

The Impact of Digital Economy on the Holding Rate of Household Financial Products

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Abstract. In today's digital era, traditional household financial management approaches are undergoing transformation. Against this backdrop, investigating the influence of digital economy on household financial products holding rate carries significant practical implications. This article is mainly about the effect of digital economy on household financial products holding rate, employing a two-way fixed-effects model incorporating provincial and temporal effects based on panel data from 29 provinces (municipalities, autonomous regions) in China in 2017 and 2019. The results demonstrate a significant positive effect, with the conclusions remaining valid after robustness tests. In western regions and areas where the level of digital economic development is relatively low, the impact turns out to be more pronounced, according to heterogeneity analysis. Instrumental variable tests further confirm the absence of significant endogeneity issues. The study reveals the independent effect of digital economy on household financial decision-making across macro and micro perspectives, providing a theoretical foundation and reference for the formulation of inclusive financial policies in digital finance and regional differentiated strategies.

Keywords: Digital economy, financial products, household financial behavior, inclusive digital finance.

1. Introduction

Over the past few years, the Chinese economy has made strong progress towards a new phase of high quality. As the most dynamic sector within China's economic system, in 2012, the scale of digital economy was 11.2 trillion yuan. By 2023, it has expanded to 53.9 trillion yuan, nearly quadrupling over the past 11 years. Microscopically, it has irrevocably reshaped the foundational logic of China's economy through transformations in production modes, circulation channels, and consumption patterns. As the fundamental unit of economic activities, households' wealth management approaches deeply reflect the operational status of financial markets and social wealth distribution mechanisms. Among these management practices, the holding rate of household financial products serves as a core benchmark for evaluating wealth management quality. According to the China Household Investment Behavior Survey Report, although bank deposits still account for 74%, the allocation ratio of wealth management products has maintained stable growth for three consecutive years, with usage rates reaching 41%. These figures directly validate the current trend of household transition from singular reserves to diversified wealth management in the digital era. Consequently, investigating how digital economy influences the holding rate of household financial products has become a critical proposition for understanding current residents' wealth management behavior.

Existing literature has scarcely explored the direct impact of digital economy on household financial investment behavior. An analysis of existing studies reveals that digital economy can promote investment behavior by enhancing the accessibility of household financial services, with three primary mechanisms:

Information Cost Reduction: Xie and Zou earlier noted that digital technologies, through big data aggregation and intelligent algorithm processing, transform fragmented financial product information in traditional finance into standardized and visualized content, significantly reducing household costs in accessing critical information [1]. **Channel Expansion Effect:** Overall, inclusiveness within the financial sector has been advanced by digital economy. Zhang et al. discovered that third-party payments and online investment platforms had transcended physical branch limitations, facilitating

inclusive finance. From the perspective of regional disparities, Jiao pointed out that mobile payments can provide rural residents with more convenient financial services, attributable to both the mobile interaction of financial services and innovations in internet-based financial operations [2,3]. Xie et al.'s research further indicated that digital finance can compensate for traditional finance shortcomings, enabling underdeveloped regions to access convenient financial services [4].

The Empowering Role of Financial Literacy: Digital economic development can objectively enhance financial capabilities. Luo Yu and Zeng Lianyun further revealed through micro-level behavioral observations that digital and financial capabilities were undergoing profound integration, with significant interactive effects on family well-being. Notably, households with higher digital capabilities may improve their financial literacy through more convenient digital channels [5]. Zhang Haodong and Yin Zhichao, based on the 2013 CHFS data, demonstrated that financial knowledge not only reduced family financial exclusion but also mitigated exclusion in investment and financing products [6].

Analyzing these studies reveals that existing research has accumulated important achievements in this field, yet several limitations persist: First, existing research has predominantly examined the impact of classical variables like financial literacy on household financial behavior while lacking macro-level digital economy studies [7]. Second, there is a lack of quantitative data on the holding rates of household financial products at the provincial level.

Based on this, in this paper, the effect of digital economy on the household finance products holding rate is discussed. It employs a two-way fixed-effects model incorporating provincial and temporal dimensions. The research reveals a significant positive effect. The benchmark conclusion remains unchanged after robustness testing. Subgroup analyses by regional affiliation and digital economic development levels demonstrate heterogeneous impacts, with western regions and areas of lower digital economic development showing the strongest influence. No significant endogeneity issues were detected using the instrumental variable method.

The main marginal contributions of this study lie in two aspects: First, current research predominantly examines risk investments, whereas this study extends the depth of research on household financial behavior and quantifies the marginal influence of digital economy on household financial products holding rate. Secondly, based on heterogeneous results, it enables targeted formulation of region-specific digital financial development policies, thereby enhancing the inclusiveness of household financial participation.

2. Research Design

2.1. Model Construction

To investigate the impact of digital economic development levels on the household financial products holding rate, this article employs a two-way fixed effects model:

$$Y_{it} = \alpha_0 + \alpha_1 X_{it} + \alpha_2 \text{control}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

Among them, i denotes the province; t denotes the year; X represents the level of digital economic development; Y represents the holding rate of household financial products; control denotes control variables including urbanization rate, proportion of financial sector employment, and education level; α_0 devotes the intercept term; α_1 devotes the coefficient of digital economic development; α_2 represents the coefficients of control variables; μ_i represents provincial fixed effects; λ_t denotes time fixed effects; ε_{it} signifies the random error term.

2.2. Variable Design

2.2.1 Dependent variable

The holding rate of household financial products (Y) is the dependent variable, representing the proportion of households holding financial products among total households.

2.2.2 Explanatory variable

The digital economic development index (X) is the explanatory variable. Although extensive research exists on measuring digital economy, evaluation indicators remain inconsistent. Building on Tang Xianbin's framework, this study constructs a digital economy evaluation index system comprising 20 variables. Specific implementation steps are detailed in the aforementioned literature [8].

2.2.3 Control variables

UR: The urbanization rate reflects disparities in financial service accessibility and residents' awareness of financial management between urban and rural areas. The ratio of urban permanent population to total regional population is what it is calculated as.

PEFS: This ratio reflects regional financial employment density. It is calculated as the number of individuals in financial industries across provinces divided by the total permanent population.

EDU: Educational level directly influences households' understanding of financial products and risk identification capabilities. It is represented by the number of ordinary higher education institutions in each province.

2.3. Data Sources

The study focuses on 29 provinces (cities, autonomous regions). Due to the biennial statistical cycle of China Household Finance Survey (CHFS) and discrepancies in questionnaire coverage, figures from 2017 and 2019 are selected. Statistical computation of household behavior across different provinces yields 58 observations. Indicators related to digital economy development levels are primarily sourced from the China Statistical Yearbook, China Science and Technology Statistical Yearbook, China Information Statistical Yearbook, and the National Bureau of Statistics website. The holding rate of household financial products at the provincial level is derived from the CHFS, which aggregates extensive information on household financial products nationwide. This study aggregates household financial product data by province and year to obtain the holding rates. Urbanization rates and proportions of financial sector employment are from the China Statistical Yearbook and provincial statistical bulletins. The data on educational level is derived from the statistical data released by the Education Bureau's official website.

Table 1. Baseline regression results

Variables	Y (1)	Y (2)	Y (3)	Y (4)
X	21.85*** (3.87)	20.00*** (3.72)	21.23*** (4.18)	22.08*** (4.16)
UR		-127.52** (-2.42)	-151.92** (-2.70)	-144.38** (-2.21)
PEFS			-1321.20 (-1.34)	-1295.84 (-1.27)
EDU				-0.04 (-0.55)
PFE	Yes	Yes	Yes	Yes
TFE	Yes	Yes	Yes	Yes
Observations	58	58	58	58
R ²	0.69	0.77	0.80	0.80

Note: The values placed in parentheses stand for t-statistics; Significance at the 10%, 5%, and 1% levels is represented by *, ** and *** respectively, with the same notation applying to subsequent tables.

3. Empirical Results and Analysis

3.1. Baseline Regression Results

All model results in this paper are estimated using robust standard errors. The baseline regression results are presented in Table 1. No control variables are included in Column (1), whereas different sets of control variables are gradually added in Column (2)-(4). Across all specifications, the estimated coefficient of the core variable X is consistently shown to be statistically significant and positive, as demonstrated by the results. The regression outcomes show the digital economic development enhances the household financial products holding rate significantly. Specifically, a one-unit growth in the digital economic development index corresponds to an average 22.08 percentage point rise in the holding rate.

3.1.1 Altering the measurement approach of the core variable

This paper further adopts a new measurement method for digital economy, utilizing the digital finance inclusive economic index to re-measure digital economy [2]. The results are presented in columns (1) and (2) of Table 2. The estimated coefficients of the core variables consistently remain statistically significant and positive, indicating that digital economic development enhances the holding rate of household financial products. This finding aligns with previous research conclusions.

Table 2. Robust test results

Variables	(1)	(2)	(3)	(4)
	Y	Y	Y	Y
X_2	0.13*** (3.32)	0.10*** (4.80)		
X			29.21*** (3.61)	28.17*** (3.30)
UR		-117.19** (-2.53)		-145.50** (-2.13)
PEFS		-762.82 (-1.06)		-1271.82 (-1.20)
EDU		-0.002 (-0.03)		-0.023 (-0.35)
PFE	Yes	Yes	Yes	Yes
TFE	Yes	Yes	Yes	Yes
Observations	58	58	58	58
R^2	0.78	0.84	0.68	0.79

3.1.2 Lagged variable method

To alleviate the potential bidirectional causality between digital economy and the holding rate of household financial products, this study employs a one-period lagged digital economy development index for robustness testing. As shown in columns (3) and (4) of Table 2, the estimated coefficients of the core variable remain significantly positive, demonstrating that digital economic development enhances the holding rate of household financial products, consistent with previous research findings and indicating robust empirical results.

3.2. Heterogeneity Analysis

3.2.1 Affiliation with a region

Following the regional classification standard from Li Jianjun and conducting empirical tests using Equation (1), columns (1)-(3) of Table 3 reveal digital economy significantly and positively impacts the household financial products holding rate in western regions [9].

3.2.2 Regional digital development levels

By dividing the sample into higher-level and lower-level groups based on the top 30% and bottom 30% of the digital economy development index respectively and conducting tests using Equation (1), columns (4)-(5) of Table 3 show that both groups exhibit significant positive coefficients for X, but the lower-level group demonstrates a larger coefficient. This indicates that digital economic development exerts more pronounced effects on enhancing the holding rate of household financial products in regions with lower digital development levels. In contrast, the higher-level group may experience effects primarily through "optimizing existing assets," characterized by lower marginal contributions and less noticeable improvements [10].

Table 3. Heterogenization analysis results

Variables	Region			Digital economy development level	
	(1) East	(2) Center	(3) West	(4) Higher	(5) Lower
X	9.70* (1.89)	11.98 (0.86)	33.01* (1.90)	12.86** (2.79)	81.71* (2.01)
Control	Yes	Yes	Yes	Yes	Yes
Fixed effects	No	No	No	No	No
Observations	58	58	58	58	58
R ²	0.78	0.34	0.33	0.80	0.16

4. Endogeneity Test

This study selects the telephone penetration rate as the instrumental variable for digital economy. Detailed findings are provided in Table 4. A robust association of the endogenous variable with the instrumental variable is verified through this first-stage regression. The Wald F statistic associated with Cragg and Donald is 73.97, which significantly exceeds the empirical threshold of 10, thereby rejecting the weak instrument assumption and confirming the validity of the instruments. The second-stage results demonstrate the same conclusion. Although the Hausman test doesn't detect significant endogeneity, the exogeneity of the telephone penetration rate has a clear economic rationale that strengthens causal inference. Additionally, while two-way panel fixed-effects models may still exhibit latent biases due to omitted variables, this instrumental variable approach retains substantial significance.

Table 4. Endogeneity test results

Variables	First-stage Digital economy	Second-stage pct_1
Telephone penetration rate	0.0033*** (8.60)	
X		10.5116* (1.88)
UR	0.0418 (0.38)	20.1815*** (3.76)

PEFS	-2.5764 (-0.91)	224.3739* (1.72)
EDU	0.0018*** (11.24)	-0.0123 (-0.99)
Cragg-Donald F	73.9660	
Hausman test p-value		0.6684

Note: Within the instrumental variable regression results of the second-stage, the values in parentheses under the coefficients are Z-statistics.

5. Conclusion

This study employs panel data from 29 provinces (cities, autonomous regions) in 2017 and 2019 to construct a two-way fixed-effects model, verifying the impact and heterogeneous influencing factors of digital economy on the holding rate of financial products. Key findings include: Digital economy exhibits statistically significant positive effects on the holding rate of financial products. Robustness tests via "core variable replacement" and "lag variable method" confirm the robustness of baseline conclusions. Digital economy exerts the strongest impact on the holding rate of financial products in western regions, likely due to lower physical branch coverage there, which amplifies the "complementary effect" of digital economy. Lower-developed regions demonstrate more pronounced impacts from digital economy, whereas higher-developed regions, with more mature financial service systems, exhibit relatively diminished marginal contributions.

On the basis of these findings, the following policy implications are suggested: First, measures need to be taken to enhance the digital empowerment of financial services, which involves addressing traditional financial bottlenecks through technological innovation. Specifically, big data integration should be leveraged to rationalize the risks and returns of wealth management products, intelligent algorithms deployed for precise matching, and households' information search costs reduced. Meanwhile, financial literacy should be popularized via lightweight tools such as short videos—this helps elevate households' financial literacy and operational capabilities. Secondly, differentiated regional strategies should be implemented. For eastern regions with superior financial foundations, service quality should be optimized. For central-western regions and those with low-level digital economies, priority should be given to expanding online channel coverage and supplementing physical branches.

This study, despite striving to examine how digital economy affects household financial products holding rate, is not without limitations that should be noted. First, the temporal coverage of the holding rate of household financial products data utilized in this study is insufficient, thereby suggesting the need for future research to further supplement this aspect. Second, the limited number of control variables selected in this study may lead to omitted variable bias.

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