396	14.326
HeadGender	Gender of household head (1 = male; 0 = female)	0.777	0.416
HeadEducation	Household head with high school education or above (1 = yes; 0 = no)	0.277	0.447
HeadMarriage	Household head is married (1 = yes; 0 = no)	0.867	0.339
HeadHealth	Household head in good health (1 = yes; 0 = no)	0.849	0.358
HeadWork	Household head is employed (1 = yes; 0 = no)	0.660	0.474
PoliticalStatus	Household head is party membership (1 = yes; 0 = no)	0.139	0.346
HouseholdAge	Average age of household members	42.504	13.954
HouseholdHealth	Share of healthy members in a household	87.967	22.567
HouseholdEducation	Share of educated members (high school or above) in a household	29.975	32.645
HouseholdWork	Share of employed members in a household	51.646	30.156
HouseholdBurden	Share of elderly and children in a household	29.081	28.859
Internet	Household has internet access (1 = yes; 0 = no)	0.545	0.498
Finance	Household holds financial assets (1 = yes; 0 = no)	0.045	0.206
HousingAsset	Household owns property with full ownership (1 = yes; 0 = no)	0.575	0.494
Credit	Household can obtain productive loans from financial institutions (1 = yes; 0 = no)	0.028	0.164
NaturalDisaster	Community has experienced severe natural disasters (1 = yes; 0 = no)	0.192	0.394
Bank	Presence of banking institutions in the community (1 = yes; 0 = no)	0.382	0.486
Bus	Presence of bus stations in the community (1 = yes; 0 = no)	0.221	0.415
Plain	Community located in a plain area (1 = yes; 0 = no)	0.608	0.488
Hill	Community located in a hilly area (1 = yes; 0 = no)	0.199	0.399
Mountain	Community located in a mountainous area (1 = yes; 0 = no)	0.192	0.394

3.3. Empirical Methodology

The following baseline empirical model is specified as Equation (13) to examine the quantitative relationship between peer savings and household savings:

$$Household\ savings_{ipt} = C + \beta_1 Peer\ savings_{it} + \sum_{g=1}^{g} \beta_g CV_{itg} + P + T + \varepsilon_{itp} \quad (13)$$

The subscripts in Equation (13) denote household, province, and survey year, respectively. CV represents a series of control variables; P and T are province and year-fixed effects, respectively; β represents the parameter to be estimated; ε is the random error term; and C is the constant term. It is important to note two points. First, as discussed in the theoretical framework, the joint error terms of equations (4) and (5) are not independent. Therefore, ε in Equation (13) may exhibit intra-household correlation, and standard errors should be clustered at the household level. Second, the sign and magnitude of β_1 capture the effect of peer savings on household savings: $\beta_1 < 0$ implies a negative association, $\beta_1 > 0$ indicates a positive association, and $\beta_1 = 0$ suggests no statistically significant relationship between the two.

4. Empirical Results and Analysis

4.1. Correlation Analysis

4.1.1. Correlation Between Peer Savings and Household Savings

A heat map examines the relationship between household savings and various variables. In the lower left portion of Figure 1, the arc-shaped lines illustrate the correlation coefficients and their significance levels between control variables and household savings. Thicker lines indicate a greater absolute value of the correlation coefficient. Orange lines denote statistical significance at the 1% level ($p < 0.01$), dark blue at the 5% level ($p < 0.05$), and purple at the 10% level ($p < 0.10$). Two key observations emerge: (1) the majority of the lines are orange, suggesting that household savings are significantly correlated with most control variables, thereby validating the selection of variables in this study; (2) the arc between peer savings and household savings is both thick and orange, indicating a statistically significant and relatively strong correlation between the two. While correlation analysis provides valuable preliminary insights into the associations among variables, it does not account for

potential confounding factors. Thus, it cannot capture the conditional quantitative relationship between variables. Therefore, further analysis using econometric models is necessary to rigorously assess the impact of peer savings on household savings.

In addition, the heat map in the upper right quadrant of Figure 1 illustrates the correlations among the control variables. The size of each circle indicates the magnitude of the correlation coefficient between variables—the larger the circle, the stronger the correlation. The results reveal that certain variables exhibit relatively strong correlations, such as between HouseholdBurden and HeadAge, and between HeadWork and HeadAge, which suggests that the estimation results may be affected by potential multicollinearity. A multicollinearity test was conducted to address this concern. The results show that all variables have variance inflation factor (VIF) values below 3, with an average VIF of 1.62, indicating that multicollinearity is not a significant issue in the model.

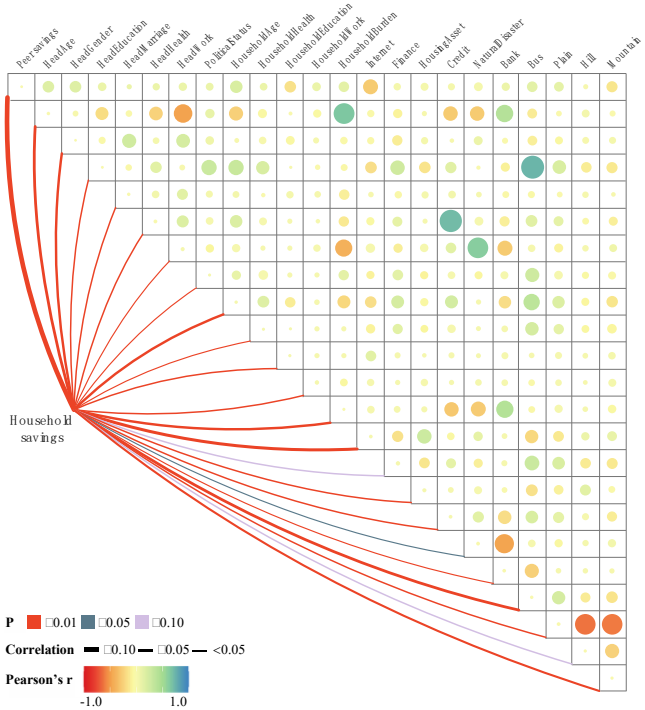

Figure 1. Correlation relationship

4.1.2. Urban-rural Heterogeneity

For urban and rural households, household savings increase with higher levels of peer savings (Figure 2a), suggesting that peer savings are positively associated with household savings without other controls. Moreover, Figure 2a indicates that the fitted line for urban households has a slightly steeper slope than that for rural households, implying that urban household savings may be more sensitive to peer savings.

Additionally, the frequency distributions of household savings for rural residents (Figure 2b) and urban residents (Figure 2c) exhibit right-skewed tails, indicating that household savings distribution patterns are relatively similar across rural and urban households. From a statistical perspective, there appears to be no substantial difference in the savings distribution between the two groups.

In summary, it is necessary to employ econometric models with subgroup regressions to further examine whether the relationship between peer savings and household savings differs between urban and rural households.

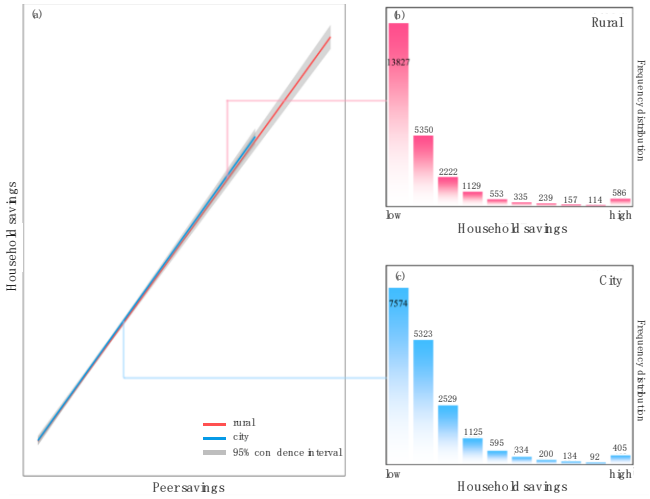

Figure 2. Urban-rural heterogeneity in the peer effect on household saving

4.2. Baseline Regression

Although multicollinearity tests suggest that potential multicollinearity is negligible, this paper incrementally adds control variables to the baseline model to enhance the precision of estimation and address concerns of omitted variable bias. Table 2 presents the estimated effects of peer savings on household savings, using Ordinary Least Squares (OLS). Column (1) is the baseline specification; Column (2) adds year-fixed effects to control for unobserved time-varying shocks; Column (3) further includes province-fixed effects to account for regional policy heterogeneity; Column (4) controls for characteristics of the household head as the primary decision-maker; Column (5) incorporates household-level covariates to capture internal constraints on saving behaviour; and Column (6) adds village-level characteristics to control for contextual environmental factors. The F-statistics for all models are significant at the 1% level, indicating a strong overall model fit and confirming the appropriateness of using OLS estimation in this study.

The estimation results reported in Table 2 show that the coefficients of the peer savings variable are consistently positive and statistically significant at the 1% level across columns (1) through (6), suggesting a robust positive relationship between peer savings and household savings. Specifically, according to the fully specified Column (6), a 1% increase in peer savings is associated with a 59.8% increase in household savings. These findings provide strong empirical support for Hypothesis 1

Regarding the control variables, both the household head's age and household members' average age positively and significantly increase household savings, which may reflect the 'expectation effect' in the demographic dividend, whereby aging induces greater precautionary or lifecycle savings behaviour [26, 27]. In contrast, households where the head is married exhibit lower levels of savings, which could be attributed to higher consumption obligations, such as child-rearing and educational expenditures, which exert downward pressure on household saving capability [34]. Access to credit is found to significantly reduce household savings. This finding may indicate that improved credit availability mitigates households' exposure to development risks, thereby reducing the need for precautionary saving as risk management [33]. Conversely, financial participation positively and significantly increases household savings. A possible explanation is that exposure to potential losses in

financial assets elevates perceived financial risks, prompting households to increase savings as a buffer against such uncertainties.

Table 2. Baseline regression results

Variables	Dependent variable household savings					
	(1)	(2)	(3)	(4)	(5)	(6)
Peer savings	0.875***	0.667***	0.633***	0.611***	0.605***	0.598***
	(68.145)	(29.023)	(27.037)	(25.844)	(25.505)	(24.842)
HeadAge				0.006***	0.003**	0.003**
				(6.511)	(2.145)	(2.097)
HeadGender				-0.031	-0.006	-0.007
				(-1.076)	(-0.212)	(-0.239)
HeadEducation				0.104***	0.056	0.058
				(3.728)	(1.512)	(1.555)
HeadMarriage				-0.164***	-0.120***	-0.121***
				(-4.351)	(-3.157)	(-3.182)
HeadHealth				0.331***	0.114**	0.112**
				(10.190)	(2.527)	(2.494)
HeadWork				0.063**	-0.177***	-0.178***
				(2.264)	(-5.166)	(-5.180)
PoliticalStatus				0.085**	0.081**	0.082**
				(2.381)	(2.244)	(2.267)
HouseholdAge					0.004***	0.004***
					(3.024)	(3.000)
HouseholdHealth					0.005***	0.005***
					(7.143)	(7.100)
HouseholdEucation					0.001	0.001
					(1.123)	(1.071)
HouseholdWork					0.006***	0.006***
					(10.723)	(10.737)
HouseholdBurden					0.000	0.000
					(0.201)	(0.202)
Internert					-0.105***	-0.107***
					(-3.653)	(-3.712)
Finance					0.247***	0.251***
					(3.989)	(4.040)
HousingAsset					-0.017	-0.019
					(-0.660)	(-0.728)
Credit					-0.118**	-0.117**
					(-2.119)	(-2.101)
NaturalDisaster						0.012
						(0.391)
Bank						0.011
						(0.445)
Bus						0.023
						(0.747)
Hill						0.058*
						(1.764)
Mountain						-0.072**
						(-2.175)
Constant	0.290***	0.035***	0.204**	-0.392***	-0.859***	-0.856***
	(17.498)	(6.152)	(2.306)	(-3.390)	(-6.650)	(-6.577)
Province FE	No	No	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes
F	4643.687***	4051.477***	510.518***	426.707***	349.542***	318.382***
Observations	42,796	42,796	42,796	42,796	42,796	42,796

Note: t-statistics in parentheses; *** p < 0.01, ** p < 0.05, * p < 0; standard errors clustered at the household level.

4.3. Robustness Tests

4.3.1. Subsample

Table 3. Estimation results by yearly subsamples

Variables	Dependent variable household savings			
	(1)	(2)	(3)	(4)
Peer savings	0.304***	0.493***	0.542***	0.600***
	(4.542)	(10.357)	(13.568)	(13.941)
Constant	-0.019	0.289	0.060	0.302
	(-0.290)	(1.163)	(0.249)	(1.087)
CV	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes
Observations	7,843	9,965	13,016	11,972

Note: t-statistics in parentheses; *** p < 0.01, ** p < 0.05, * p < 0; standard errors clustered at the household level.

To rule out the possibility that the observed positive effect of peer savings on household savings is merely a statistical artefact arising from the aggregation of multi-year survey data, regressions are performed on subsamples partitioned by survey year. Table 3 presents the estimation results. Column (1) uses the 2012 survey data; Column (2) uses the 2014 data; Column (3) relies on the 2016 data; and Column (4) is based on the 2018 data. Across all four subsamples, the coefficient on the peer savings variable remains positive and statistically significant at the 1% level. These consistent results across survey years reinforce the conclusion that peer savings exerts a significantly positive influence on household savings. Thus, the baseline estimation results in the current study are robust.

4.3.2. Alternative Measurement

This section redefines both the dependent and key explanatory variables using the ratio of household net income to total household income. Following Chamon and Prasad (2010) [7], Kłopocka (2017) [49], Staal (2023) [50] and Zeng et al. (2023) [51], household savings are reconstructed as the proportion of net income—defined as the difference between total household income and total household expenditure—to total household income. Based on this redefinition, peer savings are recalculated using Equation (12). Using a stepwise inclusion of control variables, Table 4 reports the regression results. Across all specifications, the coefficients on peer savings remain positive and statistically significant at the 1% level. These findings suggest that the positive relationship between peer and household savings is robust to alternative variable definitions, thereby providing further empirical support for H1.

Table 4. Alternative variable measurements

Variables	Dependent variable household savings (net income to total household income)			
	(1)	(2)	(3)	(4)
Peer savings	2.095***	1.330***	1.263***	1.101***
	(118.472)	(53.789)	(47.123)	(38.556)
Constant	-46.886***	-86.261***	-81.463***	-111.939***
	(-78.348)	(-58.626)	(-41.603)	(-36.783)
CV	No	No	No	Yes
Province FE	No	No	Yes	Yes
Year FE	No	Yes	Yes	Yes
Observations	43,008	43,008	43,008	43,008

Note: t-statistics in parentheses; *** p < 0.01, ** p < 0.05, * p < 0; standard errors clustered at the household level.

4.3.3. Panel Data

Table 5. Three-wave panel data

Variables	Dependent variable household savings			
	(1)	(2)	(3)	(4)
Peer savings	0.675***	0.631***	0.621***	0.577***
	(13.652)	(12.272)	(11.964)	(9.044)
Constant	0.686***	0.191	-0.092	-0.355
	(7.839)	(0.571)	(-0.252)	(-0.764)
Lag (1) of Household savings	No	No	No	Yes
CV	No	No	Yes	Yes
Year FE	No	Yes	Yes	Yes
Province FE	No	Yes	Yes	Yes
Observations	7,270	7,270	7,270	4,825

Note: t-statistics in parentheses; *** p < 0.01, ** p < 0.05, * p < 0; standard errors clustered at the household level.

Given the potential long-term relationship between peer and household savings, this section seeks to strengthen the causal inference by employing a fixed effects model based on a balanced panel dataset constructed from CLDS 2012, 2014, 2016, and 2018 waves. Table 5 reports the estimation results across four specifications. Column (1) includes only peer savings and household savings. Column (2) adds survey year and province-fixed effects to account for time- and region-specific shocks. Column (3) further incorporates a comprehensive set of control variables. Column (4) introduces the one-period lag of household savings to mitigate path dependence and dynamic endogeneity concerns. Across all specifications, the coefficient on peer savings remains positive and statistically significant at the 1% level. These results provide robust evidence supporting a causal effect of peer savings on household savings.

5. Discussions

5.1. Moderating Mechanisms

Stimulating domestic consumption has emerged as a central policy challenge for sustaining high-quality growth in China's new development stage [4, 5]. However, persistently elevated and rising household savings continue to constrain the expansion of internal demand. This section incorporates household-level social security coverage and local social capital as moderators of the peer effect on saving behaviour to probe potential moderating mechanisms. In Table 6, column (1) includes a measure of household social security, proxied by the number of household members enrolled in medical or pension insurance, along with its interaction term

with peer savings. Column (2) introduces social capital, proxied by the number of household members able to access informal assistance locally, and includes an interaction term between this measure and peer savings.

According to Jiang (2022) [53], an interaction term bearing the opposite sign to the primary explanatory variable indicates that the moderating variable attenuates the effect of the core explanatory variable on the outcome. Table 6, column (1) shows that peer savings significantly and positively affect household savings at the 1% level. In contrast, the interaction between peer savings and social security enters with a significantly negative coefficient at the 1% level. Similarly, in column (2), peer savings remain positively associated with household savings at the 1% level, while the interaction with social capital is negative and statistically significant at the 10% level. Considered together, these results suggest that improved access to household-level social security and stronger local social capital weaken the marginal effect of peer savings on household savings. These findings provide empirical support for Hypothesis 2, indicating that both social security and social capital function as mitigating channels in the peer effects framework.

Table 6. Estimation of mitigating channels

Variables	Dependent variable household savings	
	(1)	(2)
Peer savings	0.627***	0.585***
	(18.166)	(17.978)
SocialSecurity	0.011	
	(0.679)	
SocialSecurity#Peer savings	-0.048***	
	(-3.799)	
SocialCapital		0.002
		(0.123)
SocialCapital#Peer savings		-0.022*
		(-1.773)
Constant	-0.836***	-0.806***
	(-6.788)	(-6.565)
CV	Yes	Yes
Year FE	Yes	Yes
Province FE	Yes	Yes
Observations	34,933	34,933

Note: t-statistics in parentheses; *** p < 0.01, ** p < 0.05, * p < 0; standard errors clustered at the household level.

5.2. Heterogeneity

5.2.1. Urban-rural Heterogeneity

One of the most pressing imbalances in China's development lies in the disparity between urban and rural areas. To investigate whether rural and urban households respond differently to peer savings shocks, this study conducts subgroup regressions and applies a seemingly unrelated estimation (SUE) coefficient comparison test. As reported in Table 7, a 1% increase in peer savings is associated with a 58.9% rise in household savings for the rural sample, and a 54.2% rise for the urban sample. The SUE test yields a coefficient difference of 0.888, which is not statistically significant, suggesting that the impact of peer savings on household savings does not differ significantly between rural and urban households.

Although the difference between rural and urban households is statistically insignificant, the observed coefficient gap remains noteworthy. Specifically, for every 1% increase in peer savings, the growth in rural household savings exceeds that of urban households by 4.7 percentage points. This difference may stem from the combined effects of two structural factors. First, the rural consumer market remains underdeveloped and its consumption potential is largely untapped [54, 55]. Second, rural areas often suffer from inadequate and insufficient social security systems compared to urban settings [56, 57]. As a result, rural households may exhibit stronger precautionary saving motives, making the effect of peer savings more pronounced in rural contexts.

Table 7. Urban-rural heterogeneity

Variables	Dependent variable household savings	
	Rural	Urban
Peer savings	0.589***	0.542***
	(17.543)	(15.002)
Constant	-0.623**	-0.504***
	(-4.164)	(-2.705)
CV	Yes	Yes
Province FE	Yes	Yes
Year FE	Yes	Yes
Observations	24,512	18,284
Suest test	0.888	

Note: t-statistics in parentheses; *** p < 0.01, ** p < 0.05, * p < 0; standard errors clustered at the household level.

5.2.2. Heterogeneity by Plant Patterns

According to the social preference theory, trust in others can effectively reduce inequality aversion [58, 59]. Prior research suggests that because rice cultivation depends heavily on neighbourhood cooperation and mutual support, rice-growing regions are more likely to develop close-knit social networks characterised by high interpersonal trust, in contrast to wheat-growing regions [46, 60, 61]. Based on this premise, a dataset is constructed covering the period from 2012 to 2018 and measuring the share of rice cultivation area in each province's combined area of rice and wheat cultivation. Provinces where rice accounts for more than 80% of total grain cultivation are classified as rice-growing regions; the rest are classified as wheat-growing regions. Subgroup regressions were conducted and a SUE coefficient comparison test was applied to investigate whether residents of rice- and wheat-growing areas respond differently to peer savings shocks regarding their household saving behaviour. As reported in Table 8, in the rice-growing sample, a 1% increase in peer savings is associated with a 52.9% increase in household savings. In the wheat-growing sample, the same increase in peer savings corresponds to a 65.9% increase in household savings. The SUR test yields a coefficient difference of 7.010, which is statistically significant at the 1% level, indicating that the impact of peer savings on household savings varies significantly between rice- and wheat-growing regions.

The estimation results in Table 8 suggest that cultural norms embedded in historical agricultural practices exert a lasting influence on contemporary economic behaviour. In regions dominated by rice cultivation, higher levels of interpersonal trust and a stronger inclination toward collectivism and cooperation are more prevalent [60]. In such

rice-growing areas, households are embedded in close-knit social networks characterised by high trust. As a result, their inequality aversion is lower, and they are less likely to engage in competitive saving behaviour in response to peer saving activity. This is because they tend to believe that mutual support from neighbours will be readily available in the face of adverse events. This finding implies that enhancing societal trust may dampen the positive effect of peer savings on household savings by mitigating the perceived need for precautionary or competitive saving.

Table 8. Heterogeneity by plant patterns

Variables	Dependent variable household savings	
	Rice-growing region	Wheat-growing region
Peer savings	0.529***	0.659***
	(16.833)	(17.552)
Constant	-0.870***	-0.711***
	(-5.596)	(-4.449)
CV	Yes	Yes
Province FE	Yes	Yes
Year FE	Yes	Yes
Observations	26,089	16,707
Suest test	7.010***	

Note: t-statistics in parentheses; *** p < 0.01, ** p < 0.05, * p < 0; standard errors clustered at the household level.

5.2.3. Community-size Heterogeneity

According to the social impact theory, the extent to which individuals are affected by others depends on three key factors: strength, immediacy, and the number of other people [62]. The 'number' dimension highlights a vital implication—namely, the marginal effect of each additional person diminishes as group size increases. In other words, the larger the group, the weaker the marginal impact of additional members on an individual's behaviour, a phenomenon known as the diminishing marginal effect of social impact, which suggests that in larger communities—measured by the number of households—the effect of peer savings on individual household saving behaviour may be attenuated due to reduced perceived social pressure or mimetic motivation.

To empirically assess the moderating role of community size in the peer effects on household savings, the number of households in a community is used as a proxy for community size. Based on the quartile distribution of this variable, the sample is divided into two subsamples: the lower quartile (representing smaller communities) and the upper quartile (representing larger communities). Subgroup regressions are then performed, and a SUR coefficient comparison test is applied to examine whether peer savings exert differential effects across communities of varying sizes. The estimation results, reported in Table 9, show that for the smaller community subsample, a 1% increase in peer savings is associated with a 63.1% increase in household savings. In contrast, for the larger community subsample, the corresponding increase in household savings is only 58.5%. Although the coefficient difference—0.35—is not statistically significant, it is noteworthy in magnitude. These results suggest that in larger communities, where social pressure and behavioural mimicry may be weaker, the effect of peer savings on household saving behaviour tends to diminish.

The results presented in Table 9 suggest that expanding community size may attenuate the effect of peer savings on household saving behaviour. This observation can be interpreted through the lens of social psychological mechanisms. In smaller communities, where interpersonal familiarity is higher and social interactions are more frequent, individuals are more susceptible to the behavioural cues of their peers. In contrast, larger communities are characterised by looser social ties and lower interaction density, which diminishes both the 'visibility' and the perceived 'salience' of peer behaviours. As a result, the motivational force behind behavioural imitation is likely to be weaker in such contexts. This finding not only deepens one's understanding of the mechanisms underlying peer effects but also underscores the importance of considering community-level heterogeneity, such as social structure and network density, when designing policy interventions aimed at shaping household financial behaviour.

Table 9. Community-level heterogeneity

Variables	Dependent variable Household savings	
	Lower quartile	Upper quartile
Peer savings	0.631***	0.585***
	(9.223)	(15.276)
Constant	-0.165***	-1.063***
	(-0.474)	(-5.607)
CV	Yes	Yes
Province FE	Yes	Yes
Year FE	Yes	Yes
Observations	5,157	16,525
Suest test	0.350	

Note: t-statistics in parentheses; *** p < 0.01, ** p < 0.05, * p < 0; standard errors clustered at the household level.

6. Conclusion

This paper identifies peer savings as a significant determinant of China's persistently high household savings based on nationally representative data from the CLDS 2012, 2014, 2016, and 2018 waves. Rooted in the traditional Chinese ethos of 'concern for inequality over scarcity' and the difference aversion from the social preference theory, Chinese households may exhibit competitive saving behaviour. Specifically, when households observe their peers accumulating savings, they are incentivised to save more, reinforcing the upward pressure on overall household savings.

This study develops a household savings utility model, which predicts that household savings increase in response to higher peer savings. It further posits that the extent of social support moderates this relationship. Empirically, the study employs nationally representative panel data to identify a significant and positive causal effect of peer savings on household savings, consistent with competitive saving behaviour among Chinese households. Moreover, the analysis shows that social support, proxied by social security and social capital, attenuates this effect, confirming its role as a moderating channel. Heterogeneity analyses suggest that while the peer effect on household savings varies between rural and urban households and between small and large communities, these differences are not statistically significant. In contrast, the peer effect differs significantly between rice-cultivating and wheat-cultivating regions, further reinforcing the moderating role of social support in shaping household savings responses to peer savings.

The 20th CPC National Congress report emphasized 'enhancing the fundamental role of consumption in economic development and the critical role of investment in optimising the supply structure'. The findings of this study provide empirical insights into how to reduce excessive savings and stimulate consumption. Since 2008, when the CPC Central Committee first proposed expanding domestic demand, China has consistently advanced this strategic priority; the 14th Five-Year Plan (2021–2025) called for a deeper implementation of the strategy; in 2022, the CPC Central Committee and the State Council released The Plan for the Strategy to Expand Domestic Demand (2022–2035); and in 2023, with the approval of the State Council, The Measures on Restoring and Expanding Consumption was published. Against the backdrop of profound global changes unseen in a century and at a critical juncture in the great rejuvenation of the Chinese nation, promoting consumption upgrades and achieving breakthroughs in domestic demand requires addressing excess savings and fostering new forms of consumption. First, this paper finds that peer savings significantly increase household savings. In response, accelerating the development of nationwide consumption scenarios that better align with real-life needs is proposed. For example, implementing a 'green product subsidy program for rural areas' and building a 'smart platform for urban cultural tourism and wellness services'. These efforts aim to make 'green consumption and the consumption of green goods' new drivers of consumption growth. Second, the study finds that social security can mitigate the positive relationship between peer and household savings. Therefore, accelerating the establishment of a more comprehensive social security system, adopting multiple measures to ensure its effectiveness, and fully realising the shift from individual to social protection is recommended, enabling residents to consume without undue concern. Third, the study finds that social capital and social trust also weaken the impact of peer savings on household savings. In light of this, it is suggested to vigorously promote China's fine traditional culture, accelerate the construction of a law-based society, and continuously enhance people's sense of fulfilment in the rule of law, ultimately improving the overall social trust among residents.

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