

# Research on the Impact of Digital Finance on Household Financial Asset Allocation

Xiao Zhang

School of Business, Nanjing Normal University, Nanjing 210000, China

---

**Abstract:** With the continuous progress of science and technology and the popularization of the Internet, digital finance has gradually become an important development direction of the financial industry, and the development of digital finance has a profound impact on household financial asset allocation behavior. This paper reviews the research results related to digital finance and household financial asset allocation, discusses the possible direct and indirect impacts of the development of digital finance on household financial asset allocation by combining asset portfolio theory, market friction theory and long tail theory, and proposes the possible intermediary effects of financial availability, financial literacy and entrepreneurial willingness through mechanism analysis. Based on the above discussion, this paper puts forward relevant suggestions: (1) improve the penetration rate of digital finance, and increase the promotion of digital finance for remote areas and low-income groups; (2) Strengthen financial education to enhance families' awareness and digital financial literacy of digital finance. (3) Optimize digital financial products to meet the diverse needs of users. (4) Strengthen government supervision, improve digital finance related laws and regulations, and ensure the healthy and sustainable development of digital finance.

**Keywords:** Digital finance, Household financial asset allocation, Financial availability, Financial literacy, Entrepreneurial willingness.

---

## 1. Introduction

With the rapid development of information technology and the advent of the digital era, digital finance has gradually become an important trend in the global financial field. Digital finance relies on advanced technologies such as big data, cloud computing and artificial intelligence to deeply transform traditional financial services and provide more convenient, efficient and personalized financial services for family investors. In this context, the household financial asset allocation has also undergone profound changes, and the impact of the rise of digital finance on the household financial asset allocation has become a hot issue in current research. The development of digital finance has provided family investors with more diversified financial products and services, such as online financing, P2P lending, digital currency and so on. The emergence of these new financial forms enables household investors to allocate financial assets more flexibly and achieve higher investment returns. The rise of digital finance has broken the dependence of traditional financial transactions on physical outlets, increased the convenience of financial transactions and investment and financing, and made it possible for families in remote areas and low-income groups to allocate financial assets. The emergence of big data platform alleviates the information asymmetry in the process of financial transactions, and the data and records left by the household financial asset allocation process enable the platform to effectively prevent and control risks, reducing the possibility of adverse selection and moral hazard. The development of third-party payment, online loan, digital insurance and other businesses is a great innovation to traditional financial products. At the same time, digital finance also brings new risks and challenges, such as information security, privacy protection, and market fluctuations. Therefore, in-depth research on the impact of digital finance on household financial asset allocation has important practical significance for guiding family investors

to allocate assets reasonably and improve risk control ability.

## 2. Research Background

In the field of family finance research, family financial asset allocation behavior is an important branch. Existing studies on family financial asset allocation mainly focus on the internal and external factors that affect family financial asset allocation behavior. Internal factors include life cycle effects, income levels, wealth effects, demographic structure and characteristics (age, gender, education, etc.), financial literacy, investment experience, and family risk attitudes, while external factors include social interaction, social trust, and other macroeconomic factors.

The Overall Layout Plan for the Construction of Digital China points out that the digital process plays an important role in promoting China's modernization and plays an important supporting role in building new competitive advantages of the country. China should accelerate the innovation and application of digital technologies in important fields such as finance, agriculture, industry, medical care and education, promote the multifaceted and all-round integration of digital technologies with the real economy, and further improve the systematic layout of digital China construction. Digital China strategy has penetrated into all aspects of the industry, and digital finance, as a key field in the construction of digital China, is bound to have a significant impact on the traditional household financial asset allocation behavior. So what is the specific impact of the development of digital finance as an emerging thing on the allocation of household risk financial assets? What are the influencing mechanisms? The development of digital finance has changed many traditional financial forms, and it is self-evident that it is important to explore the impact of digital finance on household financial asset allocation.

### 3. Literature Review

At present, there have been sufficient researches on factors affecting household financial asset allocation at home and abroad, including internal factors such as life cycle effect, wealth effect, income level and liquidity constraints, population structure and characteristics, financial literacy, investment experience and family risk attitude, as well as external factors such as social interaction and social trust.

#### Internal factors

Guiso, Haliassos and Jappelli studied household financial asset selection in some European and American countries and found that household asset selection has a life cycle effect. With the increase of residents' age, the holding ratio of risky assets presents a "bell shape" and the participation ratio of risk-free assets market presents a "U-shape". Campell's research finds that with the continuous improvement of family wealth, the tendency to participate in the financial market and the proportion of allocation of financial assets will also increase correspondingly, and the investment objects of families with different wealth levels also have obvious differences. The main investment focus of low-income households is the financial assets with high liquidity and high security; The main focus of the middle class investment is real estate and other fixed assets; The rich have a wide range of investments, but they are mainly concentrated in equity assets. Agnew found that in addition to direct factors such as income and wealth level, demographic characteristics such as gender, health level and education level will also have a significant impact on family financial asset allocation behavior. For example, healthy people have higher preference and acceptance for high-risk asset types such as stocks compared with unhealthy people. Bernheim's study found that the level of residents' education has a significant impact on whether they participate in the stock market decision. Poterba J M found that gender has a significant impact on residents' participation in the stock market. Compared with men, women tend to be conservative and cautious in their risk attitude, and men are more inclined to participate in the stock market. Edwards et al. studied the impact of health on the allocation of risky financial assets, and the results showed that there was a significant positive correlation between residents' physical health and the proportion of risky assets held. Residents with higher health would allocate more risky financial assets such as stocks, bonds and funds. Residents in poor health are more likely to choose risk-free or low-risk financial assets. Rooij et al. Found that the lack of financial knowledge restricted families' participation in the stock market, resulting in families often making wrong investment decisions blindly. Hong et al., Guiso and Paiella, Guiso et al. Based on the resident investment data of the United States, Italy and the Netherlands, it is found that the higher degree of risk aversion of residents leads to the lower possibility of participation in the stock market.

#### External factors

It is found that social trust and social interaction, transaction costs and other macroeconomic factors have a certain impact on household financial asset allocation behavior. According to the social trust theory, the behaviors and decisions of residents participating in the stock market are closely related to the degree of trust of residents, and residents with a higher degree of trust are more willing to invest in stocks and participate in the stock market. Guiso et al.

proposed that the proportion of stocks in residents' assets would be higher in areas with higher levels of trust. Durlurf proposed partner group effect, that is, the behavior of residents participating in the stock market is affected by the results of other individuals' stock investment. Hong et al. Found that residents with a higher degree of social interaction were more likely to participate in the stock market for investment. Some other scholars study household financial asset allocation behavior from the perspective of transaction costs, and believe that high financial transaction costs caused by market friction may be an important reason for the limited participation of households in the financial market, because the higher the degree of social interaction of residents, the greater the possibility of learning financial knowledge through observation and communication, and the higher the probability of participating in the financial market. Yin Zhichao et al. conducted research from the perspective of financial availability and limited participation opportunities, and found that the higher the financial availability, the more willing households are to participate in the formal financial market and conduct asset allocation. Some other scholars explain the impact on household financial asset allocation from the perspective of macroeconomic factors. For example, Liu Yulin and Zheng Xiaochen find that inflation will affect the stock risk premium, and then affect the proportion of various assets in the optimal asset portfolio. Using CHFS data, Lu Xiaomeng et al. found that the development of regional finance would have a positive impact on household investment, make households invest more rationally, and improve the diversification of household investment portfolios.

At present, the research on digital finance at home and abroad mainly focuses on its role in economic growth, wealth accumulation and narrowing the gap between the rich and the poor. Beck et al. found that digital finance can significantly promote economic growth. Using data from the 2017 China Household Finance Survey, Qianguo Linghe Mall conducted empirical research and found that digital finance is conducive to achieving common prosperity. Some scholars also pointed out that the development of digital finance has exacerbated the digital divide to some extent, resulting in residents without access to the Internet, poor economic conditions, and less educated people may be further marginalized. Research directions of digital finance at the micro level include employment, entrepreneurship, consumption and financing. Some scholars have found that the development of digital finance has promoted residents' employment, entrepreneurship and consumption behaviors, while the characteristics of digital finance breaking geographical restrictions have alleviated financial exclusion and financing constraints, and increased the convenience of financing.

### 4. Relevant Theories

#### (1) Asset portfolio theory

Portfolio theory began in the 1950s with the publication of an academic paper titled Asset Selection by American economist Markowitz in 1952. The Effective Diversification of Investment systematically discusses the problem of asset portfolio and selection. The research holds that the optimal investment portfolio should be the tangent point between the indifference curve of risk aversion and the effective boundary of assets. By effectively balancing returns and risks, investors can find the optimal investment weight and establish an ideal

investment portfolio. On this basis, William Sharpe proposed a single index model to simplify the solution process. He assumed that the market was in equilibrium and investors were rational, and described the relationship between the expected rate of return and standard deviation of the effective portfolio as a simple linear relationship. Ross proposed the arbitrage pricing theory (APT), which argues that the expected return of an asset presents a linear correlation with a set of multiple factors. Merton proposed the Dynamic asset allocation model in his 1969 paper Lifetime Portfolio Selection by Dynamic Stochastic Programming, which applies life cycle to asset portfolio theory. The theory of one-period portfolio began to develop into the theory of interperiod portfolio.

#### (2) Financial exclusion theory

The theory of financial exclusion originated in the 1990s and initially focused on the geographical orientation of financial institutions and services. Today, the theory refers to a segment of society that lacks the ability to access the financial system or access necessary financial services in an appropriate manner. Financial exclusion is usually manifested as difficulty in financing, lack of financial services, lack of financial knowledge, etc. Kempson, Whyley(1999a,1999b) and Sarma(2010) put forward six dimensional indicators to determine financial exclusion, one is geographical exclusion. That is, the inability of certain regions or groups to access financial services may be due to geographical remoteness, inconvenient transportation, lack of financial institutions, etc. The second is appraisal exclusion, which means that some individuals or enterprises are unfairly assessed when applying for financial services, such as low credit rating, lack of collateral, etc., resulting in their inability to obtain necessary financial services; The third is conditional exclusion, which means that some individuals or enterprises are attached to unreasonable loan conditions, such as high interest rates, complicated procedures, etc., so that they cannot obtain the required financial services; The fourth is price exclusion, which means that some individuals or enterprises cannot afford the price of financial services, such as high interest, commission, etc., so that they cannot obtain necessary financial services; Marketing exclusion refers to the exclusion of some individuals or enterprises from the marketing activities of financial institutions, unable to obtain financial services that are advertised and promoted; The sixth is self-exclusion, which means that some individuals or enterprises take the initiative to give up the use of financial services because of misunderstanding and distrust of financial services.

#### (3) Long tail theory

The Long tail theory arose in the Internet era and was proposed by American scholar Chris. Anderson proposed. If described as a normal distribution curve, people pay more attention to the people or things at the "top" of the curve and ignore most of the people or things at the "bottom" of the curve. The long-tail theory holds that in the Internet age, people can focus on the "tail" of the normal distribution curve at a lower cost, and this part of the total benefit may even be higher than the "head". The Long Tail theory reveals a new business and economic model that emphasizes the focus on the overall benefits brought by the "tail" in the network age and exerts the "long tail" effect.

In the field of digital finance, the typical application of the long-tail theory is Yu 'e Bao. As a monetary fund, Yu 'e Bao covers a large number of long-tail users through the Internet

platform Alipay, whose individual funds may be small, so they are ignored by banks and other financial institutions. However, a large number of small funds have formed a huge financial scale, and finally made Yu 'e Bao become the largest monetary fund in China in a short period of time. As an Internet financial product, Yu 'e Bao takes advantage of the scale effect of the Internet platform to lower the threshold of financial services and enable more long-tail users to conduct financial management conveniently.

## 5. The Impact of Digital Finance on Household Financial Asset Allocation

Digital finance is an important part of the wave of China's industrial digital transformation. It refers to the new generation of financial services that combine the Internet and modern information technology means, which is different from the traditional financial model. Digital finance uses advanced technologies such as big data, blockchain, cloud computing and artificial intelligence to provide services such as Internet payment, mobile payment, online banking, financial services outsourcing, online lending, online insurance and online funds. This form of financial services is more extensive and convenient, allowing more families to access a greater variety of financial products and services.

#### Direct impact

##### (1) Break physical network dependence and improve financial availability

Since the 1990s, the banking industry has undergone tremendous institutional changes, the scale of network has been greatly reduced, and financial institutions have gradually shifted to the economic center, resulting in more unbalanced layout and services of financial institutions. At the same time, according to the 80/20 rule, financial institutions generally pay more attention to the top 20% customers with higher profits and incomes, so as to occupy 80% of the market share, while there is a certain credit discrimination against the remaining 80% low-income families in underdeveloped areas. The emergence of digital finance breaks the dependence of traditional finance on physical outlets, breaks through the restrictions of geographical location, has stronger geographical penetration, and realizes the efficient supply and development of long-tail users under the premise of basically no increase in cost. The Internet, mobile communication and other technologies have made financial services networked, intelligent, convenient and low-cost, lowered the threshold of online financial investment, and improved the coverage, efficiency and quality of financial services. Customers can use the Internet and mobile devices to carry out financial transactions and investments and purchase financial products and services anytime and anywhere, which has greatly improved the availability of finance.

##### (2) Innovate financial products and enhance the diversity of financial services

China is the country with the largest population and the largest number of Internet users in the world, and these characteristics determine that China has huge and diverse financial needs. Digital finance uses big data and artificial intelligence technology to collect, analyze and mine customer data, understand customer consumption habits, consumption power, consumer demand and preferences, develop personalized financial products and services to meet the

financial needs of different customers, provide more segmented and convenient services, and improve customer satisfaction and customer stickiness through precision marketing and services. At the same time, through cooperation with multiple platforms such as Internet platforms and e-commerce platforms, digital finance innovates and launches new types of financial products and services such as deposits, payments, loans, insurance and funds (such as Yu'e Bao and wechat Wealth Management, etc.) to provide families with more diversified asset allocation options and effectively enhance the diversity of financial products and services.

(3) Innovate payment methods and improve the efficiency of financial transactions

The progress of digital finance integrates the Internet, terminal devices and financial institutions to form a new type of payment system as an important outcome of the digital financial revolution. Third-party payment and mobile payment have promoted the integration of payment system and network and become a key component of financial infrastructure. The impact on the financial industry can be divided into the following aspects: 1. The popularity of mobile payment. Traditional payment methods are mainly through bank cards, POS machines, etc., while the emergence of mobile payment apps such as Yu'e Bao and Alipay saves tedious steps such as queuing and swiping cards, and only requires the input of the password by the mobile APP to complete the payment, which is more popular and convenient, making financial transactions more efficient and convenient. 2. The application of digital currency. Digital currencies such as Bitcoin can achieve decentralized transactions using the same blockchain technology, avoiding the dependence of traditional payment methods on intermediaries, reducing transaction costs and risks, and improving transaction efficiency. 3. Application of blockchain technology. Blockchain technology provides financial institutions with a secure, transparent and decentralized transaction method, through blockchain technology, financial institutions can reduce transaction costs, improve transaction speed, but also improve the security and transparency of transactions.

(4) Ease information asymmetry and reduce financial transaction costs

The core function of finance is the financing based on credit, and the premise of credit is that market participants have relatively complete information. However, in the actual market economic activities, traders often have asymmetric information because of different channels to obtain information and different amounts of information, resulting in high transaction costs, low transaction efficiency, and even market failures. The emergence and development of digital finance makes financial information more transparent and reduces transaction costs. The specific points are as follows: 1. Expand information channels and reduce information acquisition costs. Digital finance makes it more convenient for investors and consumers to obtain financial information through mobile devices, the Internet, financial apps and other channels, and reduces the cost of information acquisition. 2. Record transaction data. Improve information transparency. Digital financial platforms are usually able to provide transparent transaction records and data, so that both sides of the transaction can better understand each other's credit status and transaction history, reducing the risk of information asymmetry. 3. Use digital technology to improve the

efficiency of financial services. Through intelligent and automated technical means, digital finance improves the efficiency and quality of financial services, making financial services more convenient and efficient.

(5) Improve financial knowledge and investment awareness

Relying on big data and big technology platforms, digital finance enables families to have more channels and platforms for obtaining financial information and knowledge, improves the financial knowledge level of consumers and investors, effectively stimulates family investment awareness, and allocates more funds to the financial market. To be specific, the development of digital finance provides 1. Convenient learning resources: Platforms supported by digital finance usually provide rich and diverse financial knowledge and educational resources for learning. Investors can acquire financial knowledge and learn investment skills through online learning, reading tutorials, watching teaching videos and other ways to improve their financial knowledge and investment awareness. 2. Personalized learning experience: A major difference between digital finance and traditional finance is that digital finance will analyze users' interests and needs through various technical means such as data analysis and machine learning, and provide personalized learning experience, recommend different financial knowledge and learning content for different users, and improve learning effect and investment awareness. 3. Real-time market information and transaction data: Digital financial platform can provide market information and real-time transaction data to facilitate users to timely understand financial market dynamics and investment performance, more accurately grasp investment opportunities and risk points, and improve investment awareness and investment decision-making ability. 4. Social learning exchange: The digital financial platform provides users with social learning functions, and investors can communicate and discuss on the social learning platform to share investment experience and investment views. Investment in financial market is not only an economic behavior, but also a social interaction behavior. The social learning platform provided by digital finance and the development of network informatization are conducive to investors' learning and mastering more financial knowledge, thus promoting their participation in financial market investment. 5. Intelligent investment advice: The digital financial platform relies on big data analysis technology, artificial intelligence technology, etc., to provide users with intelligent investment advice and risk assessment, help users understand their own investment situation and risk tolerance level, and make more intelligent investment decisions.

Indirect effect

The indirect impact of digital finance on households' participation in financial markets and allocation of financial assets is mainly realized through promoting economic growth, driving wealth accumulation in the household sector, promoting financial equity and promoting common prosperity.

First, digital finance ADAPTS to the development trend of China's digital economy, meets China's huge and diversified financial needs, and can promote high-quality economic development. Through digital means, digital finance enables financial resources to flow and allocate more effectively, improves the efficiency of the use of funds, flows more accurately to efficient areas and enterprises in the real economy, and promotes high-quality economic development

and innovation. Micro, small and medium-sized enterprises occupy an important position in China's economic development. According to data, small and medium-sized enterprises contribute 60% of China's GDP and 80% of urban employment. However, in the traditional financial system, micro, small and medium-sized enterprises and self-employed people often have difficulty in obtaining loans or need to pay high interest due to reasons such as not reaching the financing threshold. Financing difficulties have become an important problem restricting development. The rapid development of digital finance provides more diversified channels and financing methods for micro, small and medium-sized enterprises and self-employed individuals. Even if financing cannot be obtained from commercial banks, financing needs can be met through other channels or platforms. Both the supply and demand of funds can directly transact, realizing the efficient flow and allocation of financial resources, and providing a new driving force for the development of China's real economy.

Second, the development of digital finance has expanded the channels and ways of household wealth accumulation and improved the level of household wealth. With digital technology as the medium, digital finance has significant advantages in enriching financial products and services, improving household investment returns, and promoting employment and entrepreneurship of residents. The diversified financial products and services provided by digital finance can meet the financial needs of different families, while matching financial investment strategies for different families according to risk appetite and capital status, providing personalized services and improving family investment returns. In addition, the digital financial platform provides a wealth of shared information, families can more easily and quickly access to market information and industry development trends, better grasp market and industry opportunities, and promote the success of employment and entrepreneurship.

Third, the inclusive features of digital finance play a huge role in promoting financial equity and common prosperity, narrowing the huge differences in financial market participation and financial asset allocation behaviors between developed or urban households and less developed or rural households, which is conducive to easing the urban-rural dual structure. Compared with households in developed areas and cities, households in underdeveloped areas or rural areas have relatively small financial assets, lower participation in financial markets and lower allocation ratio of risky assets due to a variety of reasons such as relatively backward economic development, imperfect financial infrastructure, relatively lack of financial knowledge and low risk tolerance. The pursuit of inclusive digital finance refers to a financial system that provides all businesses, households and individuals with the financial products and services they need to achieve equitable development opportunities. Compared with traditional finance, digital finance, through the combination and innovation of technology and finance, has obvious advantages, including replicability, accessibility, affordability, comprehensiveness, low threshold, low cost, wide coverage and deep service, which plays a vital role in promoting economic development, financial equity and common prosperity.

## 6. Mechanism Analysis

As for the specific mechanism of the impact of the development of digital finance on the allocation of household risk financial assets, first, the development of digital finance is accompanied by the continuous improvement of financial infrastructure, and the extensive application of network and mobile communication technology has overcome the dependence of traditional finance on physical outlets, and has strong geographical penetration and low-cost advantages. It has lowered the threshold for customers to purchase financial products and services, enabled the financial industry to reach and cover low-income residents, rural residents and other groups, and greatly improved the availability of finance.

Second, the popularization and promotion of digital inclusive finance in China has effectively promoted the sinking of financial knowledge at the grassroots level and improved the financial literacy of consumers and investors. Various terminals and online platforms provide massive financial knowledge and resources, broaden the channels for regions with relatively backward financial development to obtain financial information and knowledge, improve the financial literacy and financial cognition of various regions and groups, and enable them to allocate financial assets in a more rational and professional manner.

Third, the development of digital finance has a certain impact on the family's willingness to start a business, and whether the family has the willingness to start a business affects the family's allocation of funds. When the family wealth level is limited, if part of the capital is invested in entrepreneurship, the capital that can be allocated to risky financial assets will inevitably be affected, and the family's financial asset allocation behavior will also change. If a family has a strong willingness to start a business, it will usually allocate more capital to entrepreneurial activities. In addition, due to the large risk inherent in entrepreneurial activities, most families in China tend to be conservative and cautious in their risk attitude, which may lead to families with entrepreneurial intentions to reduce their willingness to participate in risky financial markets and the allocation ratio of risky financial assets. On the one hand, the development of digital finance has improved the confidence of entrepreneurs. The expansion of information channels enables entrepreneurs to better understand market dynamics and industry trends, better grasp market opportunities, and stimulate families' willingness to start businesses. At the same time, the development of digital finance can provide more convenient financial services and financial support for family entrepreneurship, including loans, investment, insurance, etc. Families can carry out e-commerce, online marketing and other entrepreneurial activities through the Internet platform without investing a lot of time and money. Entrepreneurs can also obtain more market information, policies and regulations, and technical advice on the relevant platforms provided by digital finance, which improves family confidence and willingness to start a business. On the other hand, because the development and popularization of digital finance can lower the threshold of financial products and services, more families can have easier access to financial support and financial services, which may lead to families more inclined to choose traditional career paths, such as employment, rather than choose entrepreneurial activities that require higher risk and uncertainty. At the same time, the development of digital finance may have a certain "crowding out effect" on the

family's willingness to start a business. Some families may think that the investment opportunities and investment income brought by the development of digital finance are more stable and reliable, so they are more inclined to invest and rely on financial products and services, thus losing the motivation and courage to start their own businesses. In addition, the convenience and high-yield nature of digital finance may also make households more willing to pursue short-term gains from investments rather than long-term entrepreneurial development.

## 7. Conclusion

The development of digital finance has brought new opportunities and challenges to family financial asset allocation. On the one hand, digital finance provides more convenient and diversified financial services, making it easier for families to contact and participate in the financial market, and expanding the coverage of financial services. On the other hand, the use of digital financial instruments reduces the threshold of financial services, provides families with a variety of financial product choices, stimulates families' willingness to participate in the risk financial market, enables more families to make financial investments, and optimizes the structure of family financial asset allocation.

However, while digital finance improves the participation of household financial asset allocation, it also brings certain risks. Family investors need to strengthen self-risk identification and prevention ability, rational treatment of investment returns and risks. In order to optimize digital financial services and better meet the needs of family investors, future studies can further explore how to strengthen digital financial regulation, improve the inclusion of digital finance, and guide family investors to establish correct investment concepts.

In order to further play the role of digital finance in household financial asset allocation, we put forward the following suggestions.

First, increase the penetration rate of digital finance. Policies should encourage financial institutions to increase the promotion of digital financial services to remote areas and low-income households, and narrow the geographical gap in financial services. At the same time, we should strengthen technological investment, improve the stability and anti-risk ability of digital financial systems and platforms, and ensure the safe development of digital finance.

Second, strengthen financial education. Through financial literacy activities, families' awareness of digital finance and risk awareness are enhanced to help them make financial investments more rationally.

Third, optimize digital financial products. For financial institutions, they should further innovate digital financial

products to meet the diversified investment needs of different households, constantly improve the competitiveness and attractiveness of digital financial products, and promote the sustainable development of digital finance.

Fourth, strengthen oversight. While encouraging the development of digital finance, it is necessary to strengthen the supervision of related businesses, ensure the fairness and transparency of the market, and provide strong support for the healthy and sustainable development of digital finance.

## References

- [1] Markowitz, H. Portfolio Selection [J]. *Journal of Finance*, 1952, 7(1): 77-91.
- [2] Tobin J Liquidity Preference as Behavior Towards Risk[J]. *Review of Economic Studies*, 1958, 25(2):65-86.
- [3] Sharp William. Capital asset prices: a theory of market equilibrium under condition of risk. *Journal of Finance*, 1964; 12.
- [4] RC. Merton, 《Life Portfolio Selection under Uncertainty: The Continuous-Time Case》, 1969.
- [5] Guiso L Haliassos M, Jappelli T Household Portfolios[M]. Cambridge: MIT Press,2002:251-290.
- [6] Bogan,V.,2008, “Stock Market Participation and the Internet,” *Journal of Financial and Quantitative Analysis*, 43(01), pp. 191-211.
- [7] Bertaut, C. C., 1998, “Stockholding Behavior of US Households: Evidence from the 1983-1989 Survey of Consumer Finances” *Review of Economics and Statistics*, 80(2),pp. 263~275.
- [8] Guiso L Haliassos M, Jappelli T Household Portfolios[M]. Cambridge: MIT Press,2002:251-290.
- [9] GuisoL Haliassos M, Jappelli T Household Stockholding in Europe: where Do We Stand and Where Do We Go[J]. *Economic Policy*2003, 18(36):123-170.
- [10] Campbell JY Household Finance[J]. *Journal of Finance*, 2006, 61(4): 1553-1604.
- [11] Agnew J Balduzzi P Sunden A. Portfolio Choice and Trading in large 401(k) plan [J]. *American Economic Review*2003, 93 (1): 193-215.
- [12] Benheim BD Garrett DM The effects of financial education in the workplace Evidence from a survey of households[J]. *Journal of Public Economics*, 2003, 87(7-8): 1487-1519.
- [13] Campbell JY Household Finance[J]. *Journal of Finance*, 2006, 61(4): 1553-1604.
- [14] Poterba JM Samwick A Taxation and household portfolio composition: Evidence from tax reforms in the 1980s and 1990s[J]. *Journal of Public Economics*,2003,87(1):5-38.
- [15] Edwards RD. Health Risk and Portfolio Choice[J]. *Journal of Business and Economic Statistics*.2008, 26(4):472-485.