AN EXAMINATION OF INTERGENERATIONAL CHINESE SAVING

An Undergraduate Research Scholars Thesis

by

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Submitted to Honors and Undergraduate Research

Texas A&M University

in partial fulfillment of the requirements for the designation as an

UNDERGRADUATE RESEARCH SCHOLAR

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May 2014

Major: Economics

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ABSTRACT

An Examination of Intergenerational Chinese Saving (May 2014)

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While China has traditionally had exceedingly high saving rates over generations, there has been a current trend towards a remarkable decrease in this tendency. The theory behind life cycle savings models suggests that as China faces more exposure to open-market situations, the resulting changes in China's spending habits will drive trends towards an overall saving rate level that is more similar to that of Western countries.

For decades, Chinese citizens have been exposed to luxury products and other conditions that have changed the cultural attitude towards saving and created a phenomenon in which the younger Chinese have a drastically less frugal lifestyle than their older counterparts.

In order to determine whether the younger citizens have had an impact on China's saving as a whole, this paper will employ the concepts supporting the aforementioned Life Cycle Hypothesis Models. By examining different data from 2011's China House Financial Survey (CHFS) and examining the participants' responses and their relationship to several factors of interest as well as the saving rates for nations of similar size and influence, the changes spurred by the newer generations of Chinese become clear.

Generally, the results of the study provide two conclusions. First, despite the shift in cultural attitude towards spending, China as a whole is still strongly entrenched in consuming not nearly as much as the West. In fact, the saving rates remain consistently above 50%. Furthermore, while the overall saving level may not be diminishing quite as dramatically as expected, there is evidence to suggest that it is starting to increase at a lower rate. Currently, the large majority of the survey participants still hold the older Chinese standards of high saving and low consumption. Nevertheless, as more of the risk-taking individuals start to join the workforce, the overall trend presented by CHFS' data should change, presenting much higher rates of consumption and moving the nation's Life Cycle Saving Curve (as expected in the theory of the model) to a level similar to that of many developed Western nations.

NOMENCLATURE

CHFS	China Household Financial Survey
IMF	International Monetary Fund
LCH	Life Cycle Hypothesis
OECD	Organization for Economic Co-Operation and Development

CHAPTER I

INTRODUCTION

Over the past decade, there has been a significant phenomenon in Chinese society — one in which younger generations are exhibiting saving behavior patterns markedly different than that of their predecessors (Modigliani and Cao 167). Unlike their older counterparts, the young Chinese are saving at a lesser rate, leading to a remarkable change in what had been overall saving rate for the country. In the past, Chinese citizens would refrain from spending their earnings throughout their life, creating an outlier in which the peak savings rate (usually located at middle-age) extended to retirement and beyond.

As such, it is important to understand how the economic preferences of this group are changing as the younger generation gains decision-making influence in the government. By examining data concerning the average spending patterns of Chinese citizens, I will describe how their saving rate has changed up to its current point as well as assert whether the traditionally high number is likely to continue.

Moreover, I intend to examine several possible reasons that might be influencing this change in the China's saving patterns. The consequences of this phenomenon are very significant in that they present a shift in the centuries-long financial tendencies of Chinese culture. Altering the previous extreme in savings could drastically change government policies and affect short and long-term economic planning for the country (Browning 1800).

Interestingly, when presented with unprecedented amounts of economic growth, individuals in positions of relative wealth (such as the new Chinese middle class) tend to be more unbridled in their spending patterns. This phenomenon, known as *Conspicuous Consumption*, is often a direct consequence of rapid increases in per capita income, generally with the intent of displaying greater social standing (O'Cass and McEwen 28). Despite the fact that determining the reason why households save the way they do is difficult, pinpointing the conditions in which the new social composition in China is affecting the overall state of their economy becomes crucial.

A way to test these conditions is to directly examine data corresponding to the average saving patterns of Chinese citizens. In order to do so, I will make use of the data made available by the China Household Financial Survey (CHFS). The CHFS produces information concerning the composition, distribution and magnitude of many different citizens' financial activity for a specific year, in this case 2011. This survey provides a representative look at the population by interviewing citizens from all regions, income levels and family sizes. Generally, there is a clear discrepancy between the survey attitudes of the younger participants and those of the older ones in areas such as risk aversion, overall spending levels and yearly total income.

After testing all the available variables, I will proceed to draw several conclusions regarding the future of the current Chinese saving model. This is done using much of the existing literature on the subject as support throughout as well as data coming from other comparable nations (in this case the United States, Japan and South Korea) provided by the OECD as part of their annual forecasts on consumption information.

Generally, I find that many of China's saving tendencies remain the same after considering the impact that these newer generations have had. Despite there being evidence to suggest that the younger Chinese will save less in the near future (mainly due to the cultural tendency for parents to move back to their children's home after retirement) the overall saving rate for the nation remains at a threshold consistently over 50 percent. In comparison to other major industrialized nations, Chinese private saving is often ten times the rate recorded. Additionally, many cultural assumptions are validated by the results. For instance, women are still generally not the primary earners in the average Chinese family. Similarly, spending on non-essential items remains very limited, refuting the claim that there is an influence of increased incomes on these individuals' spending patterns.

Literature review

The existing literature concerning savings rates in China is very extensive. Being that the conditions that apply to this group of individuals is very unique, there are many studies outlining different effects and their consequences on that population. Be it because of urban or rural discrepancies, inefficiencies in income distribution or the previously mentioned *Conspicuous Consumption*, one idea becomes evident — that the change in saving patterns between old and young Chinese is significant. However, because of the limitations in reliability concerning the datasets that come from China and their inherent bias, it is extremely difficult to judge whether the results posted by these studies are accurate. As such, the intention of this research is to expand on these suggested effects, and provide more direct information concerning the spending habits of their citizens.

The backbone of this study is composed of how the changing cultural norms in Chinese society are moving their savings rates down. As such, the ideas behind the LCH create a good starting point when considering how to approach the central question of this research. In their study "The Chinese Saving Puzzle and the Life Cycle Hypothesis", Modigliani and Cao apply this model in order to preliminarily examine the conditions behind China's extraordinary growth and its change in saving.

The life-cycle hypothesis, originally thought to be only applicable to fairly developed countries, can provide a very intriguing look into the fiscal policies of developing countries and how they deal with switches in economic planning (Modigliani and Cao 145). In their mind, the vast gap between the lifetime savings of Chinese is superficial in and of itself. Because one of the main assumptions of the LCH is that the main determinant of the rate of private saving is given by the rate of growth of income and demographic structures of the economy, simply considering per-capita income as an indicator of consumption (and thus, saving) does not capture the full impact.

One of the main issues with the development of this conclusion, is that due to the unreliable nature of the data obtained for that study, the authors had to make a concession to alter the way that they calculated private saving. Instead of subtracting consumption from disposable income, they resorted to several shortcuts in order to make their data work. By directly referencing the consumption patterns of different generations of Chinese, the results of this study create a more accurate depiction of the changes in capital growth in their economy.

Another essential component of the existent studies on the topic concerns where to attribute the changes in saving, and whether they are leading the nation to a moment in which the economic growth will be closer to that of Western nations. The main point of He and Cao's "Understanding High Saving Rates in China" is that the excessively high rates are a combination of both governmental policies that lead to increased disposable income and consumption, as well as artificially high capital depreciation rates compared to those of other major nations. As such, it becomes important for the economic developers in China to adopt policies that would decrease precautionary saving in the future, such as increasing the minimum wage and revising some of the more stringent tax rates (He and Cao 2).

Furthermore, there is a very marked discrepancy between the ability of rural citizens and that of urban citizens to withstand standard economic shocks. In the research titled "Unemployment, Consumption smoothing, and Precautionary Saving in urban China" Xin Meng argues that urban citizens have a strong motivation for precautionary saving, as these individuals are the most vulnerable to sudden changes in the Chinese economy. In essence, the ideal social welfare policies would be ones where groups who have more trouble adjusting to sudden shocks (such as the elderly and rural households) are assisted first (Meng 466).

While the conclusions of both these papers are accurate in stating that precautionary saving is one of the main components of the current level of heightened private saving in China, they neglect the idea that factors such as the socioeconomic status of the individual, which intuitively is related to a person's age, also greatly changes the amount of saving they incur. For instance, by failing to account for how older citizens might save in different ways than their younger counterparts, the

researchers neglected how their discrepancy affects the overall consumption rate. In order to account for this, the age of the respondent is considered in the dataset, producing stratified groups that connect all individuals over (or under) a certain age threshold.

Lastly, one of the more prevalent findings in the existing literature is that the current saving composition of China is likely to extend itself in the long-term and continue affecting policy for years to come. For example, policies promoting job creation, stronger social safety nets and enhanced social services can all lead to the continued growth of the private saving rate (Ma and Yi 7). Additionally, it can be added that this wealth accumulation is leading to an increase in the difficulty for social mobility. (Pudney 249). In a sense, the rich will continue to hold most of the capital available, and those with less options will continue to struggle moving forward.

The main issue with these conclusions is that while they present the idea that China may or may not continue growing indefinitely, they fail to pinpoint for how much longer this process might continue. While establishing a timeline for the remainder of the Chinese private saving growth can be difficult, it is essential to provide an estimate for the change in order to create a more accurate prediction of government policy and the public's response to it.

One of the main goals of this research is to overcome this issue, by presenting a model that can approximately estimate the savings growth rate using consumption data from different areas of the country and accounting for the socioeconomic differences of the individuals within them. As many of the previous studies have pointed out, specifically Pudney's "Income and Wealth Inequality and

the Life-Cycle", life-cycle factors can only explain a small fraction of the gap between wealth accumulation and the general high level of saving.

As a whole, the existing research backing this concept is very helpful in determining some of the main factors influencing saving rates. However, not many (if any) attempt to describe the difference between capital accumulation between old and young citizens of China. This is particularly essential to research of this kind because of the social implications that an increased prevalence of young Chinese might have on saving. For instance, the more recent generations are faced with issues of supporting families that were larger than that of their direct predecessors (in that they feel culturally obligated to provide for their parents, who now live longer). Thus, the main question behind this research paper can present a valuable opportunity to bring an important contribution to the understanding of how China's high savings rate can affect their citizens' welfare.

CHAPTER II

METHODS

Data

The data collected by the China Household Financial Survey is organized in two separate sections: first by individual responses pertaining to every member in one family group and their financial preferences and secondly by responses showing entire households' spending patterns over the period of time considered in the study. As such, it is important to note that while there were 8348 households interviewed for the purposes of the survey, there are far more individual responses (and more importantly, unanswered sections) than if simply considering the overall output of each family unit. This becomes important when considering the consumption of an entire family, as it would be essentially impossible to calculate how much each family member spends exactly. Due to this issue, all entries to the CHFS dataset that have no indicated income (such as children) are dropped.

The main goal of the research is to test the hypothesis that there is a significant effect between a participant's age and their saving rate. Evidently, the main variable of interest in the data is then the survey respondent's age. In the dataset, the indicator for a person's age is the birth year, so I simply subtract the year that CHFS's survey took place (2011) from their birth year to find their age at the time. Additionally, to bypass the issue concerning the construction of the family, I consider the age of the highest earning member of that unit to be the main predictor (but not dropping the remaining values where, for example, there might be two working parents). Despite the separation of household and individual responses in the CHFS dataset, I have made the assumption of considering the overall unit of interest to be a whole family.

The other key variable is, correspondingly, the saving rate. The calculation of saving rate for a specific family consists of two parts. Initially, I consider all variables contained within CHFS's household portion pertaining to yearly spending, of which there are eight different areas. They are: clothing expenditure, housing, utilities, household goods, education, conveyance, travel and health care. Ideally, I would be able to estimate to the last cent what was spent by every family. In the understandable absence of that amount of precision in the data, these nine areas represent a sufficiently accurate representation of each unit's spending habits.

Following the calculation of a family's consumption, I can then calculate that group's saving rate by simply finding the ratio between their total income earned and total amount of income spent. For instance, if the unit's income is 100,000 RMB and they've spent 80,000 RMB over the course of 2011, then their saving rate is 20 percent, and so forth for all families considered.

Model specifications

In order to test the aforementioned relationship between the saving rate and the other key factors considered, I ran a standard OLS regression. Since the goal was to approximate the impact that age has on saving, creating a line of best fit proves rather useful. Thus, the model supporting this research paper is as follows:

$$SavingRate = \beta_1 * Age + \beta_2 * Age^2 + \beta_3 * \log(Income) + \beta_4 * Luxury + \beta_5 * Female + \beta_6 * Old + \beta_7 * Young + \varepsilon$$

Where *Age* represents the main variable, in quadratic form to show the expected relationship between the age of the respondent in the survey and the saving rate associated with said individual's household. Additionally, *Age* refers to the age of the highest earning component of a household (as averaging the age of everyone involved would skew the results when integrating very young and very old individuals). In the LCH theory, individuals change their consumption preferences depending on which stage of their life they are currently at. For instance, individuals at middle age are likely to save more than those who are young or old.

Furthermore, there are additional qualifiers for different characteristics that define the spending profile of the person being examined. For example, the *Female* variable is a binary variable representing whether the household's primary earner is a male (given a 0) or a female (given a 1). This is done to account for changing factors in gender roles within Chinese families and to examine how each gender affects their respective unit. Similarly, the *Luxury* variable accounts for each household's spending on luxury items, as considered by each survey taker. The expectation is that following the *Conspicuous Consumption* principles, families whose income is higher would also spend more, particularly in areas outside of their basic needs.

The remaining three components of the model, *Income*, *Young* and *Old* are the other essential factors affecting a subject's saving rate. *Income* sets a household's maximum earner yearly after-tax money earned in RMB, of which I take the logarithm of in order to account for the skewed nature of income distributions. *Young* and *Old,* on the other hand, represent the situation in which the primary earner's family has dependents that are under 18 and over 65 years of age, respectively.

They account for the total number of individuals in the household that meet this condition, while excluding for the situation where the primary earner might also be in these categories.

CHAPTER III

RESULTS

Summary statistics

Table 1 is a summary of the variables in the dataset and their respective values, detailing the data's descriptive statistics:

Table 1: Variable Summary					
Variable	Observations	Mean	Std. Dev.	Min	Max
Saving Rate	2000	72.35	22.41	0.34	99
Age	2000	40.10	10.01	16	90
Age^2	2000	1707.30	852.79	256	8100
Luxury	2000	122.17	1162.75	0	27273
Female	2000	1.41	0.49	1	2
Income	2000	10.11	0.76	6.25	13.81
Old	2000	0.15	0.44	0	3
Young	2000	0.69	0.69	0	5

Initially, I can draw some important conclusions from the exorbitant saving rate that the data suggests for China. With a mean value of approximately 72% per household, this implies that Chinese individuals as a whole save drastically more than other comparable populations in the world. There are some instances in which there is a 100% saving rate (which is impossible in the scope of daily life), but in general this rate is consistent with the official mid-50s rate when accounting for the limited sample size. Flanked by a minimum of 16 and a maximum of 90, the age of the primary earner of the household provides a mean value of approximately 40 years. This supports the intuition that middle-aged individuals would be the most prominent members of the dataset, providing a majority of the saving within it. Interestingly, the results suggest that

roughly 60% of the primary earners in each household are male, somewhat dispelling the pre-existing notion of a Chinese society in which males were very strongly the primary earners in each family. Expectedly, calculating the logarithm of the incomes for each household's primary earner provides a very well-balanced range, as opposed to the highly skewed pre-logarithm results. Lastly, the families considered tend to have a mean of approximately 1 person under 18 years of age and it's not very likely that they will have a dependent over 65.

Regression results

The following summary, Table 2, presents the results of the regression and how the variables considered affect the saving rate:

Table 2: Coefficient Calculations							
Age	Age^2	Luxury	Female	Income	Old	Young	ε
-1.25*	.015*	-.01*	-2.83*	5.39*	-1.70	-.31	47.28
(.39)	(.01)	(.01)	(1.02)	(.71)	(1.34)	(.74)	(10.48)
Note: N= 2000, *p-value < 0.05, R^2 =0.052							

Out of the eight variables included in the model, five of them are statistically significant at a 95% confidence level. *Age* possesses an interesting effect in that if considered in a strictly linear fashion, I can conclude that increasing the age simply decreases the saving rate. However, the quadratic version of the same variable suggests that the relationship between age and saving is not quite that straightforward. According to the data, saving rates in China actually turn out to be the opposite

of what LCH theory would suggest as saving rates are decreasing as an individual reaches middle-age and then starts increasing as they age and approach retirement.

Additionally, the variables concerning dependents within each household (*Old* and *Young*), as well as *Income*, all have coefficients that align with the theoretical explanation for them. For instance, the variables concerning dependents are both negative correlated to saving rate, suggesting that an increased number of household members would decrease the overall rate for that family group as they have less disposable income. However, neither of these variables exhibit statistical significance.

Increasing the amount of income for the main earner in that same group increases the overall saving rate as there is a greater pool of income to choose from. *Luxury*, however, possesses a very negligible effect on the saving rate, with a very slight negative relationship. This result quickly dispels the notion that *Conspicuous Consumption* is a problem to be accounted for, as luxury spending is clearly not that remarkable a variable in the end.

Lastly, the gender of the participant in the survey has a very strong effect in how that particular person spends their income. Through a coefficient of roughly -2.8, I can conclude that a woman included in the model saves roughly 3 percentage points less than a comparable male.

World comparison

Collecting comparison points from OECD's forecasts on household saving rates, I can very briefly

show the discrepancy between saving rates in the US and China (above 50%) as well as China and

two of its closest geographical competitors, Japan and South Korea.

Table 3: China's Saving Rate Comparisons[1]	
Country	**Saving Rate[2]**
United States	5.7
Japan	2.3
South Korea	3.5

Not only does the average citizen in either of these three countries save about 10% of what a

Chinese citizen saves in a year, but they do so in very similar ways. In accordance with the standard

saving hypothesis theories, they follow a pattern in which their peak rates occur at mid-life (while

in China they are far more uniform). So, when considering the primary factors that influence China

to have such an abnormally high saving rate, we can discount geographical location or size of their

economy. Simply put, when drawing parallels to nations that are similar to it, China clearly stands

out as a remarkable outlier in terms of consumption patterns.

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[1] China's official saving rate (as calculated by the IMF in 2011) is 54%
[2] All saving rates reported are from OECD's 2011 report.

CHAPTER IV

CONCLUSIONS

The main implication of the results given by the model is that, as I originally hypothesized, the overall saving rate in China is still strongly increasing, as shown by the unsustainably high average saving rate for 2011. Despite this, the relationship shown in the regression – where the age and saving actually are negatively related as an individual reaches middle-age – suggests that their private saving rate will start decreasing due to a cultural phenomenon where older Chinese often end up being supported by their children after retirement (effectively minimizing their propensity to save). Some of the shortcomings of a conclusion of this nature is that despite my intent, the available data is still not widespread enough to cover all sections of Chinese society and provide a more introspective look at their saving patterns.

Furthermore, I can come to the conclusion that *Conspicuous Consumption* does not have nearly as significant an effect as originally hypothesized. In general, every segment of Chinese families I considered for the model had relatively small levels of luxury spending, signaling that perhaps this is an effect that has yet to develop quite as much as that of the number of dependents per household. I consider these results to be a good indicator of the cultural factors that provided the basis for the model. For instance, men were far more prevalent in terms of being the primary income earner for their respective families. Additionally, the emergence of an increased number of dependents per family does not have a significant effect on the saving rate. This is more than likely due to the fact that the social change needed to increase the amount of older citizens takes an extended period of time to take place, and we are more than likely still going through said period. Despite my attempts to prove the contrary, I believe China's saving profiles remain largely unchanged.

As far as governmental policy is concerned, China's government should examine the preposterously high saving rate and consider how this might be affecting their long-term growth plans. Chinese citizens such as the ones I examined tend to stockpile their income at a rate often ten times greater than most other industrialized nations. This disposable capital remains unused as these people age, and creates a gap in which there is some wasted opportunity for China (in a situation similar to that of developing countries) to invest these savings in the short-term development of their nation (Deaton 61).

The implication is that since young Chinese are not decreasing their savings quite as much as previously thought, then China's attempted move to a more market-oriented base for their economy might be slowed down moving forward. Additionally, being that these inflated savings are the primary driver in this nation's current run of growth, then the streak of years with growth rates hovering around 7-10% is rather likely to continue.

Lastly, an important factor to be considered in future applications of this theory is that the geographical location of the respondent has some sort of bearing on the saving rate for this same person. Although CHFS's dataset has representatives from several different areas in China, the lack of several reliable data points from all regions in China leaves a significant amount of work to be developed in this area. As more concrete information becomes available in different regions throughout this nation, we will be able to produce more overreaching conclusions about the current (and future) state of savings and consumption, and how that might affect both China and the rest of the world.

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