

# The Impact of Digital Finance Development on Household Financial Asset Allocation—Analysis Based on CHFS Data

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**Abstract:** With China's economic development and rising living standards, household asset structures have evolved from single-channel allocation to diversified distribution. Concurrently, digital advancements should be examined for their impact on household financial asset allocation. This study investigates how digital finance development influences household asset allocation. Based on portfolio theory, financial inclusion principles, and the current state of digital finance development, we formulate research hypotheses. Using CHFS (2019) data and the Digital Inclusive Finance Index, we construct a Tobit regression model. Results demonstrate that digital finance development increases household asset proportion and diversifies financial assets, indicating its positive role in optimizing asset allocation. The mediating effect mechanism reveals this promotion is achieved through reduced information frictions. Finally, we propose strategies including expanding digital finance development, enhancing financial literacy, strengthening regulatory oversight, and innovating financial service products.

**Keywords:** Digital Finance, Household Financial Asset Allocation, Inclusive Finance

## 1. Introduction

### 1.1 Research Background

Since 2013, the Chinese government has repeatedly advocated for "vigorously developing inclusive finance" to alleviate financing constraints through digital finance, thereby reducing financial costs and indirectly encouraging household participation in financial markets. This has led to rapid growth in household income and a significant improvement in living standards. As household assets continue to expand, an increasing number of families are prioritizing asset allocation. In recent years, digital finance—a new model utilizing digital technology for investment, financing, payments, and financial services—has grown rapidly. Undoubtedly, the development of digital finance will influence household asset allocation choices, making it essential to explore the integration of digital finance with household finance in the current era.

Digital finance serves as a vital channel for facilitating rational household investment and delivering financial services. As China remains in an economic transition phase with an underdeveloped financial system, insufficient market supply has increased information and transaction costs for household investments. The profit-driven nature of financial resources further exacerbates financial exclusion, ultimately restricting the free allocation of household assets. Regional disparities in economic capacity, cultural background, and geographical location may also hinder the accumulation of household wealth and impede the rational distribution of financial assets.

Diversification of household asset allocation is the only way to increase people's property income and achieve common prosperity. With the opening of the capital market, the household wealth of Chinese residents has grown rapidly, and their demand levels have gradually shifted from basic consumption to higher-level investment needs. The upgrading of demand levels means that more Chinese households have developed the need for rational asset allocation. Meanwhile, Ning Jizhe, deputy director of the Economic Committee of the National Committee of the Chinese People's Political Consultative Conference, pointed out at the 2022-2023 China Economic Annual Conference hosted by the China International Economic Exchange Center that China will increase residents' 'income through multiple channels and continuously enhance their consumption capacity. He also explicitly proposed adopting multi-channel measures to raise residents' property income and gradually

increase the proportion of property income, which means that in the new era, residents are required to participate in financial markets more actively to achieve household income diversification. On one hand, rationally optimizing the structure of financial asset allocation can enable households to obtain higher returns within a certain risk exposure, thereby increasing household property income, preserving and appreciating household wealth, and promoting steady growth in household consumption. On the other hand, it can advance the development of the national capital market, achieve domestic economic circulation, and thereby contribute to the improvement of social welfare and the realization of the goal of common prosperity.

### ***1.2 Research Objectives and Significance***

Although China's financial sector has achieved remarkable growth in recent decades, it still lags behind developed countries in several key areas: late start, limited investment, and insufficient research—particularly in household finance studies. Digital finance has become a critical factor influencing household investment decisions, yet few studies examine its impact on micro-level financial behaviors. This gap arises because whether digital finance can genuinely benefit every household remains debatable. Moreover, as household incomes rise and asset scales expand, how to enhance wealth accumulation through future investments has become an urgent issue. Given these challenges, it's crucial to understand whether digital finance development affects household asset allocation and how it does so, to inform residents' investment decisions. In recent years, to accelerate financial sector development, the Chinese government has implemented policies. For instance, the Fintech Committee of the People's Bank of China emphasized multiple measures to drive financial digital transformation during its annual meeting, launched the Financial Digital Transformation Enhancement Project, established a digital capability maturity assessment system and exemplary case repository, strengthened international cooperation, and propelled the sector into a new phase of rapid development. Using CHFS data from 2019 and 2020, this study investigates the impact of digital finance development on household asset allocation and analyzes regional disparities in digital financial progress.

## **2. Literature Review**

The development of digital finance has invigorated China's financial markets and enhanced the rationality of household financial asset allocation. Research by Liu Huiqin demonstrates that digital finance improves the temporal and spatial accessibility of household investments, enabling more efficient access to financial information [1]. Empirical analyses using China Household Finance Survey (CHFS) data by An Qiangshen and Bai Lu [2], as well as Jie Li et al. [3], reveal that digital finance development optimizes household asset allocation structures and boosts efficiency. Notably, its impact is significantly stronger in eastern and northeastern regions compared to central and western areas, with greater effects on households in first- and second-tier cities than third-tier cities. Furthermore, digital finance effectively promotes diversified household asset allocation. China should accelerate the integration of digital and traditional finance while strengthening internet infrastructure, expanding online investment channels, enhancing financial literacy education, and improving regulatory frameworks to further diversify household investments. Additionally, efforts should focus on age-friendly adaptations of digital finance, bridging the digital divide, and advancing common prosperity [4].

The impact of digital finance on household financial asset allocation has been studied by many scholars at home and abroad. Based on the authoritative data and the research results and development trend of this field, this paper further studies the impact of digital finance on household financial asset allocation.

## **3. Analysis of the Current Status of Digital Finance and Household Financial Asset Allocation**

### ***3.1 Analysis of the Current Development Status of Digital Finance***

This paper adopts the latest data from the Digital Inclusive Finance Index to measure the development of digital finance in China. The Digital Inclusive Finance Index is compiled by the Digital Inclusive Finance Center of Peking University, and from the source of the data to the processing of the numbers, it ensures a high degree of credibility in measuring the digital financial environment. The

development levels of digital finance in 2011 and 2020 are shown in Figure 1. By comparing the development levels of digital finance in other provinces except Chinese Hong Kong, Chinese Macao, and Chinese Taiwan, it can be observed that digital finance has experienced rapid growth in all provinces over the past decade, with the average index rising sharply from 40.00 in 2011 to 341.22 in 2020. Additionally, the disparities among provinces have significantly narrowed. By 2020, the gap between Shanghai, the best-developed city with an index of 431.93, and Qinghai, the least developed city with an index of 298.23, had narrowed to just 0.45 times, indicating a significant reduction in disparity. Moreover, it is evident that digital finance has developed more rapidly in less developed regions.

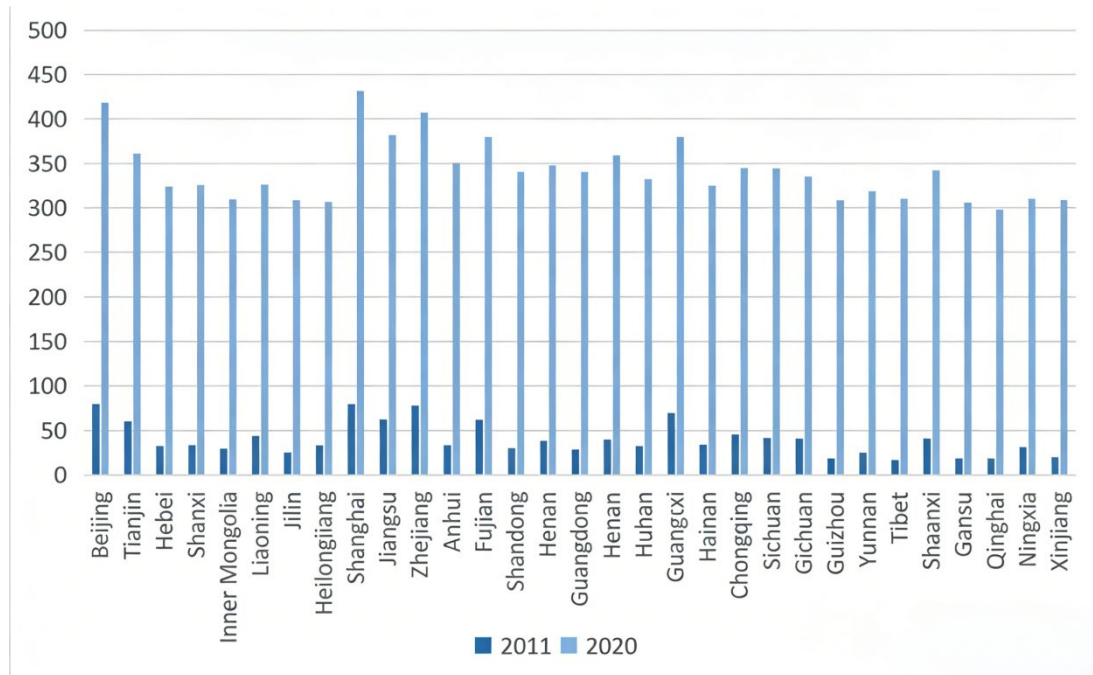


Figure 1 Digital Finance Index 2011 and 2020

(Data source: Peking University Digital Inclusive Finance Research Center)

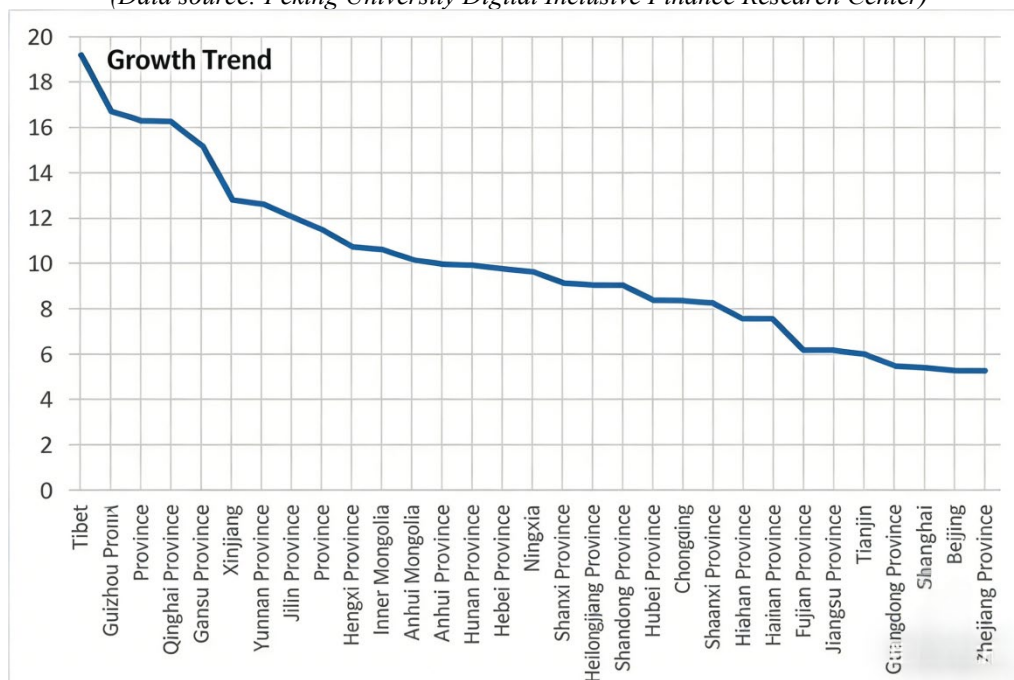


Figure 2 Growth trend in 2011 vs. 2020

(Data source: Peking University Digital Inclusive Finance Research Center)

Then, this paper compares the growth of each province in 2011 with that in 2020, as shown in Figure 2.

Finally, Figure 3 presents the annual averages of coverage breadth, usage depth, and digitalization level across provinces, analyzed from multiple dimensions of digital finance development. The data reveals a consistent upward trend in all three metrics, with their disparities gradually narrowing. This demonstrates that digital finance is advancing toward more balanced development.

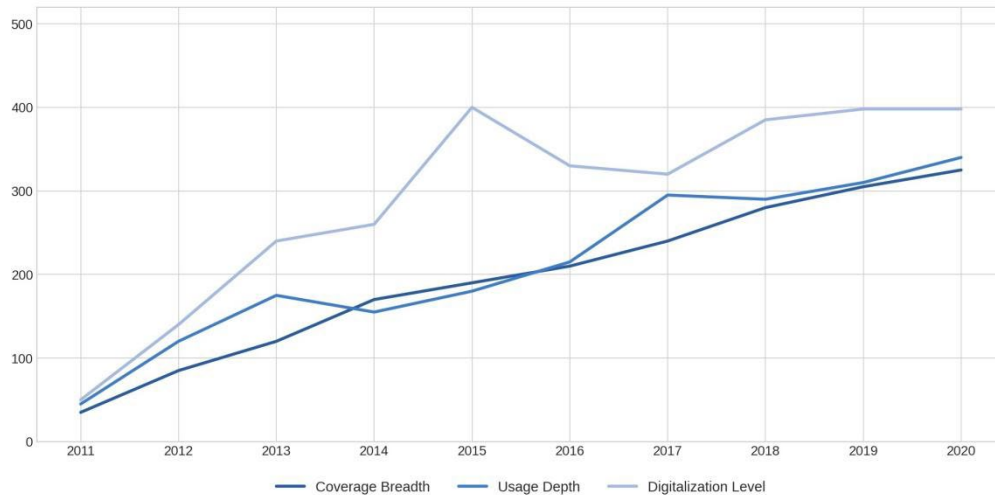


Figure 3 Growth of digital finance in 2011 and 2020

(Data source: Peking University Digital Inclusive Finance Research Center)

### 3.2 Current Status of China's Household Financial Asset Allocation

According to the 2022 China Family Wealth Index survey report by Southwestern University of Finance and Economics, the overall growth rates of household wealth income and job stability slowed down in 2022, with an improvement in the fourth quarter. As shown in Figure 4, affected by the pandemic, all three indicators first declined and then rose. However, overall, by the fourth quarter of 2022, wealth income and job stability reached a new inflection point, beginning to develop a positive trend.

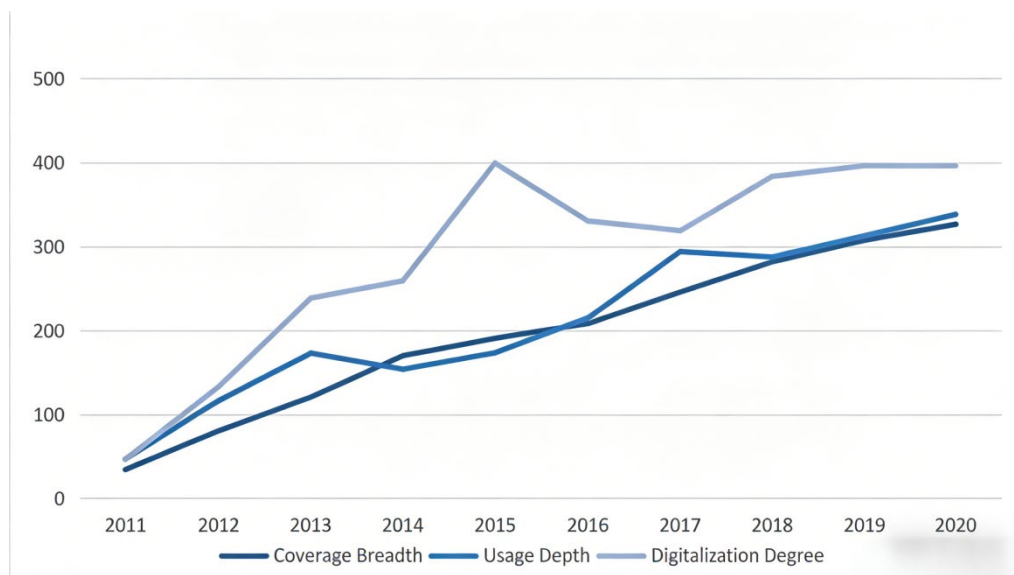
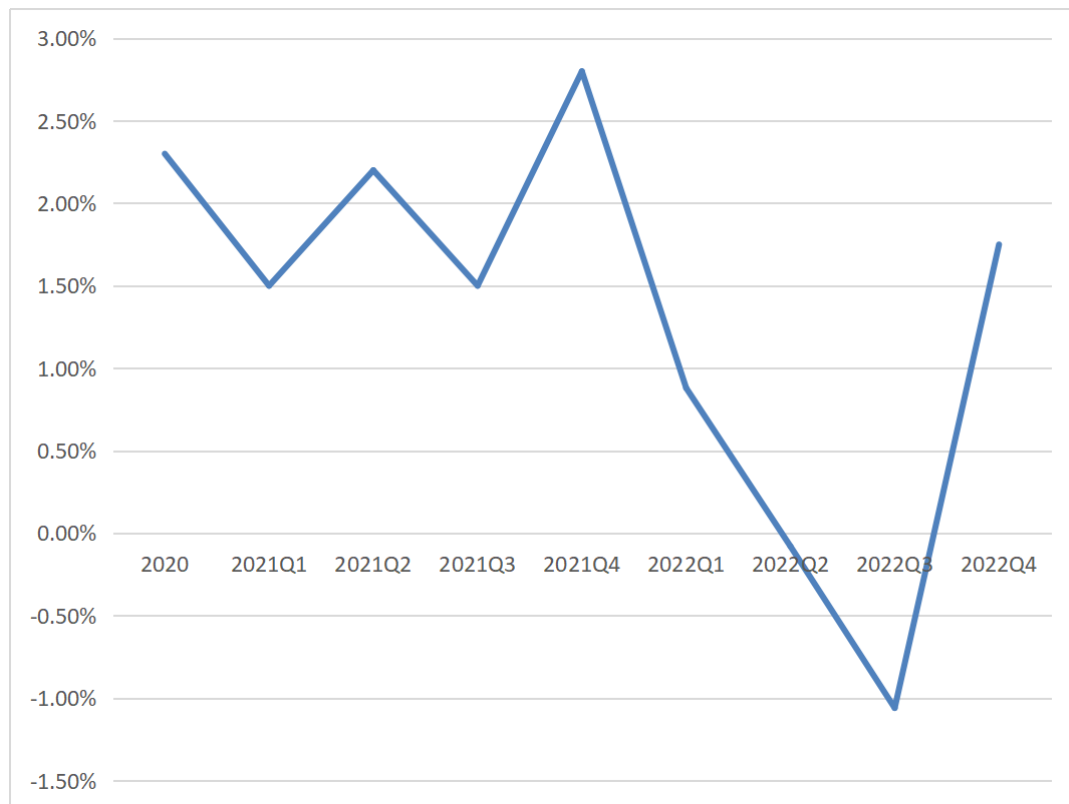


Figure 4 Changes in household work, income and wealth

(Data source: 2022 China Household Wealth Index Survey Report)

The report further notes that household asset allocation in 2022 was adjusted in response to stock market volatility. First, household investment returns followed a 'decline-first, rebound' pattern, as

detailed in Figure 5. The report highlights that household wealth, income, and consumption growth rates initially declined before recovering in 2022, with a marked improvement in the fourth quarter. Additionally, the demand for asset allocation has grown steadily, prompting continuous adjustments in investment decisions. This underscores the need to further enhance household asset allocation capabilities.



*Figure 5 Historical Trend of Average Return Rate of Household Investment and Financial Management*  
(Data source: 2022 China Household Wealth Index Survey Report)

### 3.3 Research Hypothesis

Through the literature review and theoretical analysis, it is evident that rational investors typically allocate assets more prudently, thereby maximizing returns by diversifying risks. However, in real-world practice, the issue of limited participation persists, with non-financial assets constituting a significant portion of household financial portfolios. The advent of digital finance, however, has enhanced investment convenience through internet-enabled platforms, increased household exposure to financial risks, and improved the rationality of asset allocation. Digital finance facilitates online transactions, reducing information asymmetry while expanding investment options. Therefore, this paper proposes Hypothesis 1: The development of digital finance contributes to the rationalization of household financial asset allocation.

Financial exclusion is a key driver of market friction. Investors rely on social networks to exchange information and conduct financial activities like investments. With the internet enabling enhanced social connectivity, more households now access financial markets and participate in financial activities. This leads us to Hypothesis 2: The development of digital finance can reduce information friction, thereby improving the rationality of household financial asset allocation.

## 4. Empirical Analysis

The data sources of this article are two-fold. The first is the 2019 China Household Finance Survey (CHFS) compiled by the China Household Finance Survey and Research Center at Southwestern University of Finance and Economics. The second is the 2019 Digital Inclusive Finance Index, jointly compiled by the Digital Finance Research Center of Peking University and Ant Financial Group, which

measures the development of digital finance. This database is sufficiently large and has good representativeness.

#### 4.1 Variable Design

##### (1) Dependent variable

This study employs two dependent variables. The first is risk financial assets, quantified as the proportion of risk assets in total assets. We select three common financial instruments: stocks, funds, and bonds. The risk asset ratio is thus defined as the combined proportion of these three asset types in total assets, denoted as "riskier" hereafter. The second variable is financial asset diversity. While prior studies predominantly measured household financial asset diversity through asset categories, this approach overlooked the issue of asset holdings. To address this, we adopt a financial asset diversity index, calculated as:

$$\text{Diversity Index} = 1 - \sum_{i=0}^n W_i^2$$

where  $W_i$  represents the proportion of each financial asset type in total assets, and  $i$  denotes the number of asset types (denoted as "fvariety" hereafter).

##### (2) Explanatory variables and mediating variables

This study employs the Peking University Digital Inclusive Finance Index to assess China's digital financial inclusion development. The total index serves as the primary explanatory variable, denoted as 'index' hereafter. As the CHFS database lacks this index, it was incorporated into data cleaning and merging by matching it with annual and provincial records. Information friction is treated as a mediating variable, measured through CHFS communication costs (abbreviated as 'travel' in subsequent analysis). Given the substantial scale of communication expenses, logarithmic transformation was applied during empirical analysis.

##### (3) Control variables

This study employs three tiers of control variables: household head characteristics, family characteristics, and social characteristics. Household head characteristics comprise variables such as age, gender, marital status, years of education, employment status, risk appetite, financial information awareness, and financial literacy. Family characteristics include family size, annual household income, and future home purchase plans. Social characteristics encompass economic development indicators, specifically GDP. Given the large magnitude of GDP, its natural logarithm was used in empirical analysis. In total, the study incorporates 13 control variables.

Table 1 shows the definition of variables in this section, as shown in the table below:

*Table 1 Variable Definition Table*

| type of variable     | Variable name                   | variable symbol | variable declaration                                                                                                                                                                                                              |
|----------------------|---------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| explained variable   | risk financial asset            | riskier         | risk exposure                                                                                                                                                                                                                     |
|                      | diversity of financial assets   | fvariety        | Formula for calculating the financial asset diversification index                                                                                                                                                                 |
| explanatory variable | Digital Inclusive Finance Index | index           | Data obtained from Peking University's Digital Finance Research Center shows a 100-fold reduction                                                                                                                                 |
| metavariable         | information friction            | travel          | Logarithm of home communication cost                                                                                                                                                                                              |
| controlled variable  | age                             | age             | Difference between the year and the birth year                                                                                                                                                                                    |
|                      | sex                             | gender          | Assign 1 to males and 0 to females                                                                                                                                                                                                |
|                      | marital status                  | marriage        | Married is assigned 1, otherwise 0                                                                                                                                                                                                |
|                      | years of schooling              | edu             | Years of education for those without schooling: primary school, junior high school, senior high school, secondary vocational school, college, undergraduate, master's, and doctoral degrees: 0, 6, 9, 12,13,15,16,19,22 years     |
|                      | health condition                | health          | Very good assignment 1, good assignment 2, average assignment 3, poor assignment 4, very poor assignment 5                                                                                                                        |
|                      | working condition               | job             | Set to 1 if there is a job, otherwise set to 0                                                                                                                                                                                    |
|                      | risk appetite                   | risk            | High risk, high return assigned 1, slightly higher risk, slightly higher return assigned 2, average risk, average return assigned 3, slightly lower risk, slightly lower return assigned 4, unwilling to take any risk assigned 5 |
|                      | financial information attention | attention       | Highly concerned with assignment 1, highly concerned with assignment 2, generally concerned with assignment 3, rarely concerned with assignment 4, never concerned with                                                           |

|  |                                    |              |                                                                                                     |
|--|------------------------------------|--------------|-----------------------------------------------------------------------------------------------------|
|  |                                    |              | assignment 5                                                                                        |
|  | Financial knowledge level          | knowledge    | The more correct answers you get to the 3 financial questions, the better your financial knowledge. |
|  | Family size                        | fsize        | total family population                                                                             |
|  | annual family income               | total income | Natural logarithm of household income                                                               |
|  | Family's Future Home Purchase Plan | house        | Assign 1 if you plan to buy a house, otherwise assign 0.                                            |
|  | economic development               | gdp          | GDP, natural logarithm                                                                              |

#### (4) Descriptive statistics

Table 2 presents descriptive statistical results from a sample of 24,012 cleaned data points. The Digital Inclusive Finance Index shows a wide range of values, with the highest score at 410.3 and the lowest at 282.6, highlighting significant regional disparities in China's digital finance development. The median difference in information friction variables further underscores this imbalance, as households in less developed areas face disproportionately low communication costs. Control variables reveal that the average age of 54.31 reflects a declining proportion of young families and a trend toward delayed marriage and childbearing. The risk preference score of 4.28 indicates that most Chinese households exhibit risk aversion, while the combined scores of attention (high) and knowledge (low) suggest limited financial literacy and attention to information. This explains why such households tend to prioritize low-risk assets and maintain narrow investment portfolios. As digital finance evolves, this study examines whether digital tools can help these families achieve more rational asset allocation.

*Table 2 Descriptive Statistics*

| Variable name | mean   | Standard deviation (dispersion) | least value | crest value | sample number |
|---------------|--------|---------------------------------|-------------|-------------|---------------|
| riskier       | 0.01   | 0.059                           | 0           | 0.978       | 24012         |
| fvariety      | 0.622  | 0.359                           | 0           | 0.999       | 24012         |
| index         | 3.294  | 0.331                           | 2.826       | 4.103       | 24012         |
| travel        | 8.348  | 1.796                           | 0           | 14.674      | 24012         |
| age           | 54.313 | 13.632                          | 17          | 95          | 24012         |
| gender        | 0.75   | 0.433                           | 0           | 1           | 24012         |
| marriage      | 0.857  | 0.35                            | 0           | 1           | 24012         |
| edu           | 9.749  | 3.958                           | 0           | 22          | 24012         |
| health        | 2.659  | 0.975                           | 1           | 5           | 24012         |
| job           | 0.651  | 0.477                           | 0           | 1           | 24012         |
| risk          | 4.282  | 1.05                            | 1           | 5           | 24012         |
| attention     | 4.112  | 1.027                           | 1           | 5           | 24012         |
| knowledge     | 0.413  | 0.602                           | 0           | 3           | 24012         |
| fsize         | 3.089  | 1.494                           | 1           | 15          | 24012         |
| total income  | 10.746 | 1.469                           | 0           | 16.311      | 24012         |
| house         | 0.163  | 0.369                           | 0           | 1           | 24012         |
| gdp           | 10.264 | 0.816                           | 7.987       | 11.59       | 24012         |

#### 4.2 Model Selection and Specification

Building upon the empirical model, this study also employs the Tobit model.

$$Y_{ijt}^* = \beta_0 + \beta_1 \text{Index}_{ijt} + \beta_2 \text{control}_{ijt} + \varphi_t + \mu_{ijt}$$

$$Y_{ijt} = \max(0, Y_{ijt}^*)$$

$Y_{ijt}$ :share of risky assets or financial asset diversity index of household i in province j in year t

$\text{Index}_{ijt}$ :digital financial inclusion index of province j in year t

$\text{Travel}_{ijt}$ :information friction of household i in province j in year t

$\text{Control}_{ijt}$ :control variables

$\varphi_t$ :time control variable (time fixed effects)

$\mu_{ijt}$ : random error term

To further examine the transmission mechanism of digital finance's impact on household financial

asset allocation, this study employs an intermediary effect regression model to analyze information friction. The constructed model is as follows:

$$Y_{ijt}^* = \alpha_0 + \alpha_1 \text{Index}_{jt} + \alpha_2 \text{control}_{ijt} + \theta_t + \mu_{ijt}$$

$$\text{travel}_{ijt} = \beta_0 + \beta_1 \text{Index}_{jt} + \beta_2 \text{control}_{ijt} + \theta_t + \mu_{ijt}$$

$$Y_{ijt}^* = \lambda_0 + \lambda_1 \text{Index}_{jit} + \lambda_2 \text{travel}_{jit} + \lambda_3 \text{control}_{jit} + \theta_t + \mu_{ijt}$$

$$Y_{ijt} = \max(0, Y_{ijt}^*)$$

$Y_{ijt}$ :share of risky assets or financial asset diversity index of household i in province j in year t

$\text{Index}_{jt}$ :digital financial inclusion index of province j in year t

$\text{Travel}_{ijt}$ :information friction of household i in province j in year t

$\text{Control}_{ijt}$ :control variables

$\theta_t$ :time control variable (time fixed effects)

$\mu_{ijt}$ :random error term

### 4.3 Correlation Test

Table 3 presents the correlation analysis of variables. The correlation coefficients between the dependent variables—riskier financial assets (riskier) and financial asset diversity (fvariety)—and the independent variable, the digital inclusive finance index (index), show positive values of 0.137 and 0.040, respectively. These coefficients are statistically significant at the 1% level, indicating a positive correlation between the dependent variables and the index. While the absolute values of the correlation coefficients between the independent and control variables are generally small, some coefficients approach 0.5, suggesting no immediate evidence of multicollinearity among the variables.

Table 3 Correlation Coefficient Matrix

|              | riskier   | fvariety  | index     | age       | gender    | marriage  | edu       | health    | job       | risk      | attention | knowledge | fsize     | total_income | house     | gdp |
|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|-----------|-----|
| riskier      | 1         |           |           |           |           |           |           |           |           |           |           |           |           |              |           |     |
| fvariety     | 0.037***  | 1         |           |           |           |           |           |           |           |           |           |           |           |              |           |     |
| index        | 0.137***  | 0.040***  | 1         |           |           |           |           |           |           |           |           |           |           |              |           |     |
| age          | 0.015**   | -0.296*** | 0.080***  | 1         |           |           |           |           |           |           |           |           |           |              |           |     |
| gender       | -0.034*** | -0.01     | -0.041*** | -0.023*** | 1         |           |           |           |           |           |           |           |           |              |           |     |
| marriage     | 0.001     | 0.093***  | 0.003     | -0.068*** | 0.289***  | 1         |           |           |           |           |           |           |           |              |           |     |
| edu          | 0.143***  | 0.265***  | 0.128***  | -0.350*** | -0.006    | 0.063***  | 1         |           |           |           |           |           |           |              |           |     |
| health       | -0.033*** | -0.112*** | -0.054*** | 0.243***  | -0.045*** | -0.053*** | -0.245*** | 1         |           |           |           |           |           |              |           |     |
| job          | -0.068*** | 0.124***  | -0.120*** | -0.501*** | 0.245***  | 0.156***  | 0.073***  | -0.177*** | 1         |           |           |           |           |              |           |     |
| risk         | -0.136*** | -0.155*** | -0.052*** | 0.286***  | -0.008    | 0.006     | -0.226*** | 0.122***  | -0.130*** | 1         |           |           |           |              |           |     |
| attention    | -0.174*** | -0.140*** | -0.052*** | 0.113***  | -0.013**  | -0.021*** | -0.277*** | 0.126***  | -0.048*** | 0.305***  | 1         |           |           |              |           |     |
| knowledge    | 0.165***  | 0.113***  | 0.088***  | -0.155*** | -0.025*** | -0.003    | 0.258***  | -0.108*** | 0.033***  | -0.254*** | -0.268*** | 1         |           |              |           |     |
| fsize        | -0.044*** | 0.193***  | -0.087*** | -0.265*** | 0.175***  | 0.328***  | -0.036*** | -0.041*** | 0.219***  | -0.101*** | -0.022*** | 0.012*    | 1         |              |           |     |
| total_income | 0.096***  | 0.242***  | 0.203***  | -0.167*** | -0.017*** | 0.142***  | 0.362***  | -0.206*** | 0.073***  | -0.175*** | -0.190*** | 0.190***  | 0.204***  | 1            |           |     |
| house        | 0.020***  | 0.104***  | -0.026*** | -0.291*** | 0.012**   | 0.022**   | 0.171***  | -0.136*** | 0.150***  | -0.190*** | -0.131*** | 0.126***  | 0.114***  | 0.156**      | 1         |     |
| gdp          | 0.052***  | -0.012*   | 0.567***  | 0.036***  | -0.009    | 0.011     | 0.038***  | -0.051*** | 0.01      | 0.004     | -0.017*** | 0.035***  | -0.047*** | 0.091**      | -0.025*** | 1   |

Note: \*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

### 4.4 Multicollinearity Test

Correlation coefficient analysis alone cannot determine whether the selected variables exhibit multicollinearity. To conclusively assess multicollinearity, this study further calculates the Variance

Inflation Factor (VIF). The VIF formula is:  $VIF = 1 - \frac{1}{1-R_i^2}$ . A VIF value below 10 indicates no multicollinearity between variable  $i$  and other variables. Table 4 presents the VIF values of the variables. The job variable has a VIF of 1.51, while the average VIF value across all variables is 1.34. Since all values remain below the critical threshold of 10, the calculation of VIF confirms the absence of multicollinearity among the variables.

Table 4 Variance Inflation Factor Table

| Variable name                  | variance inflation factor | 1/variance inflation factor |
|--------------------------------|---------------------------|-----------------------------|
| age                            | 1.81                      | 0.553535                    |
| index                          | 1.6                       | 0.624779                    |
| job                            | 1.51                      | 0.663956                    |
| gdp                            | 1.5                       | 0.668134                    |
| edu                            | 1.48                      | 0.676185                    |
| total income                   | 1.32                      | 0.756195                    |
| fsize                          | 1.31                      | 0.76059                     |
| risk                           | 1.24                      | 0.806671                    |
| marriage                       | 1.22                      | 0.818046                    |
| attention                      | 1.21                      | 0.827864                    |
| gender                         | 1.18                      | 0.850597                    |
| knowledge                      | 1.17                      | 0.857339                    |
| health                         | 1.13                      | 0.883592                    |
| house                          | 1.13                      | 0.885016                    |
| mean variance inflation factor | 1.34                      |                             |

#### 4.5 Benchmark Regression Analysis

##### (1) Principal Effect Regression Analysis

Table 5 presents the regression results of the baseline model, where  $N$  denotes the sample size,  $R^2$  indicates the goodness of fit, and the  $t$ -statistics are provided in parentheses. The asterisks (\*) indicate significance at the 10% level, while double asterisks (\*\*) and triple asterisks (\*\*\*) denote significance at the 5% and 1% levels, respectively. Columns 1-4 and 5-8 show regression results with stepwise inclusion of individual-level control variables, household characteristics, and regional characteristics. Column 4 reveals that the coefficient of the Digital Inclusive Finance Index (index) is significantly positive at the 1% level, indicating a significant positive effect of digital inclusive finance on risky financial assets. Column 8 demonstrates that the index coefficient remains significantly positive at the 1% level, suggesting a positive impact on financial asset diversification. Overall, the influence of digital finance on household financial assets remains significant at the 1% level whether control variables are excluded or progressively added. This confirms that digital finance development significantly enhances the rationality of household financial asset allocation, validating Hypothesis 1.

Table 5 Benchmark regression results

|           | (1)<br>riskier       | (2)<br>riskier         | (3)<br>riskier         | (4)<br>riskier         | (5)<br>fvariety     | (6)<br>fvariety        | (7)<br>fvariety        | (8)<br>fvariety        |
|-----------|----------------------|------------------------|------------------------|------------------------|---------------------|------------------------|------------------------|------------------------|
| index     | 0.024***<br>(21.443) | 0.017***<br>(15.231)   | 0.017***<br>(14.437)   | 0.019***<br>(13.317)   | 0.044***<br>(6.235) | 0.033***<br>(4.872)    | 0.019***<br>(2.791)    | 0.043***<br>(5.332)    |
| age       |                      | 0.000***<br>(7.984)    | 0.000***<br>(6.635)    | 0.000***<br>(6.672)    |                     | -0.006***<br>(-29.048) | -0.005***<br>(-24.435) | -0.005***<br>(-24.367) |
| gender    |                      | -0.003***<br>(-2.915)  | -0.002**<br>(-2.493)   | -0.002**<br>(-2.519)   |                     | -0.029***<br>(-5.324)  | -0.031***<br>(-5.784)  | -0.031***<br>(-5.842)  |
| marriage  |                      | 0.002*<br>(1.738)      | 0.003**<br>(2.467)     | 0.003**<br>(2.475)     |                     | 0.081***<br>(12.425)   | 0.028***<br>(4.114)    | 0.028***<br>(4.131)    |
| edu       |                      | 0.001***<br>(11.588)   | 0.001***<br>(10.066)   | 0.001***<br>(9.989)    |                     | 0.014***<br>(21.621)   | 0.013***<br>(19.559)   | 0.013***<br>(19.401)   |
| health    |                      | 0.000<br>(0.328)       | 0.000<br>(0.527)       | 0.000<br>(0.462)       |                     | -0.002<br>(-0.846)     | 0.001<br>(0.557)       | 0.001<br>(0.417)       |
| job       |                      | -0.006***<br>(-6.015)  | -0.006***<br>(-6.000)  | -0.005***<br>(-5.734)  |                     | -0.007<br>(-1.218)     | -0.011**<br>(-2.045)   | -0.008<br>(-1.520)     |
| risk      |                      | -0.005***<br>(-11.695) | -0.005***<br>(-11.834) | -0.005***<br>(-11.735) |                     | -0.013***<br>(-5.533)  | -0.008***<br>(-3.752)  | -0.008***<br>(-3.552)  |
| attention |                      | -0.006***<br>(-15.443) | -0.006***<br>(-15.398) | -0.006***<br>(-15.410) |                     | -0.019***<br>(-8.336)  | -0.017***<br>(-7.303)  | -0.017***<br>(-7.330)  |
| knowledge |                      | 0.010***<br>(14.676)   | 0.010***<br>(14.553)   | 0.010***<br>(14.555)   |                     | 0.007*<br>(1.780)      | 0.003<br>(0.739)       | 0.003<br>(0.740)       |
| fsize     |                      |                        | -0.001***<br>(-3.510)  | -0.001***<br>(-3.528)  |                     |                        | 0.030***<br>(18.304)   | 0.030***<br>(18.277)   |

|              |           |           |           |           |          |          |           |           |
|--------------|-----------|-----------|-----------|-----------|----------|----------|-----------|-----------|
| total_income |           |           | 0.001*    | 0.001*    |          |          | 0.028***  | 0.028***  |
|              |           |           | (1.904)   | (1.854)   |          |          | (16.886)  | (16.785)  |
| house        |           |           | -0.001    | -0.001    |          |          | -0.017*** | -0.017*** |
|              |           |           | (-1.257)  | (-1.278)  |          |          | (-2.791)  | (-2.838)  |
| gdp          |           |           |           | -0.001**  |          |          |           | -0.017*** |
|              |           |           |           | (-2.481)  |          |          |           | (-5.361)  |
| cons         | -0.070*** | -0.030*** | -0.029*** | -0.021*** | 0.479*** | 0.796*** | 0.429***  | 0.523***  |
|              | (-18.725) | (-5.926)  | (-5.047)  | (-3.296)  | (20.701) | (26.458) | (12.970)  | (13.976)  |
| N            | 24012     | 24012     | 24012     | 24012     | 24012    | 24012    | 24012     | 24012     |
| R2           | 0.019     | 0.075     | 0.076     | 0.076     | 0.002    | 0.130    | 0.157     | 0.158     |

Note: \*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

## (2) Regional Heterogeneity Regression Analysis

This study further divides the sample into eastern, central, and western regions for extended analysis. It examines the differential impacts of digital inclusive finance on risk financial assets and financial asset diversity across regions. Table 6 presents the specific regression results of regional heterogeneity. The regression results indicate that digital inclusive finance has a more pronounced effect on risk financial assets in the eastern region, while the central region demonstrates a more significant impact on financial asset diversity compared to the eastern and western regions.

Table 6 Results of Regional Heterogeneity Regression

|              | riskier                |                       |                       | fvariety               |                        |                        |
|--------------|------------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|
|              | east                   | middle part           | the west area         | east                   | middle part            | the west area          |
| index        | 0.018***<br>(7.684)    | -0.009*<br>(-1.779)   | 0.007<br>(1.192)      | 0.056***<br>(5.394)    | 0.107***<br>(2.582)    | -0.079*<br>(-1.647)    |
| age          | 0.000***<br>(5.510)    | 0.000***<br>(3.870)   | 0.000*<br>(1.839)     | -0.006***<br>(-17.636) | -0.004***<br>(-11.129) | -0.005***<br>(-11.772) |
| gender       | -0.003*<br>(-1.736)    | 0.000<br>(0.126)      | -0.003**<br>(-2.353)  | -0.019**<br>(-2.477)   | -0.043***<br>(-4.251)  | -0.045***<br>(-4.323)  |
| marriage     | 0.006***<br>(2.617)    | -0.000<br>(-0.000)    | 0.002<br>(1.014)      | 0.032***<br>(3.252)    | 0.034***<br>(2.646)    | 0.018<br>(1.376)       |
| edu          | 0.002***<br>(6.960)    | 0.001***<br>(5.565)   | 0.001***<br>(4.583)   | 0.011***<br>(10.842)   | 0.017***<br>(13.545)   | 0.013***<br>(10.444)   |
| health       | 0.001<br>(0.695)       | -0.000<br>(-0.691)    | -0.000<br>(-0.479)    | -0.007*<br>(-1.870)    | 0.008*<br>(1.868)      | 0.007<br>(1.482)       |
| job          | -0.006***<br>(-3.466)  | -0.004***<br>(-2.989) | -0.005***<br>(-3.815) | -0.008<br>(-1.006)     | -0.012<br>(-1.160)     | -0.002<br>(-0.176)     |
| risk         | -0.007***<br>(-9.209)  | -0.002***<br>(-4.378) | -0.003***<br>(-5.036) | -0.009***<br>(-2.686)  | -0.002<br>(-0.546)     | -0.011**<br>(-2.524)   |
| attention    | -0.009***<br>(-11.817) | -0.003***<br>(-6.407) | -0.004***<br>(-6.609) | -0.017***<br>(-4.818)  | -0.013***<br>(-3.101)  | -0.019***<br>(-4.546)  |
| knowledge    | 0.012***<br>(10.036)   | 0.006***<br>(6.824)   | 0.007***<br>(7.225)   | 0.004<br>(0.729)       | 0.007<br>(0.940)       | -0.002<br>(-0.322)     |
| fsize        | -0.002***<br>(-2.856)  | -0.001**<br>(-2.182)  | -0.000<br>(-1.297)    | 0.030***<br>(12.087)   | 0.028***<br>(8.607)    | 0.030***<br>(10.255)   |
| total_income | 0.000<br>(0.356)       | 0.001**<br>(2.524)    | 0.000<br>(0.325)      | 0.027***<br>(10.872)   | 0.035***<br>(10.793)   | 0.021***<br>(6.938)    |
| house        | -0.000<br>(-0.178)     | -0.003**<br>(-2.114)  | -0.000<br>(-0.106)    | -0.030***<br>(-3.345)  | -0.010<br>(-0.851)     | -0.008<br>(-0.678)     |
| gdp          | -0.000<br>(-0.227)     | 0.005***<br>(3.172)   | -0.000<br>(-0.357)    | -0.002<br>(-0.551)     | -0.023*<br>(-1.814)    | -0.025***<br>(-3.027)  |
| cons         | -0.018<br>(-1.321)     | -0.019<br>(-1.597)    | 0.004<br>(0.329)      | 0.382***<br>(6.125)    | 0.191**<br>(2.021)     | 1.047***<br>(10.062)   |
| N            | 10445                  | 7386                  | 6181                  | 10445                  | 7386                   | 6181                   |
| R2           | 0.093                  | 0.041                 | 0.047                 | 0.177                  | 0.148                  | 0.153                  |

Note: \*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

## 4.6 Robustness Test

This study conducts robustness checks through sample screening and replacement. Given that individuals aged 20-40 tend to exhibit more rational and mature financial decision-making when investing in assets, their samples demonstrate higher reliability. Therefore, we first selected household heads aged 20-40 as the research sample and performed model regression to validate model robustness. Table 7 presents the regression results, which show that the coefficients of the digital inclusive finance index in both riskier and fvariety remain significantly positive. This aligns with the baseline regression results from earlier analyses, confirming the model's robustness. These findings further demonstrate that digital finance significantly enhances the rationality of household financial asset allocation.

*Table 7 Results of robust regression after screening samples*

|              | (1)<br>risker         | (2)<br>fvariety       |
|--------------|-----------------------|-----------------------|
| index        | 0.008***<br>(2.598)   | 0.038**<br>(2.115)    |
| age          | 0.000*<br>(1.913)     | 0.006***<br>(5.224)   |
| gender       | -0.003<br>(-1.304)    | -0.028**<br>(-2.522)  |
| marriage     | -0.000<br>(-0.173)    | 0.027*<br>(1.775)     |
| edu          | 0.001***<br>(3.155)   | 0.021***<br>(13.519)  |
| health       | 0.001<br>(0.831)      | -0.000<br>(-0.081)    |
| job          | -0.002<br>(-0.672)    | 0.052***<br>(3.071)   |
| risk         | -0.004***<br>(-5.251) | -0.008*<br>(-1.931)   |
| attention    | -0.007***<br>(-6.837) | -0.016***<br>(-2.941) |
| knowledge    | 0.008***<br>(6.378)   | -0.012*<br>(-1.700)   |
| fsize        | -0.000<br>(-0.286)    | 0.003<br>(0.763)      |
| total_income | -0.000<br>(-0.200)    | 0.011***<br>(3.326)   |
| house        | -0.001<br>(-0.344)    | -0.015<br>(-1.529)    |
| gdp          | 0.001<br>(0.482)      | -0.013**<br>(-2.076)  |
| _cons        | -0.006<br>(-0.404)    | 0.193**<br>(2.450)    |
| N            | 3907                  | 3907                  |
| R2           | 0.074                 | 0.100                 |

Note: \*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

Given the high overlap between the digitalization index and the broader digital inclusive finance index, this study specifically adopts the digitalization component (denoted as 'digital') from the latter as the proxy variable for digital inclusiveness, conducting regression analysis to validate model robustness. As shown in Table 8, the regression results confirm that the coefficients of the digital inclusive finance index remain significantly positive in both columns 1 and 2, consistent with the baseline regression findings. This demonstrates the model's robustness, validity, and high reliability.

*Table 8 Robust Regression Results after Sample Replacement*

|              | (1)<br>risker          | (2)<br>fvariety        |
|--------------|------------------------|------------------------|
| digital      | 0.032***<br>(14.527)   | 0.058***<br>(4.497)    |
| age          | 0.000***<br>(6.629)    | -0.005***<br>(-24.322) |
| gender       | -0.002**<br>(-2.357)   | -0.031***<br>(-5.788)  |
| marriage     | 0.003**<br>(2.547)     | 0.028***<br>(4.170)    |
| edu          | 0.001***<br>(10.278)   | 0.013***<br>(19.586)   |
| health       | 0.000<br>(0.157)       | 0.001<br>(0.309)       |
| job          | -0.005***<br>(-5.714)  | -0.009*<br>(-1.650)    |
| risk         | -0.005***<br>(-11.659) | -0.008***<br>(-3.591)  |
| attention    | -0.006***<br>(-15.439) | -0.017***<br>(-7.319)  |
| knowledge    | 0.009***<br>(14.411)   | 0.003<br>(0.734)       |
| fsize        | -0.001***<br>(-3.509)  | 0.030***<br>(18.207)   |
| total_income | 0.000<br>(1.562)       | 0.028***<br>(16.868)   |
| house        | -0.001<br>(-1.066)     | -0.017***<br>(-2.802)  |

|                       |                       |                       |
|-----------------------|-----------------------|-----------------------|
| gdp                   | -0.003***<br>(-5.099) | -0.018***<br>(-5.117) |
| _cons                 | -0.070***<br>(-9.143) | 0.442***<br>(9.963)   |
| <i>N</i>              | 24012                 | 24012                 |
| <i>R</i> <sup>2</sup> | 0.077                 | 0.158                 |

Note: \*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

#### 4.7 Mechanism Analysis

The following section analyzes the information friction mechanism, using mediation effect regression to verify how digital finance can mitigate information friction and thereby improve the rationality of household financial asset allocation. Table 9 presents the mediation effect regression results, where Column 1 shows the regression results of the mediating variable "information friction" with the explanatory variable "digital inclusive finance," while Columns 2 and 3 present the regression results of the dependent variable, explanatory variable, and mediating variable, respectively. The regression results in Column 1 indicate a significantly positive coefficient for information friction. Columns 2 and 3 reveal that both information friction and digital inclusive finance coefficients are significantly positive. These findings demonstrate a mediation effect mediated by information friction, establishing a transmission mechanism of "digital finance development → reduction of information friction → household financial asset allocation." This indicates that the development of digital finance can enhance the rationality of household financial asset allocation by alleviating information friction, thereby validating Hypothesis 2.

Table 9 Intermediary Effect Regression Results

|                       | (1)<br>travel          | (2)<br>risker          | (3)<br>fvariety        |
|-----------------------|------------------------|------------------------|------------------------|
| index                 | 0.290***<br>(8.327)    | 0.018***<br>(13.156)   | 0.036***<br>(4.471)    |
| travel                |                        | 0.001***<br>(2.668)    | 0.025***<br>(16.464)   |
| age                   | -0.031***<br>(-34.511) | 0.000***<br>(7.094)    | -0.004***<br>(-20.337) |
| gender                | 0.029<br>(1.265)       | -0.002**<br>(-2.541)   | -0.032***<br>(-6.009)  |
| marriage              | 0.279***<br>(9.686)    | 0.003**<br>(2.304)     | 0.021***<br>(3.119)    |
| edu                   | 0.065***<br>(23.119)   | 0.001***<br>(9.487)    | 0.011***<br>(16.867)   |
| health                | -0.077***<br>(-7.743)  | 0.000<br>(0.595)       | 0.003<br>(1.240)       |
| job                   | 0.057**<br>(2.408)     | -0.005***<br>(-5.776)  | -0.010*<br>(-1.784)    |
| risk                  | -0.101***<br>(-10.435) | -0.004***<br>(-11.530) | -0.006**<br>(-2.457)   |
| attention             | -0.134***<br>(-13.711) | -0.006***<br>(-15.117) | -0.013***<br>(-5.891)  |
| knowledge             | 0.043***<br>(2.632)    | 0.010***<br>(14.509)   | 0.002<br>(0.464)       |
| fsize                 | 0.284***<br>(40.542)   | -0.001***<br>(-4.089)  | 0.023***<br>(13.612)   |
| total_income          | 0.219***<br>(30.568)   | 0.000<br>(1.303)       | 0.023***<br>(13.373)   |
| house                 | 0.245***<br>(9.318)    | -0.002<br>(-1.436)     | -0.023***<br>(-3.838)  |
| gdp                   | -0.053***<br>(-3.836)  | -0.001**<br>(-2.415)   | -0.016***<br>(-4.982)  |
| _cons                 | 6.593***<br>(40.978)   | -0.026***<br>(-3.869)  | 0.361***<br>(9.377)    |
| <i>N</i>              | 24012                  | 24012                  | 24012                  |
| <i>R</i> <sup>2</sup> | 0.380                  | 0.076                  | 0.168                  |

Note: \*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

The empirical findings demonstrate that digital finance significantly enhances the rationality of household financial asset allocation. By providing faster access to accurate financial information and personalized investment recommendations, it helps prevent losses caused by information asymmetry. Consequently, this optimizes asset allocation and encourages more households to invest in financial products, thereby stimulating market development. Regional heterogeneity analysis further reveals that the eastern region benefits more substantially, reflecting its higher development level. Mechanistic analysis indicates that this effect is mediated through reduced information frictions.

## 5. Recommendations

Empirical analysis demonstrates that digitalization has diversified household financial assets while optimizing the allocation of risk exposure. By reducing financial exclusion, digitalization has empowered more families to participate in financial markets and develop customized investment strategies. This study proposes three key perspectives to explore these developments.

Firstly, accelerate the development of digital finance. As a new-generation product integrating traditional finance with digital technology, digital finance has experienced rapid growth over the past decade, not only enhancing household financial accessibility but also optimizing asset allocation. However, regional disparities in its development remain evident. The regional heterogeneity analysis conducted by dividing samples into eastern, central, and western regions reveals significant differences: the western region, being relatively underdeveloped, shows limited impact of digital finance on household asset allocation. Therefore, the government should prioritize developing lagging regions, reduce financial exclusion, and intensify efforts in digital finance development.

Secondly, the government should intensify financial literacy initiatives. Descriptive statistics reveal that the average financial knowledge level remains low, indicating widespread underpreparedness. This may lead to herd mentality in investment decisions, hindering individuals from effectively managing and planning their financial assets. To address this, the state should enhance financial education programs, improve public financial literacy, and help households develop sound risk awareness and identification skills. By reducing financial exclusion and mitigating information asymmetry, more financially literate families can participate in financial markets. This approach will optimize asset allocation while diversifying investment portfolios.

Thirdly, strengthen financial regulation and innovate financial service products. Given the increasingly complex online and financial environments, relevant authorities should enhance oversight of financial information to prevent investor losses caused by data breaches. Additionally, reducing information friction can boost household investment enthusiasm. Finally, to combat the widespread spread of misinformation, authorities must take decisive action against violations. Considering China's significant wealth disparity, financial institutions should develop tailored financial products to meet diverse investor needs, thereby enhancing public satisfaction with investment services.

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