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Saving Thought, Theory and Evidence

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Abstract

The common sense of economic thought on saving in the world is that the thrift is emphasized, and that living in luxury are also important somehow, but the current society is likely to put a slight on the former. There are many theoretical and empirical studies on savings, while few of them can well explain the under- and over-saving problem. There are few of theories but increasing empirical studies on saving in mainland China during the past two decades, and it is expected that the experiences on saving behaviors in Taiwan and Hong Kong would be good references and good lessons for the world especially for the current and future mainland China, because these two districts experienced a very unstable asset market and did overcome the housing bubble and currency speculation issue by the unique policies which have been not succeeded in other countries.

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1 Introduction

The current world has been in a big economic crisis, while few studies can give a plausible explanation on this issue (Stiglitz, 2009). Recently, Wan (2011) argues that the current crisis is caused by the undersaving problem during the housing bubble era because the household with a speculative saving motive has an incentive to abuses the distorted housing policy. If this argument is true, we have to think of the saving problems as the most fundamental one in economics. We also have to consider why there are still under- or over-saving problem now. To answer this question, the only way is to look back the saving thought, theory and evidence in the literature in the world. Via this work, we may obtain some hints to deepen the understanding of saving. In this paper, we will first survey the saving thought, then survey the theories, and finally survey the empirical results in the world till today.

From the view of saving thought, we found that there were big literature on saving and consumption in ancient China during the period two thousands years ago, while there has been little studies on saving during the past two thousands of years. By contrast, in ancient Greece during the period two thousand of years ago, we found a few descriptions on saving, while we found almost nothing in all over the Europe during the period from the AD to Renaissance. However, we found many thoughts on saving in

Europe and U.S. after the industrial revolution. The common part of the thoughts among the world is to emphasize thrift, while to mention living in luxury being important somehow in some cases.

From the viewpoint of theory, we found many ones on saving since Ramsey's pioneer work in 1928, while these theories are not yet enough to well explain the existing facts such as undersaving issue in the world. Some scholars are still working on this topic today.

From the view of the empirical studies, we first searched the results from the countries except Taiwan, Hong Kong and mainland China (the greater China, hereafter), then searched the literature from the greater China. For the first part, we found that there are over three thousands of papers on empirical studies associated with the existing theories. We also found that there are some papers which analyze the issue on saving shortfalls. Still being unhappy, this undersaving problem have been discussed for many years in the developed economies while can not be solved well, and then are being realized in U.S. and EU economies today.

In Taiwan, we found that the trends of saving rate and housing price during the period 1971-1993 are similar to the ones in mainland China during the period 1978-2010. Current mainland China is trying her best to make the bubbly heating

economy soft landing just like past Taiwan, it is expected that mainland China will succeed on soft landing and that the change of saving behavior in Taiwan will be a good lesson for future mainland China.

In Hong Kong, because of the Asian Financial Crisis in 1997, there is a big volatile in Hong Kong's asset markets, while there are few studies on the link between the saving and the changes in asset prices. There was a dramatic intervention policy on counter-speculation in financial markets in Hong Kong, we expect more further researches on Hong Kong's experiences would be good lessons for the current and future world, especially for mainland China.

In mainland China, there are many empirical studies but few theories on the saving. The empirical papers on savings dramatically increased during the past two decades, and now it is still a very hot topic. The existing literature related to mainland China tell us that there are many factors associated with savings while it is still not clear which one is dominant, thus further researches are needed.

The left of this paper is organized as follows. Section 2 gives a survey on saving thought. Section 3 makes a review on theories on saving. Section 4 presents a simple survey on empirical results, and Section 5 concludes and makes some related discussions.

2 Thought

One of The Huangdi's (Yellow Emperor, BC2697-BC2599?) virtues is ``work hard with heart, power, ear and eye, but save water, fire, woods and goods (Sima, BC91)."

The Great Yu (BC2002?) says that ``Full of toilsome earnestness in the service of the State, and sparing in your expenditure on your family (The Shoo King, vol.3, p.60)."

Guanzi (BC670) says ``frugal and economical in preparation for famine" in ``The Five Aids (Guan, vol.1, p.196)," while says ``Have the rich build grandiose tombs to employ the poor, construct highly elaborate grave sites to employ engravers and sculptors, use large coffins to provide work for carpenters, and prepare numerous sets of funerary clothing and coverlets to provide work for seamstresses. Since this is still not enough, there should be bundles containing different types of grain, and funerary objects of metals, pottery, and jade. Doing this provide a source of living from which, thereafter, all people benefit, and it is appropriate even the country is preparing for war (Guanzi, vol.2, p.319)."

There are three chapters on economizing expenditures by Mozi (BC464-BC376). For example, we can find the following description in the first section entitled by "Economizing Expenditure (1)" in the first chapter. "When a sage is in charge of a state, the financial resources of the state will double; when he is in charge of the world, the financial resources of the world will double. This doubling is realized not by plundering the land from a foreign country, but by cutting the inefficient expenditures. The sage kings will never issue orders to run enterprises, employ the people and expend wealth unless it can bring benefits to the people. As wealth is not wasted and the people are not exhausted, many more benefits will be procured (Mozi, p.169)."

There is also a statement on saving in the "On the Way to Make a Country Self-sufficient" by Xunzi (BC313-BC238). "Moderate the use of goods, let the people make a generous living, and be good at storing up the harvest surplus. Moderate the use of goods by means of ritual principles, and let the people make a generous living through the exercise of government. Such moderation in the use of goods will cause overflowing surpluses and allow the people to make a generous living (Xunzi, vol.1, p.267)."

In the ancient Greek before about BC600, there was philosophy on saving. For

example, we can learn a lot from "The Ant and the Grasshopper" in the "Aesop's Fables." The story tells us that the virtues of hard work and saving and the perils of improvidence (Caxton, 1483). There are also some statements related to consumption and saving by Aristotle, for example, who says that "Of the art of acquisition then there is one kind which is natural and is a part of the management of a household. Either we must suppose the necessaries of life to exist previously, or the art of household management must provide a store of them for the common use of the family or state. They are the elements of true wealth; for the amount of property which is needed for a good life is not unlimited, although Solon in one of his poems says that, No bound to riches has been fixed for man (Monroe, 1930, p.15)."

However, it is insisted by Mandeville (1705), that the human's vices such as luxurious living may raise economic circulation, and stimulate the progress of the society. This idea is in line with the "paradox" of saving by Hayek (1931), Keynes (1933) as well as Guanzi (BC670).

Quesnay (1758) says that the excess luxurious expenditures of decorations by the land owner and the unproductive class would pass out the nation wealth and the domestic consumption.

Smith (1776) also tells a story related to saving. It is said that the division of

labor improves the economic productivity to make profit, then the people save a part of this surplus for new investment. The capital accumulation by the investment further raises the labor division, and the economic productivity is expanded, the saving and capital is further increased. It is just a circulation among labor division, saving and capital accumulation.

Ricardo (1817) analyzes the governmental tax and debt's impact on economy. He says that the timing of any tax or debt change does not influence the expenditure because the individual internalize the governmental budget constraint. It is also called the Ricardian equivalence hypothesis by his followers. This idea has been expanded by many economists such as Barro (1976). The hypothesis conjectures that the household will increase current saving if she or he predicts the tax increase by government in the future.

Malthus (1820) believes that the capitalist saves much to accumulate capital, while the landowner and worker have not enough purchase power to buy the products, thus an economic crisis caused by this type of insufficient demand takes place. To solve this type of crisis, the income transfer from capitalist to both landowner and worker is necessary.

Marx (1867) classifies the society into two groups, the capitalist and the worker.

The capitalist owns the whole capital and monopolies the whole surplus of the firm, and then makes a big saving to enlarge the industry scale. By contrast, the worker only obtains the subsistence wage then saves nothing, and can not make any wealth accumulation. This economy causes two crises. The first one is that the rich becomes richer while the poor is always poor, the income gap increases with the economic progress, and the society becomes unstable due to the increasing income inequality. The second one is, that the rich can not consume the product because the output of the factory is more than the demand of the rich, while the poor worker has no money or purchase power to buy anything further though he or she wants to consumes all the product from the industry. This induces an economic crisis caused by the inefficient domestic demand which is caused by the economic inequality. The Marx's point is quite similar to the Malthus's one, and the common factor of the economic crisis is the saving consumption imbalance caused by the distorted distributions of income and wealth.

Hobson (1889) points out that the economic crisis of capitalist economy is from the rich class's oversaving and overthrift. The unlimited thrift is not virtue but causing inefficient effective domestic demand. The reason that the rich class monopolies the main national wealth, is the unfair social institution. This oversaving finally slows the economic growth and harms social progress. Hobson not only

inheritances the main insists of Malthus and Marx, but also makes a further step.

Veblen (1899) analyzes the consumption and saving problem from the view point of social status. For example, we can read the following description in his "Conspicuous Consumption." "Consumption becomes a larger element in the standard of living in the city than in the country. Among the country population its place is to some extent taken by savings and home comforts known through the medium of neighborhood gossip sufficiently to serve the like general purpose of pecuniary repute. These home comforts and the leisure indulged in -- where the indulgence is found -- are of course also in great part to be classed as items of conspicuous consumption; and much the same is to be said of the savings. The smaller amount of the savings laid by the artisan class is no doubt due, in some measure, to the fact that in the case of the artisan the savings are a less effective means of advertisement, relative to the environment in which he is placed, than are the savings of the people living on farms and in the small villages. Among the latter, everybody's affairs, especially everybody's pecuniary status, are known to everybody else. Considered by itself simply -- taken in the first degree -- this added provocation to which the artisan and the urban laboring classes are exposed may not very seriously decrease the amount of savings; but in its cumulative action, through raising the standard of decent expenditure, its deterrent

effect on the tendency to save cannot but be very great (Veblen, 1899, Chap. 4)."

To sum up, we know that there were big literature and many thoughts on saving and consumption in ancient China during the period two thousands years ago, while there has been little studies on saving during the past two thousands years in China. In ancient Greece during the period two thousand of years ago, we can find a few descriptions on saving, while we can find almost nothing in all over the Europe during the period from the AD to Renaissance. We find many thoughts on saving in Europe and U.S. after the industrial revolution. Therefore, it is natural for us to have a question on why there are so many significant differences on saving thoughts over the whole history and over the whole world. The common part of the thoughts among the world is to emphasize thrift, while to mention living in luxury (or not overthrift) being important somehow in some cases.

3 Theory

Ramsey (1928) considers a mathematically optimal saving problem in an infinite horizon. He answers the question that how much of its income a nation should save. He finds that a nation can find the optimal saving pass for the individual lifetime

utility maximization. Ramsey does a path breaking work on the saving problem. The later literature like the permanent income hypothesis and the life cycle hypothesis has been largely influenced by Ramsey's finding.

As the advisor of Ramsey, Keynes (1933) proposes the absolute income hypothesis. He says that a part of current income is consumed and the left part is saved. This hypothesis is the foundation of his theory on unemployment and macro economics. Keynes (1933) also says the household prefers saving to consumption by the liquidity preference especially during the deflation period. This is also called Keynes effect in the literature. Hicks (1937) combines this hypothesis with the liquidity preference in the asset market to explore a general equilibrium model named IS-LM.

Hayek (1932, 1941) presents a concept on forced saving. He says that the voluntary saving may be herded in some sections to cause overinvestment, thus the economy should force some saving not to buy consumption goods but to invest to form production goods. His point is that the optimal saving is difficult in a free market economy, thus "forced saving" is needed.

Pigou (1943) says that the household increase consumption (reduce saving) due to the rise of real balance of wealth particularly during the deflation period, even though the current income is unchanged. This is called Pigou effect or real balance effect in the

literature. This effect is opposite to the Keynes effect.

Dusenberry (1949) proposes the relative income hypothesis. He says that individual's decision on consumption and saving is more effected by the relative income compared with others than by the abstract living standard. Thus an individual pay more attention on her or his relative consumption level (demonstration effect). Thus the income distribution of the economy have significant impact on saving. Furthermore, the hypothesis predicts that the current consumption is also influenced by the previous consumption (initial dependent, named ratchet effect), thus the household may difficultly reduce the consumption once attained.

Friedman (1957) presents the permanent income hypothesis. He says that the current consumption is determined by current income but by the long-term or lifetime income expectation. Thus he conjecture that the temporary income change has little impact on consumer spending but significant impact on saving.

Ando and Modigliani (1963) develop the life cycle hypothesis. They focus the different timing of income and consumption during the lifetime, then find that the household makes optimal consumption and saving plan for lifetime consumption smoothing if the lifestyle is assumed stable. Similar to the permanent income hypothesis, transitional income change has significant impact on saving but little impact on current

consumption. Furthermore, one of important conjectures is that the age structure of the household or nation has significant impact on saving.

Leland (1968) presents the precautionary saving hypothesis. He finds that the individual has an additional saving motive to make a consumption smoothing in response to the uncertainty regarding future income, due to the lack of completeness of insurance markets. According to this hypothesis, the volatility of future income and the completeness of insurance market have significant impact on saving.

Many scholars points out that status saving is an important factor in a market economy. An individual's happiness depends on her or his position, or status in society, along with her or his absolute consumption, income, or wealth. This idea can be traced back to Hume (1752a, b), Veblen (1899), Weber (1904), Easterlin (1974), Douglas and Isherwood (1979), and recent works such as Cole, Mailath and Postlewaite (1992) and Zou (1994). It is said that a society with stronger status preference on wealth, the economy has higher saving rate and then has higher economic growth rate.

Saving for transfers such as social security, bequest, intrageneration etc., has been analyzed by Feldstein (1974), Kotlikoff and Avia (1981), Bernheim, Shleifer and Summers (1985) and Cox (1987), Kotlikoff (1988), etc.. This transfer saving hypothesis conjectures that the household with higher transfer motive will has higher saving rate.

Recently, Laibson (1997) presents a model to explain undersaving problem caused by the consumer's time preference with hyperbolic discounting. If the consumer's time preference is hyperbolic discounting, her or his "optimal" solution on saving ex ante at any time is always under the optimal value ex post, thus the consumer always regret her or his saving decision ex post. Therefore, a rational consumer with hyperbolic discounting will choose a commitment device such as a housing loan or pension contract to force herself or himself to realize the optimal saving not to regret ex post.

Today we also introduce the newest theory on saving by Wan (2011). He presents a theory of bubbly saving to explain why some countries like Greece and U.S. undersave while some countries like China and Japan oversave during the housing bubble era. It is found that a household with a speculative saving motive under- or over-saves depending on the degree of distortion of housing policy and financial market. The speculative saving hypothesis first proposed here conjectures that the combination of the accessibility of financial market and the speculative saving motive will induce under-, over- and an unintended optimal saving.

To sum up, we have several theories on saving since Ramsey's pioneer work in 1928, while these theories are not enough to well explain the existing facts such as under- and over-saving in the world. Therefore, some scholars like Laibson (1997) and

wan (2011) are still working on some new theories on saving even today, and we would like to believe that some elegant ones will come.

4 Evidence

4.1 Empirical results from the countries except the greater China

There is much "saving" on the empirical saving literature. For example, we searched the paper of which one word of the paper title is "saving" using data base Econolit (1961-Nov. 2011) performed by the American Economic Association in November 2011. We found that there 3,409 papers where some ones (less than 400) are not real saving paper but such as "water saving," "energy saving" or "labor saving," etc.. We also found that most of them are empirical ones. Here it is difficult to summarize all results in the literature because of the limit of paper space and saving of potential readers' time, thus we would like to make a very simple survey on the literature surveys on "saving."

We only mention some influential survey papers. For example, the quite early one, King (1985) analyses the contribution to the theory of life cycle hypothesis and find some evidence to support the life cycle hypothesis. Hayashi (1986, 1997) answers

the question on "why is Japan's saving rate so apparently high?" and find that Japan starts with a low level wealth and has desire to accumulate wealth in order for their children to live as well as Americans do, thus the saving rates that are independent of age may be explained by the possibly significant flow of intergenerational transfers (dynastic hypothesis). Deaton (1989, 1992) finds that a household saves for a buffer stock to make consumption smoothing using the data from developing countries.

Bertocchi (1989) finds that the fiscal policy such as Italy from 1860's to 1983 contributed significantly to the decline in the saving rate. Bovenberg (1989) surveys that how tax policy affects saving in U.S., and finds that the effect of taxes on the private saving is small and uncertain and that raising the public saving is the most direct and efficient way to raise national saving, considering that the low levels of the national saving rate during 1980s.

Lehmussaari (1990) find that the wealth effects have played an important role determining saving with consumers' response to changes in real wealth apparently increasing since the financial liberalization in Nordic countries. Smith (1990) finds that many factors such as demographics, the existing stock of wealth, attitudes toward bequests, the rate of return and the level of social security wealth affect a country's saving level, and that government deficits appear to significantly reduce the national

saving in a number of developed countries during the 1980s.

Browning and Lusardi (1996) make a survey on theory and evidence on household saving via a broad view, and find that the certainty-equivalence model allows for the life-cycle, intertemporal substitution, bequest motives, habits and imperfections in the capital markets, and that the identification of the importance of different saving motives such as precautionary motives and liquidity constraints. Browning and Lusardi (1996, p.1850, line 39) also mention that some nonstandard model with the elements such as self-control and limits on computational power seems important intuitively. Schmidt-Hebbel and Serven (1997) finds that the saving rates have had a increasing divergence over the last three decades across the world, and that the higher saving rates have come from higher income growth.

Recently, Horioka (2007) finds ``that Japan's high household saving rate was a temporary phenomenon and that it was high in both absolute and relative terms during the 1955-95 period (especially during the 1960s and 1970s) but that it was not unusually high during the prewar and early postwar periods after 1950s, and that the Japan's temporarily high household saving rate was due not to culture but to temporary economic, demographic, and institutional factors." Hassan, Salim and Bloch (2011) surveys the existing literature on the effects of population age structure on saving,

capital flows and the real exchange rate, and find that this area of research is very important but is at its beginning stage, thus further theoretical model and empirical study are necessary for the theoretical and policy implications.

There are some papers such as Ferleger and Mandle (1994) and Mitchell, Moore and Phillips (2000) which analyze the issue on saving shortfalls. Still being unhappy, this undersaving problem have been discussed in the past two decades in the developed economies while can not be solved well, and then are being realized today. We have to ask why the academic research result of this type fundamental issue can not be reflected as a policy on solving the undersaving issue. If the governments in developed countries were conscious of seriousness of undersaving many years ago, the governments would do something to prevent the current worldwide crisis caused by undersaving.

4.2 Empirical results from the greater China

4.2.1 Taiwan

Deaton and Paxson (2000) find that the increase in Taiwan's saving rate, like the decline in the saving rate in the U.S., cannot be explained by the life-cycle

mechanism, and that the upward trend saving is not an aggregation effect, but an individual effect, by time-series of cross-sectional household surveys. Young Taiwanese now save a larger fraction of their resources than did their parents at the same age.

Using aggregate time series data during the period 1952-1999, Athukorala and Tsai (2003) find that the household saving rate rises with both the level and the rate of growth of household disposable income, and that the real deposit rate has significant positive impact. They also find that the public saving seems to crowd private saving, and that the increased availability of social security provisions and enhance credit availability seem to reduce saving. By micro Pseudo-panel data from 1975 to 1995, Tsai, Chu and Chung (2000) find that prolonged life expectancy helps raise the saving rate while higher children's survival rates reduce it.

By the micro data of the Survey of Family Income and Expenditure during the period 1991-1998, Chou, Liu and Hammitt (2003) find that the government insurance programs, National Health Insurance reduced households' precautionary saving by an average of 8.6-13.7% with the largest effects for households with the smallest saving. Using micro household survey data from 1976-1996, McKenzie (2006) also finds evidence for a strong precautionary motive in Taiwan, with levels of prudence much higher than found in the U.S. and U.K..

Using household survey 1980, 1990 and 2000, Chen, Kuan and Lin (2007) analyze the effects of housing price appreciation in the late 1980s on homeowners and renters over the past two decades. They find that evident heterogeneity exists not only in the marginal propensity to save out of income but also in discouragement effect for renters and wealth effect for homeowners across the conditional distribution of savings. They also find that the higher saving household, the larger is the marginal propensity to save out of income.

The notable point is that the trends of saving rate and housing price during the period 1971-1993 are similar to the ones in mainland China during the period 1978-2010. Therefore, we can explore the information during 1994-2010 to find a reference for the prediction on mainland China after 2011. Especially noticeable point is that the trend of housing price in Taiwan during 1971-1993 was nearly same as the one in Japan during 1971-1992, while the housing price in Taiwan had been kept stable from 1994 comparing with the crash of housing price in Japan from 1992. We would like to name the Taiwan's case as the "soft landing" but name the Japan's case as the "hard landing." Current mainland China is trying her best to make the bubbly heating economy soft landing,³ we believe that they will succeed on this operation and that the

³ For the China's housing bubble, see Dreger and Zhang (2010) for details.

change of saving behavior in Taiwan will be a good lesson for future mainland China.

4.2.2 Hong Kong

There are few studies on saving in Hong Kong, thus we have to turn to find some papers related to saving. It is lucky enough to find three papers on consumption. The first one, Lai (2002), assess the relationship between consumer credit, household debt-service burden and consumption. Using aggregate time series data, Lai (2002) finds that real income and net wealth as captured by property prices are major determinants of consumer spending, and that the changes in the real interest rate and the debt-service burden are significantly and negatively associated with consumption in the short run, and that the quantity of consumer credit has little explanatory power for consumption.

The second one, Cutler (2005), using aggregate time series data and the life cycle framework, finds that there is a stable relationship between consumption, labor income and wealth with plausible long run, and that the marginal propensity to consume out of housing wealth is lower than in other industrialized economies, e.g. U.S. and Canada, which is consistent with a relatively uneven distribution of wealth in Hong Kong.

The third one, Tse, Man and Choy (2007), also using aggregate time series data, analyze the wealth effect of housing and stock markets on consumption. They find that there is a long term equilibrium relationship between household consumption and the changes in housing wealth, and that this effect appears to be more significant than that associated with changes in financial wealth.

To summarize the findings in Hong Kong, we can know that the studies are focused on asset markets by aggregate data. Because of the Asian Financial Crisis in 1997, there is a big volatile in Hong Kong's asset markets, the link between the saving and consumption and the changes in asset prices should be carefully analyzed.

According to Goodhart and Dai (2003), there was a dramatic intervention policy on counter-speculation in financial markets in Hong Kong. We expect further researches on Hong Kong's case in the future, and believe that the potential results would be good lessons for the current and future world, especially for the mainland China.

4.2.3 Mainland China

Hsiang (1967) analyzes the people's saving including deposit savings in the national banks and the deposit savings in the credit cooperatives in the rural communes under the socialist system. Using aggregate time series data, Qian (1988) analyzes the

household savings behavior in urban and rural sectors during 1950-1985, and finds that the savings of the two sectors are substantially different, and that the rural sectors has a higher propensity to save due to rural reform from 1978 to 1985, and that the savings behaviors are much more in line with results of similar studies of other countries.

Feltenstein, Lebow and Wijnbergen (1990) also use time series data and the market rationing theory to analyze the saving behavior, and find that the real interest rate has negatively significant impact on saving rate.

Wang (1995) uses a micro data set of the "Consumption and Savings of Chinese Rural and Urban Households" designed by the Institute of Economics of the Chinese Academy of Social Sciences and collected by the State Statistical Bureau in 1987, to analyzes the relation between the permanent income and the wealth accumulation, and finds that the permanent income in China is not only closely related to the household head's education, age, occupation and other human capital characteristics but also related to the scope of market-oriented reforms as reflected by types of employer and differentiated effects of locations, and that rural households with highly uncertain income appear to have a higher wealth-income ration when the value of housing in take into account, and that the usual hump saving behaviors over age are generally consistent with the life cycle and the permanent income theories.

Also using time series data 1952-92 and disequilibrium model, Li (1997) distinguishes quantitatively the forced savings which is defined as the financial equivalent of the excess demand which households give up in a certain period after futile goods searches or/and for some other reasons, and the voluntary savings under rational expectations. Lin (1997) finds that both regime shifts and repressed inflation have contributed to the rapidly rising personal money balances during the reform period, and that the household voluntary savings can be well explained by official interest rates, and that only forced savings and instantaneous excess demand matter in affecting market prices, and thus that monetary overhang is not so unsettling as some economists would think.

Kraay (2000) uses panel data from China's household survey to analyze the determinants of the saving rate of rural and urban households during the 1978-83 and the 1984-89 periods. It is found that the future income growth and the share of food in total consumption have significantly negative impact on rural household saving, presumably because the rural households are too poor to save, and that neither the dependency ratio nor future income uncertain has a significant effect. It is also found that none the explanatory variables has a significant effect on urban households saving rates.

Using micro data from the State Statistical Bureau's Urban Household Survey in Sichuan and Liaoning for the 1986-1990 period, Aaberge and Zhu (2001) analyze the saving behaviors under extremely hyperinflation and high economic growth rate. They find that the high inflation gave the households strong motives to switch from financial savings to purchase of consumer durables.

Using two micro data sets of the "1995 Urban Household Income Distribution Survey" and the "1999 Urban Household Income Expenditure and Employment" by the Institute of Economics of the Chinese Academy of Social Sciences, Meng (2003) finds that the urban households have a strong motive for precautionary saving, and that the strong evidence of an inability of the educational expenditure suggests the educational subsidies may be necessary to prevent further increases in income inequality in the next generation.

Using time series data for the period 1953-2000, Modigliani and Cao (2004) find that the long-term growth rate, the reciprocal of the dependency ratio, the deviation of growth from the long-term growth rate, and inflation have significantly positive effects on the household saving rate.

Using simulation method and the data including demographics for the period 1998-2050, Lu and McDONALD (2006) use Ramey model to investigate whether the

high saving ratio is optimal. They find that the rate of time preference should be negative to consider the current high saving rate as optimal, thus it suggests that the current rate of saving in China is excessive.

Using micro panel data sets by the survey department of the Research Center on the Rural Economy at the Ministry of Agriculture in Beijing for the periods 1986-1991 and 1992-2000, Giles and Yoo (2007) find that 10% of savings can be attributed to a precautionary motive, and this increases to 15% for households with consumption per capita below the poverty line, and that both poor and nonpoor households engage in less precautionary saving as the size of the village migrant network increases.

Horioka and Wan (2006) incorporate the change of age structure of population by the "one child policy" and rapid income growth into a simple habit formation model to explain the high saving rate in China, and then do some empirical estimations. Using dynamic GMM and the panel provincial survey data for the rural and urban sectors during the period 1995-2004, Horioka and Wan (2007, 2008) find that the initial of saving rate, the increase of real income, (in many cases) the real interest rate, and (in some cases) the inflation rate have significantly positive impacts on saving, however, the variables relating to the age structure of the population have the expected impact on

the household saving rate in only one of the four samples. The results provide mixed support for the life cycle and the permanent income hypotheses, and imply that China's household saving rate will remain high for some time to come.

Using the Flow of Fund Accounts 1992-2004 released by China's National Bureau of Statistics and the National Income and Product Accounts of the Bureau of Economic Analysis in the U.S., Qin and Ren (2008) recalculate the saving rates of the two countries on a comparative scale. They find that the difference between the household saving rates of these two countries is in fact much smaller than is often suggested, and that the households rates of these two countries are experiencing the same decreasing trend, but that both have increased slightly since 2002.

Chamon and Prasad (2010) try to answer the question of "why are saving rates of urban households in China rising?" using micro data from 1995 to 2005. They find that the saving rates increased across all demographic groups, and the age profile of savings has a unusual pattern with younger and older households having relatively high saving rates. They argue that these patterns are best explained by the rising private burden of expenditure on housing, education and health care.

Using time series data 1982-2008, Barnett and Brooks (2010) investigate whether the sizable increase in government social spending in recent years lowered the

precautionary saving and increased consumption. They find that spending on health, but not on education, had an impact on household behavior, and one yuan increase in government health spending causes two yuan increase in urban household consumption.

Also using a structural model and time series data, Chao, Laffargue and Yu (2011) find that the life cycle hypothesis can explain only 35% of the surge of the Chinese household saving, while after adding the strong motivation of young adults for buying a home and the financial support from their parent into the model, the model can reproduce the high and increasing level of saving since mid-nineties.

Wan (2011) uses panel provincial data during 1995-2010 and individual data in 2005 from China to examine whether the housing bubble has effects on household saving. It is found that increase of housing price and the interest payment of loan especially in urban sector significantly raises the saving rate in cities as well as nationwide after controlling for the life cycle and the other related factors. This empirical results are not consistent with any theory in the existing literature such as Wang and Wen (2010), but consistent with the speculative saving hypothesis which causes under- and over-saving problem first presented by the author.⁴ This study sheds a new insight not only to the literature on the saving consumption imbalance issue

⁴ Ogawa and Wan (2007) find that the debt outstanding of Japanese households decreases the consumption (imply increasing saving rate) after the housing bubble burst.

domestically and globally, but also to the policies on how to overcome the issue of shortage of domestic demand in current China as well as how to prevent against bankruptcies in U.S. and EU economies after the bubble crash.

Yang, Zhang and Zhou (2011) make an analysis and a literature survey on why saving rates in China are so high. Using the data from the Flow of Funds Accounts and Urban Household Surveys supplemented by the findings from existing studies, they analyze the causes of China's high and rising saving rates in government, corporate, and household sectors. They find the causes are complex, but the evolving economic, demographic, and policy trends in the internal and external environment of Chinese economy will decrease the national saving rate in the foreseeable future.

Wei and Zhang (2011) proposes a new competitive saving motive to explain the China's high and rising saving rates. They also use cross-regional and micro data set to identify the impact of the sex ratio rise caused by one child policy on saving. They find that the rising sex ratio can explain about half the actual increase of household savings rate during the 1990-2007, and that it is presumably because the Chinese parents with a son raise their savings in a competitive manner in order to improve their son's relative attractiveness for marriage in a special society with sharply imbalanced sex ratio.

To sum up, there are many empirical studies but few theories except Wan (2011) and Wei and Zhang (2011) on the saving in mainland China. The papers on savings dramatically increased during the past two decades, and now it is still a very hot topic. The existing literature related to mainland China tell us that there are many factors associated with savings while it is still not clear which one is dominant, thus further researches are needed.

5 Conclusion

We have done a literature survey on saving thought, theory and evidence. From the view of saving thought, we found that there were big literature on saving and consumption in ancient China during the period two thousands years ago, while there has been little studies on saving during the past two thousands of years. In ancient Greece during the period two thousand of years ago, we found a few descriptions on saving, while we found almost nothing in all over the Europe during the period from the AD to Renaissance. We found many thoughts on saving in Europe and U.S. after the industrial revolution. Thus we naturally have a question on why there are so many significant differences on saving thoughts in timing over the whole history and over the

whole world. The common part of the thoughts among the world is to emphasize thrift, while to mention living in luxury (not overthrift) being important somehow in some cases, but it is a pity that the current world is likely to put a slight on the former.

From the viewpoint of theory, we found many theories on saving since Ramsey's pioneer work in 1928, while these theories are not yet enough to well explain the existing facts in the world. Therefore, some scholars are still working on this topic, and we expect that some more elegant theories will come in the near future.

From the view of the empirical studies, we first searched the results from the countries except the greater China, then searched the ones from the greater China. For the first part, we found that there are thousands of papers on empirical studies related to existing theories. We also found that there are some papers such as Ferleger and Mandle (1994) and Mitchell, Moore and Phillips (2000) which analyze the issue on saving shortfalls. Still being unhappy, this undersaving problem have been discussed in the past two decades in the developed economies while can not be solved well, and then are being realized today. We have to ask why the academic research result of this type of fundamental issue can not be reflected as a policy on solving the undersaving issue.

In Taiwan, we found that the trends of saving rate and housing price during the period 1971-1993 are similar to the ones in mainland China during the period

1978-2010. Current mainland China is trying her best to make the bubbly heating economy soft landing just like past Taiwan, we believe that they will do this work well and that the change of saving behavior in Taiwan will be a good lesson for future mainland China.

In Hong Kong, because of the Asian Financial Crisis in 1997, there is a big volatile in Hong Kong's asset markets, while there are few studies on the link between the saving and the changes in asset prices. According to Goodhart and Dai (2003), there was a dramatic intervention policy on counter-speculation in financial markets, we expect more researches on Hong Kong's experiences, and believe that the potential results would be good lessons for the current and future world, especially for mainland China.

In mainland China, there are many empirical studies but few theories on the saving in mainland China. The empirical papers on savings dramatically increased during the past two decades, and now it is still a very hot topic. The existing literature related to mainland China tell us that there are many factors associated with savings while it is still not clear which one is dominant, thus further researches are needed.

Through this survey on saving and the current world crisis caused by undersaving, we tend to think of that the thought of thrift, a common sense among the

saving thought in the world, is still important today. Even we have many existing theories and evidence on saving, many countries in the current world still be failed to solve the under- or over-saving issues. It may be because of two reasons. The first reason would be that we still have not a good theory and evidence on saving. The second one would be that the other factors besides economics such as political process make the economy without optimal saving even we have good theories and empirical studies. It is also a task for us to identify which reason is more important.

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