

Financial Literacy, Risk Preference, and Personal Financial

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ABSTRACT

Against the backdrop of an increasingly complex global economy and continuous innovation in financial products, financial literacy, this is important for people's ability to cope with financial difficulties and has a significant impact on the quality of financial decision-making and personal finances.. However, current research on how financial literacy and risk preference jointly influence personal financial behavior is still insufficient. This study focuses on working people aged 30 to 60 in China. Through a questionnaire survey, 149 valid samples were collected. The study employed multiple linear regression, ANOVA, and t-tests to analyze the relationships among financial literacy, risk preference, and personal financial outcomes. Empirical findings confirm that financial literacy significantly improves both monthly income and personal savings. This indicates that individuals with stronger financial knowledge are more likely to make informed financial decisions, which support improved financial well-being. Additionally, risk preference is another critical factor influencing personal financial outcomes. Individuals with a higher risk tolerance often achieve higher savings and income levels. Further analysis reveals that financial literacy and risk preference interact in ways that jointly influence financial behavior. Individuals with greater financial literacy typically demonstrate stronger understanding of financial principles and are more likely to accept financial risk, which may enhance their overall financial status.

KEYWORDS

Financial literacy; Risk preference; Personal finance

1 Introduction

With the complexity of the global economic environment and the diversification of financial products, the financial decisions faced by individuals are becoming increasingly complex. Financial literacy, as a basic ability for individuals to understand and cope with financial challenges, directly affects the level of financial health. However, studies indicate that, in spite of the increasing significance of financial literacy, its levels remain relatively low on a global scale. This trend holds true even in countries with highly developed financial markets, where the state of financial literacy is still a cause of concern. This problem is particularly prominent in some groups that are already economically vulnerable, such as women, low-income people, and people with low education^[1]. At the same time, risk preference, as a key psychological factor influencing personal financial decisions, is also an important determinant of financial health. While research has been conducted on the role of financial literacy and risk preferences^[2], there remains a notable gap in the literature regarding the role of personal financial risk preferences. Additionally, the interactions between these two factors and their combined impact on personal financial outcomes have been relatively underexplored. In addition, existing studies are mostly concentrated in developed countries, lacking in-depth exploration of this issue in different cultural backgrounds and economic environments^[3]. The purpose of this study is to understand how financial literacy and risk preferences work together to shape an individual's financial health. This research contributes a fresh viewpoint to elucidating the connection between financial literacy and financial health, thereby addressing an unmet need in the current literature.

2 Literature Review

2.1 The impact of financial literacy on risk preference and personal finance

Financial literacy is commonly conceptualized as "the capacity to comprehend and utilize financial concepts and tools effectively"^[1]. A growing body of research^[4-7] has consistently demonstrated that financial literacy exerts a strong and positive effect on various financial behaviors and outcomes, including investment behavior, financial planning, savings habits, and overall financial well-being. For instance, Sun et al. highlighted that financial literacy can help reduce poor decision-making and improve investment choices^[4]. Similarly, Zaimovic et al. identified financial literacy as a crucial element in improving financial well-being and promoting sustainable development^[8]. Alshebami & Aldhyani, focusing on the younger demographic, noted that inadequate financial literacy can result in savings crises and increased debt burdens^[6].

2.1.1 Impact of financial literacy on personal finance

When looking at how financial literacy affects personal finance, most studies say that financial literacy helps improve

financial results. For example, Rahman et al. said that financial behavior, more than just financial knowledge, mostly decides the financial condition of people with low income^[9]. Lone and Bhat found that believing in one's ability to handle money (financial self-efficacy) helps explain how financial literacy affects financial outcomes^[10]. Alshebami and Aldhyani also pointed out that financial literacy is important for helping people, especially the young, manage their money better and save more^[6]. Zhang and Chatterjee added that financial literacy is closely linked to basic financial actions, like saving and borrowing. It also affects how people think about investing and what they plan to do^[5]. They stressed that learning about money plays a big role in building financial safety and long-term planning. Also, research by Lusardi and Streeter showed that people who know more about finances are more likely to plan for retirement, save for emergencies, and keep their debt under control^[11].

2.1.2 The role of risk preference in personal financial behavior

Risk preference plays a significant role in shaping investment and savings behavior. Nguyen et al. highlighted that within the context of financial consulting, risk tolerance is positively correlated with investment decisions^[12]. Additionally, trust and the duration of relationships have been shown to positively influence both financial literacy and risk tolerance. This implies that individuals with a higher risk preference are more likely to allocate their funds to riskier assets, consequently reducing the proportion of their savings held in deposits.

2.2 The relationship between financial literacy and risk preference

In their empirical study, Song et al. argued that risk tolerance plays a middle role between financial literacy and financial behavior, which in turn is influenced by emotional intelligence^[13]. Bauer et al. introduced the macro-level "risk-taking channel" to investigate how monetary policy affects financial behavior through the implementation of financial policy^[13]. Risk preference affects economic behavior^[14], but it is missing at the level of individual behavior. Murhadi et al. found that in Indonesia, financial literacy does not strongly affect how much financial risk individual investors are willing to take. However, having an interest in finance does have a clear positive effect on their risk tolerance^[2]. This shows that the link between financial literacy and risk-taking may change depending on things like location, culture, or the situation in which the study was done.

Different literatures have different research objects and scopes. But there's still not enough research on how financial literacy, risk preference, and personal property are related. Some studies focus on specific countries or regions, such as Sun et al. studied the perception of small investors^[4]; Zhang and Chatterjee studied the financial well-being of the United States^[5]; Lusardi and Streeter were also based only on data from the United States^[11]. Some studies have a more macro international perspective, such as Ansari et al. analyzed 2182 articles published in peer-reviewed journals from 2001 to 2022 through bibliometric analysis, covering financial literacy research^[3]. Some studies only focus on specific groups, such as Alshebami and Aldhyani studied the savings behavior of Saudi youth^[6]; Bado et al. studied the personal financial management of Generation Z^[7]; Lone and Bhat studied residents in Jammu and Kashmir^[10]. These different research objects and scopes make the research results limited to a certain extent.

3 Method

3.1 Questionnaire survey method

In order to obtain first-hand data on financial literacy, risk preference and the relationship between personal finance, the study adopted a questionnaire survey method. In the process of questionnaire design, the study referred to the theoretical framework of behavioral finance and designed questionnaire questions covering financial literacy, risk preference and personal finance. The questionnaire comprises multiple-choice questions, fill-in-the-blank questions, and weighted questions to ensure that the necessary information for the study is collected in a comprehensive and accurate manner.

In terms of question setting, we first set the basic information of the sample : age and education level , in order to facilitate the screening of the group to be surveyed .

Regarding financial literacy, we use the most classic core representative of behavioral finance: Lusardi & Mitchell Big Three Questions. We set up three questions to test the financial literacy of the respondents.

(1) Interest rate calculation (simple arithmetic)

"Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much would you have in the account if you left the money to grow?"

(2) Inflation

"Imagine that the interest rate on your savings account is 1% per year and inflation is 2% per year. After 1 year, would

you be able to buy more than, exactly the same as, or less than today?"

(3) Risk diversification (investment portfolio)

"Is the following statement true or false? Buying a single company stock usually provides a safer return than a stock mutual fund."

The measure is to compare the answers to : (1) \$110 (2) less than now (3) wrong. The score is 0–3, with higher scores indicating higher financial literacy.

3.2 Regarding questions related to risk appetite setting

(1) Risk selection

Based on the classic risk preference measurement method, the preference between certain and uncertain returns is evaluated by choosing between two options. If you choose A (stable income of \$50,000), you set the risk preference value to 0, indicating a low risk preference; if you choose B (half the chance of getting \$100,000 and the other half to \$0), you set the risk preference value to 1, indicating a high risk preference.

(2) Asset allocation preference

Drawing on the concept of asset allocation in the field of financial investment, risk preference is measured by asking about the proportion of stock investment. Points are calculated based on the proportion of stock investment selected by the respondents to their total assets. The higher the proportion, the higher the score, indicating a higher risk preference.

(3) The degree of risk accepted

The survey uses a scale rating method to directly ask respondents about their subjective acceptance of financial risks. On a scale of 1 to 5, the higher the value, the higher the risk preference.

Set up relevant questions for personal finances;

(1) Monthly income amount

Income is one of the important indicators to measure personal financial status, which is evaluated by dividing income ranges. On a scale of 1 to 5, the higher the value, the higher the risk preference.

(2) Deposit Amount

The amount of deposits reflects the accumulation of personal wealth and is an important aspect of measuring personal financial status. Options AD correspond to values 1-4 respectively, and the higher the value, the better the personal financial status.

Subsequently, we distributed questionnaires online through the questionnaire survey website: Wenjuxing. We selected stratified sampling of people aged 30-60 from various regions in China. We handed out 150 questionnaires. We got back 149 usable ones. The rate of usable ones was 99.33%. We used the statistical software SPSS to process the questionnaire data, and used linear regression, T-test, and variance analysis to reveal the current situation, characteristics, and relationship between various factors of financial literacy, financial risk preference, and personal finance among the working people aged 30-60 in China.

4 Analysis

This study focuses on the impact of financial literacy and risk preference on personal financial status, and uses quantitative analysis methods such as multiple linear regression, variance analysis, and independent sample t-test. The research results are presented in three main parts: (1) regression analysis of monthly income and deposit amount; (2) group difference analysis based on financial literacy and risk preference; (3) t-test comparison related to risk preference.

4.1 Linear regression test

4.1.1 Linear regression analysis of monthly income

In Table 1, multiple linear regression method was used to test whether financial literacy score, education level, risk selection, asset allocation preference and acceptable risk level have significant predictive effects on monthly income.

Table 1 Linear regression analysis of monthly income (n = 149)

	Unstandardized coefficients		Standardized coefficient	t	p	Collinearity diagnostics	
	B	Standard error	Beta			VIF	Tolerance
constant	2.571	0.241	-	10.687	0.000**	-	-
Financial Literacy Score	0.124	0.055	0.183	2.269	0.025*	1.101	0.909

Note: Dependent variable = Monthly income amount

* p < 0.05 ** p < 0.01

Table 1 Linear regression analysis of monthly income ($n = 149$) (Continued).

	Unstandardized coefficients		Standardized coefficient	t	p	Collinearity diagnostics	
	B	Standard error	Beta			VIF	Tolerance
Education	0.026	0.049	0.041	0.526	0.600	1.015	0.985
Risk Selection	0.056	0.158	0.034	0.352	0.726	1.594	0.627
Asset Allocation Preference	0.006	0.004	0.170	1.594	0.113	1.917	0.522
Acceptable risk level	0.110	0.080	0.136	1.386	0.168	1.619	0.618
R^2				0.152			
Adjust R^2				0.122			
F				F (5,143)=5.120, p =0.000			
DW value				1.751			

Note: Dependent variable = Monthly income amount

* $p < 0.05$ ** $p < 0.01$

The model passed the F test ($F = 5.120$, $p = 0.000 < 0.05$) with an R^2 of 0.152, indicating that the five independent variables can explain 15.2% of the variation in monthly income. The results of the multicollinearity test were good ($VIF < 5$), and the DW value was 1.751, indicating that there was no autocorrelation problem between the residuals. Among all the independent variables, only the financial literacy score has a significant positive effect ($B = 0.124$, $t = 2.269$, $p = 0.025$). None of the remaining variables showed significant relationships.

4.1.2 Linear regression analysis of deposit amount

Table 2 Linear regression analysis of deposit amount ($n = 149$)

	Unstandardized coefficients		Standardized coefficient	<i>t</i>	<i>p</i>	Collinearity diagnostics	
	<i>B</i>	Standard error	<i>Beta</i>			VIF	Tolerance
constant	0.808	0.262	-	3.083	0.002**	-	-
Financial Literacy Score	0.182	0.060	0.239	3.044	0.003**	1.101	0.909
Education	0.038	0.053	0.054	0.717	0.475	1.015	0.985
Risk Selection	0.266	0.172	0.146	1.547	0.124	1.594	0.627
Asset Allocation Preference	0.001	0.004	0.033	0.314	0.754	1.917	0.522
Acceptable risk level	0.172	0.087	0.189	1.983	0.049*	1.619	0.618
<i>R</i> ²	0.196						
Adjust <i>R</i> ²	0.168						
<i>F</i>	<i>F</i> (5,143)=6.985, <i>p</i> =0.000						
DW value	1.483						

Note: Dependent variable = Deposit amount

* $p < 0.05$ ** $p < 0.01$

From the above table, we can see that the financial literacy score, education level, risk selection, asset allocation preference, and risk level accepted are used as independent variables, while the deposit amount is used as the dependent variable for linear regression analysis.

The table shows that this regression model is also significant ($F(5,143)=6.985$, $p=0.000$), with an R^2 of 0.196, indicating that the model can explain 19.6% of the variation in the deposit amount. Both financial literacy score ($B = 0.182$, $p = 0.003$) and the degree of risk accepted ($B = 0.172$, $p = 0.049$) have a significant positive impact on the deposit amount, while the other variables are insignificant. This result supports the research conclusion that the higher the financial literacy and risk appetite, the stronger the personal financial ability.

4.2 Analysis of variance

4.2.1 Variance analysis of financial literacy on personal finance

As shown in Table 3, one-way ANOVA was used to test the differences in monthly income and deposit amount among groups with different financial literacy levels. The results showed that the deposit amount ($F = 7.942$, $p = 0.000$) and

Table 3 ANOVA results of financial literacy on personal finance

	Financial literacy score (mean $\pm$ standard deviation)				F	p
	0.0($n=30$)	1.0($n=13$)	2.0($n=31$)	3.0($n=76$)		
Deposit Amount	1.45 $\pm$ 0.74	1.77 $\pm$ 0.93	1.55 $\pm$ 0.89	2.20 $\pm$ 0.83	7.942	0.000**
Monthly income amount	3.17 $\pm$ 0.54	3.31 $\pm$ 0.95	2.97 $\pm$ 0.87	3.70 $\pm$ 0.71	8.535	0.000**

* $p < 0.05$ ** $p < 0.01$

monthly income ($F = 8.535$, $p = 0.000$) were significantly different among different financial literacy score groups. The high financial literacy group, who scored 3.0, performed significantly better in terms of financial well-being than the groups that scored 0.0 or 2.0. This suggests that there is a positive correlation between financial literacy and personal financial health.

4.2.2 Variance analysis of risk preference on personal finance

Table 4 Variance analysis on risk preference and personal finance

	Acceptable risk level (mean $\pm$ standard deviation)					F	p
	1.0(n=22)	2.0(n=48)	3.0(n=60)	4.0(n=13)	5.0(n=6)		
Deposit Amount	1.18 $\pm$ 0.39	1.75 $\pm$ 0.76	2.13 $\pm$ 0.96	2.46 $\pm$ 0.97	1.67 $\pm$ 0.52	7.385	0.000**
Monthly income amount	3.05 $\pm$ 0.84	3.25 $\pm$ 0.70	3.52 $\pm$ 0.83	4.08 $\pm$ 0.49	3.50 $\pm$ 0.55	4.606	0.002**

* $p < 0.05$ ** $p < 0.01$

Table 4 shows the financial differences among participants at different levels of acceptable risk.

The results showed that the deposit amount ($F = 7.385$, $p = 0.000$) and monthly income ($F = 4.606$, $p = 0.002$) were significantly different among the different risk acceptance groups. This means that people who accept different levels of risk have different amounts of money in the bank and different monthly incomes. The financial levels of the 3.0 and 4.0 groups are generally higher than those of the low groups, indicating a trend that high-risk recipients have better financial status. Providing data to support the identification of the impact of risk preferences on individual financial behavior.

4.2.3 Variance analysis of financial literacy on risk preference

Table 5 ANOVA of financial literacy on risk preference

	Financial literacy score (mean $\pm$ standard deviation)				F	p
	0.0(n=30)	1.0(n=13)	2.0(n=31)	3.0(n=76)		
Asset Allocation Preference	30.28 $\pm$ 24.02	25.38 $\pm$ 20.35	19.68 $\pm$ 17.15	43.53 $\pm$ 20.26	11.617	0.000**
Risk Selection	0.24 $\pm$ 0.44	0.38 $\pm$ 0.51	0.13 $\pm$ 0.34	0.57 $\pm$ 0.50	8.064	0.000**
Acceptable risk level	2.34 $\pm$ 1.11	2.31 $\pm$ 0.95	2.23 $\pm$ 0.96	2.80 $\pm$ 0.89	3.674	0.014*

* $p < 0.05$ ** $p < 0.01$

The impact of financial literacy on the three dimensions of risk preference (asset allocation preference, risk selection and risk acceptance) was also tested through analysis of variance (see Table 5).

The results show that asset allocation preferences differ significantly across financial literacy groups. ($F = 11.617$, $p = 0.000$), risk selection ($F = 8.064$, $p = 0.000$), and risk acceptance ($F = 3.674$, $p = 0.014$). The high financial literacy group, with a score of 3.0, showed a higher willingness to take risks and a more proactive tendency to make risk decisions on all three indicators.

4.3 Analysis of the relationship between risk preference and financial literacy and personal finance using t-test

Table 6 t-test analysis of risk preference on financial literacy and personal finance

	Risk selection (mean $\pm$ SD)		t	p
	0.0(n=90)	1.0(n=59)		
Financial Literacy Score	1.79 $\pm$ 1.19	2.41 $\pm$ 1.07	-3.234	0.002**
Monthly income amount	3.26 $\pm$ 0.82	3.64 $\pm$ 0.71	-2.987	0.003**
Deposit Amount	1.66 $\pm$ 0.81	2.22 $\pm$ 0.91	-3.962	0.000**

* $p < 0.05$ ** $p < 0.01$

To further investigate the effect of risk preference on financial literacy and financial performance, we compared two groups of participants with low (0.0) and high (1.0) risk preference scores using an independent samples t-test. The results are shown in Table 6. high-risk selection group (1.0) had significantly higher financial literacy scores (mean = 2.41 vs. 1.79; $t = -3.234$, $p = 0.002$), monthly income (3.64 vs. 3.26; $t = -2.987$, $p = 0.003$), and deposit amount (2.22 vs. 1.66; $t = -3.962$, $p = 0.000$) than the low-risk group (0.0). These results suggest that the greater the risk taken by individuals and the higher their level of financial literacy, the better their financial performance.

5 Conclusion

This study looks at the relationship between financial literacy, risk preference, and personal financial status using

numbers and statistics. It uses methods like multiple regression analysis, analysis of variance, and independent sample t-tests. The findings show how financial literacy and risk preference affect personal financial health and how they work together, offering significant theoretical and practical insights. The study shows that financial literacy is important for better personal financial performance. People with higher financial literacy usually have higher incomes and save more money, reflecting stronger financial decision-making skills and behaviors. Risk preference also influences financial performance, with those having higher risk tolerance often achieving higher incomes and savings rates. This may be attributed to their propensity to engage in investment activities that offer higher returns. Moreover, there's a strong link between financial literacy and risk preference. People who know more about finance are more willing to take risks, choose good risks, and manage their money better. Overall, the research shows that both financial literacy and risk preference can positively affect personal financial status, and the synergistic effect of the two has important theoretical and practical significance for promoting individual financial health.

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