How Aging and Health Conditions Affect the Asset Holdings of Chinese Seniors

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Abstract

In this paper I measure the impact of aging and associated health conditions on the asset allocations of Chinese seniors by estimating multiple linear regression models. The database I use is the China Health and Retirement Longitudinal Study. The estimation results imply that the asset holding values of all asset classes vary negatively with age, and the portfolio shares of cash/deposits/bonds and durable goods vary positively with age. The values of cash/deposits/bonds and durable goods are sensitive to several health variables, but the value of risky financial asset do not significantly depend on health. Whether people have disabilities has a significant effect on the shares of almost all asset classes, but whether people feel depressed can affect the portfolio share of only one asset.

Keywords: age, health conditions, asset holding value, portfolio shares, Chinese seniors

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1. Introduction and Motivation

In this paper, I study how age and health conditions affect the investment behavior of Chinese seniors. I measure how values and portfolio shares of different asset classes held by Chinese seniors change with age. I also measure how different health risks, such as physical dysfunction, depression, chronic disease, and fears affect the holdings of different asset types.

Most people receive much lower income after they retire because they do not receive standard wages from their careers anymore. Therefore, they might have insufficient money for their future consumption. Even though they accumulate adequate wealth before retirement, the probability that they experience unexpected health issues such as illnesses, mortality risk, and being isolated is still high. These unexpected health risks are even higher when seniors become older, and they can also reduce the existing wealth of seniors considerably.

This issue is unsurprisingly serious in China. Feng, Lou, and Yu (2015) investigate the relationship between age and average 4-week health expenditures in China. They find that the average health expenditure during 4 weeks for people in the above 70 age group is more than three times higher than that for people in the below 49 age group. This indicates that seniors spend much more in health care than younger people in China. Although seniors may accumulate more wealth than younger people, they also spend more money than younger people. Therefore, investment can be an essential source of funding for seniors especially for those who have already retired. It not only provides additional available wealth but also helps seniors to hedge those health risks.

Chinese seniors can invest in various types of assets, and different assets have different characteristics. For example, the return patterns of financial assets are more volatile than those of

bank deposits. As a result, which asset types that seniors invest their wealth in may depend on their health conditions, age, and amount of existing wealth.

Several studies examine the effect of age and health on the value of asset holdings and on portfolio shares. For instance, Yoo (1994), Poterba (2001), and Samwick (2001) use regression analysis to find the effect of age on asset portfolio share, controlling for cohort effects. Poterba and Samwick (2001) find that real estate investment is the most sensitive to aging among all asset types.

Edwards (2008), Love (2010), Smith (2010), Rosen (2004) and Wu (2004) analyze the role of health in investment choice, and most of them find that health significantly affects investment behavior and that people with health problems tend to invest more in safe assets. Coile and Milligan (2006) estimate the effects of both age and health risks on investment behavior of American seniors, and they find that the shares of most riskier assets vary negatively with age and health problems.

My data come from the China Health and Retirement Longitudinal Study (CHARLS). The data come from surveys of around 20,000 respondents who are aged above 40. The survey asks basic demographic and health questions, and also asks about the income and expenses of these interviewees. The survey also provides information about how these study subjects invest in bonds, stocks, mutual funds, housing, land, equipment, cash, and bank deposits. I divide asset holdings into six classes (Cash/Deposits/Bonds, Risky [illegible]ets, Vehicles, Durables, Principal Residence, and Land/Production Tools). [illegible]2015 (the latest wave) because I want to do a single cross-sectional analys[illegible]ffect and health effect directly, and it reflects the newest information.

Should have explored longitudinal aspect of the data set.

My ~~statistical~~ approach uses a multivariate regression model and is similar to Coile and Milligan (2006). My analysis involves two parts. In the first part, I examine the influence of aging and health status on asset holding values of various asset classes. The dependent variable is asset holding value of each asset type. I include age as an explanatory variable. Control variables include gender, whether the respondent l[illegible]l area, number of children, employment status, and marital status. I [illegible]s and interaction terms between age and each health dummy to the mod[illegible]

Discuss results in intro.

In the second part, I examine the impacts of age and health condition on asset portfolio shares. The depen[illegible] portfolio share, which equals the value of a particular asset held by the [illegible]ne respondent's total wealth. The independent variables remain the same. [illegible]st squares to estimate the model in order to find the partial effects of explanatory variables on both asset holding values and portfolio shares. I find that the holding values of all asset classes vary negatively with age, and the portfolio shares of Cash/Deposits/Bonds and Durable increase with age.

Avoid passive voice.

2. Literature Review

There are many papers that study how asset values and asset shares vary with both aging and health risks in western countries. The first literature I build on concerns how asset values and asset shares vary with age. ~~Some studies use theoretical approach~~ to measure the effect of aging on investment behavior. These include Gomes [illegible]Michaelides (2005), and Yogo (2016). Gomes and Michaelides (2005) analyze [illegible]sing a life-cycle asset allocation model, and Yogo (2016) derives the gro[illegible]ks, and housing using a multi-period inter-temporal choice model.

Useless lit review.

Poterba and Samwick (2001) use the Survey of Consumer Finances to analyze the effect of aging on asset portfolio shares in the United States. They calculate the shares of different asset types held by American seniors in years 1983, 1986, 1989, and 1992. For each respondent, they divide each individual asset value by the respondent's total wealth and compare how the portfolio shares change from 1983 to 1992. They find that the shares of tax-deferred accounts and tax-exempt bonds increase over that period, and that the shares of bank accounts and taxable equity decrease. Second, they estimate a regression model with asset share as the dependent variable and age-group dummies and cohort dummies as independent variables. They find that the asset category that is the most sensitive to age, controlling for cohort effects, is real estate. Yoo (1994) estimates a similar regression model using the Survey of Consumer Finances. He finds that the portfolio share of cash initially decreases and then increases after retirement. In contrast, Yoo (1994) finds that the shares of bond and equity holdings initially increase and then decrease after retirement.

Coile and Milligan (2006) estimate models of both dollar value and portfolio shares of asset holdings for each asset class, using the first six waves of the Health and Retirement Study (spanning 1992-2002). They include age in levels as an explanatory variable, rather than including dummies for age. Coile and Milligan (2006) find that there is a downtrend of investment in the principal residence, vehicles, and IRAs/Stocks/Bonds with age of respondents over 55 years old. They also control for cohort and individual characteristics.

The second literature I build on estimates the impact of health conditions on asset holdings. Edwards (2008) estimates the effect of self-perceived health risk on asset shares, and he finds that people with health problems prefer investing in safe assets. Love and Smith (2010) estimate the effect of health status on the portfolio choice of different asset types controlling for spousal

information and find the health effect to be small. Rosen and Wu (2004) analyze the effect of health on the portfolio shares of different asset types using cohort dummies. They draw conclusions similar to Edwards (2008) that health status is a significant predicator of portfolio allocation, and people who have health issues hold less share of risky financial assets than healthier people.

Coile and Milligan (2006) also analyze the effect of health shocks, but they include more specific health factors such as becoming widowed, experiencing an "acute event" and receiving a new diagnosis of a chronic illness. They find that these factors impact asset holdings considerably. For example, the holding values of housing, vehicles, and IRA/Stocks/Bonds drop, on average, when an older person becomes widowed. However, Coile and Milligan do not control for other determinants besides health conditions in their health model, and I include them in my model. The external determinants that I consider are gender, number of children, employment status, marital status, and whether the interviewee lives in an urban area.

I follow Coile and Milligan's (2006) basic empirical approach but I include interaction terms between age and health in my models. The reason is that the impacts of health status on asset holdings may be different for younger people and older people. Coile and Milligan controls for the individual characteristics such as marital status, race, religion, and educational background of different American respondents. Controlling for other necessary determinants provides a less biased age and health partial effects.

I measure the effect of age and health condition on both holding values and portfolio shares because they have different meanings. Holding value represents the monetary wealth that seniors hold in a particular asset type. In contrast, portfolio share represents the percentage of the total wealth that the respondents distribute in an asset. The total wealth of different respondents is also

different, so the partial effects on value and share of an asset may have opposite direction. I want to see how both the monetary wealth and percentage allocation change with aging and health status.

3. Database

The database I use in my study is the China Health and Retirement Longitudinal Study (CHARLS) which is conducted by the China Center for Economic Research (CCER) at Peking University. Most of its interview questions and corresponding variables are compatible with that of its American counterpart, the Health and Retirement Study.

The subjects of the CHARLS are Chinese seniors who are between 40 and 95 years old. The survey is nationally representative. Interviewees come from both rural and urban areas. The survey provides detailed information on basic demographic background, family information, working and retirement status, health condition, pension and insurance purchases, income, expenditure, liabilities, and the value of asset holdings of these respondents. Consequently, the CHARLS is the most suitable database among all the databases that are relevant to the asset holding behaviors of Chinese individuals and households.

The CCER started its pilot interviews in Gansu and Zhejiang provinces in 2008, and the first nationwide interview was done in 2011. So far, the CCER has conducted five full interviews in 2011, 2012, 2013, 2015, and 2017, and the databases for the first four rounds have already been publicly released. There are only 2,685 observations in the pilot interview, but the number of observations increases to 15,000 – 20,000 for the full interviews. I use the fourth wave of CHARLS which was ready in 2015 for my analysis because it is the latest dataset that is publicly

available, and it reflects the newest information about the health, demographic information, and the asset holding characteristics of Chinese seniors.

4. Methodology

My analysis has three parts. First, I provide summary statistics of how respondents in different age groups differ in their asset holdings. Specifically, I calculate the average asset holding values and portfolio shares for six asset classes by different age ranges (eg. 50-59, 60-69, etc.). I group multiple small asset classes into several bigger asset classes based on their type and risk-return characteristics.

The six asset classes I define are (1) **Cash/Deposits/Bonds** (including cash, bank deposits, and government bonds), (2) **Risky Financial Assets** (including stocks, mutual funds, public housing funds, and private lending), (3) **Vehicles** (including motor vehicles, motorcycles, and bicycles), (4) **Durables** (including furniture, commodities, etc.), (5) **Principal Residence**, and (6) **Land/Production Tools** (including real estate ownership and equipment such as tractor, thresher, processing equipment, water pump and other fixed capital assets). I divide the value of each asset class by the respondent's aggregate wealth in order to obtain each asset share in the total portfolio of each interviewee.

For the second part of my analysis, I estimate the following linear regression models of the effect of aging and health status on the asset holdings of individual senior *i*:

(1) $log\ (Value_i) = \beta_1 + \beta_2 age_i + \sum_{j=1}^{5} \delta_j X_{ij} + \sum_{k=1}^{4} \theta_k H_{ik} + \sum_{k=1}^{4} \alpha_k\ (age_i \times H_{ik}) + \varepsilon_i$

(2) $AssetShare_i = \beta_1 + \beta_2 age_i + \sum_{j=1}^{5} \delta_j X_{ij} + \sum_{k=1}^{4} \theta_k H_{ik} + \sum_{k=1}^{4} \alpha_k\ (age_i \times H_{ik})\ + \varepsilon_i$

where the dependent variables are the logarithm of asset holding values (expressed as yuan) and portfolio shares (expressed as a percentage) of all six asset classes that the individual senior *i*

holds. The explanatory variables include the age of individual *i* in 2015, a vector of background control variables *X*, a set of health dummies *H*, and the interaction terms between age and each health variable.

The background control variables include gender (*Male = 1; Female = 0*), marital status (*Married = 1; Divorced/Never Married/Widowed = 0*), number of children, employment status (*Retired = 1; Not Retired = 0*), and whether the person lives in an urban area (*Urban = 1; Rural = 0*). I add these control variables to control for other factors besides age that impact the asset holding value. For example, people who live in a village may hold lower value of Risky Financial Assets and more value of Land/Production Tools than people who live in metropolis and towns regardless of their age. I investigate not only whether age has positive or negative effect on the individual holding of different asset classes, but also which asset classes are the most sensitive to aging, holding other factors constant.

I also analyze the effects of health conditions because given age, people with different health conditions may make different decisions about which and how much of a specified asset class they choose to invest in. For example, if a person has a physical disability, he or she may tend to decrease the holding in vehicles and increase the holding in durables. My purpose is to find the signs of health effects on both holding value and portfolio shares, and which asset types are the most sensitive to health variables, *ceteris paribus*.

The health dummies include (1) Disability (includes physical dysfunction, brain damage, vision problem, hearing problem, and speech impediment), (2) Chronic Disease (includes heart disease, blood pressure, cancer, and stroke), (3) Fearful (includes worries about future life, fears of death and losing wealth, and so on), and (4) Depression (includes sadness and isolation). Each

of these health dummies equals 1 if the interviewee has the corresponding health problem. I also include an interaction term $age_i \times H_{ik}$ for each of the k different health conditions.

I also measure the average partial effects of age on the wealth held and portfolio shares of different asset classes by taking interaction effects between age and health into account. The average marginal effect of age is given by the partial derivative:

(3) $$\frac{\partial AssetHolding}{\partial age} = \hat{\beta}_2 + \sum_{k=1}^{4} \widehat{\propto}_k \overline{H}_k$$

where $\hat{\beta}$ is the OLS estimator of β, and $\widehat{\propto}$ is the OLS estimator of $\propto$. Asset holding represents both portfolio share and logarithm of asset holding value. In doing my analysis, I also assume that all respondents invest their wealth in at least one asset type. Therefore, I delete the observations if they do not invest in any assets.

5. Results

5.1 Asset Holdings by Age Groups: Summary Statistics

Both Table 1 and Figure 1 show the average individual holding value of each asset type for different age groups. I find that the holding values of all asset types decrease with age. The decreasing pattern in the wealth held in the Durables is flat. It is 3,811 yuan in the below 50 age group, and it decreases to 2,046 yuan in the over 70 age group. In contrast, the value of Risky Financial Assets declines steeply with age falling from 24,584 yuan for the below 50 age group to only 1,800 yuan for the over 70 age group. The decreases in the values of Cash/Deposits/Bonds, Vehicles, and Land/Production Tools are smaller than that of Risky Financial Assets, but they are bigger than that of Durables. I also find that people in the over 70 age group hold less total wealth than people in the below 50 age group.

In all age groups, people hold the most wealth in the Principal Residence. Wealth held in the Principal Residence ranges between 174,939 yuan and 131,887 yuan across all age groups. The pattern of the change in its value with age is different than other asset types because it exhibits an inverted U-shape. In other words, the wealth held in the Principal Residence varies positively with age in the lower age groups, but it varies negatively with age in the higher age groups. It increases to 256,534 yuan in between 50 and 59 age group and then decreases to 162,793 yuan in between 60 and 69 age group.

In the below 50 age group, the wealth held in Risky Financial Assets is greater than that in other asset classes aside from Principal Residence. However, the value of Risky Financial Assets is the lowest in the above 70 age group. This may be due to the fact that investments in stocks or funds are not popular in the past decades in China, so older people have much less knowledge about financial assets than younger people.

Both Table 2 and Figure 2 illustrate how the average percentage allocation of each asset type differs across different age groups. The proportion of wealth held in the Principal Residence is the highest among the shares of all asset classes. It ranges between 55.0% and 51.7%. It increases until 50-59 age group and then decreases as people become older. The second largest asset share is the share of Cash/Deposits/Bonds which ranges from 18.0% in the below 50 age groups to 26.0% in the over 70 age group. As age increases, the share of Durables also rises, but the increasing is less dramatic than that of Cash/Deposits/Bonds.

Shares of Risky Financial Assets, Vehicles, and Land/Production Tools decline with age. The average proportion of Risky Financial Assets held by people below 50 is 7.5%, but it is only 1.5% in the over 70 age group. The average portfolio shares of other two asset types decreases, but the magnitudes of decreases are smaller than that of Risky Financial Assets.

The results that I present here give an overview about how the holding values and portfolio shares of all asset types vary with different age groups, but they only show the simple relationship between age and asset holdings without controlling for other determinants of wealth allocation. I examine the impact of age and health condition on the wealth held in each asset class in my further analysis. I also control for the individual characteristics of respondents.

5.2 Effects of Age and Health Condition on Asset Holding Values

Table 3 gives estimates for the impacts of aging and health condition on the logarithm of the wealth held in each asset type. The coefficients on age are statistically significant at the 1% level (p-value < 0.01) in models of the values of all asset types. In the model of Cash/Deposits/Bonds, the coefficient on age is -0.027. When respondents become one year older and if they are healthy (all health dummies equal zero), the yuan value held in Cash/Deposits/Bonds falls by approximately 2.7%, holding all other factors constant.

This table also demonstrates the impacts of four health variables (Disability, Fearful, Depression, Chronic) and the cross terms between age and each health dummy on the logarithm of the values of holdings of all six asset types. In a log-linear regression model, if a dummy changes from 0 to 1, the dependent variable changes by $100\times\left(e^{(\hat{\beta}-\frac{1}{2}\left(se(\hat{\beta})\right)^2)}-1\right)$%, other things equal (Giles, 2011). $\hat{\beta}$ denotes the coefficient estimate of β, and $se\left(\hat{\beta}\right)$ denotes the standard error of $\hat{\beta}$. The coefficient estimate of Disability on the logarithm of the wealth of Cash/Deposits/Banks is -0.878, and its standard error is 0.206. After I input these two numbers into the formula, I get -59.31%. On average, the wealth held in Cash/Deposits/Bonds decreases by approximately 59.3% if a person gets physical dysfunction, *ceteris paribus*. I also find that all health factors have significant effect on the values of Cash/Deposits/Bonds and Durables. In

contrast, holdings of Risky Financial Assets do not necessarily depend on the health conditions because the coefficient estimates of all health variables and interaction terms on its value are statistically insignificant.

The coefficient estimates of Chronic and Depression on the value of nearly all asset types are statistically significant, while whether people feel fearful about future life has a significant negative effect on the holding values of only two asset classes which are Cash/Deposits/Bonds and Durables.

The respondent who has each of Disability, Chronic, Fearful, and Depression holds less wealth in Cash/Deposits/Bond than the respondent who is healthy. Similarly, I find that the wealth held in Durables also becomes smaller if the respondent has each of these four health problems. However, the magnitudes of the effects of all health variables on the value of Durables are smaller than that on the value of Cash/Deposits/Bonds. The effects of almost all health variables on the values of almost all asset types are negative. An exception is that the impacts of Chronic and Depression on the value of Land/Production Tools are both positive, *ceteris paribus*.[1]

Table 5 gives the estimated average partial effects of age on the value of asset holdings after taking interaction effects into account. The marginal impact of age on the logarithm of the value of Vehicles equals to $-0.037 + 0.029\overline{Disability} + 0.010\overline{Chronic} + 0.003\overline{Fearful} + 0.009\overline{Depression}$. This expression equals to around -0.02 after I input the figures of average health condition that I present in Table 4.

From this table, I discover that the signs of the average partial effects of age on the wealth held in all asset categories are negative, and they are compatible with the summary statistics I

1 I assume that age and other factors are constant when I discuss the signs and magnitudes of the partial effects of health variables on holding values.

present in Table 1. I also find that, conditional on controls, the value of Land/Production Tools is the most sensitive to age among the different asset types I consider. In contrast, the magnitude of the age effect on holding of Cash/Deposits/Bonds is the smallest.

5.3 Effects of Age and Health Condition on Asset Portfolio Shares

In the previous section, I present estimated age and health effects on the asset values of various asset types held by Chinese seniors controlling for background characteristics of the respondents. Portfolio share is also an essential indicator of the investment behavior of Chinese seniors. How people distribute their total wealth into various asset types may depend on their risk aversion and existing wealth. For example, older people may be more risk averse than younger people because they are more likely to suffer health risks and lack the ability to return to work to recoup monetary losses. Therefore, the proportional allocation of Cash/Deposits/Bonds may vary positively with age because the variance of returns on these assets is small. In contrast, older people may allocate less of their wealth to Risky Financial Assets and Vehicles than younger people. In this section, I examine the impacts of age and health conditions on the portfolio shares of each asset type.

Table 6 gives estimates for the impacts of age, health factors, and cross terms between age and each health variable on portfolio shares of all six asset classes. The coefficient estimate on age in the model of share of Risky Financial Assets is -0.198. When all health dummies are equal to zero, people who become one year older decrease their portfolio share in Risky Financial Assets by 0.198 percentage points, *ceteris paribus*.

The coefficients on age in models of the portfolio shares of almost all asset types are statistically significant at the 1% significance level. Nevertheless, age does not have a significant

effect on the share of wealth held in the Principal Residence. This is compatible with the results I present in Table 2 and Figure 2 because the relationship between age and the share of Principal Residence is an inverted U-shape.

The partial effect of Chronic on the share of Cash/Deposits/Bonds is -6.108. On average, people who have chronic diseases such as blood pressure or stroke allocate 6.1% less of their wealth to Cash/Deposits/Bonds than people without disability, *ceteris paribus*. I find that three of health variables have significant effect on the portfolio share of Cash/Deposits/Bonds. In contrast, the shares of both Vehicle and Principal Residence are only statistically significantly affected by one health variable. The effects of Disability on the shares of nearly all assets are significant except for Land/Production Tools. In contrast, whether people feel depressed can significantly affects the share of only one asset which is Land/Production Tools.

There are also several intriguing findings with regard to the partial effects of health variables. If respondents have overall bad health conditions, the share of Vehicles decreases with age, but the shares of Principal Residence and Land/Production Tools increase with age. Whether people have diseases can either positively and negatively affect the portfolio shares of Cash/Deposits/Bonds, Risky Financial Assets, and Durables. For example, the percentage allocation in Cash/Deposits/Bonds is lower when people have disabilities or chronic diseases, but it is higher when people worry about future life.[2]

Table 7 illustrates the average marginal effects of age on portfolio shares. I use the same method to obtain the results in this table because I input average health conditions into partial derivatives, and I take all interaction effects into account. I find that the average marginal effect of age on the shares of Cash/Deposits/Bonds and Durables is positive, and that the average

2 I assume that age is constant when I discuss the signs and magnitudes of the partial effects of health variables on portfolio shares.

marginal effect of age on the shares of Risky Financial Assets, Vehicles, and Land/Production Tools are negative. I also find that the magnitude of average age effects on the share of Land/Production Tools is smaller than that for all other asset types.

The signs of the age effects on the values and shares of most asset types I find are compatible with the findings of Coile and Milligan (2006) find. Nevertheless, they find that the impact of age on the wealth of bank accounts and certificate of deposits held by American seniors is positive.

6. Conclusion

In this paper I analyze the impacts of aging and health conditions on the asset holding of Chinese seniors. I analyze their allocation of wealth across Cash/Deposits/Bonds, Risky Financial Assets, Vehicles, Durables, Principal Residence, and Land/Production Tools using OLS estimation of two regression models. I find a number of useful results.

In the first part of my analysis, I provide a summary table showing how average asset values and average portfolio shares vary across different age groups. I find that the average asset values of most asset types decrease continuously as the age group increases. One exception is that the average holding value of Principal Residence exhibits an inverted U-Shape when people become older. I also find that the shares of Cash/Deposits/Bonds and Durables vary positively with age. In my further analysis, I control for other determinants, such as the number of children, marital status, and gender, that affect the wealth allocation of Chinese seniors. I also discuss the effects of several health factors on asset holdings.

In the second part of my analysis, I find that the coefficients on age on all asset types are statistically significant at the 1% significance level. Then, I compute average partial effect of age

taking interaction effects with health variables into account. I find that the average aging effect on the values of all asset classes held by Chinese seniors are negative. The value of Land/Production Tools is the most sensitive to aging among all asset types. The values of Cash/Deposits/Bonds, Vehicles, and Principal Residence are the least sensitive to aging. I also find that the values of Cash/Deposits/Bonds and Durables are negatively affected by all health variables, but that of Risky Financial Assets does not significantly depend on health conditions. Overall, if the interviewees have health problems, the value of total investable wealth decreases.

In the last part of my analysis, I analyze the effect of age and health on shares of different assets in the individual's portfolio. I find that the coefficients on age have a statistically significant effect on portfolio shares of all asset types except Principal Residence. When people become older, the shares of Cash/Deposits/Bonds and Durables rise, and the shares of Risky Financial Assets, Vehicles, and Land/Production Tools decline. I also find that Disability is the most significant predictor of changes in portfolio shares because it has a statistically significant effect on the shares of nearly all asset types. In contrast, the impact of whether people feel depressed is weak because it only statistically significantly affects the share of only one asset, and the magnitude of this effect is very small.

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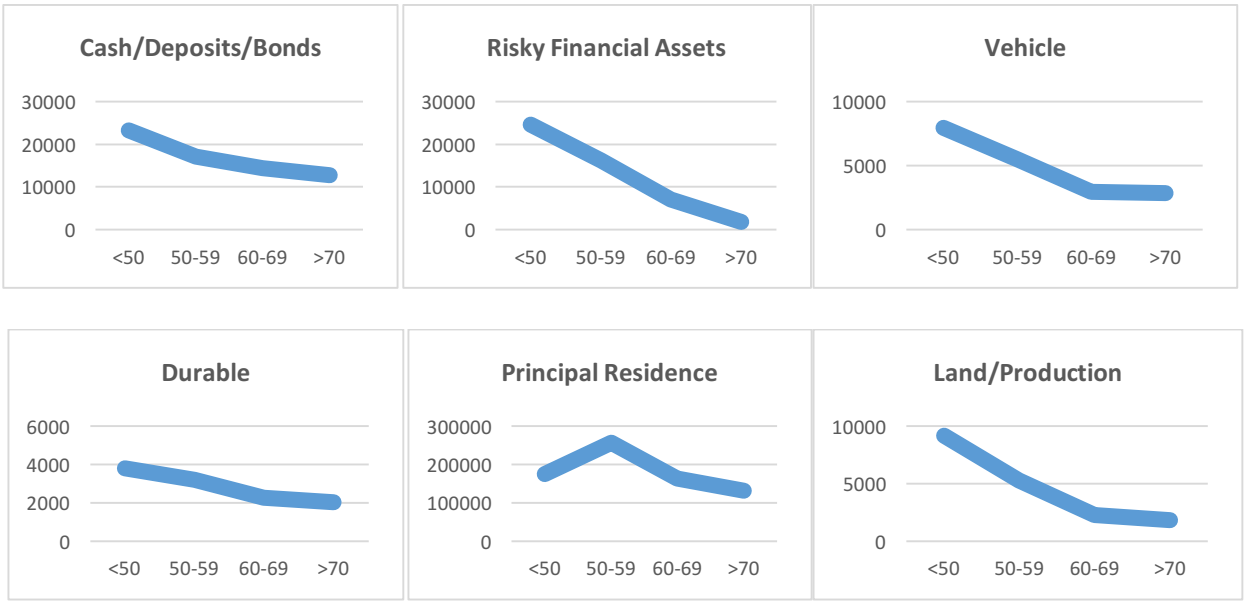
Appendices

Table 1: Average asset values (in yuan) held by Chinese seniors by age group

	<50	50-59	60-69	>70
Cash/Deposits/Bonds	23,299	17,034	14,449	12,692
Risky Financial Assets	24,584	16,167	7,017	1,800
Vehicles	7,965	5,496	2,954	2,857
Durable	3,811	3,204	2,279	2,046
Principal Residence	174,939	256,534	162,793	131,887
Land/Production Tools	9,206	5,282	2,278	1,833
N	3,938	6,492	6,031	3,347

This table illustrates how the average holding value of each asset type differs in different age groups. The column corresponds to different age groups and the row corresponds to different asset classes. The numbers come from the calculations using CHARLS.

Figure 1: Variations of average asset values (in yuan) across different age groups



This figure is the graphic representation of Table 1. The blue line directly shows the variation of the holding value of each asset across different age range. The x-axis labels age groups and the y-axis labels yuan value of the corresponding asset type.

Table 2: Average portfolio shares (in percent) held by Chinese seniors by age group

	<50	50-59	60-69	>70
%Cash/Deposits/Bonds	18.0	16.3	19.9	26.0
%Risky Financial Assets	7.5	5.7	3.3	1.5
%Vehicles	7.1	5.5	4.4	3.6
%Durable	7.3	8.4	10.3	13.6
%Principal Residence	55.0	59.2	57.4	51.7
%Land/Production Tools	5.0	4.8	4.7	3.6
N	3,938	6,492	6,031	3,347

This table illustrates how the average portfolio share of each asset type differs in different age groups. The column corresponds to different age groups and the row corresponds to different asset classes. The numbers come from the calculations using CHARLS.

Figure 2: Variations of average portfolio shares (in percent) across different age groups

This figure is the graphic representation of Table 2. The black line directly shows the variation of the portfolio share of each asset across different age range. The x-axis labels age groups and the y-axis labels percentage allocation of the corresponding asset type.

Table 3: Impact of age and health factors on asset holding values

Independent Variables	**Dependent Variables**					
	CDB	RFA	Vehicle	Durable	Residence	LP
age	-0.027***	-0.028***	-0.037***	-0.036***	-0.023***	-0.042***
	(0.003)	(0.007)	(0.003)	(0.002)	(0.002)	(0.004)
Disabili (yes = 1)	-0.878***	-0.371	-1.896***	-0.758***	-0.083	-0.094
	(0.206)	(0.499)	(0.245)	(0.143)	(0.174)	(0.270)
Chronic (yes = 1)	-0.638***	0.199	-0.628***	-0.380***	-0.822***	0.722***
	(0.193)	(0.439)	(0.227)	(0.134)	(0.163)	(0.259)
Fear (yes = 1)	-0.795***	-0.109	-0.295	-0.414***	-0.104	-0.122
	(0.185)	(0.428)	(0.217)	(0.130)	(0.159)	(0.248)
Depress (yes = 1)	-0.579***	-0.257	-0.606***	-0.256**	-0.323**	-0.581**
	(0.184)	(0.421)	(0.215)	(0.129)	(0.158)	(0.247)
age*Disabili	0.008**	-0.001	0.029***	0.009***	-0.003	-0.001
	(0.003)	(0.009)	(0.004)	(0.002)	(0.003)	(0.004)
age*Chronic	0.010***	-0.002	0.010***	0.006**	0.013***	-0.010**
	(0.003)	(0.008)	(0.004)	(0.002)	(0.003)	(0.004)
age*Fear	0.010***	-0.003	0.003	0.005**	-0.001	0.001
	(0.003)	(0.008)	(0.004)	(0.002)	(0.003)	(0.004)
age*Depress	0.005	0.002	0.009**	0.001	0.003	0.010**
	(0.003)	(0.008)	(0.004)	(0.002)	(0.003)	(0.004)
Constant	8.930***	10.432***	9.846***	9.590***	12.603***	9.597***
	(0.170)	(0.374)	(0.189)	(0.116)	(0.142)	(0.224)
Observations	18,204	3,363	11,778	18,604	15,118	9,636

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

This table provides the estimation output for the model "$\log(\text{Value}_i) = \beta_1 + \beta_2 \text{age}_i + \sum_{j=1}^{5} \delta_j X_{ij} + \sum_{k=1}^{4} \theta_k H_{ik} + \sum_{k=1}^{4} \alpha_k (\text{age}_i \times H_{ik}) + \varepsilon_i$." It illustrates the estimated impacts of age and health condition on the logarithm of the holding value of each particular asset type, controlling for external determinants. Each column corresponds to a different dependent variable (logarithm of value of a particular asset class), and each row corresponds to a right-hand-side key variable including age, health indicators, and the interaction terms between age and each health indicator. CDB denotes Cash/Deposits/Bonds. RFA denotes Risky Financial Assets. LP denotes Land/Production Tools. One, two, and three asterisks mean that the coefficient estimate is statistically significant at 10%, 5%, and 1% significant level respectively.

Table 4: Average health condition of all respondents

Disability	**Chronic Disease**	**Fearful**	**Depression**
0.30	0.36	0.46	0.48

Table 5: Estimated average partial impacts of age on asset holding values

(statistically significant age effects only)

Independent Variable	**Dependent Variables**					
	CDB	RFA	Vehicle	Durable	Residence	LP
age	-0.01	-0.03	-0.02	-0.03	-0.02	-0.04

This table illustrates the significant average partial effects of age on the logarithm of the holding value of all asset classes after I take interaction effects into account. I obtain the average partial effect of age through this formula $\frac{\partial \log(\text{Value})}{\partial \text{age}} = \hat{\beta}_2 + \sum_{k=1}^{4} \hat{\alpha}_k \bar{H}_k$. $\hat{\beta}_2$ denotes the coefficient estimates on age. $\hat{\alpha}_k$ denotes the coefficient estimates on k different health variables. $\bar{H}_k$ denotes the average of k different health variables. I show the results for $\hat{\beta}_2$ and $\hat{\alpha}_k$ in Table 3 and $\bar{H}_k$ in Table 4.

Table 6: Impact of age and health factors on asset portfolio shares

Independent Variables	**Dependent Variables**					
	%CDB	%RFA	%Vehicle	%Durable	%Residence	%LP
age	0.244***	-0.198***	-0.135***	0.163***	-0.018	-0.056***
	(0.037)	(0.020)	(0.017)	(0.025)	(0.052)	(0.017)
Disabili (yes = 1)	-6.108**	-3.179**	-3.298***	-5.296***	16.539***	1.343
	(2.684)	(1.445)	(1.268)	(1.846)	(3.789)	(1.219)
Chronic (yes = 1)	-6.704***	3.146**	-1.947	-1.849	4.003	3.352***
	(2.536)	(1.365)	(1.197)	(1.744)	(3.580)	(1.152)
Fear (yes = 1)	-5.099**	-1.063	-0.054	3.921**	1.150	1.145
	(2.466)	(1.328)	(1.165)	(1.696)	(3.481)	(1.120)
Depress (yes = 1)	0.315	2.147	-0.588	2.384	-2.293	-1.966*
	(2.444)	(1.316)	(1.154)	(1.681)	(3.451)	(1.110)
age*Disabili	0.079*	0.038	0.047**	0.110***	-0.260***	-0.014
	(0.043)	(0.023)	(0.020)	(0.030)	(0.061)	(0.020)
age*Chronic	0.099**	-0.044**	0.031	0.032	-0.066	-0.051***
	(0.041)	(0.022)	(0.019)	(0.028)	(0.058)	(0.019)
age*Fear	0.115***	0.011	-0.002	-0.068**	-0.037	-0.020
	(0.041)	(0.022)	(0.019)	(0.028)	(0.058)	(0.019)
age*Depress	-0.004	-0.017	0.005	-0.045	0.025	0.036**
	(0.041)	(0.022)	(0.019)	(0.028)	(0.057)	(0.018)
Constant	2.743	13.883***	13.145***	0.699	61.627***	7.904***
	(2.198)	(1.184)	(1.038)	(1.512)	(3.104)	(0.999)
Observations	19,644	19,644	19,644	19,644	19,644	19,644
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1						

This table provides the estimation output for the model "$\text{AssetShare}_i = \beta_1 + \beta_2 \text{age}_i + \sum_{j=1}^{5} \delta_j X_{ij} + \sum_{k=1}^{4} \theta_k H_{ik} + \sum_{k=1}^{4} \alpha_k (\text{age}_i \times H_{ik}) + \varepsilon_i$." It illustrates the estimated impacts of age and health condition on the portfolio share of each particular asset type, controlling for external determinants. Each column corresponds to a different dependent variable (portfolio share of a particular asset class), and each row corresponds to a right-hand-side key variable including age, health indicators, and the interaction terms between age and each health indicator. CDB denotes Cash/Deposits/Bonds. RFA denotes Risky Financial Assets. LP denotes Land/Production Tools. One, two, and three asterisks mean that the coefficient estimate is statistically significant at 10%, 5%, and 1% significant level respectively.

Table 7: Estimated average partial impacts of age on asset portfolio shares

(statistically significant age effects only)

Independent Variables	**Dependent Variables**					
	%CDB	%RFA	%Vehicle	%Durable	%Residence	%LP
age	0.35	-0.21	-0.11	0.16		-0.07

This table illustrates the significant average partial effects of age on the portfolio shares of all asset classes after I take interaction effects into account. I obtain the average partial effect of age through this formula $\frac{\partial \text{AssetShare}}{\partial \text{age}} = \hat{\beta}_2 + \sum_{k=1}^{4} \hat{\alpha}_k \overline{H}_k$. $\hat{\beta}_2$ denotes the coefficient estimates on age. $\hat{\alpha}_k$ denotes the coefficient estimates on k different health variables. $\overline{H}_k$ denotes the average of k different health variables. I show the results for $\hat{\beta}_2$ and $\hat{\alpha}_k$ in Table 6 and $\overline{H}_k$ in Table 4.

Table 8: Definitions of dummy variables

Control Variables	**Definition**	**Value**
Urban	Whether interviewees live in urban area?	Yes = 1; No = 0
Martial	What is the martial status of these interviewees?	Married = 1; Divorced/Never Married/Widowed = 0
Gender	What's the gender of the interviewees?	Male = 1; Female = 0
WorkStatus	Are these interviewees currently employed?	Retired = 1; Not Retired = 0
Disability	Do these interviews have disabilities such as deformity or	Yes = 1; No = 0
Fear	Do these interviewees worry about their future life?	Yes = 1; No = 0
Depression	Do these interviewees feel lonely or sad?	Yes = 1; No = 0
Chronic	Do these interviewees have chronic diseases such as heart disease or cancer?	Yes = 1; No = 0