

Financial Literacy Research on The Mechanism of Action of Residents' Property Income and Path

Hong Zhou, Yuan Tan*

Faculty of Finance, Anhui University of Finance and Economics, Bengbu City, Anhui Province, 233000, China

*Corresponding author: Yuan TAN (Email: 1060226874@qq.com)

Abstract: Property income, as a kind of derived wealth, may produce the Matthew effect of "the poor getting poorer and the rich getting richer", which in turn leads to further widening of the wealth gap and more serious income disparity among residents. Based on the 2014 data of the China Household Tracking Survey (CFPS), we analyze the relationship between financial literacy and residents' property income using Tobit model, Probit model, Poisson regression and Sobel test. This paper finds that financial literacy has an enhancing effect on residents' property income. Mechanism and path analysis found that risk attitude and financial planning play a mediating effect in the process of financial literacy affecting residents' property income.

Keywords: Financial literacy, Property income, Financial planning, Risk attitude.

1. Introduction

The 19th Party Congress emphasized "promoting a more reasonable and orderly distribution of income", "widening the channels for residents' labour and property income", and "narrowing the income distribution gap". The low and uneven distribution of residents' property income will not only inhibit the growth of domestic demand, but will also be detrimental to the development of the domestic general circulation system. Increasing the property income of residents, adjusting and optimising the structure of different income levels, is important for improving China's economic structure and income distribution structure, narrowing the gap between the rich and the poor, and successfully crossing the "middle income trap".

Human capital becomes an important factor influencing urban households' access to property income, and only by actively participating in markets such as capital or real estate can residents increase their income. Only by actively participating in markets such as capital or real estate can residents increase the likelihood of having property income (Guangjie Ning, 2014)[1]. Financial literacy, as a type of human capital investment (Lusardi, 2014)[2], is the ability of people to use financial resources for lifelong financial security through the basic financial concepts they have acquired and are able to apply this knowledge when using and managing money (Hung A, 2009)[3], it is the ability to integrate financial knowledge and financial resources, and a lack of financial literacy can lead individuals to make poor financial decisions. A large body of literature suggests that financial literacy has a significant impact on the financial behaviour of residents, such as savings, commercial insurance participation, financial planning, credit discipline, asset allocation, and salary allocation stock investment, etc.

How does financial literacy, the end result of financial behaviour, affect people's property income? What are the mechanisms at play? What are the mechanisms at play? At present, the relationship between property income and financial literacy has attracted increasing attention from scholars, but few have explored the role of financial literacy on property income in depth. However, few scholars have

explored in depth the mechanisms and pathways of financial literacy on property income, and have only explored the relationship between financial literacy and financial behaviour, financial literacy and property income respectively. financial literacy and property income, financial literacy and property income, and financial behaviour and property income, respectively, and have not been included in the statistical framework to explore their relationships.

Based on data from the China Household Tracking Survey (CFPS) in 2014, this paper uses Tobit models, Probit models, Poisson regressions and Sobel tests, using instrumental variables to address endogeneity issues. The relationship between financial literacy and residents' property income is analysed using Tobit models, Probit models, Poisson regressions and Sobel tests, and instrumental variables are used to address endogeneity issues.

The possible innovations and contributions of this paper are twofold:

Clarifying the mechanism and path of the role of financial literacy and property income. The increase in the level of financial literacy not only raises the degree of households' appetite for risk, but also raises their awareness of financial planning. These two abilities play a mediating role in the level of financial literacy to enhance residents' property income, so improving residents' financial literacy is crucial to enhance residents' property income.

Few scholars have studied the mediating role of risk attitude and financial planning in the relationship between financial literacy and property income, so this paper will test the mediation effect of both in detail.

2. Theoretical Framework

Most of the ways to obtain property income are closely related to financial investment and saving behaviours. In order to make the right choices and decisions to obtain more property-derived income, financial investment decisions require residents to be financially literate, otherwise it is difficult to increase the value of financial assets and may even lead to

serious consequences such as investment losses and property damage[4,5]. The more financially literate residents are, the more reasonable their allocation of financial assets and their ability to avoid investment risks, and the higher their household income from financial investments (Hong Zhou , and Ming Xia , 2020)[6]. Preferred households will care more about returnability (Xia Shen, 2019)[7]and risk-averse people are more likely to prefer investing in risky assets (Minhong Wu,2015)[8]. Investors with higher financial literacy are able to allocate financial assets and avoid investment risks more rationally and the more rational and effective their financial investments are, the more property income they can obtain due to more rational and scientific financial planning (Hong Zhou and Ming Xia, 2020)[5].Therefore, the following three hypotheses are proposed:

Hypothesis 1: An increase in the level of financial literacy will have an enhancing effect on the property income of the population

Hypothesis 2: As financial literacy increases, the more risk-averse residents become, the greater the breadth and depth of their participation in financial markets, leading to higher property income.

Hypothesis 3: Increased financial literacy increases the awareness of financial planning and the more efficient the allocation of assets, thereby increasing the property income of residents.

3. Data Sources and Description of Variables

3.1. 1Data sources

The CFPS2014 is a comprehensive survey of the variables required for this paper, so data from the 2014 China Household Tracking Survey (CFPS2014) was used. The survey sample covered 25 cities in eastern, central and western China, and included a total of 13,946 households and all their household members. In the data processing, all samples with missing information and obvious abnormalities in the relevant variables were excluded, and the financial endings of key variables were processed, resulting in a sample of 3857.

3.2. Selection of variables

3.2.1. Explanatory variables.

In this paper, the property income of residents in the CFPS2014 data is selected as the explanatory variable. In order to make the distribution of the variables closer to the normal distribution and to better meet the assumptions of the regression model, the logarithm of the property income of the residents is taken. Since a large number of households in the sample do not have property income, to ensure that the logarithm is meaningful for households with zero property income, the logarithm is obtained by adding 1 to the property income as in Changyun Wang (2014)[9].

3.2.2. Financial literacy

This paper uses an objective financial literacy measure. 38 questions are included in the financial literacy section of the 2014 CFPS household questionnaire, and a total of 12 questions relating to objective financial literacy have been selected for this paper.

In this paper, we refer to the methods used by Van Rooij[10] and Weixing Wu[11] to construct indicators of residents' financial literacy (Fl_factor) using factor analysis. When respondents answered the financial literacy-related questions,

there were differences in the level of financial literacy represented by "wrong" and "don't know" answers. Therefore, two dummy variables were constructed for each question, following the practice of Zhichao Yin [12]. The first dummy variable indicates whether the question is answered correctly, with a value of 1 for a correct answer and 0 for an incorrect answer; the second dummy variable indicates whether the question is answered directly, with "don't know" and "can't calculate" considered as indirect answers and assigned a value of 0, while the others are considered as direct answers and assigned a value of 1. The second dummy variable indicates whether or not the question is answered directly. Factor analysis was conducted using principal component analysis based on a total of 24 dummy variables for the 12 questions.

Factor analysis The results of the tests are shown in Table 1. The Bartlett sphericity test passed the Bartlett sphericity test as the p-value was 0.000, which rejected the original hypothesis. The KMO value was 0.871, which was greater than 0.6, so the data was suitable for factor analysis.

Table 1. KMO and Bartlett's test

KMO		.871
Bartlett's test	Approximate cardinality	49252.094
	Degree of freedom	276
	Significance	.000

In this paper, we used factor analysis to obtain the factor scores after rotating the factors by the maximum variance method, and Bartlett's method to obtain the factor scores. The six common factors were extracted according to the principle of eigenvalues greater than 1. The financial literacy index was calculated by weighting the factors according to Table 2.

Table 2. Total variance explained

Factor	The sum of squared loads after rotation		
	Total	Percent variance	Accumulation
Factor1	3.970	16.540	16.540
Factor2	3.041	12.672	29.212
Factor3	2.503	10.430	39.642
Factor4	2.040	8.502	48.144
Factor5	1.965	8.187	56.331
Factor6	1.678	6.991	63.322

3.2.3. Risk attitude and financial planning

In this paper, attitude to risk and financial plan are selected as mediating variables. According to the questionnaire on risk appetite in the CFPS survey questionnaire on risk appetite, "If your family invested/investment, how much risk are you willing to take?" , according to There are four options according to the risk attitude of urban residents: high risk, high return; moderate risk, solid return; low risk, low return; no According to residents' preference for risk, the four options are 4, 3, 2 and 1, with a value of 4 indicating that urban residents are willing to take any investment risk. The value of 4 indicates that urban residents are extremely risk-averse and have the highest appetite for risk.

As the CFPS questionnaire does not set questions related to financial planning, and the role of financial planning awareness is more on optimising the allocation of funds (Weixing Wu , 2021)[11]. Therefore, we take the ability of households to allocate their income appropriately to improve their financial liquidity as a measure of financial planning, and we refer to Jiang Tao's [13] treatment by setting the "moonlighting" variable, which defines a household as "moonlighting" if its liquid assets (cash, demand deposits,

stocks, funds) are less than one-fourth of its annual disposable income. A household with less than a quarter of its annual disposable income is defined as "moonlight", which means that it is in a "moonlight" state, cannot allocate its income and assets effectively, and its liquidity is low, and it has no sense of financial planning. The household is in a state of "moonlighting". If the household is able to allocate its income and assets effectively and has high liquidity, the household is aware of financial planning.

3.2.4. Other variables

The other variables are the main control variables used in the study of residential property income issues. Characteristics variables of the head of household (financial respondent) include: gender, age, age squared, marital status, education level, health status. The variables that characterise the household include: presence or absence of work, presence of property, and household size. Regional characteristics include: location and urban/rural variables.

4. Empirical Results and Tests of Financial Literacy and Residents' Property Income

4.1. The impact of financial literacy on residents' property income

4.1.1. The impact of financial literacy on residents' property income

$$\ln property = \alpha_1 + \beta_1 Fl_factor + \gamma_1 X + \varepsilon_1 \quad (1)$$

Equation (1) is an empirical model of the relationship between financial literacy and property income. Where $\ln property$ is the logarithm of the resident's property income after adding one. fl_factor is the resident's financial literacy level; β is its coefficient; X denotes the control variable that has an effect on the resident's property income and γ is the corresponding coefficient vector; α is the constant term; ε denotes the idiosyncratic random error term

Models (1) and (2) are used to examine whether the level of financial literacy has a specific role in enhancing residents' property income, and model (3) is the result of adding the instrumental variable instrumental variable ($iv\ Fl_factor$) in order to minimize the effect of endogenous problems. The regression results show that after controlling for the personal characteristics, household characteristics and regional characteristics of the head of household (financial respondent), the coefficient estimate of financial literacy is 4.63 and is significantly positive at the 1% level, which indicates that financial literacy has an enhancing effect on the property income of residents. When residents have a higher level of financial literacy, they tend to be more proficient in financial knowledge and have more accurate judgments about various mixed information, thus they can make better financial decisions and enhance household property income. After adding the instrumental variables, the effect of financial literacy on residents' property income is still significant, which proves that Hypothesis 1 is valid. With the improvement of financial literacy, residents' property income gradually increases.

Table 3. The relationship between financial literacy and property income

Variable	(1)	(2)	(3)
	Tobit	Tobit	IV-Tobit
Fl_factor	5.56*** (5.09)	4.63*** (3.68)	9.94*** (3.36)
Control variables	Uncontrolled	Controlled	Controlled
Constant term	-20.56*** (-18.17)	-55.61*** (-8.69)	-20.59*** (-18.17)
Observation	3857	3857	3857
LogLikelihood	-2509.33	-2440.27	-2517.3
Left-censored	3458	3458	3458
LR chi2 (1)	27.79	165.90	11.85
Pseudo	(0.000)	(0.000)	(0.0006)
Pseudo R2	0.0055	0.0329	0.0023

4.2. Analysis of the influence mechanism

4.2.1. Financial literacy and risk attitude and their mediating role

The Sobel test was used to verify the mediating effect of risk attitude and financial planning in the process of financial literacy on property income, respectively, according to the "mediating effect test" introduced by Zhonglin Wen[14]. Sobel test for mediating effect, if the p-value is less than 0.05, it means that there is a mediating effect. The mediating effect was found to exist. The mediating effect model was thus developed:

$$Attitude = \alpha_3 + \beta_3 FL_factors + \gamma_3 X + \varepsilon_3 \quad (3)$$

$$\ln property = \alpha_4 + \beta_4 FL_factors + \beta_5 Attitude + \varepsilon_4 \quad (4)$$

The estimated coefficient β_3 of equation (3) is the effect of financial literacy on the mediating variable risk attitude; the estimated coefficient β_5 of equation (4) is the effect of the mediating variable risk attitude on property income after controlling for the effect of financial literacy. The estimated coefficient β_4 is the direct effect of financial literacy on the property income of urban residents after controlling for the effect of the mediating effect risk attitude. If β_1 in equation (1) is significant, β_3 in equation (3) is significant, and risky attitude in equation (4) is significant (β_5 is significant), if the effect of financial literacy on property income is significant (i.e., β_4 is significant), then there is a partial mediation effect, and if the effect of financial literacy on property income is not significant (i.e., β_4 is not significant), then there is a full mediation effect (Zhonglin Wen and Baojuan Ye, 2014)[14].

Table 4 On the basis of reporting financial literacy on

property income, the regression models of financial literacy on risk attitude, financial literacy and risk. The regression models of financial literacy on risk attitude, financial literacy and risk attitude on property income are reported, and the specific statistical results are shown in Table 4. From equation (1) in Table 4, it is clear that financial literacy has a significant effect on enhancing residents' risk preferences. After controlling for the personal characteristics of the head of household (financial respondent), household characteristics, and regional characteristics, the level of financial literacy is significantly positive at the 1% level, indicating that households with higher levels of financial literacy have a stronger preference for risk (Dohmen, 2010)[15] and a greater tendency to engage in risky live-knowledge. To avoid that this

result is caused by endogeneity, the instrumental variables mentioned before are used for this purpose and the results are shown in equation (2). The enhancement effect of financial literacy on the risky preferences of the population is also significant. From equation (3), after adding the risk attitude and financial literacy variables, the coefficient of risk attitude is significantly positive, which means that risk attitude has a significant enhancing effect on property income. Meanwhile, the coefficient of financial literacy variable is significantly positive and there is a decrease in the coefficient compared to the estimated results in Table 4, indicating that risk attitude plays a mediating role in the relationship between financial literacy affecting the size of property income[16]. Hypothesis 2 is proved.

Table 4. Financial literacy and risk attitude

Variable	(1)	(2)	(3)
	Attitude	Attitude	Lnproperty
	Poisson	IV- Poisson	Tobit
Fl_factor	0.37*** (17.68)	0.45*** (8.30)	3.10** (2.39)
Attitude			2.16*** (4.15)
Control variables	Uncontrolled	Controlled	Controlled
Constant term	0.87*** (11.42)	0.74*** (9.46)	-60.78*** (-9.23)
Indirect effect			0.20*** (3.87)
Direct effect			0.38*** (3.21)
Total effect			0.58*** (5.42)
The Proportion of mediating effect to total effect			0.34
Sobel test results			3.867***
Observation	3857	3857	3857
Log pseudolikelihood	-5445.40	-5489.80	
Log Likelihood			-2431.43
Left-censored			3458
Wald chi2(12)	1956.04	1518.30	
LR chi2(12)			183.58
Pseudo	(0.000)	(0.000)	(0.000)
Pseudo R2	0.0444	0.0366	0.0364

4.2.2. Financial literacy, financial planning and intermediary role

$$Finance_{plan} = \alpha_7 + \beta_9 FL_{factors} + \gamma_5 X + \varepsilon_7 \quad (5)$$

$$Lnproperty = \alpha_8 + \beta_{10} FL_{factors} + \beta_{11} Finance_{plan} + \varepsilon_8 \quad (6)$$

Equations (1), (5) and (6) are used to test the mediating effect of risk attitude in the process of financial literacy on property income. The effect of financial literacy on financial planning awareness is significantly positive, as shown in models (1) and (2) in Table 5, and the effect of financial literacy on financial planning awareness remains significant after controlling for the personal, household, and regional characteristics of the household head (financial respondent).

As shown in Table 5, Model IV(3), the regression results are still significant after adding the instrumental variables, indicating that households with high levels of financial literacy are more willing to engage in financial planning. From equation (3), it can be seen that the coefficient of financial planning is significantly positive after the inclusion of financial planning and financial literacy variables, which means that financial planning has a significant boosting effect on property income[17]. At the same time, the coefficient of financial literacy variable is significantly positive and decreases compared to the estimated results in Table 8, indicating that financial planning plays a mediating role in the relationship between financial literacy and property income share[18]. Hypothesis 3 is proved.

Table 5. Financial literacy and financial planning

Variable	(1)	(2)	(3)
	Finance plan	Finance plan	Lnproperty
	Probit	IV- Probit	Tobit
Fl_factor	0.90*** (14.82)	0.91*** (6.35)	3.92*** (3.04)
Finance_plan			2.22** (2.30)
Control variables	Uncontrolled	Controlled	Controlled
Constant term	0.00 (0.00)	-0.41 (-1.58)	-56.48*** (-8.80)
Indirect effect			0.09*** (2.69)
Direct effect			0.49*** (4.37)
Total effect			0.58*** (5.42)
The proportion of mediating effect to total effect			0.16
Sobel test results			2.69***
Observation	3857	3857	3857
Log pseudolikelihood	-2323.62	-2422.35	
Log likelihood			-2437.57
Wald chi2(12)	443.01	275.45	
LR chi2(12)			171.30
Pseudo	(0.000)	(0.000)	(0.000)
Pseudo R2	0.0935	0.0570	0.0339

5. Conclusion and Enlightenment

Property income, as an important growth point of China's residents' income, is of great significance in increasing the income level of low- and middle-income groups, increasing the number of middle-class families in China, and stimulating the expansion of domestic investment and consumption demand. This paper explores the impact of financial literacy on residents' property income based on data from the China Household Tracking Survey (CFPS) in 2014, which found that (1) financial literacy plays a significant role in promoting residents' property income. (2) The effects of risk attitude and financial planning on property income and the share of property income change with the level of financial literacy.

Financial literacy helps residents use and manage their money in a way that enables them to apply the financial knowledge they have acquired to allocate financial resources to achieve lifelong financial security. Investors with high levels of financial literacy are able to diversify their risks through a reasonably diversified portfolio, despite their high appetite for risk and high participation in financial markets. At the same time, families with a high level of financial literacy have a strong sense of financial planning and are able to make reasonable allocations of their daily funds and plan ahead for future consumption and investment.

Therefore, it is important to strengthen financial literacy education for family members and increase the popularization of financial knowledge so that they can clearly recognize their own risk tolerance according to their asset status and family background, etc., and make reasonable financial plans and choose suitable family financial assets according to their own situation, instead of blindly avoiding risks and choosing only risk-free assets such as cash and savings, or just following the trend of choosing Risky financial assets. With their understanding of the operation of financial markets and investment methods, financially literate households are able to eliminate their fear of participating in financial markets,

effectively make decisions in financial markets, and gain more property income through reasonable and effective investments. Overall, popularizing financial literacy to improve residents' financial literacy is important for people of different financial literacy levels.

Acknowledgment

This work was supported in part by grants from Excellent Young Talents Support Program (Key)" (Project No:gxyqZD2020089) and Postgraduate Research Innovation Project of Anhui University of Finance and Economics "Research on the Mechanism and Path of Financial Literacy to the Improvement of Urban Residents' Property Income"(Project No:ACYC2021271)

References

- [1] Guangjie Ning. Property Income Gap among People: Ability Difference or Institutional Hindrance? --Evidence from the China Household Finance Survey[J]. Economic Research, 2014 (S1).
- [2] Lusardi Annamaria, Mitchell Olivia S. The Economic Importance of Financial Literacy: Theory and Evidence[J]. Journal of economic literature, 2014 (1).
- [3] Hung, A., Parker, A. M., Yoong, J. Defining and Measuring Financial Literacy[J]. RAND Labor and Population Working Paper, 2009(8)
- [4] HONG, H. and STEIN, J. A unified theory of underreaction, momentum trading, and overreaction in asset markets[J]. Journal of Finance, 1999(6).
- [5] Guiso and M. Paiella. Risk aversion, Wealth and Background Risk[J]. Journal of the European Economic Association, 2008(6).
- [6] Hong Zhou, Ming Xia, Jizeng Li. A Study on the Effect of Financial Literacy on Household Risky Asset Allocation and Its Mechanism[J]. Journal of Qingdao University of Science and Technology (Social Science Edition), 2020 (01).

- [7] Xia Shen.The Impact of Risk Attitudes on Household Financial Asset Allocation in Xinjiang[J].Market Week,2019(01).
- [8] Minhong Wu.A Study of Factors Affecting Household Risk Capital Market Investment Decisions[J].Business Economics Research, 2015(16).
- [9] Changyun Wang,Teng Zhong,Huamao Zheng.Has Financial Marketization Increased Farmers' Access to Credit? --An Empirical Study Based on Farm Household Surveys [J]. Economic Research, 2014 (10).
- [10] Maarten van Rooij,Annamaria Lusardi,Rob Alessie. Financial Literacy and Stock Market Participation [J]. Journal of Financial Economics, 2011 (2).
- [11] Weixing Wu,Xuyang Zhang,Kun Wu.Financial Literacy and Household Savings Rates - An Explanation Based on Financial Planning and Borrowing Constraints[J].Economic Research, 2021 (08).
- [12] Zhichao Yin,Quanyun Song,Yu Wu.Financial Literacy, Investment Experience and Household Asset Selection. [J]. Economic Research,2014(04).
- [13] Tao Jiang, Bingbing Dong, Yuan Zhang.Asset Allocation and Consumption Behavior of Chinese Urban Households: theory and evidence [J]. Economic Research,2019(11).
- [14] Zhonglin Wen,Baojuan Ye.Intermediary Effects Analysis: Methodology and Model Development [J]. Advances in Psychological Science, 2014,22(05):731-745.
- [15] Thomas Dohmen,Armin Falk,David Huffman,Uwe Sunde. Are Risk Aversion and Impatience Related to Cognitive Ability?[J]. The American Economic Review,2010 (3).
- [16] Hussein A. Hassan Al-Tamimi,Al Anood Bin Kalli. Financial literacy and investment decisions of UAE investors[J]. The Journal of Risk Finance,2009 (5).
- [17] Alhenawi Y ,Elkhal K. Financial Literacy of U. S. Households: Knowledge vs. Long-Term Financial Planning[J]. Financial Services Review, 2014 (3).
- [18] KRAMER M M. Financial literacy, confidence and financial advice seeking [J]. Journal of Economic Behavior and Organization, 2016(131).