

Differential Analysis of Demographic Factors on Performance of Household Financial Asset Allocation in China

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Abstract: The growth of private wealth in Chinese households has improved the demand for financial asset allocation, and the performance derived from such allocation can enhance the overall financial well-being of families. In social sciences and policy-making, demographic factors analysis holds significant importance. Existing studies have explored its direct correlation with household financial asset allocation. This study employed independent sample t-test and Welch analysis of variance (ANOVA) to further investigate the differential impact of demographic variables on the performance of household financial asset allocation. The primary data used in this study were collected from questionnaires in 19 first-tier cities in China. The results indicate that there is no significant difference in the impact of different age and household size groups on the performance of household financial asset allocation. Other demographic factors such as gender, marital status, education level, and income show significant variability in household financial asset allocation performance. This finding provides valuable insights for policymakers, financial institutions, and investors to improve financial well-being for families and society.

Keywords: Demographic factors, Performance of household financial asset allocation, Differential analysis.

1. Introduction

The growth of household income in China has stimulated a strong desire for financial asset allocation. According to data released by China's national statistics agency, from 1978 to 2022, the per capita disposable income of households increased by 216 times, while the Engel coefficient gradually declined from 63.9% in 1978 to 30.5% in 2022 over the same period. The continuously growing surplus of investable income has led more households to participate in financial asset allocation. The performance of household financial asset allocation (PHFAA) serves as a measurement for evaluating the effectiveness of investment decisions, as well as the outcomes of financial asset allocation (Gomes et al., 2021). Household financial asset allocation performance is closely related to household financial well-being. By choosing the right mix, households can potentially earn higher returns on their investments, leading to wealth accumulation over time (Fan & Henager, 2022). Therefore, the significance of household financial asset allocation lies in its ability to help households grow wealth, manage risks, provide financial security, generate income, plan for retirement, achieve long-term goals, and enhance overall well-being.

Analyzing data from the perspective of demographic factors is critical for understanding a wide range of social and economic phenomena (Prakash et al., 2022). Demographic factors, which include characteristics such as age, gender, education, marital status, family size, and income, play a crucial role in various aspects of social science. Most studies have explored the direct relationship between demographic factors and household financial asset allocation (Wang et al., 2019; Wu et al., 2021). However, Lusardi and Mitchell (2014) further argued that due to the heterogeneity of households, studies targeting specific groups may be more effective. Therefore, this study further conducts differential analysis of

demographic factors on the performance of household financial asset allocation in China.

The contribution of this study not only fills the research gap in this area but also provides valuable insights for policymakers, financial institutions, and investors by delving into the differential impact of demographic variables on PHFAA. Such insights are instrumental in shaping targeted financial policies, enhancing financial literacy programs, and optimizing investment strategies tailored to diverse demographic groups. The remaining sections of this study are structured as follows. Section 2 presents comprehensive literature review and hypotheses development. Section 3 outlines the research methodology employed, followed by a main findings in Section 4. Finally, Section 5 offers the conclusion of the study.

2. Literature Review and Research Hypothesis

The performance of household financial asset allocation refers to how well a household's investment portfolio has performed over a specific period of time. It is a measure of how effectively the household has allocated its financial resources among different asset classes, such as stocks, bonds, real estate, and cash, with the goal of achieving a balance between risk and return based on the household's financial objectives and risk tolerance (Gomes et al., 2021). Portfolio performance is typically measured by the rate of return. A high rate of return at a certain level of risk signifies good asset allocation performance. Furthermore, maintaining an adequate reserve of liquid assets is crucial for households to cope with financial crises and enhance financial resilience (Lytton et al., 2013). Risky financial assets usually include stocks, funds, and futures. The quantity and proportion of these financial assets in the portfolio reflect the level of risk that investors are willing to bear in pursuit of potential high

returns (Li et al., 2023). Additionally, the diversification of financial assets is also a significant manifestation of asset allocation performance. The Mean-Variance Model demonstrates that households can reduce investment risk under uncertain conditions by investing in different types of risk portfolios (Candelon et al., 2021). Furthermore, financial asset allocation performance is reflected in the efficiency of asset allocation. In modern portfolio theory, holding portfolios on the efficient frontier is the most effective way for investors to allocate assets and achieve maximum risk-adjusted returns. To assess the efficiency of financial asset allocation, the excess return of assets or portfolios is typically divided by their standard deviation to calculate the risk-adjusted return (Li & Qian, 2021).

Existing studies have analyzed the impact on the performance of household financial asset allocation from the perspectives of gender, age, marital status, education, family size, and income. The influence of gender in investment portfolios has been a subject of considerable interest. Marinelli et al. (2017) pointed out that gender does not significantly affect risk preferences in portfolios with fewer risky assets. However, in portfolios with a higher proportion of risky assets, gender becomes a significant factor, with males exhibiting a noticeably higher risk appetite compared to females. Conversely, Wu et al. (2021) hold a different perspective that in a majority of Chinese households, women hold the decision-making power regarding family finances. With the rise in women's education levels and their growing sense of independence, their willingness to engage in risky financial investments has also increased. The impact of age on the performance of household asset allocation is also important. As individuals age, their risk preferences gradually decrease. Households with older heads aged over 60 allocate a larger proportion of their assets to property and bank savings, a proportion that continues to rise with the increasing proportion of elderly individuals in the household. Consequently, this trend suppresses participation in financial markets such as stocks and funds (Wang et al., 2019). Additionally, married households are more able to make appropriate investment decisions in response to financial markets than unmarried households, largely due to the fact that married households increase the risk-taking capacity of their families by sharing risk with their spouses (Hillesland, 2019). The educational level of household members also profoundly affects financial asset allocation performance. Education compensates for financial cognitive ability. Therefore, for better educated households, the motivation and initiative to invest in risky financial assets is higher than that of the average household, which enables better utilization of risky financial assets for returns (Cole et al., 2014). An increase in the number of household members suppresses the probability of holding financial assets (Pan, 2021). This is primarily due to the added financial burden resulting from additional dependents, leading to a reduction in both the quantity and proportion of financial assets allocated. Furthermore, income is an important source of wealth for every household. An increase in household income facilitates household investment in risky financial assets, and the higher the household income, the more controllable resources the household has and the greater the household's risk tolerance (Wu et al., 2021). The above literature suggests that the heterogeneous characteristics of households may result in differential effects on the performance of household financial asset allocation. Therefore, this study proposes the following

hypotheses:

H1: There are differences in PHFAA among household heads of different genders.

H2: There are differences in PHFAA among household heads of different age groups.

H3: There are differences in PHFAA among household heads with different marital statuses.

H4: The PHFAA differs among household heads in terms of their education levels.

H5: The PHFAA differs among household in terms of their household sizes.

H6: The PHFAA differs among household in terms of their income levels.

3. Methodology

The structured questionnaire was carefully prepared to collect primary data in first-tier cities in China from July to September 2023. The survey targeted heads of urban households and was administered using multi-stage stratified random sampling. During the questionnaire collection process, demographic information was gathered, and PHFAA was measured using a Likert 5-point scale. A total of 770 questionnaires were distributed, and after excluding outliers and missing samples, 534 valid questionnaires were obtained. The questionnaire's reliability and validity were confirmed with a Cronbach's alpha value of 0.926. The collected data were entered into the statistical software SPSS version 27.0 for analysis while the statistical techniques used for analyzing the data are independent sample t-test and ANOVA. The independent samples t-test is a statistical test to determine if there is a significant difference between the means of two groups of data. When dealing with more than three groups, ANOVA is required.

In both of these methods for differential analysis, it is necessary to meet the assumptions of normality and homogeneity of variances. According to the Central Limit Theorem, when the sample size is greater than 30, the sample means are approximately normally distributed (Wackerly et al., 2014). In this study, the sample size reached 534, and PHFAA is approximately normally distributed. Furthermore, in independent samples t-test, when the variances of the two distributions are equal, the results of the t-test under the assumption of equal variances can be further examined. However, if there is a significant difference in the variances between the two distributions, it is necessary to observe the results of the t-test under the assumption of unequal variances (Orcan, 2020). In the context of multiple comparisons, when variances are equal, researcher can directly observe the results of one-way ANOVA. However, when variances are unequal, Welch's ANOVA result is recommended for differential analysis (Delacre et al., 2019).

4. Main Findings

Due to the gender of the household head being characterized as either male or female, an independent samples t-test can be used to identify whether there is a statistically significant difference in the overall means of the two samples concerning PHFAA. Table 1 presents the results of the independent samples T-test for gender with respect to PHFAA. Since the significance level of Levene's test is less than 0.001, it indicates heterogeneity in variance between the male and female samples. Therefore, it is necessary to examine the results under the assumption of variance

inequality, as shown in the second row of Table 1. Correspondingly, the significance level of the T-test is less than 0.001, suggesting a significant difference in PHFAA among household heads of different genders. Thus, hypothesis H1 is confirmed. The disparities in PHFAA between genders can be attributed to the influence of

traditional Chinese social and cultural values, as well as family norms. These factors have led to a scenario where male assume a greater responsibility for making financial decisions within the family. As a result, they are more inclined to invest time and effort in managing household financial assets. This situation manifests in differences in PHFAA between genders.

Table 1. Independent sample T-test results of gender on PHFAA

PHFAA	Levens-test		t-test		
	F	Sig.	t	df	Sig.(2-tailed)
Equal Variance Assumed	62.77	<0.001	21.775	532	<0.001***
Equal Variance Not Assumed			23.223	517	<0.001***

Notes: ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels.

Table 2 presents the results of the one-way ANOVA analysis of variables of age, marriage, education, household size, and income concerning PHFAA. The results of age-based ANOVA showed that the majority of household samples are in the age group of 25 to 40, while the fewest samples belong to the 70 and above age group. The significance level of the Levene statistic is 0.38, which is greater than 0.05, confirming the assumption of homogeneity of variances. Further analysis using ANOVA produces an F-value of 0.79, with a p-value greater than 0.05, indicating no significant differences in PHFAA among different age groups. Therefore, hypothesis H2 is rejected. The impact of marital

status on PHFAA is investigated across three groups. The number of married household samples reach 449, with a mean of PHFAA higher than unmarried and other types of households. Since the significance level of the Levene statistic is less than 0.001 and does not meet the assumption of homogeneity of variance, the corrected Welch ANOVA is employed for the test. The asymptotic F-test yields a p-value less than 0.001, indicating statistically significant differences in PHFAA across marital status. Hypothesis H3 is supported. Married families can collaborate to co-manage family wealth, not just personal finances. This collaboration may result in better financial planning and performance.

Table 2. ANOVA for significant difference among demographic variables and PHFAA

Variable	Group	N	M ± SD	Levene Sig.	Type	F	Sig
Age	< 25	44	3.57±0.95	0.38	ANOVA	0.79	0.530
	25-40	252	3.71±0.83				
	41-55	163	3.64±0.84				
	56-70	65	3.83±0.80				
	> 70	10	3.72±1.01				
Marriage	Married	449	3.82±0.76	0.006	Welch ANOVA	89.15	<0.001***
	Unmarried	65	3.47±0.62				
	Others	20	1.62±0.34				
Education	Below Diploma	16	1.36±0.12	<0.001	Welch ANOVA	985.72	<0.001***
	Diploma	212	3.00±0.47				
	Bachelor	204	4.07±0.20				
	Mater or Above	102	4.72±0.13				
Household Size	2	44	3.70±0.87	0.466	ANOVA	1.675	0.171
	3	327	3.75±0.81				
	4-5	130	3.56±0.92				
	6 and above	33	3.60±0.83				
Income	Below 5000	194	3.07±0.76	<0.001	Welch ANOVA	77.79	<0.001***
	5000-10000	191	3.85±0.65				
	10000-30000	65	4.23±0.33				
	30000-50000	66	4.19±0.77				
	Above 50000	18	4.94±0.05				

Note: F and Sig in Welch analysis are asymptotically F distributed. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels.

Similarly, under four educational levels, the significance level of the Levene statistic is less than 0.001, suggesting variance heterogeneity. The asymptotic F-test yields a p-value less than 0.001, signifying significant differences in PHFAA among different educational levels. Hence, hypothesis H4 is confirmed. Well-educated households usually have higher levels of financial literacy and skills. Such knowledge and skills help them to better understand the risk-return

relationships of different investment instruments, empowering them to make wiser financial decisions. Consequently, they are more likely to demonstrate superior performance in financial asset allocation. In the case of household size, the Levene test shows homogeneity of variances, with a p-value of 0.466. However, the ANOVA test result in a p-value of 0.171, greater than 0.05, leading to the rejection of hypothesis H5. Additionally, household income

does not meet the assumption of homogeneity of variances, with a p-value less than 0.001. The asymptotic F-test yields a p-value less than 0.001, indicating significant differences in PHFAA across different income levels. Thus, hypothesis H6 is supported. Higher-income households usually may have more investable funds and can more easily diversify their risks and access a wider range of investment opportunities, leading to better investment performance.

5. Conclusion

This study provides differential analysis on performance of household financial asset allocation in China from the perspective of demographic factors. The findings of this study highlight important insights for policymakers, financial institutions, and investors regarding the performance of household financial asset allocation. It is evident that the impact of different age and family size groups on asset allocation performance is not significant, whereas factors such as gender, marital status, education level, and income play a crucial role in explaining the variation in household financial asset allocation performance. For policymakers, these results underscore the importance of targeted financial literacy and education programs. By addressing the disparities associated with gender, marital status, education, and income, policymakers can design interventions that promote inclusive financial practices, ensuring equal access and opportunities for all households. Financial institutions can benefit from these findings by tailoring their financial products and services to better accommodate the diverse needs and preferences of their customers. For example, offering investment and financial planning tools that are user-friendly and accessible to individuals with varying levels of financial knowledge and experience can enhance customer satisfaction and engagement. Household investors should consider the impact of personal demographic factors on their financial decision-making processes. Being aware of how gender, marital status, education, and income influence asset allocation can lead to more informed investment strategies and better financial outcomes. In conclusion, this research provides valuable insights into the nuances of household financial asset allocation performance. Acknowledging the influence of demographic factors in this context can guide more effective policies, financial services, and investment practices, ultimately contributing to improved financial well-being for families and society.

References

- [1] Candelon, B., Fuerst, F., & Hasse, J. B. (2021). Diversification potential in real estate portfolios. *International Economics*, 166, 126-139.
- [2] Delacre, M., Leys, C., Mora, Y. L., & Lakens, D. (2019). Taking parametric assumptions seriously: Arguments for the use of Welch's F-test instead of the classical F-test in one-way ANOVA. *International Review of Social Psychology*, 32(1), 13.
- [3] Fan, L., & Henager, R. (2022). A structural determinants framework for financial well-being. *Journal of Family and Economic Issues*, 43(2), 415-428.
- [4] Gomes, F., Haliassos, M., & Ramadorai, T. (2021). Household finance. *Journal of Economic Literature*, 59(3), 919-1000.
- [5] Hillesland, M. (2019). Gender differences in risk behavior: An analysis of asset allocation decisions in Ghana. *World Development*, 117, 127-137.
- [6] Li, R., & Qian, Y. (2021). How does entrepreneurship influence the efficiency of household portfolios? *The European Journal of Finance*, 27(13), 1282-1302.
- [7] Li, Z., Mirko, C., D'Agostino, M. T., & Jin, J. (2023). Comparative analysis of the influence of Chinese urban and rural family cultures on household financial asset allocation. *Frontiers in Psychology*, 14.
- [8] Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *American Economic Journal: Journal of Economic Literature*, 52(1), 5-44.
- [9] Lytton, R. H., Grable, J. E., & Klock, D. D. (2013). *The process of financial planning: Developing a financial plan*. National Underwriter Company.
- [10] Marinelli, N., Mazzoli, C., & Palmucci, F. (2017). How does gender really affect investment behavior?. *Economics Letters*, 151, 58-61.
- [11] Orcan, F. (2020). Parametric or non-parametric: Skewness to test normality for mean comparison. *International Journal of Assessment Tools in Education*, 7(2), 255-265.
- [12] Pan, W. D. (2021). The Impact of Descendants' Characteristics on Household Financial Asset Allocation. *Finance and Economics*, (01), 72-81.
- [13] Prakash, N., Alagarsamy, S., & Hawaldar, A. (2022). Demographic characteristics influencing financial wellbeing: a multigroup analysis. *Managerial Finance*, 48(9/10), 1334-1351.
- [14] Save-Soderbergh, J. (2012). Self-Directed Pensions: Gender, Risk, and Portfolio Choices. *The Scandinavian Journal of Economics*, 114(3), 705-728.
- [15] Wackerly, D., Mendenhall, W., & Scheaffer, R. L. (2014). *Mathematical statistics with applications*. Cengage Learning.
- [16] Wang, C., Yao, L., & Chai, S. (2019). The Impact of Age Structure on Household Asset Allocation and Its Regional Differences. *International Finance Research*, (02), 76-86.
- [17] Wu, Y., Li, X., Li, J., & Zhou, L. (2021). Digital Financial Development and Effectiveness of Household Financial Asset Allocation. *Management World*, (07), 92-104+7.