

Analysis on Saving Behaviors in Urban China: Empirical Results Based on Household Survey in Shanghai

TANG Cheng, HOKEN Hisatoshi, XU Wenxing

1. Introduction

Since the economic reforms at the end of 1978, high investment rates and domestic household savings rates have served as the key elements driving economic development in China. In the domestic household sector, savings rates have been characterized by rapid increases that have challenged the maximum in terms of absolute value. As such, savings rates in this sector have become a major contributor to China's economic success.

Despite the importance of saving in the household sector in China, only a limited number of studies have attempted to examine this saving behavior. In this field, Qian's [1988] pioneering work analyzed saving during the 1980's. Prior to that work, Zang [1994] was the first to conduct comprehensive studies on the nature of consumption and saving. Also, Xie [1997] and Zhang [1997] focused on the relationships between institutional transitions and saving behavior. Task Team of the Research Bureau of PBC [1999], Li [1999], Kraay [2000], Tang [2000, 2001] and Zang et al. [2001] studied the causes of high savings rates, and Sun [2002] conducted research on portfolio selections of urban households.

A common characteristic of these empirical analyses is the use of such aggregated macro-data as national or provincial data. Given that diversity within such vast economic units is large, basing studies on aggregated macro-data can cause under-evaluation of economic behavior. It is widely recognized that income discrepancies

among urban households have been rapidly increasing, and so it is clear that micro-data analyses of saving behavior are also required to understand the relationships between household attributes and motives for saving, and the effects of socioeconomic structures on household saving.

Theoretical analyses and econometric estimates are also deficient within existing studies, and so it is necessary to call into question whether the current understanding of household saving behavior in China can be productively included in international comparisons.

We conducted household surveys in Shanghai during August 2002 with the help of a major research company based in that city. The questionnaire survey was designed to collect data on saving and consumption decisions, as well as general attitudes toward saving within individual Shanghai households. A major contribution of this paper is to give a close view of such behavior and attitudes using original household micro data.¹

We not only utilized quantitative data on household saving, but also qualitative data, such as attitudes toward saving, to compare with households in Japan and the US, and thereby clarify the distinctive characteristics of saving in Shanghai. The main purpose of this paper is to examine the saving behavior of Shanghai households in terms of life cycle, precautionary saving, and motivations behind bequests, and investigate the reasons for maintaining high savings rates in Shanghai in relation to their socioeconomic background.

Our estimates suggest that the level of saving is determined by permanent income as well as transitional income, and so we reject the permanent income life cycle model as the sole factor in household saving decisions. This result relates to a precautionary awareness of aged households due to recent reforms in old-age pensions and medical insurance, which induces them to maintain relatively high savings rates after retirement in Shanghai.

The rest of this article is divided in three parts. Section 2 describes the characteristics of the households surveyed in terms of income, consumption and saving by age bracket, and then estimates

¹ Micro data analyses on the saving behavior of rural households have been conducted by Cao [2002] and Wan, Shi and Tang [2003] using the Fixed Point Survey method.

income and savings functions to test their determinants. Section 3 focuses on the purposes of saving and the motivations behind inheritance. In comparison with households in Japan, we clarify the reasons why saving behavior in Shanghai is not consistent with life-cycle models. A summary of the major findings and concluding remarks are presented in Section 4.

2. Structure of Household Savings and Estimation of Savings Functions

2.1. Survey Design and Economic Characteristics of Households in Shanghai

In this section we examine the structure of household saving and differences among age brackets. Shanghai is the largest commercial and industrial city in China with a population of 16 million. The per capita GDP of Shanghai in 2002 reached 46,460 yuan, which is the highest of all provinces in China and five times the national average. According to an urban household survey conducted by NBS, the per capita income of Shanghai households comes to 13,250 yuan, while the national average is 7,702 yuan.

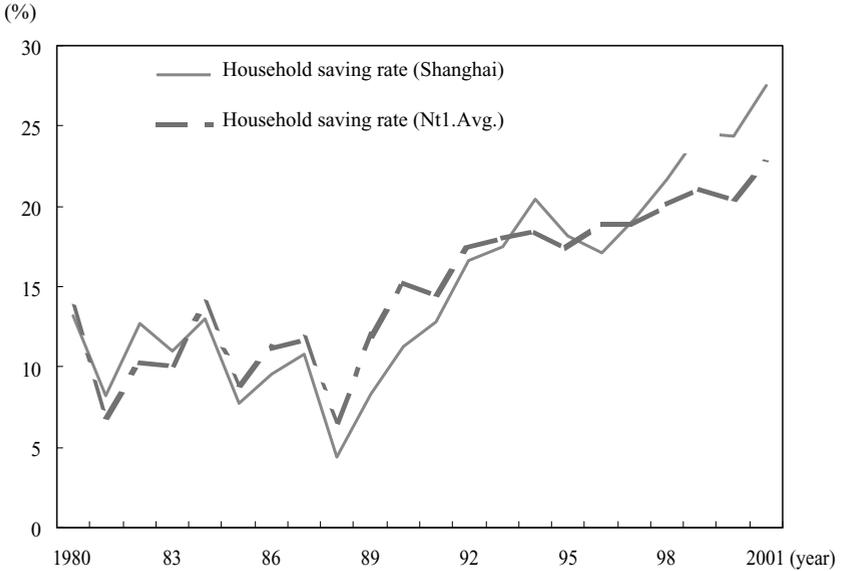
With respect to the flow savings rate, however, the distinctions between Shanghai households and the national average is not so large. Figure 1 shows changes in savings rates of Shanghai households and the national average from 1980 to 2001. This comparison indicates that their savings rate trends were similar up until the mid-1990s. Although the income level of Shanghai was higher than that of the national average, its average savings rate was slightly lower than the national average.

Since the end of the 1990s, the Shanghai savings rate has increased, reaching 27.5% in 2001 and it is still occupies a place at the upper-middle level among all provinces (Tang [2001]). It is notable that the savings rate of urban households is not solely determined by the level of household income; other factors are influencing saving behavior.

2.2. Characteristics of Household Saving

Before examining in detail saving behavior per se, we will describe the design of our survey, which is based on two-stage ran-

Figure 1 Change of Saving Rates of National Urban Average and Shanghai



Source: *National Statistic Yearbook* and *Shanghai Statistic Yearbook* (Various issues).

dom sampling methodology. First, 31 urban committees were randomly selected from 9 districts of central Shanghai. Households were randomly sampled from each urban committee. After the sample was determined, researchers were sent to the selected households to conduct interviews. We excluded the following kinds of household from the sample: (i) households that had been located in Shanghai for less than three years, (ii) households whose heads were under 18 years old, (iii) households whose average monthly incomes fell below 1,000 yuan. In total, 430 households were surveyed.

Table 1 shows the per capita disposable income and savings rates obtained from the NBS survey and from our survey. The per capita disposable income figures obtained from our survey are rather close to those obtained by NBS, while the household savings rates from our survey are on the average about three points higher than those of NBS. This would imply that consumption levels in our sur-

Table 1 Comparisons of Household Survey Data (2001)

	Shanghai Statistics Bureau	Our Survey
Per capita disposable income (yuan)	12,883	12,688
Savings rate	27.5%	30.5%

Source: *Shanghai Statistical Yearbook* (various issues) and Our survey data.

vey may be somewhat underestimated, although the disparity is small, and thus suggesting that the reliability of our survey data is generally high.²

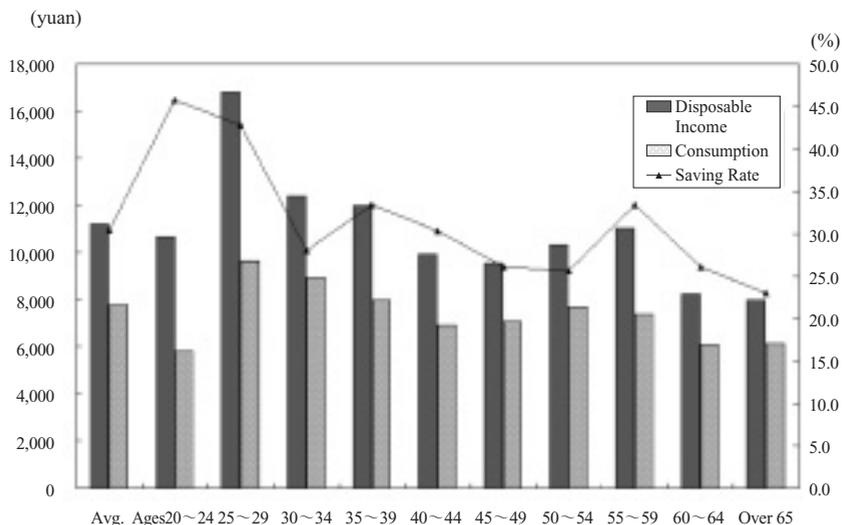
Next, we examined the characteristics of saving behavior of the households in our sample. Figure 2 shows levels of household income, household consumption and savings rates by age group. We found that the level of household income is different among age groups, the highest being earned by the 25-29 age group, followed by the 30-39 age group. The income level of people in their 40s is lower than all groups, except for the over-60 age group. It is evident from these findings that the wage profile of Shanghai households is not consistent with that of the seniority wage system.

Why do younger groups earn higher income than other age groups? This may be related to differences existing in human capital development among age groups. To address this issue, we determined levels of educational achievement by age bracket. Table 2 shows that the proportion of college graduates in the 25-29 age group comes to 35.1%, a figure overwhelmingly higher than that of any other age group. When the percentage of junior college graduates is added, almost 70% of this age group has higher educational experience. In contrast, the proportion of college graduates in their 40's comes to only 3.9%, and higher educational experience amounts to 17.4%, the lowest among all age groups.³ As shown in Table 2, there is a striking correlation between the level of education and per capita income level.

² In conducting the analysis, it is desirable to use not only flow data but also stock data on household savings. For the purpose of reducing the rejection rate, however, we could not include questions on total amount of deposits in our questionnaire. Thus, we have concentrated our study on flow data analysis.

³ People in their 40s are the generation of "the Cultural Revolution." Since the

Figure 2 Income, Consumption and Saving Rate of Shanghai Households by Age Group



Source: Our survey data

Table 2 Composition of Educational Level by Age Group

levels of educational	Under 30	Ages 30~39	Ages 40~49	Ages 50~59	Over 60	Avg. Per capita income (yuan)
Jr.High	3.5%	13.1%	29.0%	43.7%	40.6%	9,128
High School	26.3%	46.4%	53.5%	36.9%	21.9%	10,198
Jr. College	35.1%	25.0%	13.5%	11.7%	12.5%	13,358
College	35.1%	15.5%	3.9%	7.8%	25.0%	17,000
Total	100.0%	100.0%	100.0%	100.0%	100.0%	11,372

Source: Our survey data.

opportunities for them to receive formal education were strictly restricted, the average income level is the lowest of all age brackets, and they are facing severe economic conditions. The relationships between educational level and income stratum are fully examined in Sato [2000].

In addition to differing educational levels, the occupations of household heads in the sample vary according to age group. Table 3 indicates that 35.5% of the under-30 household heads work for foreign companies, employment that is considered the best type. In contrast, 27.5% of household heads in their 40s are employed in state-owned enterprises, and those employed in “other units” (including physical labor in the transportation industry, etc.) accounts for 20.3%, which is the highest proportion among all age groups. The unemployment rate of household heads in their 40s is 16.3%, also higher than any other age group. As shown in Table 3, the average income of those employed by foreign and domestic private companies and of professionals (lawyers, accountants, etc.) falls between 15,000 and 20,000 yuan, while state and other employees comes to only around 10,000 yuan. Thus, differences in type of employment among the age groups largely contributes to household income disparity within the sample.

In contrast to household income, there is little difference in per capita consumption among age groups. Within the 25-29 age group, which enjoys the highest income, the average level of consumption is not strikingly higher than any other age group. Households whose heads are aged 60 and over maintain consumption levels similar to households with 40- and 50-year old heads, meaning that consumption levels do not decline sharply after retirement.

The typical household life-cycle model indicates that when a household head reaches his 30s and early 40s, his children proceed to high school, leading to year-by-year increases in educational expenses. Therefore, these households are required to start saving before that stage in the life-cycle. Since household heads usually start to retire at 55, they are then required to save for their old age prior to retirement. Considering the consumption behavior of Shanghai households in terms of such life-cycle patterns, we observed that household heads control their consumption levels and continue to save from their 20s to first accumulate for education funds for their children, then for their retirement. In fact, as Figure 2 indicates, the savings rate of people in their 20s exceeds 40%, showing a very high awareness for the need to save.

Meanwhile, the over-60 age group maintains a positive savings rate (about 20%), which is a little lower than that of the under-60

Table 3 Composition of Type of Employment Unit and Income Level

	Under 30	Ages 30~39	Ages 40~49	Ages 50~59	Over 60	Avg. Per capita Income (yuan)
State owned Enterprise	17.7%	36.6%	27.5%	26.2%	6.5%	11,848
Three types of joint venture enterprise	35.5%	13.4%	4.6%	3.9%	0.0%	19,968
Private enterprise	16.1%	14.6%	11.8%	4.9%	0.0%	15,281
Other unit	4.8%	13.4%	20.3%	6.8%	0.0%	9,546
retired	0.0%	0.0%	5.9%	46.6%	80.6%	10,359
Unemployed & temp.laid-off	1.6%	8.5%	16.3%	4.9%	0.0%	9,172
Specialists(ex. lawyers)	12.9%	6.1%	5.9%	1.0%	0.0%	16,290

Source: Our survey data.

groups. The life-cycle model assumes that households accumulate savings before retirement, then after retirement, withdraw their savings to finance their remaining years. However, Figure 2 shows, to the contrary, that aged households continue to maintain relatively high savings rates, a pattern that contradicts the life-cycle model.

2.3. Estimated Income and Savings Functions

In order to examine the determinants of household savings, we estimated a savings function and tested the applicability of the above-mention life-cycle hypothesis. Since our survey collected data on the attributes of household heads (age, educational level, occupation, etc.) and on household wealth (financial assets, real estate, etc.), we estimated the permanent household income at the first stage using levels of human capital and wealth as regressors and differentiated actual income into permanent and transitional income.

The existing definitions of “permanent income” vary, and theoretical life-cycle models and permanent income hypotheses tend not to coincide. In our study, we defined permanent income as the aggregate annuity value of current financial, non-financial and human cap-

ital. If a household's utility functions are additive and separable, and there is a constant real interest rate equal to the rate of time-preference of a household, then a household's optimal consumption is equal to permanent income.⁴

Permanent income is defined as the predicted value of the income function,

$$Y_i = X_i' \beta + \varepsilon_i \quad (1)$$

where Y_i is the income of household i , and X_i is a vector of exogenous variables.

Since the lifetime income of a household should be determined by levels of human and physical capital, exogenous variables include age and the educational level of its household head as indices of human capital, and the amount of financial assets, housing prices, and the amount of other real property as indices of physical capital. In addition, a single household dummy (proxy for the number of household laborers), the gender of the household head, and cohorts of the household head are included as exogenous variables, in order to control household attributes.

Predicted income is defined as the sum of the fit value of (1):

$$\hat{Y}_i^p = X_i' \hat{\beta} \quad (2)$$

Actual income does not necessarily coincide with predicted permanent income. It is only natural that some disparity will exist between the two. The spread can be defined as "transitional income," which constitutes a shock to household income.

$$\hat{Y}_i^T = Y_i - \hat{Y}_i^p \quad (3)$$

Supposing that the consumption behavior of households is consistent with the permanent income hypothesis, consumption levels are not affected by transitional income, but rather determined by permanent income. Since savings are residuals from actual income minus permanent income, the propensity to save is determined solely by transitional income. This hypothesis can be verified by the fact that the coefficient of transitional income equals 1 and that of permanent income also equals 1. Thus, the savings function can be esti-

⁴ See Deaton [1992], pp.81-82.

mated by the use of a 2-stage least square (2SLS).

Table 4 describes the estimated results of the income function and shows that the signs of college graduates and junior college graduates dummies are significantly positive, and implies that human capital of higher value increases permanent income. Contrary to this, the coefficients of housing prices and amount of other real property have no significant effects on permanent income, although financial assets are significant.

The coefficients of age, age square and cohort dummies are not statistically significant except for cohorts aged 30-35. This result means that the accumulation of experience and cohort specific shocks basically do not determine the educational level of household heads and thus the level of permanent income. The single household dummy shows a significant negative effect, which implies that the number of household laborers influences household income. On the other hand, the coefficient of the female dummy is negative, but not significantly so.⁵

Based on the results of our 1st stage regression, we estimated the savings function by 2SLS.⁶

$$S_i = \alpha_1 + \beta_1 Age_i + \beta_2 (Age_i)^2 + \beta_3 \hat{Y}_i^P + \beta_4 \hat{Y}_i^T + \beta_5 Single_i + \beta_6 Marriage_i + \beta_7 Child_i + \beta_8 Retire + \varepsilon_i \quad (4)$$

where S_i is the amount of savings, defined as the amount of annual income minus annual consumption, α_1 is a constant term, Age_i is the age of the household head, \hat{Y}_i^P is the predicted value of permanent income, \hat{Y}_i^T is that of transitional income, $Single_i$, $Marriage_i$, $Child_i$ are dummy variables for individual households, status of marriage and

⁵ We estimated a model which includes dummy variables regarding occupation and types of ownership as independent variables, but most of the coefficients of those variables were not significant. According to the theory of labor economics, it is appropriate to treat them as endogenous variables of the income function, and determined by educational level and age. A probit model was constructed which regards employment in foreign companies as a dummy dependent variable and educational level, age and sex as independent variables. The result shows that the properties having high educational background, being younger age and male, significantly contributes to increase the possibility of obtaining those occupations.

⁶ The estimation of saving function which also includes the results of the purposes of savings and the attitudes toward the bequests as explanatory variables has been

Table 4 Result of Regression on Income

Variable	Coefficeient	t-statistics
Constant	1154.8	0.350
Age	120.1	0.740
(Age) ²	-1.351	-1.010
Jr.HighGrad	-37.8	-0.190
Jr.college grad	426.9*	1.870
College grad.	1128.5***	3.200
Unemployed	-74.0	-0.220
Single household	-1140.7***	-3.790
Male	252.6	1.640
Managerial position	429.3*	1.720
Financial asset (securities)	8.23E-03**	2.570
Home purchase price	1.18E-03	1.230
Other real estate	1.36E-03	1.110
cohort_30	-1381.6**	-1.970
cohort_35	-1268.4	-1.190
cohort_40	-1799.6	-1.370
cohort_45	-1888.3	-1.250
cohort_50	-1663.7	-0.980
cohort_55	-1395.0	-0.740
cohort_60	-2073.1	-1.070
Number of observations	430	
R-squared	0.265	

Notes: *** significant at 1% level, ** at 5% level, and * at 10% level.

carried out, but the coefficients of those variables are not significant. It is necessary to introduce IV method to control the endogeneity of those variables, however we cannot find our appropriate instruments from our survey data, therefore we have adopted the functional form of equation (4).

existence of child, respectively, Retire is a dummy variable which is 1 if the household head has already retired, and ε is an error term.

Table 5 shows the estimated results of the savings function. The coefficients of permanent and transitional income are significantly positive plus, which implies that not only transitional income, but also permanent income has a positive effect on savings. Since the Wald test, by which the coefficient of permanent income equals 0 and that of transitional income equals 1, is rejected at the 1% level, the assumptions of the permanent income life-cycle model are rejected. Since propensity to save transitional income is 0.808, it is apparent that large amounts of transitional income is being put aside. While the coefficient of permanent income is 0.655, the effects of permanent income on saving are not negligible.

The signs of the single-married dummy are significantly negative. While the propensity to save in single households is significantly lower than married households, household heads that have not married and live with their parents do have a higher propensity to save. It would be worth noting that the retire dummy positively effects household savings. This result is apparently inconsistent with the assumption, and leads to the inference that the saving behavior of Shanghai households contradicts the permanent income life-cycle model.

Why this saving behavior is not in accordance with the permanent income life-cycle model would be difficult to explain just by household saving data; so we must also examine attitudes toward household saving?the motives behind saving and inheritance. Since our household survey was also designed to collect such qualitative data, in the next section we will discuss the characteristics of saving decisions in Shanghai compared with those in Japan and the United States.

3. International Comparison of Attitudes toward Saving and Inheritance

3.1. Attitudes towards Saving in Shanghai and Japan

For comparative purposes, our survey was designed to ask the same questions as the “7th Survey on Financial Asset Choice in Japanese Households” conducted by the Institute for Post and

Table 5 Estimation Results for Saving Function (2SLS)

Variable	Coefficient	<i>t</i> -statistics
Constant	-297.358	-0.480
Age	1.686	0.080
(Age) ²	-0.070	-0.290
Permanent Income	0.655***	8.710
Transitional Income	0.808***	18.690
Single Household	-471.427***	-2.590
Married	-392.378***	-2.790
Child	57.925	0.710
Retired	264.138***	2.640
F test statistic	60.09***	
Wald test statistics	38.38***	
Number of observations	430	

Note: Standard Errors are corrected by White=Huber methods
 *** significant at 1% level, ** at 5% level, and * at 10% level.

Telecommunications Policy in 2001.⁷ The purposes of household savings are generally classified into life-cycle savings, precautionary savings and savings for inheritance.⁸ To put it concretely, life-cycle savings are to cope with time lags between lifetime income and consumption, and include saving for old age, housing and consumer durables. Precautionary savings provide for unexpected fluctuations of income and consumption caused by unemployment, illness, accidents, disasters, etc., and are regarded as *ex ante* measures for coping with uncertainty. The more uncertainty about future prospects,

⁷ This survey has been carried out every two years since 1988 by the Institute for Posts and Telecommunications Policy. The survey in 2001 was conducted based on the multi-stage random selection of 5,010 households with heads aged between 20 and 79 from all over Japan. A total of 3,111 households responded (response rate, 62.1%). The details of this survey are described in Institute for Posts and Telecommunications Policy [2001].

⁸ For classifications of purposes for savings, see Horioka and Hamada eds. [1998, pp. 30-31].

the more households behave cautiously and the more savings rates rise. Saving for inheritance should be self-explanatory.

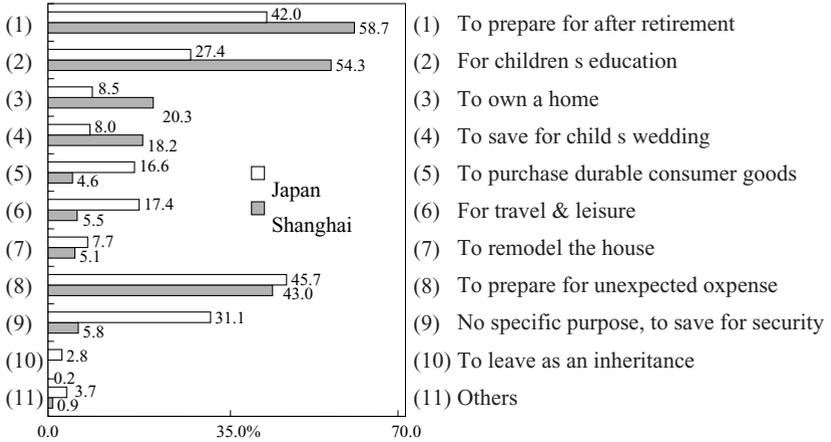
Figure 3 summarizes the multiple-choice responses to why households save in Shanghai and Japan, expressed in percentages. The respondents were allowed to select as many as three possible answers to the question. Choices (1) to (7) are related to life-cycle savings, (8) and (9) to precautionary savings, and (10) to inheritance. In Shanghai providing for old age (58%) and providing for the education of children (54.7%) were the main reasons for saving, while providing for illness, disasters and other unexpected expenses (43.0%) was also important. On the other hand, traveling and leisure, marriage, and purchasing consumer durables were not important reasons.

In Japanese households, the percentage share of (8) and (1) were 45.7% and 42.0%, respectively, and no specific purpose except for security and (2) ranked high, accounting for 31.1% and 27.4%, respectively. These results imply that the motives related to life-cycle savings are relatively stronger in Shanghai, while Japanese households are inclined to save for precautionary purposes. In particular, the percentages occupied by (9) differ sharply between the two countries, meaning that saving constitutes a strong response to psychological anxiety in Japanese households. On the other hand, the desire to save for inheritance is very low in both countries.

Motivational differences according to age group are shown in Figures 4 and 5. Only the most popular responses are shown. It is clear from Figure 4 that motives for savings different among age brackets. The percentage shares of (1) and (8) increase with age in Shanghai, while the share of (3) decreases. As already mentioned, (8) falls into the category of precautionary savings, by also seems to have some correlation to life-cycle in aged households. Since the probability of getting sick would be higher for the elderly, they would be more inclined to provide for unforeseen expenses. Age groups in their 30s and 40s demonstrate a strong tendency toward savings for educational expenses.

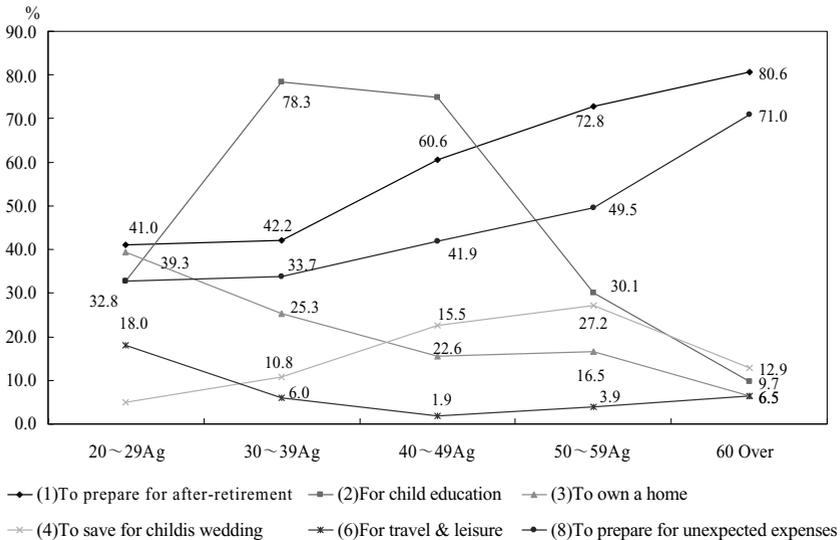
These results would imply that younger households at first start saving money for purchasing housing and providing for the education of their children, and that after their children leave, they begin saving for their own retirement. That is to say, the motives for sav-

Figure 3 Comparison of Purposes of Savings Between Shanghai and Japan



Source: Our survey data and Institute for Post and Telecommunications Policy eds. [2001]

Figure 4 Purposes of Savings in Shanghai Households by Age Group



Source: Our survey data.

ing among Shanghai households appear to be consistent with the life-cycle model.

Figure 5 enables us to compare Figure 4 with age groups in Japan. Overall, the figure shows that the two countries are similarly motivated to save: motivation (1) increasing with the age of household head; that of (2) and (3) decreasing with age. The table also implies that both Japanese and Shanghai households regard savings for the life-cycle as important and intend to save money from a long-term point of view.

However, there are some differences. The proportion of Shanghai households who selected (1) is higher in all age brackets than the Japanese figures. The 41.0% for Shanghai household heads in their 20's is more than double that of their Japanese counterparts. Among people over 60, the amount of Shanghai households who selected (8) again surpassed the Japanese figure.

Such results may indicate that increases in medical expenses owing to reforms implemented in the medical insurance system and reports about a shortage of reserve funds for old-age pensions in China have induced Shanghai households to worry more about their retirement years and how to deal with unexpected events, like sickness. The absence of an established social security system appears to have forced Shanghai householders, especially older ones, to adopt self-insurance methods.

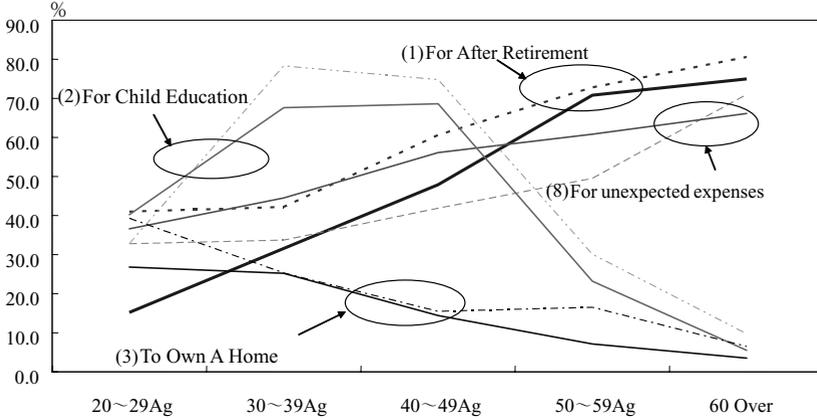
3.2. Attitudes towards Inheritance in Shanghai and Japan

As shown in Section 1.3, aged households in Shanghai still managed to maintain high savings rates after retirement, results that are not consistent with the permanent income life-cycle model. This phenomenon may be partially related to bequest motives, although Figure 3 reports that the percentage of respondents whose chose (10) was very low. Our survey used the same questions on attitudes toward bequests contained in the 1996 Japanese and 1996 US surveys.^{9, 10}

⁹ This survey covered 1,800 households in both Japan and US with identical questionnaires. 1,243 and 1,508 households responded, respectively. The survey data is analyzed in Horioka et al. [1998] and Horioka [2002].

¹⁰ In addition to the question on the attitudes toward inheritance, our survey included a

Figure 5 Comparison of Purposes of Savings Between Shanghai and Japan by Age Group



Note: Dotted lines mean the number of Shanghai households, and solid lines mean that of Japanese households.

Source: Our survey data and Institute for Posts and Telecommunications Policy eds. [2001]

We asked our respondents which of the following five attitudes toward bequests is closest to their own:

(1) I/We plan to leave bequests to my/our child or children if my/our child or children take care of me/us.

(2) I/We do not feel it is necessary to leave bequests to my/our child or children under any circumstances.

(3) I/We plan to leave bequests to my/our child or children no matter what.

(4) I/We do not plan to make any special efforts to leave bequests to my/our child or children, but will leave behind whatever happens to be left over.

(5) I/We do not know.

Only one answer could be chosen. The choice of (1), (2), or (4)

question on attitudes toward the division of inheritance, to compare with Japan and U.S. Since the choice variables on this question are not suitable for the actual situation in Shanghai, most of the responses to this question seem unreliable, thus we have not utilized the results in the present study.

Table 6 International Comparison of Attitudes towards Bequests

Motives For Bequest	Unit: %		
	Shanghai	Japan	U.S.
(1) Will leave bequests if child take care of me	19.6	5.2	3.2
(2) Will not leave bequests under any circumstance	1.6	4.0	2.7
(3) Will leave bequests no matter what	45.5	15.6	39.9
(4) Will leave behind whatever happens to be left over	9.1	56.0	47.9
(5) Don't know	24.2	19.2	6.3
Number of observations	429	1,239	1,129

Source: Our survey data and Institute for Post and Telecommunications Policy eds. [1997]

can be regarded as life-style-oriented bequest motives, while (3) seems to be altruistically motivated.

Table 6 shows a sampling of attitudes toward bequests in the three countries. Response (4), which is consistent with the life-cycle model, is dominant in Japan (56.0%) and the US (47.9%), while only 9.1% of Shanghai households were so motivated. Rather, a more give-and-take life-cycle motive is preferred in Shanghai, namely motivation (1), which accounts for 19.6% of households, a figure much higher than those in Japan and the US.

The total percentage shares of (1), (2) and (4) life-cycle bequest motives in the three countries are 30.3% (S), 65.2% (J) and 53.8% (US), respectively. In contrast, the 45.5% choice of (3) in Shanghai is higher than those of two other countries. These results indicate that the life-cycle motive for making bequests is more dominant in Japan and the US than in Shanghai, and the altruistic motive is stronger in Shanghai, which would account for the maintenance of high savings rates among Shanghai's post-retirement households.

4. Conclusions and Research Prospects

This article has examined the saving behavior of Shanghai households using original household survey data collected in 2002.

Income and savings functions were estimated in order to distinguish the effects of permanent income and transitional income on saving decisions. The results rejected the hypothesis that the level of permanent income does not affect the level of flow savings, but imply that the saving behavior of Shanghai households is inconsistent with the permanent income life-cycle model.

In particular, the finding that retirement in Shanghai has significant positive effects on the savings function strongly indicates the inapplicability of the permanent income life-cycle model in the case of Shanghai households. An analysis of the motivation behind household savings partially revealed the reasons why: anxiety about medical expenses and reserve funds for old-age pension owing to the absence of an established social security system have forced Shanghai households to maintain higher savings rates than the permanent income life-cycle model calls for.

In addition, from the perspective of savings motivated by inheritance concerns, the results of our survey show that the element of altruism is more prevalent in Shanghai than in Japan or the US, which appears to induce Shanghai households to accumulate much more wealth for their children. Altruism seems to carry with it the possibility of causing immobility among economic strata and an increase in economic disparity among generations. The results of our research have important implications for political reform related to the taxation system. In order to cope with these problems, such tax reforms as the introduction of an inheritance tax, should be examined to control the widening disparity in asset holding.

There are many aspects that remain to be studied. Our paper has focused on the saving behavior among Shanghai households. Further study is needed to collect statistical information on other areas of China and to compare the data both interregionally and on an urban-rural basis.

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