A DEMOGRAPHIC AND PSYCHOMETRICAL STUDY OF HOUSEHOLD FINANCIAL INVESTMENT BEHAVIORS IN CHINA'S BEIJING URBAN AREA

Weiping Liu[1]

Eastern Connecticut State University, USA

E-mail: liuw@easternct.edu

Chen Chong[2]

Communication University of China, China

E-mail Address: sharkcc01@gmail.com

ABSTRACT

This paper studies financial behaviors of households in China's Beijing urban area. Demographic and psychometrical data were collected through questionnaire surveys and analyzed by logistic regression and Tobit regression methods. Several important factors which affect the willingness of the investigated households to participate in investment activities and their portfolio allocation decisions were examined and discussed.

Keywords: household finance, financial behavior, risk investment, logistic regression, Tobit regression, portfolio allocation.

I. INTRODUCTION

China's saving ratio has been very high in comparison to other nations. In the year 1981, the savings rate was approximately 20 percent of its GDP. However, before 1990 China's equity markets were not available, Chinese investors had to save their money conservatively (mostly in their bank accounts).

In the last two decades, Chinese economy experienced rapid and stable expansion and China's GDP grew exponentially. The livelihood of many Chinese

---

[1] Dr. Weiping Liu, Department of Business Administration, Eastern Connecticut State University 83 Windham Rd, Willimantic, CT 06226, Tel (860)465 4608, Fax (860)465 4468

[2] Chen Chong, School of Science Communication University of China, Beijing 100024, China.

households, particularly in the urban areas, jumped from the subsistence level to "*xiaokang*"[3] (comparatively comfortable) level and then to affluent level. In Beijing, the capital city of China, the per capita income of the residents reached US$10,000 in 2009. The disposable incomes of the Chinese households, especially in the urban areas, spectacularly increased. People have more money to save, and China's saving rate in the recent years remains as high as 40 percent.

Cheng and Yao (2008) report that even though Chinese household investors still maintain their assets mainly in their bank accounts, the percentage of their bank savings in their total financial portfolios is decreasing. This shows that many Chinese households are not satisfied with low return from their savings in the bank accounts and started to participate in investments of more aggressive financial products, such as stocks and mutual funds. A recent survey by the Chinese central bank indicates that investment has replaced savings as the first choice of Chinese urban household investors[4].

However, comparing with advanced countries, China's equity markets are still small in scale and financial products offered in the markets are limited in quantity and variety. History of financial markets shows that over a long-term period, equities usually outperform by a big margin over safe investments, such as bonds and money market fund. For the purpose of designing more equity market products to meet the needs of the growing demand of different types of household investors in China, both financial researchers and practitioners have a resurgence of interests in finding out the financial behaviors of the household investors.

The determinants of financial behaviors of the Chinese urban households fall into two major categories: those on the participation decisions, that is, the decision to participate in financial investment activities; and those on the portfolio allocation decisions, i.e., the proportion of the household portfolio held in risky assets[5]. This paper intends to study these determinants by analyzing the demographic and psychometrical data of residents in the urban area of Beijing so as to study different investment behaviors of various socio-demographic population groups, such as household wealth level, housing ownership, education, income, age, marital status, etc.

The reason why Beijing urban area is selected for investigation is because the living standard of residents in Beijing has reached affluent level before most other areas in China. Many people in Beijing have started in equity investment. The study of investment behavior of Beijing's households might provide more insights of the future investment behaviors in China's other areas. Another reason is that Beijing is the capital city of China and the components of residents in Beijing are more representative. The results of the study might be also applicable to other areas of China.

The rest of the paper is organized in the following way: The second section is

---

[3] *Xiaokang* (literary means comparatively comfortable) is a word used by the Chinese to describe the goal of a living standard they aimed to reach in 1990s. The rough definition of *xiaokang* is that per capita income reaches US$1000.
[4] . Xinhua News Agency December 27, 2010.
[5] . In this study, we take savings in the bank accounts as risk-free investment while investment in equity market as risky.

a literature review of previous studies both in China and other countries on household investment behaviors. The third section describes the data used in this study. The fourth section discusses the research methodology while the fifth section reports the empirical results of this study. The sixth section is a discussion of some important problems about China's household investment behavior.

II.   LITERATURE REVIEW

The study of household investment behavior, i.e. how households use financial instruments to attain their objective is known as household finance. This topic has attracted a lot of research attention recently. Researchers have been studying household finance from different vantage points. Even though previous researches often provided conflicting results, certain demographics and psychological factors are found to be key indicators that are influential when household investors make their investment decisions. They also found a wide variation in investment behavior in different countries. A vast literature has been developed on the relationships between household investment decisions and other factors. McCarthy (2004) presents a good survey of household finance studies.

The first and most important demographic factor is undoubtedly household wealth. Wealthier households are more willingly to participate in equity investment and hold a much higher proportion of their portfolios in risky investment (Carroll, 2002). Bertaut and Starr-McCluer (2002) report that the proportion of households with equity investment increases from 4.4 percent in the bottom quartile to 86.7 percent in the top quartile and over 93 percent in the top 5 percent of the financial wealth distribution. However, Hallahan et al. (2004) argue that wealthy people may be more conservative with their money and people with low levels of personal wealth may be more willing to bear risks just like troubled firms prefer and seek risk.

A related factor which exerts important impacts on household investment behavior is household income. It is generally thought that high income households will be more likely to participate in risky investments and hold a large fraction of their assets in risky investments. However, Miller (2008) reports that the correlation between the likelihood of investing in equities and household income is surprisingly weak. He suggests that wage earners at lower income levels will receive a relatively higher share of their retirement income from Social Security and thus are willing to take on more risk.

As for the gender effect, Bertaut and Starr-McCluer (2002) suggest that female headed households have a higher probability of owning risky financial assets. However, many other researchers (e.g., Sung and Hanna, 1996, Bajtelsmit and Bernasek, 1996) find that women are more conservative in investment than their male counterparts.

It is controversial as to the impact of age for the household investors to participate in public equity markets. Campbell (2006) reports a weak negative age

effect on participation in public equity markets for US households while others reported strong age effects on equity market participation (e.g. Banks and Tanner, 2002, for UK, Guiso and Jappell, 2002, for Italy and Iwaisak, 2003, for Japan). Cocco (2005) also finds that age and house ownership could have joint effects. Younger household borrow money and invest almost everything in housing. As they age, they pay off their mortgages and begin to invest in the equity market.

Households whose members have more years of education tend to have a higher probability of holding risky assets. Bertaut and Starr-McCluer (2002) find that in the United States the probability of owning risky assets is higher for households headed by college graduates than those without high school diplomas. However, some Chinese researchers (e.g. Shi and Song, 2005) have different findings that in China households with higher education tend to have less financial investment. They believe this is because households with higher education tend to have more stable income and are more likely to invest in housing and hence less in financial products.

Miller (2008) documents that married couples tend to invest more in equities, perhaps because the security of two potential wage earners allows for more risk taking with investments. Household investment behavior might also be affected by joint impacts of age and marital status in that a greater proportion of couples than singles holds stocks both before and after retirement. Yao and Hanna (2005) study the joint effects of gender and marital status on investment behavior and find that single males have the highest risk tolerance while married women have the lowest risk tolerance.

Gentry and Hubbard (2004) report that private business owners hold as much as 40% of total net worth even though they comprise less than 10% of the population. Heaton and Lucas (2000) emphasize that private business assets substitute for public equity in the portfolios of some wealthy households.

Another important factor which plays a crucial role is the home ownership. Cocco (2005) examines the asset allocation decision of US households in the presence of housing and finds that typically young households tend to buy houses first and invest in risky financial assets later. Therefore, the presence of housing reduces the equity market participation of households. In China's urban areas, residential houses used to be part of the benefit package and were provided to employees free or with a nominal rent. In the recent years, houses have become commercialized in China. Liu and Zheng (2003) report that houses constituted 47.9 percent of the total assets in the urban areas in China in 2002 and have become an important component of household financial portfolios.

Household investors' attitude towards risk is an important factor which may determine the appropriate composition of assets in a portfolio. Miller (2008) reports that compared with households that report lower tolerance for risk, highest-risk-tolerance households allocate almost 20 percentage points more to equities. Hariharan et al. (2000) find that higher risk tolerance does not affect the composition of an individual's portfolio of risky assets.

Households' expectation of the nation's macroeconomics is another important

driver for the households' investment decision. Lee et al. (2002) reports that excess returns are contemporaneously positively correlated with shifts in sentiment. Baker and Stein (2004) found that there is a linkage between investor sentiment measured by market liquidity and stock returns. Li and Zhang (2008) also found that the shifts of in sentiment of the Chinese investors are negatively correlated with market volatility.

III.   DATA

Data of this study were obtained by questionnaire surveys. The ideal data set for studying household finance should be a representative sample of the entire population. To this goal, efforts have been made to ensure the widest coverage and highest representativeness possible. Our questionnaires were distributed in different locations (such as crossroads, commercial blocks, and workplace entrances, and other populous places) and to various people (self-employing business owners, public servants, doctors, teachers, and finance professionals). Data were collected in October of 2010 and processed in two weeks' time.

A household is defined as we normally understand it: a group of people living together to form a family. Independent unmarried singles are treated as a household and its individual investment decision as household decision. We also assume that the respondents have a basic understanding of the household and know the situation of household investment.

There are two types of questions in the questionnaire. The first type of questions gathers demographic information about the investigated households. The following is an explanation of how these data were collected and used in empirical analyses (Symbols in the brackets represent the notation of variables used in empirical analyses.):

1. Household wealth (F): Subgroups are coded with dummy variables. 1 represents households with net worth less than ¥50,000[6]; 2 represents households with ¥50,000-100,000; 3 represents households with ¥100,000-500,000; 4 represents households with more than ¥1,000,000.
2. Household per capita income(I);
3. Gender of household head(S): S=1 when household head is male;
4. Age of household head (A_i): The subscript i is represented by a dummy variable. When i=1, the age of household head is below 35, young household. When i=2, the age of household head is between 35 and 60, middle-aged household. When i=3, the age of household head is above 60, senior household.
5. Education of household head (E_i): The subscript i is represented by a dummy variable. When i=1, the head of the household had a diploma of high school or below. When i=2, the head of the household had an

---

[6] . The name of Chinese currency is RMB (*Renminbi*) and the denomination is *Yuan*, and the symbol for the currency is ¥.

associate degree. When *i*=3, the head of the household had a college degree or higher.

6. Marital status (M): represented by a binary variable. When M=1, the head of the household is married.
7. Self-employed (SE): represented by a binary variable. When SE=1, the head of the household is self-employed.
8. Housing ownership (RI): 1 represents less than ¥50,000; 2 represents ¥50,000-100,000; 3 represents ¥500,000-1,000,000; 4 represents more than ¥1,000,000.

The second part of the questionnaire collects information about investigated household's psychometrical data. Psychometrics is dealing with the design and analysis of measurements of human psychological characteristics.

1. Investment preference (IP): household investors' self-assessed risk tolerance. 0 represents low risk tolerance. 1 represents high risk tolerance.
2. Investment expectation (IE): household investors' outlook of the medium-term or long-term development of China's national economy. 0 represents pessimistic, 1 represents optimistic.

The above ten data sets are used as independent variables in the empirical analyses. A summary of the descriptive statistics of the sample is presented in Table 1.

Table 1.   Descriptive Statistics of Samples

Basic Characteristics	Class	Observations	Percentage (%)
Gender of household head	Male	172	76.80
	Female	52	23.20
Age of household head	Young (Under 35)	35	15.60
	Middle-aged (35-60)	146	65.20
	Senior (Above 60)	43	19.20
Education of household head	High School diploma or lower	21	9.30
	Associate degree	105	46.90
	College degree or higher	98	43.80
Wealth of household	100K or less	62	27.70
	100-500K	90	40.20
	500K-1M	53	23.70
	1M or more	22	9.80
Ownership of risk investment	Yes	139	62.00
	No	85	38.00

Since the purpose of this study is to study the household behavior of financial investment, we therefore collected the following two sets of data through

questionnaires.

1. Ownership of risky financial assets (PRF): When a household has risk investment, the value "1" is assigned to the household; otherwise "0" is assigned;

2. Risky financial assets/Total wealth (RF): the total amount of stock holdings of the household divided by the total wealth of the household.

The above two data sets are used as dependent variables in empirical analyses.

Questionnaires with unreliable and irrelevant information are discarded. First, those with more than two unanswered questions or with any unanswered item in the second group are treated as invalid and discarded. Second, the missing items in the valid sheets are supplied with mode answers[7]. Out of the 500 distributed forms, 292 are collected, or a 58.4% collection rate, with 224 valid ones, or a 76.7% validity rate.

Reliability coefficient Cronbach α is often employed to measure the internal consistency of survey results, especially for those pertaining to attitude, viewpoints. It was first named by Cronbach (1951) and can be defined as:

$$\alpha = \frac{n}{n-1}\left[1 - \frac{\sum S_t^2}{S_h^2}\right]$$

(1)

Where n is the number of components, S_h^2 is the variance of the observed total test scores, and S_t^2 is the variance of component for the current sample. Normally, when the results of the survey have Cronbach α higher than 0.6, the results can be taken as reliable and, when higher than 0.8, very reliable. The Cronbach α of the data collected in this study is 0.736. Therefore, the results of the survey are reliable and can be used as instrument for further investigation.

IV.   RESEARCH METHODOLOGY

1.   Logistic Regression Analysis

We first empirically analyze the determinants that are important for the investigated households to make their decisions of participating in risk investment activities. Therefore, whether a household has risk investment asset is used as the dependent variable. Because the dependent variable is binary, logistic regression analysis is employed here. Logistic regression analysis, like linear regression analysis, is used to describe the nature of the relationship between a dependent variable and one (or more) independent variable(s).

The logistic response functions are of the form:

$$E\{Y\} = \frac{\exp(\alpha+\boldsymbol{\beta'X})}{1+\exp(\alpha+\boldsymbol{\beta'X})}$$

(2)

---

[7] . Mode is the value that occurs most frequently in a data set.

where $E\{Y\}$ is the mean response, i.e., the probability when the dependent variable

is one; α is the intercept, $\boldsymbol{\beta}$ is the vector of regression parameters: and $\mathbf{X}$ is a

realization of the vector of predictor variables. At the empirical level, the parameters of the logistic response function need to be estimated first for both description and prediction purpose.

The shape of the response function is frequently sigmoid but it can easily be linearized. If we denote E{Y} by π and let π'=log$_e$[π/(1-π)], then π'=**b'x** is easily obtained. This transformation is called the logistic transformations of the probability π.

After the transformation, our logistic regression model can be rewritten as follows:

$$Logit(P) = \beta_0 + \beta_1 F + \beta_2 I + \beta_3 S + \sum_{i=1}^{3} \beta_{4i} A_i + \sum_{i=1}^{3} \beta_{5i} E_i +$$

$$\beta_6 M + \beta_7 SE + \beta_8 RI + \beta_9 IP + \beta_{10} IE + \boldsymbol{\varepsilon} \qquad (3)$$

where independent variables were explained in the previous section.

In this study, not only the dependent variable is binary, the independent variables are also categorical. In regression analysis, if a dummy independent variable is 0, its coefficient will disappear from the equation, while a dummy independent variable has the value of 1 or other numbers, it causes the coefficient to function as a supplemental in intercept.

In logistic regression, the use of categorical independent variables usually yields a small number of groups that are more statistically significant than continuous or discreet numbers and makes the coefficients more stable and its significance increased.

2. Tobit Regression Model

Next we examine the factors which will affect household investors' portfolio allocation decisions. The dependent variable now is the percentage of a household's risk investment in its total investment. The households in the sample can be classified into two groups: those with risk investment assets and those without risk investment assets. The first group has both non-zero independent variables and non-zero dependent variables while the second group has non-zero independent variables and zero dependent variable. We can express the linear relationship between variables as:

$$Y_i^{'} = \beta x_i + e_i \quad Y_i = Y_i^{'}, \quad Y_i = \begin{cases} Y_i^{'}, & Y_i^{'} > 0 \\ 0, & Y_i^{'} = 0 \end{cases} \qquad (4)$$

In this case, if the ordinary least squares linear regression is used for the entire sample, the resulting estimators will be downward biased and therefore become inconsistent. To address this problem, we use censored regression model or the Tobit model. In Tobit analysis, cases when dependent variable is zero will be censored.

The censored observations are significantly different from the uncensored observations. Even if the independent variables change drastically, the dependent variable is still zero, with no changes whatsoever. The Tobit model of risk investment asset percentage can be expressed as follows:

$$RF = \begin{cases} \beta_0 + \beta_1 F + \beta_2 I + \beta_3 S + \sum \beta_{4i} A_i + \sum \beta_{5i} E_i + \beta_6 M + \beta_7 SE + \beta_8 RI + \beta_9 IP + \beta_{10} IE, & RHS > 0 \\ 0, & RHS = 0 \end{cases}$$

(5)

where RHS is the right hand side.

We employ the least square estimation method to estimate the coefficients of the model. One important thing we need to know is that the β coefficient obtained in Tobit analysis should not be interpreted as the effect of independent variable on dependent variable. Instead, it should be interpreted as the combination of (1) the change in dependent variable of those above the limit, weighted by the probability of being above the limit; and (2) the change in the probability of being above the limit, weighted by the expected value of dependent variable (McDonald and Moffitt, 1980).

V.   EMPIRICAL ESTIMATION AND RESULTS

The results of logistic analysis and Tobit analysis are reported in Table 2 and Table 3 respectively.

Table 2. Output of Logistic Regression Model

	β	Sig
F	8.081	0.021
I	-0.048	0.271
S	5.263	0.026
Young	21.41	0.033
Middle-Aged	25.031	0.045
High School degree	-13.47	0.047
Associate degree	3.337	0.043
Marital Status	-1.56	0.416
SE	-15.391	0.025
RI	-15.85	0.033
IE	1.682	0.124
IP	11.248	0.038

Table 3. Output of Tobit Regression Model

	β	Sig
F	0.05	0.001
I	0.068	0.035
S	0.023	0.045
Young	-0.019	0.234
Senior	0.018	0.286
High School Degree	0.007	0.104
Associate Degree	0.038	0.017
College Degree	0.043	0.021
SE	-0.003	0.118
RI	-0.032	0.007
IE	0.035	0.007
IP	0.015	0.054

From these two tables, we can see that:

β_1 is positive and highly significant in both logistic and Tobit analyses. This shows that the household wealth is an important determinant for a household to participate in risk financial activities and in making portfolio allocation decisions. The wealthier households are more likely to participate in risky financial investment and have a higher percentage of equity in their total financial asset portfolios. This finding is consistent with conclusions of many previous household finance researches that participation in the equity market and in risky assets is strongly correlated with wealth (e.g. Heaton and Lucas, 2001).

The logistic analysis shows that the coefficient for household per capita income β_2 is insignificant. Probably this is because financial assets of a household are accumulated for several years. The annual household per capita income plays a minor role in deciding whether a household owns risk financial asset. However, the Tobit analysis shows that β_2 is positive and highly significant. These findings are inconsistent with Miller (2008). This shows that household investors in Beijing urban area have a different investment behavior in that families with greater wage income invest a greater percentage of their total asset in financial products, probably because, in the long run, wage income will affect the size of family wealth and, in turn, the household total asset structure.

It can be seen that among the investigated households, males are more active in making financial investment decisions than females. When head of the household is male, the household is more likely to invest in risk assets and a higher percentage of the total assets will be in risky investment. In China male household heads are

much more common than female ones. Traditionally, in Chinese families, males are not only the main income earners but also are main financial decision makers. Male household heads are more positive in deciding whether to invest financial products. Besides, male household heads are more likely to take more risks in investment activities.

From the logistic regression analysis, we can see that the age effect in the Beijing urban area looks hump-shaped. Middle-aged households are the most likely to invest in equity markets. This finding is rational in that middle-aged households are more established than young households. Usually they have more stable jobs and income and hence are more capable to deal with financial uncertainties. In comparison, young households are mostly newly found and are early in their career. They have higher pressure in work and have more responsibilities to take care of their families. Hence they do not have enough energy and resources to participate in financial investment. On the other hand, senior households are not very active in participation in equity investment. From the Tobit analysis, we can see that beta coefficients of age are not significant. This shows that age is not an important factor when household investors allocate their assets between risky investment and other safer assets.

Both logistic analysis and Tobit analysis indicate that level of education of household heads in the Beijing urban area is an important determinant of financial investment behaviors. Better educated households are more likely to participate in risky investment and have a large percentage of their assets in risky investment. This finding is consistent with previous researches in more advanced countries and not with the findings of some Chinese researchers when they use data from other regions. This might indicate that the financial investment behaviors of the household investors in Beijing urban area are similar to those in more advanced countries. This is probably because risk financial investment requires more sophisticated knowledge and skills and better educated investors are more likely to understand and learn these knowledge and skills and hence have more advantageous position than those with lower education. Also, the better educated are generally better paid, and tend to have more financial resources and have higher risk bearing capacity.

The marital status is not a significant factor in either investment decision or portfolio allocation decision. This is probably because in the urban areas of China both men and wives are working.

β_7 is negative and highly significant in logistic analysis. This indicates that self-employed households are less likely to participate in risk financial activities. However, in Tobit analysis, β_7 is not significant. This shows that self-employed households also have the need to invest in financial products beside their own business but is limited in liquidity, which results in their relatively low percentage of investment.

β_8 is negative and highly significant. This shows that the more a household invests in housing, the less likely it is to take part in risk financial activities. When a household invest more money in housing, the proportion of their equity investment in their total portfolio will be smaller. The housing price in Beijing urban area has

been skyrocketing in the last several years. Many households in this area rushed to buy their residential houses by depleting their savings and borrowing from the banks. It is estimated that more than 50% of household total assets was spent on housing for most families. Real estate investment severely reduces the ability of households to take part in risk financial activities.

Both logistic and Tobit analyses show that household investors with high risk tolerance are more likely to participate in investment activities and allocate more assets in equity. This behavior can be explained both by the Capital Asset Pricing Model and the tradition of Chinese household investors who are very conservative and prefer to deposit their money in banks or in real estate market. This also shows that Chinese household investors are highly risk averse.

Intuitively household investors with optimistic expectation of the equity market would have larger percentage equity in their total investment portfolio. Evidence found in the Tobit analysis supports this belief. However, logistic analysis shows that investment expectation is not significant on the participation of equity market for household investors. This shows that even though China's equity market environment has been significantly improved, some of the problems, such as the government macro-economic policies interference, the global financial crisis and rapid increase of inflation rate, greatly reduced the confidence of household investors in the Beijing urban area.

VI.   DISCUSSION

Through this study we can gain some knowledge about key factors that influence household investment behaviors. We followed the Chinese ancient adage which says, "Recognize the whole through observation of the part". Even though we studied these behaviors microscopically, we can obtain some important macroeconomic insights. We believe that the following questions are very important and deserve our special attention.

The first one is the rapid aging of China's population. It is predicted that 11 per cent of the Chinese population will be over the age of 65 by 2020. This demographic shift to an older society will be a major challenge to the Chinese society and economy. As a result of the one child policy pursued by the Chinese authorities in the last several decades, the proportion of elderly people and the ratio between elderly parents and adult children increased rapidly. Senior households are supposed to be an important component of investment population, as the behavior of senior household investors we can observe in more advanced countries. However, the empirical test results of this study show that the senior households in China's Beijing urban area are generally not very active in investment. Consequently, to create more and sufficient financial products that appeal to the senior household investors should be an important and eminent task of China's equity markets.

The second important macroeconomic problem facing the household investors in China is the imbalance between the real estate market and the equity market. On the one hand, China's stock markets have not been attractive to long-term household

investors because of its low yield. On the other hand, fuelled by speculative fund from both domestic and foreign investors, the housing prices skyrocketed in the last several years and in many metropolitan cities, particularly Beijing and Shanghai, housing prices could be comparable with or even higher than that in many high income countries. As Zhang and Fung (2005) point out, China's real estate market and equity markets are systematically negatively related. Now the Chinese authorities have taken strict measures to control the housing prices. Therefore, another eminent task for the equity markets in China is to create a deeper market to absorb the fund flow when the housing market is cooled down.

The third problem is the high inflation in China. In the last several years, high inflation rate has been pestering many Chinese households. In November 2010, CPI in China reached its 28-month high of 5.1%. To contain the high inflation rate, China's central bank raised interest rates twice, and increased the reserve ratio for lenders four times in December 2010 and January 2011. Despite all these efforts, many Chinese economists are still pessimistic and predicting that China's high inflation rate could continue until the second or third quarter of 2011[8]. As our study indicates, Chinese household investors are very risk averse. High inflation and possible government interference in the financial markets will increase the bearish sentiments or even cause panic. Therefore, sound financial policies are needed to maintain the stability of the Chinese financial markets and confidence of household investors.

To sum up, from the above discussion, we can see that the study of the behavior of household investors in China is important not only because it can provide guides to the household investors but also because it could supply important information to financial policy makers in China.

REFERNCES

Bajtelsmit, V. and A. Bernasek, (1996). Why do women invest differently than men? *Association for Financial Counseling and Planning Education.* 7, 1-10.

Baker, M. and J. Stein, (2004). Market liquidity as a sentiment indicator, *Journal of Financial Markets,* 7, 271-299.

Banks, J. and S. Tanner, (2002). Household portfolio in the United Kingdom, in L Guiso, M. Haliasso, and T. Jappelli, eds: Household Portfolios (MIT Press, Cambridge, MA).

Bertaut, C. and M. Starr-McCluer, (2002). Household portfolios in the United States, in L Guiso, M. Haliasso, and T. Jappelli, eds: Household Portfolios (MIT Press, Cambridge, MA).

Campbell, J., (2006). Household Finance. *Journal of Finance*, 61(4), 1553-1604.

Carroll, C. (2002). Portfolios of the risk, in Luigi Guiso, Michael Haliassos, and Tullio Jappelli, eds.: Household Portfolios (MIT Press, Cambridge, MA).

Cheng, G. and J. Yao, (2008). A study of China's household financial assets portfolio,

---

[8] . People's Daily Online (January 9, 2011)

Finance in Western China, 8, 16-30.

Cocco, J. (2005). Portfolio choice in the presence of housing, *Review of Financial Studies*, 18, 535-567.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16(3), 297-334.

Gentry, W. and G. Hubbard, (2004). Entrepreneurship and household saving, *advances in Economic Analysis and Policy 4, Article 8.*

Guiso, L, and T. Jappelli, (2005). Awareness and Stock Market Participation. *Review of Finance*, (3).35-38.

Guiso, L, and T. Jappelli, (2002). Household portfolio in Italy, in L Guiso, M. Haliasso, and T. Jappelli, eds: Household Portfolios (MIT Press, Cambridge, MA).

Hallahan, T., R. Faff and M. McKenzie, (2004). An empirical investigation of personal financial risk tolerance, *Financial Services Review,* 13, 57-78.

Hariharan, G., K. Chapman and D. Domian, (2000). Risk tolerance and asset allocation for investors nearing retirement. *Financial Services Review,* 9, 159-170.

Heaton, J. and D. Lucas, (2000). Portfolio choice and asset prices: The importance of entrepreneurial risk. *Journal of Finance,* 55, 1163-1198.

Iwaisako, T. (2003). Household portfolios in Japan. NBER working paper no. 10784.

Lee, W., C. Jiang and D. Indro, (2002). Stock market volatility, excess returns, and the role of investor sentiment. *Jour of Banking and Finance,* (26), 2277-2299.

Li, X. and B. Zhang, (2008). Stock market behavior and investor sentiment: Evidence from China, *Frontier of Business Research in China, 2(2), 277-282.*

Liu, H, and S. Zheng (2003). Housing Asset: An Important Component in Household Asset Portfolios. *Economic & Management Research*, (4), 38-40.

McCarthy, D. (2004). Household Portfolio Allocation: a Review of the Literature, *Journal of Economic Literature*.

McDonald, J. and R. Moffitt, (1980). The Uses of Tobit Analysis, *The Review of Economics and statistics*, 318-321.

Miller, S. (2008). Education Level and Marital Status influence 401(K) Investing. www.shrm.org/hrdisciplines/benefits/Articles/Pages/EducationMaritalStatusInvesting.aspx

Shi, D. and Y. Song, (2005). An empirical study of ownership of financial assets by household investors, Statistical Research, 10, 43-49.

Sung, J. and S. Hanna, (1996). Factors Related To Risk Tolerance. *Association for Financial Counseling and Planning Education,* 11-18.

Yao, R., and Sherman D. Hanna. (2005). The effect of gender and marital status on financial risk tolerance. *Journal of Personal Finance* 4 (1):66-85.

Zhang, G. and H. Fung, (2006). On the Imbalance between the Real Estate Market and the Stock Markets in China. *Chinese Economy*, 39(2), 26-39.