

The Influencing Factors and Effectiveness of Family Investment Portfolio

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ABSTRACT

In recent years, research on household financial behaviors such as household financial market participation and household asset selection became an important research field. This paper uses the 2013 data of the Chinese Household Finance Survey, using OLS and the ordered Probit model to study the impact of financial knowledge on the diversity of household investment portfolios. It is found that the level of financial knowledge has a significant positive impact on the diversity of household risk asset allocation. The higher the level of financial knowledge, the more inclined to invest in more types of financial products. Further research found that the level of financial knowledge also has a significant impact on the diversity of household stock portfolios. The effectiveness of the household investment portfolio affects the property income, wealth accumulation and social wealth distribution of the household, and will further affect the consumption level of the household. This article introduces the Sharpe rate as a measure of the degree of portfolio optimization and the method of using the Heckman two-step revision model to study the group differences in the effectiveness of household portfolios.

Keywords: household finance, financial knowledge, portfolio effectiveness, Sharpe rate.

1. INTRODUCTION

Optimizing household asset allocation has an important impact on increasing residents' property income and welfare. Households can reduce the gap between the rich and the poor caused by the unfair initial distribution of wealth by participating in market investment and effectively transforming them into household income. However, the degree of optimization of different household asset portfolios is non-uniformly dynamically distributed. Some investors who have more social resources and are good at capital operation, they use financial market to plunder the wealth of another group. The development of the financial market will aggravate the process of the gap between the rich and the poor [1]. The mystery of the diversity of family portfolios is a long-term problem in the financial theory community. Traditional theory believes that rational investors should make diversified investments. Kelly (1995) [2] used the Consumer Finance Survey (SCF) data to find that more than half of American households holding stocks only hold one publicly traded stock, indicating a serious lack of diversity in household stock portfolios. Guiso and Jappelli (2008) [3] used Italian

survey data to find a similar phenomenon. This paper uses OLS, ordered Probit model and Heckman's two-step correction model to explore the impact of financial knowledge on the diversity of family portfolios and the effectiveness of family portfolios. The research on the effectiveness of household investment portfolios, at the practical level, helps investment consultants to make targeted investment recommendations based on the heterogeneity of household investment portfolios, and effectively optimize the investment portfolio; at the policy level, it is helpful to policy. The framers analyze the welfare effects of financial system reforms, improve market efficiency, and promote financial innovation.

2. FACTORS INFLUENCING THE DIVERSITY OF HOUSEHOLD INVESTMENT PORTFOLIOS

2.1 Family investment

Household investment is a complex decision-making process that requires a lot of time to screen and analyze information. Financial knowledge plays an important role in this process. The behavior of households after deciding to enter the financial investment market is divided into

two stages. In the first stage, families choose among financial products such as stocks, funds, bonds (corporate and corporate bonds), wealth management products, foreign currencies, gold assets, and other financial derivatives, and decide on the types of risk assets to invest in and the types of risk assets. The investment ratio of investment, the decision result at this stage reflects the diversity of household risk asset allocation. In the second stage, the household allocates each type of financial asset that it decides to invest in the first stage, and determines the corresponding investment quantity and amount. The decision result of this stage reflects the diversity of individual risk asset allocations, for example, the household in the first stage After deciding to use part of the property to invest in stocks, in the second stage, decide the number of stocks to hold and the amount of investment in each stock.

2.2 The relationship between financial knowledge and investment

In theory, on the one hand, the higher the level of financial knowledge is, the more fully aware of potential risks in the financial market, the better able to make reasonable investment decisions, and the more inclined to use a diversified investment portfolio to avoid financial market risks. Financial knowledge The level may be positively correlated with the diversity of household investment portfolios. On the other hand, a higher level of financial knowledge makes investors more likely to overestimate the accuracy of their knowledge and information (Fischhoff et al., 1977) [4], which will lead to investors' overconfidence in their investment behavior, which in turn leads to Investors are more inclined to invest in a single financial asset. In other words, the level of financial knowledge and the diversity of household investment portfolios may also be negatively correlated. Existing empirical studies tend to believe that the level of financial knowledge has a positive impact on the diversity of household investment portfolios. Goetzmann and Kumar (2008) [5] found that families lacking diversity in personal investment portfolios in the United States are mainly concentrated in young, low-income, low-educated, and inexperienced people who lack financial knowledge. Abreu et al. (2010) [6] found that financial knowledge, education, and information channels have a significant impact on household investment diversity.

2.3 Financial knowledge and investment diversity in risky assets

Table 1: Financial knowledge and risk asset diversity [10]

	(1)	(2)	(3)
	OLS estimate	O-Probit estimate	OLS estimate

	Types of risk assets	Types of risk assets	Risk asset diversity index
Ln(financial assets)	0.106*** (0.012)	0.365*** (0.038)	0.036*** (0.004)
Ln(income)	0.029*** (0.011)	0.072** (0.035)	0.009*** (0.003)
Education years of householder	0.015*** (0.003)	0.043*** (0.010)	0.004*** (0.001)
Risk preference	0.075** (0.030)	0.167** (0.065)	0.021** (0.010)
Risk averse	-0.040 (0.025)	-0.102 (0.063)	-0.004 (0.009)
Male	-0.086*** (0.023)	-0.230*** (0.058)	-0.021*** (0.008)
Married	0.034 (0.028)	0.056 (0.081)	0.013 (0.010)

Test the impact of financial knowledge level on the diversity of household venture capital, and the estimation results are shown in Table 1. Among them, columns (1) and (2) respectively give the OLS and O-Probit estimation results of the number of risk assets held by households. Column (3) gives the OLS estimation results of the venture capital diversity index. Columns (1) and (2) show that after controlling for a series of variables such as household financial high asset scale, income level, risk appetite, financial development level, etc., the estimated coefficients of the financial knowledge index are all positive and significant at the 1% level . It shows that the higher the level of financial knowledge of respondents, the more types of risk assets they hold. In column (3), the risk investment diversity index is used to replace the number of risk asset types for estimation. The estimated coefficient of the financial knowledge index is still positive and significant at the 1% level. It shows that the higher the level of financial knowledge, the higher the diversity of households in the amount of various risk assets, and the higher the degree of dispersion of investment. It illustrates that financial knowledge has a positive role in promoting the diversity of household risk asset allocation. On the one hand, financial knowledge reduces the knowledge cost of entering various financial markets and increases the possibility of entering various financial markets. This is consistent with the research conclusions that financial knowledge promotes residents' participation in financial markets [7]; on the other hand, financial knowledge helps families make more reasonable investment decisions, making investment more rational [8]. In addition, the number of years of education of the head of the household is significantly positive, indicating that education has a positive role in promoting the diversity of risk asset investment. Abreu et al. (2010)[9] believe that information judgment errors often lead to investment decision errors, and education can help investors overcome such judgments. The level of education measures the investor's ability to process information to a certain extent. The coefficients of household income are also significantly positive, indicating that households with higher incomes tend to

diversify their investment portfolios. The coefficients of the scale of financial assets are also significantly positive, indicating that the larger the scale of financial assets held by households, the more inclined to diversify investment strategies.

3.EFFECTIVENESS OF FAMILY PORTFOLIO

3.1 Standardized index for measuring fund performance evaluation-Sharpe rate

Under standard financial theory, if all investors face a known and identical return on assets that obeys a normal distribution, if risk-free assets are considered, then the effective frontier of the portfolio is the capital market line, and its slope is the Sharpe. The Sharpe rate of the portfolio held by such rational investors is the same. In the case of huge differences in household investment portfolios, the Sharpe rate of the investment portfolios will inevitably be different. The Sharpe rate is commonly used in the financial industry to compare fund performance, and it also has important applications in the field of household finance. For example, Pelizzon and Weber (2009) [11] used the square of the Sharpe rate to construct a statistic to test the effectiveness of Italian household investment portfolios. Grinblatt et al. (2011) [12] used Finnish household portfolio data at the end of 2000 to prove that investors with high IQ are more inclined to participate in the stock market and their Sharpe rate is also higher. Gouriéroux and Monfort (2005) [13] proved that the Sharpe rate is directly related to the expected utility, which means that in addition to measuring the performance of the portfolio, the Sharpe rate can also reflect the effectiveness of the portfolio to a certain extent.

3.2 Effectiveness analysis of investment portfolio

The effectiveness analysis of the portfolio is the cornerstone of portfolio management. The classic portfolio theory of Markowitz (1952) [14] believes that the portfolio constructed by rational investors should be on the effective frontier, and its goal is to maximize the expected return when the risk is given, or to minimize the risk when the return is given. However, the theory is based on strict assumptions, including the investor is a single-period investment, the investor knows the probability distribution of the investment rate of return in advance and the rate of return obeys the normal distribution, etc. Assuming that the utility function of investors is quadratic, investors are unsatisfied and risk-averse, and follow second-order stochastic dominance, the optimal portfolio can be found, that is, all investors hold the same portfolio of risky assets Market portfolio, investors only need to choose the number of market portfolios based on their own risk preferences. Samuelson (1969) and Merton (1969) [15] extended a

single period to multiple periods on this basis and reached similar conclusions. Later, scholars loosened the assumptions of the above-mentioned classic theories one by one to make the model closer to reality. The family asset allocation theory was born under this background. The differences in the effectiveness of family portfolios with different characteristics can be wealth level, income level, demographic characteristics and risk preference. The effectiveness of family portfolios can be compared with simple statistical classification methods, but whether there are significant differences in the Sharpe rates of family portfolios with different characteristics still needs to be analyzed by regression. In order to solve the problem of selective samples, it is necessary to use the Heckman two-step method to modify the model, with the participation decision equation as the selection equation. The regression equation is the regression of the Sharpe rate on the wealth level, income and demographic characteristics variables.

The first step is to participate in the decision equation.

$z_i^* = X_i\gamma + u_i$, if $z_i^* > 0$, then $z_i = 1$. In this equation, X_i is a variable that affects decision-making.

$$\text{Prob}(z_i = 1|x_i) = \Phi(X_i\gamma)$$

$$\text{Prob}(z_i = 0|x_i) = 1 - \Phi(X_i\gamma)$$

Φ is the cumulative distribution function of the standard normal distribution.

The second step is the regression model.

$\text{sharperatio}_i = Y_i\beta + \varepsilon_i$, when $z_i = 1$, Y_i is the variable that affects the Sharpe rate.

Assume $(u_i, \varepsilon_i) \sim N(0, 0, 1, \sigma_\varepsilon, \rho)$, then $E(\text{sharperatio}_i | z_i = 1, X_i, Y_i) = Y_i\beta + \rho\sigma_\varepsilon\lambda(X_i\gamma)$.

λ is Inverse Millsby, $\lambda(X_i\gamma) = \frac{\varphi(X_i\gamma)}{\Phi(X_i\gamma)}$, φ is the probability density function of the standard normal distribution.

4.CONCLUSION

According to the above icons and analysis, the article uses OLS and ordered Probit model to study the impact of financial knowledge on the diversity of household investment portfolios, and the current financial knowledge level has a significant positive impact on the diversity of household risk asset allocation, and the higher the level of financial knowledge is, the more inclined to invest in more types of financial products. This article also introduces the Sharpe rate as a measure of the degree of portfolio optimization and the Heckman two-step revision model, and studies the analysis method of the effectiveness of household portfolios. While encouraging residents to participate in the financial market, the government should improve the investment efficiency of residents by regulating market order and

improving system construction, encouraging financial innovation, and providing more alternative financial products. Of course, financial innovation is a double-edged sword. The government should encourage innovative behaviors that can benefit all households, instead of letting financial innovation become a tool for some people to take advantage of other people's insufficient optimization of their portfolios to infringe upon the interests of the public.

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