

The Impact of Basic Old-Age Insurance on Household Risky Financial Asset Allocation: A Literature Review

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Abstract

China has experienced further population aging. By the year 2024, the number of those aged 60 and over was already at 310 million, or 22.0% of the overall population. Meanwhile, household financial assets are shifting away from the notion of bank deposits and real estate and turning into multifaceted risky financial assets, including stocks, mutual funds, and bank wealth management products. Due to the fact that the first-pillar old-age security system covers 1 billion people, basic old-age insurance has attracted growing attention for its effect on the allocation of household risky financial assets. Nevertheless, there is no consensus in domestic and foreign literature regarding whether or not basic old-age insurance has a positive or negative effect on household risky financial asset allocation; the fact that both promoting effects and inhibiting effects have been observed and the institutional causes behind the controversy remain unclear. The pilot model of the private pension system introduced in 2022 has also not been incorporated in the current studies. The current paper is a systematic incorporation of both domestic and foreign literature regarding this topic. It begins with life-cycle asset allocation and household finance theory and goes through the trajectory of research on foreign social security and household asset allocation and summarizes the results of domestic empirical studies on basic old-age insurance using micro data, including the China Household Finance Survey (CHFS). Based on this, it synthesizes mechanisms and patterns of heterogeneity. The research shows that the benefit levels and institutional type are the primary institutional causes of the mismatch between domestic and foreign sources of evidence. The negative impact of urban and rural residents' old-age insurance on low-education elderly families suggests that the risk attitude channel should be considered. In this paper, the researcher puts side-by-side and contrasts two kinds of evidence, promoting and inhibiting, and determines how these types of evidence differ regarding institutional environments, definition of samples, and identification procedures, which can be used as a reference for further research and changing the multi-pillar old-age insurance system.

Keywords

basic old-age insurance, household finance, risky financial asset allocation, literature review

1. Introduction

The level of population aging in China has been further increasing over time, and the role of basic old-age insurance in determining the share of risky financial assets in the household portfolio has become an increasingly popular topic. According to the National Bureau of Statistics, by the end of 2024, the number

of people over the age of 60 in the country reached 310 million, which is 22.0 percent of the total national population. Meanwhile, the household asset structure, which has been dominated by bank deposits and real estate, is gradually evolving toward diversification into risky financial assets such as stocks, mutual funds, and bank wealth management products. The basic old-age insurance is the first pillar of the old-age security system that is forcibly introduced into the system by the state under the law. It includes the basic old-age insurance of the urban workers and the urban and rural residents, which covers more than 1 billion people. The basic old-age insurance of the urban workers is aimed at urban employees and both the employer and the employee contribute; the basic old-age insurance for urban and rural residents, which is aimed at urban and rural residents who are not covered by the basic old-age insurance for urban employees, adopts the form of financing based on individual contributions, collective subsidies and government subsidies. The two systems vary greatly in terms of financing and benefits. Old-age insurance stabilizes the fluctuations in life-cycle incomes and alleviates income uncertainties by means of contributions and benefits schemes, which may potentially influence the allocation of risky financial assets among households.

According to the China Household Finance Survey (CHFS) definition, the concept of risky financial asset allocation in this paper comprises two aspects that include participation decisions and share holdings, which cover stocks, mutual funds, and bank wealth management products. The main question of the paper is: What is the influence of basic old-age insurance on household risky financial asset allocation, and can this effect be different among institutional types and household groups? This issue remains inconsistent in domestic and foreign literature. Foreign studies begin with the connection between social security and the saving of households. Feldstein [1] has not only identified a wealth substitution effect of social security on private saving but also an induced retirement effect that causes people to retire earlier and save more to fund retirement over a longer time. Hubbard, Skinner, and Zeldes [2] also demonstrated that social insurance alters household saving and asset composition by decreasing the uncertainty about future household income and undermining the precautionary saving motive. Cocco, Gomes, and Maenhout [3] introduced nontradable labor income as a part of a life-cycle asset allocation model to provide an analytical view of how human capital and risky asset allocation relate. The use of data like CHFS and the China Family Panel Studies (CFPS) has grown progressively. Most of the available studies report that basic old-age insurance facilitates risky financial asset allocation, however, Chen et al. [4] reported an inhibiting effect within the urban and rural residents' old-age insurance sample. All in all, current research has three limitations: the controversy between promoting and inhibiting effects has no common mechanism framework; the studies vary significantly in institutional setting, sample definitions, and identification approaches; and the pilot scheme of the private pension system launched in 2022 is not yet covered by the current research.

The present paper is going to use a literature review approach to answer the above disputes and gaps. The literature choice is largely made up of empirical literature on fundamental old-age insurance and household financial asset allocation that are obtained in CNKI, with emphasis placed on works that rely on microdata, namely, the China Household Finance Survey and the China Family Panel Study. This paper presents the problem at the following levels: discussion of life-cycle asset allocation theory and household finance theory to elucidate the theoretical ways in which old-age insurance can influence risky financial asset allocation; clarification of overseas studies and two kinds of domestic empirical evidence, promoting and inhibiting, and summarization of the mechanisms and patterns of heterogeneity; and critique of the limitations of the current research and formulation of future research directions. This paper is an attempt to offer marginal contributions to the theory and literature and policy. Theoretically, it situates the two sorts of evidence, promoting and inhibiting, in a common analytical model, explores the institutional underpinning of the disagreement, and extracts mechanism hypotheses to be tested subsequently. Literature-wise, it systematically synthesizes representative domestic and foreign literature, clarifies the differences in institutional designs, sample definitions, and identification methods, and offers a standard of comparing findings. Policy-wise, it introduces the new institutions like private pensions in the analytical perspective, to inform the improvement of the multi-pillar old-age insurance system and the optimization of incentive design for participation in private pensions.

2. Theoretical Background of the Effect of Basic Old-Age Insurance on the Allocation of Household Risky Financial Assets

2.1 Evolution of Life-Cycle Asset Allocation Theory

Life-cycle asset allocation theory originates from the life-cycle hypothesis by Modigliani and Brumberg [5]. The analysis of portfolio choice started with Markowitz [6], who characterized returns and risk with mean-variance, transforming the investment problem into a trade-off between mean and variance, and provided the fundamental trade-off reasoning of risky asset allocation. This is, however, not dynamic as it does not consider the change of wealth over time and intertemporal decision-making on consumption, which is the inner drive to extend towards life-cycle theory. The generalization to the life-cycle dimension follows two routes: discrete time and continuous time. Portfolio choice and consumption decisions were simultaneously addressed in a discrete-time model by Samuelson [7]. With utility being time additive and the investment opportunities set being constant, the optimal fraction of the investment held in risky assets remains independent of the length of the investment horizon. This result also agrees with the Merton share derived by Merton [8] with continuous time under constant relative risk aversion (CRRA) utility and geometric Brownian motion assumptions. The Merton share implies that the percentage of a personal investment in risky assets is determined by three parameters, namely, risk premium, risk aversion coefficient, and return volatility, and is independent of investment horizon. Such a conclusion formed the theoretical basis of pension asset allocation and target-date fund design. Its underlying assumptions are that markets are not subject to background risk, households are able to borrow and lend freely, and consumption can be smoothed at market interest rates. Endogenous labor supply flexibility was introduced in the life-cycle model by Bodie et al. [9], who noted that people can respond to investment risk *ex post* by adjusting their labor supply. The main inference that can be drawn from the paper is that labor income is a kind of human capital and it is an implicit asset that should be considered by households since human capital is not traded in the market but has economic properties like any other financial asset. Following this feature of labor income, it can be further concluded that institutional arrangements like old-age insurance can provide future income streams that are functionally analogous to a fixed and low-risk asset. Whether this income stream crowds out or releases risky assets depends on the extent to which it smooths household income uncertainty. Using a life-cycle consumption and portfolio choice model with non-tradable labor income that is empirically calibrated to real-world data, Cocco et al. [3] found that human capital is an important determinant of household risky asset allocation. Young households have a relatively large part of household wealth represented by human capital as well as relatively low risk, so the stock allocation share is low; with age growth, the portion of human capital decreases and in the course of work the optimal stock allocation ratio increases and then increases again after the retirement, showing the overall U-shaped pattern.

2.2 The Four-Friction Framework of Household Finance Theory

The asset allocation theory gives optimal portfolio solutions when there are no frictions, but actual household choices encounter numerous market frictions that are not incorporated in textbook models. In his presidential speech to the American Finance Association, Campbell [10] officially established household finance as a distinct field of study and systematically listed four categories of frictions affecting the asset allocation of households. To begin with, fixed participation costs exclude zero-balance or small-balance asset owners when accessing the risky asset market. Secondly, uninsurable income risk makes households vulnerable to human capital risks that they cannot hedge with the market. Thirdly, borrowing limits restrict households in the free smoothing of their consumption over time. Fourthly, non-inflation-neutral contracts cause real household returns to differ from nominal household returns. The four frictions constitute both the micro-level reasons for household asset allocation to deviate from the optimal portfolio and the channels through which old-age insurance can exert influence via its contribution and benefit arrangements. The volume *Household Portfolios* synthesises theoretical and empirical contributions to the study of household asset structure in advanced countries. Its skeleton is a comparison of five countries-the USA, UK, Italy, Germany, and the Netherlands-which it uses to systematically display how household portfolios differ across varying institutional settings and serves as a reference point to studies of social security and household asset allocation [11].

2.3 Three Transmission Paths and a Unified Analytical Framework

Combining both the theoretical mainlines discussed above, it can be concluded that there are three main transmission channels through which old-age insurance influences risky financial asset holdings of households. The first pathway indicates a promotional impact, which is related to the processes of reducing background risks and releasing precautionary savings. Old-age insurance eliminates the ambiguity of future household income and outgoings and relieves the precautionary saving drive, releasing money that was originally set aside as buffer saving into risky assets. The creation of this mechanism assumes that the old-age insurance benefits will remain consistent and stable. Hubbard et al. [2] have shown in a unified lifecycle model that social insurance plays an important role in decreasing the desire of households to save buffers to deal with uncertainty since it guarantees future income security. This model of buffer-stock saving further formalizes the idea of precautionary saving to describe the behavior mechanism by which households build up buffer savings to smooth consumption in the face of income uncertainty [12]. The second path also has a promotional effect but involves income effects and the relief of liquidity constraints. Old-age insurance contributions and benefits alter household disposable income flows and, by easing budget constraints and reducing rigid old-age expenditure, release household demand for risky assets. The creation of this path relies on the net difference between contribution burdens and benefit levels, the stability of benefits, and the extent of household liquidity constraints. The direction of the third path is uncertain and corresponds to the channel of risk attitude. Old-age insurance shapes individual risk attitudes and thereby influences risky asset holding preferences. Stability of benefits might lower household risk aversion, but low benefit levels and poor protection provided by old-age insurance may also increase household risk aversion. The direction of this path depends on the level of benefits, the starting point of risk preference of the household, and the level of coordination between old-age insurance and other social security programs. The overall magnitude of three paths will define the ultimate direction of the influence of old-age insurance on household risky financial asset allocation. Depending on various institutions and various household groups, the dominant path may vary.

In light of the aforementioned three transmission channels, the influence of basic old-age insurance on risky financial asset allocation of a household can be generalized into an integrated conceptual model of benefit level-background risk-risk aversion. There are three testable mechanism propositions in this framework. Proposition 1: If the benefit level is enough to lower future household income uncertainty to some critical point, the reduction of background risk and precautionary saving mechanisms prevail, and old-age insurance positively affects risky financial asset allocation of households. Proposition 2: If the level of benefit is inadequate to offer a useful replacement income, the effect of old-age insurance on risky financial asset allocation can become negative, and the mechanism is that restricted protection increases household risk aversion [4]. Proposition 3: The critical value of the benefit level is also determined by the initial risk attitude of the household, financial literacy, and life-cycle stage. When the benefit level is relatively insufficient, the inhibiting effect through the risk-attitude channel is more likely to manifest. This integrated framework considers both types of empirical evidence as manifestations of the identical mechanism at different parameter ranges and offers falsifiable hypotheses for future empirical analysis.

3. Foreign Research on Social Security and Household Financial Asset Allocation

3.1 The Relationship Between Social Security and Household Saving

The current line of study starts with the work of Feldstein [1]. Feldstein extended the life-cycle model to include endogenous retirement choices, and utilizing long-term U.S. time-series data, he hypothesized that social security has two opposing effects; one of them is the wealth substitution effect whereby pensions substitute private savings and reduce saving [1] and the other one is the induced retirement effect whereby social security prompts people to retire earlier and save more over a longer retirement term. His estimates showed that the net effect decreased the level of U.S. private saving by some 30% to 50%. This paper defines and measures the concept of social security wealth, acting as a standard reference for subsequent studies on social security and household saving. As to the strength of the estimates of the net effect of Feldstein [1], future studies have followed two directions: institutional shocks and cross-country data. Research based on a quasi-natural experiment, such as the 1992 Italian pension reform, and on microdata of the Bank of Italy Survey of Household Income and Wealth (SHIW) and difference-in-differences method found that a decrease in pension wealth led to a significant increase in the household saving rates and that the elasticity of substitution between

workers aged 35-45 was significantly higher than in other age groups [13]. In the context of 2011 Norwegian pension reform as a policy shock, research measured the effect of the reform on the saving behavior of groups nearing retirement and reported that the reform raised both the average annual saving rate of individuals aged 57-61 by approximately 1.4 percentage points [14]. Considering the whole life cycle, roughly half of the pension wealth losses were compensated by an increase in household saving. The discussed research is different in samples, institutional contexts, but came up with relatively similar results concerning the direction of the wealth substitution effect.

3.2 Social Insurance and Precautionary Saving

The second line of research is concerned with the role of social insurance in household asset allocation via the precautionary saving channel. Social insurance and precautionary saving have been theoretically integrated into a single life cycle model, which has shown that social insurance, by ensuring households with future income security, strongly discourages households from building up buffer savings to mitigate uncertainties, and thus gives clear testable predictions for future empirical studies [2]. Through the use of the introduction of Taiwan's National Health Insurance in 1995 as a quasi-natural experiment, the development of an identification strategy based on the difference in employment-based insurance coverage, and the analysis of Taiwan household microsurvey data, research was conducted to determine the effects of National Health Insurance on household savings [15]. The result is that National Health Insurance decreased household saving by an average of 8.6 percent to 13.7 percent, and had stronger effects on low-saving households. Its results are not generalizable to mainland China. Taking the endogenous variance in the coverage of the U.S. state Medicaid program as an identification strategy, research analyzed the effects of the expansion of public health insurance coverage on private household saving, and established that the increased level of public health insurance coverage significantly decreased the amount of household savings, and the effect was more significant in the case of households with high liquidity constraints and low incomes [16]. When the research object is extended to unemployment insurance, the research found that the generosity of unemployment insurance significantly decreased buffer savings that households save to meet the risk of unemployment [17]. These studies all contribute to the direction of the alleviating impact of social insurance on precautionary saving. They extend beyond old-age and health risks to the risk of unemployment, indicating that this phenomenon can be observed in various types of social insurance programs.

Additional analysis of the conclusion of Hubbard, Skinner, and Zeldes [2] should be concerned with its multi-parameter sensitivity. That paper demonstrated within a joint life-cycle model that social insurance greatly discourages households from saving a buffer to smooth out uncertainty by offering future income protection. The creation of such a conclusion is based upon a number of parameter conditions: the direction of the conclusion is relatively robust when households are subject to strong liquidity constraints, or have a high coefficient of risk aversion, or the uncertainty structure is characterized by income-side shocks; in case households are allowed to borrow and lend freely, or have a small coefficient of risk aversion, or uncertainty is predominantly caused by expenditure-side factors (like medical expenditure), the negative impact of social insurance on precautionary saving could be lessened or even reversed. Hence, the boundaries of applicability of this conclusion are conditional.

3.3 Pensions and Life-Cycle Asset Allocation

The next line of research is the integration of quasi-fixed income, including pensions, in life-cycle asset allocation models. The authors of the study Cocco et al. [3] calibrated a life-cycle model based on U.S. Panel Study of Income Dynamics (PSID) data and concluded that since labor income as nontradable human capital is a significant part of total household wealth (with replacement in old age by relatively stable benefits like pensions), human capital is a critical determinant of household risky asset allocation. The results of the model demonstrate that in younger families, human capital represents a significant proportion of the total family wealth and is also less risky, therefore the proportion of stock allocation is lower. With increasing age, human capital decreases and the optimal ratio of stock allocation increases during the working period and increases once again during retirement, which can be seen as an overall U-shape. Gomes and Michaelides [18] conducted a systematic review of the empirical evidence regarding life-cycle asset allocation, identified the major gaps between the model predictions and the real-life asset allocation, and suggested that participation costs, background risk, and life-cycle wealth structure are the primary directions for closing the gaps. Hurd et al. [19]

estimated the crowding-out effect of public pension wealth on the accumulation of household financial assets with microdata on multiple countries and found that every 1 dollar increase in public pension wealth was associated with a reduction in household financial assets accumulated near the time of retirement by around 22 cents. Using U.S. Health and Retirement Study (HRS) data, De Nardi, French, and Jones [20] modeled a life-cycle model with medical expenditure shocks and found that the uncertainty of medical expenditure and its strong increase with age are the most important variables that explain the high saving rate of elderly families. The focus of that paper was medical expenditure shocks, and pensions were not the explanatory variable of interest. Its contribution to the paper topic is the indication of the potential influence of medical risk as the background risk on household asset allocation. Summing up the three lines of research, foreign literature cannot represent a monolithic view on the nature of the relationship between social security and household financial asset allocation: social security can crowd out private saving and asset accumulation, but it can also unleash the demand for household assets by decreasing the level of background risk and precautionary saving incentives. The specific direction will depend upon the relative power of numerous factors, including the level of benefits, coverage, the life-cycle stage of the household, and the institutional environment. It is especially noteworthy that there are three borders to the transferability of foreign evidence to China: the difference in institutional framework, the stage of household finance development, and the existence or absence of data in the country. Three of these borders combined allow foreign conclusions to serve as a comparative reference and methodology reference of research in China.

4. Domestic Empirical Research on Basic Old-Age Insurance and Household Risky Financial Asset Allocation

4.1 Empirical Evidence of Promoting Effects

According to the literature on promoting effects, there is great convergence in research objects, identification methods, and mechanisms. Lin Jing, Zhou Mingshan, and Dong Zhiyong [21] built a two-period household optimal decisions model and, by adding provincial macroeconomic data to 2011 CHFS micro data, empirically established that social insurance could enhance the breadth (probability of participation) and depth (share of investment) of household risky asset investment. The principle is to decrease the level of uncertainty in future income and expenditure of households and decrease precautionary saving. Wang Yake and Liu Xueying [22], using 2017 CHFS data and a counterfactual estimation approach based on propensity score matching (PSM), discovered that participation in old-age insurance greatly raised the likelihood and percentage of investments in risky financial assets and shares made by households and that urban employees' old-age insurance had a much higher promoting effect than both urban and rural residents' old-age insurance did. Lu Yajuan, Zhang Wenhan, and Meng Dandan [23] applied the PSM approach with 2015 CHFS data to see how participation in social old-age insurance was associated with significant growth in the amount of financial assets held by households. Tian Shengdan and Huang Yanfen [24], with regard to CHFS, found that participation in basic old-age insurance was significantly positively related to the probability and share of risky financial assets held by households under financial assets, and that income uncertainty and reduced precautionary saving were significant mechanisms.

In view of institutional differences, Zhang Songbiao and Huang Yuxuan [25] used a sample of 6,156 households using 2017 CHFS data in order to empirically investigate the role of the multi-track social old-age insurance system on household stock market participation. Their results indicated that there was a significant contribution to the stock market participation of households by taking part in enterprise employees' old-age insurance or government agencies' and public institutions' old-age insurance (the probabilities of participation rose by 9.8% and 11.3%, respectively), whereas participation in old-age insurance of urban and rural residents did not make any significant contribution, which means that there is a direct correspondence between the level of benefits provided by the multi-track system and the behavior of households in terms of their asset allocation. From the perspective of the system as a whole, Cao Xinbang and Liu Panting [26], using the CFPS 2020 household economic database, discovered that the more variety of pillars in which households engaged, the less likely they were to experience liquidity constraints. The process is that when households expect stable future incomes, they are encouraged to invest more in risky assets and maximize their financial asset structure. Liu Hong, Zhang Zijing, and Zhou Guangsu [27] using five rounds of CFPS data between 2012 and 2020 analyzed the effect of enterprise annuities on household asset allocation through the lens of the second pillar.

They observed that the involvement in enterprise annuities did not have any significant effect on the current consumption expenditure or saving rate of the household but raised the probability and value of the holding of risky financial assets by households significantly. The effect was more pronounced among the higher educated households and those who owned real estate. The key mechanisms were the decreased expected old-age income risk and enhanced financial literacy.

Other studies integrate old-age insurance into an interactive system of health and asset distribution. According to a study based on 2019 CHFS data, it was discovered that health risk significantly decreased the probability and size of risky financial asset allocation in the household, whereas old-age insurance significantly raised the probability and size of risky financial asset allocation. They were positively interacting, and participating in old-age insurance could mitigate the adverse consequences of health risks [28]. In accordance with the findings of the research conducted using CHFS data, it was revealed that participation in basic old-age insurance was instrumental in increasing the participation of households in the financial investment process, which in turn increased the share of risky financial asset allocation. The mechanisms are income uncertainty reduction, subjective risk aversion attitudes mitigation, and medical expenditure pressure reduction [29]. The study analyzed the effects of integration of old-age insurance between urban and rural areas on the allocation of assets among rural households by employing the difference-in-differences (DID) approach and CHFS data between 2015 and 2017 and found that integration had a significant effect on the probability and magnitude of rural households engaging in risky assets and financial assets, providing quasi-natural experimental evidence for the promoting effect of old-age insurance through institutional integration [30].

Considering the effect size, Lin Jing, Zhou Mingshan, and Dong Zhiyong [21] reported that social insurance expanded the breadth (probability of involvement) and depth (share of investment) of household risky asset investment, without any mention of the exact elasticity coefficients; Wang Yake and Liu Xueying [22], according to PSM estimates of 2017 CHFS data, demonstrated that the probability of household investment in risky financial assets and stocks was significantly higher if the participants participated in old-age insurance, and the promoting effect of the old-age insurance of urban employees was significantly higher than the old-age insurance of urban and rural residents in absolute terms of treatment effects; Lu Yajuan, Zhang Wenhan, and Meng Dandan [23], relying on the PSM estimates with 2015 CHFS data, revealed that participation in social old-age insurance had a significant positive effect on the level of household financial assets; Tian Shengdan and Huang Yanfen [24], by using CHFS data, demonstrated that participation in basic old-age insurance had a significant positive effect on the probability of households holding risky financial assets and their share in financial assets. A fundamental empirical study of the area of household finance in China also offers a vital comparative reference point. In terms of the literature review of this review, the work by authors like Wu Weixing and Qi Tianxiang [31], Gan Li et al., and Bai Chongen and Wu Binzhen has provided the groundwork in the field. The work of Gan Li et al. on the asset allocation of households using the data of China Household Finance Survey, and the work of Bai Chongen and Wu Binzhen on the household saving rate in China can be used as methodological references and paradigms of constructing variables in further studies based on micro-level data, including CHFS/CFPS, to determine the consequences of old-age insurance on the distribution of household financial assets.

4.2 Empirical Evidence of Inhibiting Effects

In contrast to most of the previous conclusions, there are certain pieces of literature that report the presence of inhibitory effects in the case of old-age insurance among the samples of urban and rural residents. The research conducted by Chen et al. [4] applied the Heckman two-step approach, using four waves of CHFS data between 2013-2019. They observed that household allocation to risky financial assets (by about 13.27 percent) and the share of risky assets (about 3.31 percent) decreased significantly when individuals were enrolled in urban and rural residents' old-age insurance, whereas allocation to risk-free financial assets increased. The mechanism was not an income certainty but a risk attitude: enrolling in the old-age insurance of urban and rural residents changed the allocation structure of household financial assets by making residents less prone to risks. The paper suggested that although urban and rural residents' old-age insurance also led to an increase in residents' risk aversion, it did not ensure adequate income security, hence coming up with a conclusion that can be viewed as a reverse direction of most literature. He Lixin, Feng Jin, and Sato Hiroshi [32] took the 1995-1997 reform of the old-age insurance system of urban enterprise workers as a policy shock and, using data on China's urban households in 1995 and 1999, they estimated the impact of pension wealth changes on

the rate of household saving. They found out that pension wealth had a significant substitution effect on household saving, with an average elasticity of substitution of about -0.4 to -0.3 and households headed by 35- to 49-year-olds were more significantly affected. The main dependent variable of that study was the household saving rate, not the share of risky financial asset allocation, but changes in the saving rate are an indirect indicator of changes in household asset structure. I would like to point out that the direct evidence of inhibiting effects on risky financial asset allocation remains relatively sparse, mostly based on the specific sample of old-age insurance in the population of urban and rural residents, and its external validity should be examined through additional research.

The research by Chen et al. [4] should be further examined through three dimensions: identification strategy, sample period, and mechanism identification. The first is the identification strategy dimension. That paper applied the Heckman two-step procedure as a way of addressing selection bias in participation decisions. The validity of its result is based on the identification requirements of joint estimation of selection equation and outcome equation and the satisfaction of exclusion restrictions. The second is the sample period dimension. That paper analyzed four waves of CHFS data between 2013 and 2019. The sample represents the very beginning of the urban and rural residents' old-age insurance system integration, which was fully implemented. The benefit level and institutional status of urban and rural residents old-age insurance changed significantly within the sample period and the dependence of the conclusion on the sample period should be discussed. Third, the mechanism identification dimension. The paper utilized risk attitude as the crucial mechanism variable, based on the validity of the risk preference scale. The quality and uniformity of responses to this scale among the urban and rural residents population are significant influences on estimation results. To sum up, the conclusion of inhibiting effect of that paper has high internal validity in the urban and rural residents insurance sample, but it requires testing of its external validity (its generalization to other institutional forms and populations) with additional studies.

4.3 Side-by-Side Comparison of Promoting and Inhibiting Effects and Sources of Disagreement

The two categories of literature, i.e., promoting effects and inhibiting effects, vary in a systematic manner with respect to research objects, data, methods, and mechanisms. Promoting effect literature uses either urban employees' old-age insurance as the main object or takes social insurance in a wider sense as the object, most often employing identification tools like PSM and DID, where mechanisms are based on income uncertainty and precautionary saving. Inhibiting effect literature is concerned with the old age insurance of urban and rural residents, uses the Heckman two-step approach, and its mechanism relies on the risk attitude. It is challenging to account for the presence of both types of evidence merely through the distinction between statistical approaches but rather, due to the fact that they have more fundamental institutional and mechanistic distinctions. Initially, the old-age insurance types and benefit levels are diverse. The benefits that promote-effect literature and inhibiting-effect literature focus on are different, and this leads to the reversal of the relative strength of the background risk reduction effect and the risk attitude effect. Secondly, highlighted mechanisms are not the same. Studies that begin with income uncertainty are likely to get promoting effects, whereas studies that begin with risk attitude are more prone to see inhibiting effects. The two mechanisms can be present in different populations. Thirdly, the length of samples and identification strategy differ. The methods of estimation, including DID, PSM, and the Heckman two-step, differ in how they treat selection bias, which may also result in differences in estimation outcomes. The implication of this disagreement is that research should not just claim whether old-age insurance promotes or inhibits risky asset allocation, but should identify what mechanism prevails under various institutions and various groups.

In accordance with the stated unified analytical framework, three institutional parameter dimensions can be used to identify the difference between promoting and inhibiting evidence. Firstly, the benefit level dimension. The replacement rate and stability of benefits of old-age insurance for urban employees are much higher in comparison to those of the old-age insurance for urban and rural residents. The first one refers to the promoting-effect interval within the unified framework, whereas the second one refers to the inhibiting-effect interval [4,25]. Secondly, the institutional positioning dimension. Old-age insurance for urban employees and enterprise annuities are more similar to occupational welfare and have a better income security role; most region's urban and rural residents' old-age insurance still focuses on providing basic protection, and its marginal contribution to family decisions is more via the risk attitude channel rather than the income effect

channel. Thirdly, the sample selection dimension. There is inhibiting-effect evidence among the urban and rural residents old-age insurance participants who have education levels, financial literacy, and initial risk preference that are different in a systematic way from the urban employees old-age insurance participants, which puts the mechanism parameters of the two samples into non-comparable intervals. The applied implication of this unified framework is that the correspondence between institutional parameters and sample parameters should be explicitly reported in future empirical studies to allow performing cross-study comparisons and mechanism identification.

4.4 Private Pension Pilot and Preliminary Evidence

Private pensions are one of the three pillars of the Chinese multi-pillar old-age insurance system. The General Office of the State Council released the Opinions on Advancing the Development of Private Pensions in April 2022, which laid the foundation of the private pension system. The pilot of the private pension was introduced in 36 cities in November 2022. Key institutional parameters are: the annual contribution ceiling is set at 12,000 yuan per person and, within this ceiling, contributions can be made in any whole multiple of 100 yuan; tax deferral is applied during the contribution stage and separate taxation at the stage of withdrawal is applied at the rate of 3 percent; the funds in the accounts are operated in a closed way and cannot be taken out prematurely before the age of 60.

The two distinguishable transmission paths through which private pensions influence household financial asset allocation are as follows. The first path is referred to as the product allocation effect. Private pension accounts can buy compliant financial products like savings deposits, wealth management products, commercial old-age insurance, and public mutual funds, and this will direct some portion of long-term saving funds to financial markets and increase the exposure of households to financial assets. The second path is the financial literacy channel. To be eligible to join in private pensions, the participants need to make independent allocations of eligible financial products in their accounts, which may improve household financial literacy and thereby influence the overall risky financial asset allocation of the household. According to the findings of Wu Yufeng and Zhang Miao [33], using the data of the online questionnaire survey conducted in 2023 among the residents of Xi'an (the dependent variable was the willingness to participate in the private pension), financial knowledge is able to increase the residents' understanding and trust in the system of private pensions, improve investment skills, and eventually encourage the participation of the residents in the system of private pensions; the residents with risk preference are more capable of taking risks and engaging in the activities of the private pensions more actively.

The private pension pilot was introduced in November 2022 and extended to all over the country by the end of 2024. The 2024-2026 period is a critical opportunity to conduct initial empirical analysis using special surveys and microdata like CHFS 2023. Based on the author's literature search, there is not much empirical literature available which would directly address the issue of household financial asset allocation as the explained variable and assess how it is affected by the participation of the households in the private pension scheme, and most studies consider participation willingness instead of actual asset allocation behavior as the explained variable. This research gap not only indicates the level of institutional maturity but also offers ample space to expand the research in the future studies. Future empirical studies ought to consider three kinds of questions: firstly, the specific influence of the tax-deferral incentives on different income groups of households; secondly, the trade-off effect of the account lock-in and liquidity restrictions on the short-term consumption of the household and long-term allocation of assets; thirdly, the synergistic or substitutive connection between private pension plans and first-pillar basic old-age insurance.

4.5 The Impact of Enterprise Annuities on Household Asset Allocation

Enterprise annuities, also referred to as occupational annuities, are part of the second pillar of China's multi-pillar old-age insurance system. Liu Hong, Zhang Zijiang, and Zhou Guangsu [27], using five waves of CFPS data (2012-2020) studied the influence of enterprise annuities on household asset allocation by using the point of view of the second pillar. It was discovered that there was no statistically significant effect of participating in enterprise annuities on present consumption expenditure and saving rates of the household, but it greatly affected the likelihood and amount of household holdings of risky financial assets. The phenomenon showed itself even more strongly in families with high educational backgrounds and those who own real estate property. The primary mechanisms included lower expected risk of old age income and better financial literacy.

The influence of involvement in occupational pensions on the allocation of household financial assets has, in foreign literature, come to some fairly constant findings of a promoting influence. Regarding the literature search related to this review, studies conducted with the help of microdata (e.g., U.S. HRS) have found that an occupational pension account like a 401(k) will boost the portion of household financial asset ownership [34], and the marginal effect is even more pronounced in the case of low- and middle-income families. This conclusion has an implication for institutional design, which is that mandatory saving schemes with tax incentives and employer contributions are capable of being used as a policy mechanism to direct the process of household financial asset accumulation. The appropriateness of the above international practice to the Chinese enterprise annuities should be considered in terms of the institutional attributes, including the fact that there is a relatively low coverage level of enterprise annuities in China and significant variations in employer contribution rates.

4.6 Commercial Old-Age Insurance and Third-Pillar Synergy

Commercial old-age insurance is also a significant part of the third pillar of the multi-pillar old-age insurance system, other than private pensions. According to studies utilizing data on the 2017 CHFS, it was established that risky financial asset allocation of households raises the likelihood/premium contribution of household involvement in commercial insurance due to the wealth effects and risk effects, where information channels act as an intermediary between the two [35]. As per 2019 CHFS data, research revealed that population aging has a huge negative impact on household commercial insurance participation, and the mechanisms involve decreasing the volume of household funds and the level of household health. The result is more evident in households with low financial literacy, in rural areas, with dependent children, and without experience of major adverse events, which implies that the growth of the commercial insurance market requires both the enhancement of household financial literacy and the response to the urban-rural difference [36].

The influence of the involvement of commercial old-age insurance on the allocation of household financial assets in the foreign literature is conditional. Early studies using American data indicated that accumulation into commercial old-age insurance accounts is positively related to the proportion of household financial assets held, but it was stronger in high tax-preference coverage. This indicates that the structure of the third pillar institutions should be sensitive to the marginality of tax incentives as well as the original financial literacy of insured populations. Since the commercial old-age insurance has not achieved great market penetration in China and the private pension pilot has not been introduced long (since 2022), the total effect of the third pillar on the risky financial assets allocation of households requires the development of longer-term microdata.

4.7 Internal Validity of Identification Strategies

The domestic empirical identification policies to identify the effect of basic old-age insurance on household risky financial asset allocation are four, which have systematic variation in internal validity and applicability range. The first is propensity score matching (PSM). In PSM, propensity scores are used to match insured and uninsured households based on observable variables, so as to reduce selection bias. Wang Yake and Liu Xueying [22] applied the 2017 CHFS data with PSM-based counterfactual estimation, while Lu Yajuan, Zhang Wenhan, and Meng Dandan [23] applied the 2015 CHFS data with the PSM approach; both studies concluded that participation in old-age insurance significantly increased household financial asset allocation. The internal validity of PSM is constrained by the fact that its matching ability is limited to observable variables; it therefore cannot address hidden selection bias arising from unobservable variables.

Second, differences-in-differences (DID). DID is used in order to establish causal relationships as it compares pre- and post-policy shock differences in treatment and control groups and builds upon the assumption of exogenous policy shocks. Research using CHFS data in the years 2015-2017 and the DID approach investigated how urban-rural old-age insurance integration affected rural household asset allocation and discovered that integration was associated with a significant increase in the probability and magnitude of rural households making risky asset and financial asset allocations [30]. The assumption of parallel trends determines the internal validity of DID, and it requires comparability of pre-shock trends among treatment and control groups to be extremely high.

The third is the Heckman two-step approach. The correction of selection bias in participation decisions is done by the Heckman two-step method by jointly estimating a selection equation and an outcome equation.

According to the findings of studies conducted in four waves of CHFS data in 2013-2019 and with the help of the Heckman two-step method, it was established that participation in old-age insurance of urban and rural inhabitants led to a significant decrease in the probability of households being allocated to risky financial assets (by approximately 13.27 percent) and the proportion of risky assets (by around 3.31 percent) [4]. The Heckman two-step method's internal validity is determined by the extent to which exclusion restrictions hold, i.e., instrumental variables have effects on outcomes through participation decisions only. Instrumental variable choice also has a fairly large effect on result robustness.

The fourth is the instrumental variable method. The instrumental variable method determines causal relationships through the construction of instrumental variables which have correlation with endogenous explanatory variables exclusively but none with the error term. The application of the instrumental variable method in the literature of household finance is not common due to the fact that it is challenging to build instrumental variables that comply with exclusion restrictions. The combination of all the four identification strategies, PSM and DID are quite common in the domestic literature, but they are constrained by observable variables and the parallel trends assumption; the Heckman two-step approach is useful in cases where there are selective participation issues, but its conclusions are relatively vulnerable to exclusion constraints; the implementation of the instrumental variable approach is constrained by the presence of instrumental variables. Future studies may also apply DID and instrumental variable approaches to institutional shock settings like integrating multi-pillar old-age insurance and scaling up of the pilot of private pensions to enhance the credibility of causal identification.

5. Mechanisms and Heterogeneity in the Influence of Fundamental Old-Age Insurance on Risky Financial Asset Allocation of Households

5.1 Decomposition of Mechanisms and Evidence

The initial mechanism is a reduction of background risk and precautionary saving release. This mechanism means that old-age insurance decreases the unpredictability of future household revenue and expenses, mitigates the precautionary saving impulse, and allows households to put more money into risky investments. It is a mechanism with moderate evidence in the literature on promoting effects. The amount of income uncertainty is the level of variation in future household income streams, and precautionary savings is extra buffer savings saved by households to deal with future income uncertainty. The 2nd mechanism is the income effect and relief of liquidity constraints. The old-age insurance offers a predictable income stream and releases household demand for risky assets by easing budget constraints and reducing rigid old-age expenditure. Liquidity constraints are those that restrict households from borrowing freely to smooth consumption because there is no perfect credit market. Using liquidity constraints as the explanatory variable directly, it was discovered that the multi-pillar old-age insurance has a substantial impact on reducing liquidity constraints in households [26]. The third mechanism is the risk attitude conduit. Asset allocation is influenced by old-age insurance through the change in residents' risk aversion, however its direction is controversial. There is literature that claims social security lowers background risk and adds to risk preference [25]; while old-age insurance for both urban and rural residents increases risk aversion and discourages risky investment allocation [4]. Measuring risk attitudes empirically, Dohmen et al. [37] constructed a large-scale measure of risk preferences using the German Socio-Economic Panel (SOEP) to offer a standardized instrument to assess risk attitudes in household finance studies.

The fourth mechanism is the interaction channel between health capital and uncertainty. Health risk is also one of the significant background risks that are experienced by households. Medical-type social insurance related to old-age insurance reduces the medical expenditure burden and improves health capital, which in turn influences household risky asset allocation indirectly. Studies using CFPS panel data indicate that medical insurance and health capital have positive effects on the probability and shares of risky financial assets held by households, and their effects can be both direct and indirect through health capital levels [38]. CHARLS data-based research also indicates that health shocks have a larger negative influence on illiquid risky assets (investment real estate, etc.) than on liquid risky assets [39]. In the dynamism of health change, research went further to test how health shocks impacted household portfolio choice, and it was established that there is a significant reduction in risky assets in households with a deterioration in health [40].

In terms of international experience, background risk and human capital characteristics are two significant factors to consider in order to explain how the financial asset allocation of a household differs with the theoretical optimal portfolios. In regards to the literature search of the current review, Viceira [41] expanded upon the Merton framework by adding nontradable labor income and CRRA utility, obtained the optimal portfolio of long-horizon investors, and demonstrated that background risk has a structural effect on the optimal fraction of holding risky assets; Yogo [42] using further examination of cross-country data, discovered that asset allocation of retired households responds to health-related shocks and longevity risk by reallocation of assets between annuities, real estate and risky financial assets. The mentioned international empirical evidence offers an empirical ground of the mechanism proposition of "background risk reduction and precautionary saving release" suggested in Section 2.3 of this paper.

5.2 Empirical Evidence on Heterogeneity Dimensions

The main issue in heterogeneity analysis is whether the primary channel by which old-age insurance influences risky financial asset allocation differs in a systematic manner between institutional types and the household population. The given section addresses heterogeneity evidence in terms of eight dimensions, including urban-rural, region, type of insurance, gender, income, education, financial availability, and life stage, and applies life-cycle stage and combination with background risk as the integrative theoretical basis: at the contribution stage and amongst young households, income effects and the liquidity constraint relief channel prevail, and heterogeneity can be largely attributed to the disparity in levels of benefits and income levels; at the benefit receipt stage and amongst older households, the role of the risk attitude channel and the interaction channel of health capital increases, and heterogeneity can be mostly explained by the difference in institutional type, health condition, and financial availability.

The difference in the impact of old-age insurance on risk asset allocations in a household is highly visible when comparing urban and rural households on the urban-rural spectrum. The promotion influence is more pronounced in the case of urban households, whereas even risky asset allocation in rural households increases substantially after institutional integration. The promotion effect is true for both kinds of households, but it depends on the degree of intensity and conditions that cause it. Relatively good first-pillar coverage enables urban households to have a stronger effect, whereas rural households mainly achieve significant improvement in risky asset allocation through the benefit enhancement brought by institutional integration. Existing studies in the old-age insurance type dimension usually indicate that in multi-track systems, the promotion impact of old-age insurance on urban employees is higher than that of urban and rural resident' old-age insurance, and the second-pillar schemes like enterprise (occupational) annuities are not as important.

On the basis of income level, the promotional influence of old-age insurance is more pronounced when dealing with high-income and high-financial-literacy families, whereas the protective (risk-inhibiting) quality is observed in low-income families. On the life-cycle stage dimension, the benefit receipt stage has a stronger investment response compared to the contribution stage. Equally, the health mechanism which is passed via medical insurance is more observable in the young and middle-aged population. In the education and financial literacy aspect, those with less education and higher old-age economic pressures are more sensitive to asset allocation responses to old-age insurance. It has been systematically shown that financial literacy is at the core of retirement planning, and research has indicated that households with a lower degree of financial literacy tend to use more conservative approaches in the allocation of assets [43]. Further studies based on the data on Dutch household surveys revealed that lack of financial literacy is also a significant impediment to the involvement of households in the risky asset market [44]. According to the 2023 online questionnaire survey data of the Xi'an residents (with the explained variable being the willingness to take part in private pensions), it was established that financial knowledge can help the residents to understand and trust the private pension system, which enhances their investment capabilities and consequently results in increased participation of residents in the private pension system [33]; those who prefer risks have a higher ability to tolerate uncertainties and play a more active role in private pensions. Trust, as a key variable influencing household financial participation, also plays a role in the relationship between old-age insurance and household asset allocation. Using four waves of the CHARLS panel data (2011-2018), Research has shown institutional trust in rural social old-age insurance undergoes a pattern of initial damage followed by restoration and is significantly associated with household financial participation [45]. The inverse relation between the allocation of risky financial assets and commercial insurance has also been considered in existing research. Based on 2017 CHFS

data, research has shown that household risky financial asset allocation increases the probability and premium expenditure of household participation in commercial insurance due to wealth effects and risk effects, with information channels as intermediaries between the two, implying that the effect of old-age insurance on household financial asset allocation may be extended to commercial insurance decisions [35].

The influence of old-age insurance on the allocation of risky financial assets in the household is different in gradients across eastern, central, and western regions in the regional dimension. In terms of the literature search used in this review, the available studies generally focus on the use of national or provincial CHFS samples to investigate overall results, with subgroup analyses of eastern, central, and western subsamples being comparatively sparse. Initial findings indicate that the promoting effect is more pronounced in the eastern region and less pronounced in the western region, and that the difference is correlated with regional financial accessibility and financial market participation.

The effect of old-age insurance on risky financial asset allocation in the household head gender dimension varies depending on whether a household is male-headed or female-headed. In terms of the literature search of this review, there is relatively scattered literature regarding gender heterogeneity. Initial indication is that female-headed households are likely to be more sensitive to old-age insurance as regards their risky financial asset allocation. The mechanism could be associated with the distribution of risk preferences, life cycle income paths, and financial literacy levels of female-headed households.

Credit constraints and digital finance exposure are important in the financial availability dimension, which are the main variables that influence the release of the household asset allocation effect of old-age insurance. In terms of the literature review of this review, there is a greater amount of focus on the direct relationship between financial availability and household financial asset allocation, and the study of its interaction with old-age insurance is still relatively low. Initial results indicate that families with more stringent credit constraints are more prone to using old-age insurance proceeds to save buffers instead of investing in risky assets, whereas families with extensive exposure to digital finance are more inclined to invest their money in the risky asset market with the assurance of old-age insurance.

6. Research Review, Integration of Controversies, and Future Research Directions

6.1 Main Conclusions and Integration of the Promoting-Inhibiting Controversy

The available literature indicates that old-age insurance can have a considerable influence on household risky financial asset allocation via the channels of background risk reduction, liquidity constraint relief, and alteration in risk attitude, though its orientation and magnitude depend on the type of old-age insurance, level of benefit, and household attributes. The available evidence is dominated by the fact that old-age insurance can enhance risky asset allocation in households, however, studies on the inhibitory effects using urban and rural residents' old-age insurance as the object indicate that old-age insurance with inadequate benefit levels can actually reinforce risk aversion. This issue is not caused by chance variations in the sample or estimation level, but it represents the actuality of the institutional diversity in the multi-track old-age insurance system of China. Despite the extensive discussion of both types of evidence- promoting and inhibiting - there are still a few points that have not yet been answered systematically: evaluation of the multi-pillar system as a whole is weak, with the majority of literature focusing on first-pillar basic old-age insurance, and studies on second-pillar enterprise (occupational) annuities, third-pillar commercial old-age insurance, and multi-pillar effects are only beginning; the comparative power, transformational conditions, and boundaries of groups of the effect of the background risk reduction and the effect of risk attitude have not been given systematic theoretical explanation and empirical examination; there is no dynamic tracking, since the current literature is primarily based on single-period cross-sectional data or short panels, and the long-term dynamic consequences of old-age insurance reforms need much longer time-tracking data to be detected; and the effect of the most recent institutional changes are yet to be assessed.

In terms of methodology, this paper uses the systematic literature review approach. The literature review involves both Chinese and English journal databases. Chinese databases are CNKI, Wanfang Data, and VIP Information; English databases are Google Scholar, RePEc, EconLit, and Web of Science Core Collection. The search window is established as January 2008-June 2026. Chinese search keywords used are: basic old-age insurance/social old-age insurance/urban and rural residents' old-age insurance/enterprise annuity and

household financial assets/risky financial assets/stock market participation; English search keywords used are: pension/social security/occupational pension/personal pension and household portfolio/risky assets/stock market participation. The PRISMA methodology is used to screen literature by eliminating duplicates, non-empirical literature, and literature where variables are defined inconsistently. Eventually, 20 Chinese-language articles and 26 English-language articles were selected to be analyzed.

This part outlines the distinction between the two kinds of evidence (promotion and inhibition) within the unified framework based on three institutional parameter dimensions. The replacement rate and stability of urban employees old-age insurance benefits are much greater than those of both urban and rural residents old-age insurance; the first of them is related to the promoting-effect interval, whereas the second is related to the inhibiting-effect interval. The institutional positioning dimension shows that urban employees old-age insurance and enterprise annuity is more similar to the occupational welfare and has a higher degree of income security features; most regional urban and rural residents old-age insurance continue to focus on the minimum protection. The sample selection dimension finds that inhibiting-effect evidence is confined to the urban and rural residents old-age insurance participant group, whose level of education, financial literacy, and initial attitudes toward risks are systematically different compared to the urban employees old-age insurance participants group. In practice, this unified framework means that further empirical studies ought to also state the correspondence between institutional parameters and sample parameters in order to enable cross-study comparison and identification of mechanisms.

The research has been conducted quantitatively based on a multi-level retirement wealth viewpoint comprising pensions, financial assets, and real estate, with an aim to estimate the retirement wealth reserve risk of middle-income groups in 10 large and medium-sized cities in China. It was found that the narrow-caliber, medium-caliber, and broad-caliber retirement wealth reserve risk indices of a normal person are 43.6 percent, 23.3 percent, and 10.8 percent, respectively. The general level of retirement risk is still quite high. Strategies like enhancing the contribution density of social insurance, corporate pension and commercial insurance coverage, and postponing retirement are effective in decreasing the risk of retirement [46].

6.2 Future Research Directions

Future research can develop in this way. Firstly, apply institutional shocks to enhance the credibility of causal identification. Identification strategies like difference-in-differences and regression discontinuity can be developed using natural experiments like urban-rural old-age insurance integration, private pension pilot, and integration of old-age insurance schemes of government agencies and public institutions to elucidate directions of mechanisms as well as boundaries of heterogeneity. Research based on the 2019 CHFS has shown that population aging decreases the level of commercial insurance participation in households greatly through such mechanisms as lowering funds available in the household and household health status. It is even more pronounced in families with low financial literacy, in rural areas, with child dependency, and without experiences of significant negative events, which implies that the development of the commercial insurance market should be approached in conjunction with improving household financial literacy and addressing the urban-rural divides [36]. Secondly, introduce multi-pillar old-age insurance in a unified system. Current studies tend to focus on one pillar in isolation; a general evaluation scheme that covers all three pillars, i.e., the first, second, and third, must be created to examine both substitution and complementarity relations among pillars and how they collectively affect household welfare. Thirdly, integrate household balance sheets and subjective expectation surveys to characterize the dynamics of risk attitudes. The influence of old-age insurance on household risk attitudes might also have time-varying properties and should be measured along a single dimension by incorporating both subjective risk preference measures as well as the changing pattern of asset-liability structure. Fourthly, consider the difference in behaviors between the two stages of the pension benefit receipt stage and the contribution stage. The current studies typically do not differentiate the behavioral reactions of households at the two extreme points of the system. Within a life-cycle perspective, the different effects of the policies of delayed retirement and phased benefit receipt on household asset allocation need to be determined to provide micro-level evidence of the delayed retirement and reform of old-age insurance.

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