

Xiaobo Zhang (International Food Policy Research Institute) – “The Competitive Savings Motive: Evidence from Rising Sex Ratios and Savings Rates in China”

First of all, I would like to say thank Professor Smith for inviting me here to give a talk. It is a great honor.

My presentation is on the Chinese savings puzzle. In the opening remarks, Professor Smith and then the keynote address, Professor Harding, pointed out why the key issue confronting the Sino-U.S. relationships (“current maker” term) is trade imbalance, enormous trade imbalance and a credit imbalance between the two countries. It has huge consequences. The former Fed Governor Greenspan blamed the Chinese excess saving rates to the global crisis. His argument that the excess savings rate from China flowed to the U.S. to purchase U.S. Treasury bills, and so the prices and long term interest rates and propelled the housing bubble to eventually cause the current global financial crisis. Personally, I don’t agree with that long chain argument, but nonetheless, it is very important to understand what are the causes of China’s high and rising savings rates. The Chinese savings rate is extremely high. There are three reasons: first, it is high relative to many countries, even to (East) Asian countries which are known to have very high savings rate; secondly, it is higher than its own past, as evident when you see his figure where the savings rate has increased from about 35% to about 50% in 15 years; and thirdly, the Chinese savings rate is rising relative to its own already high investment rate. So China’s growth model is very investment driven, Loren has pointed out all of that too, so in the paper we tried to answer ‘why the Chinese save so much?’.

Our focus is on the household savings, because household savings account for about half of national savings. Another part is government savings and corporate savings, which are beyond the scope of our study. There are several popular hypotheses. First of all is a life-cycle hypothesis. So, when there is a large working age population, you tend to see a higher rate of savings, secondly is precautionary savings because it is also pointed out the Chinese face increased uncertainty since many people do not have any social safety net. Facing that, people may save more. And also there are many other alternative hypotheses like low level of financial development, where the counter argument is that the Chinese are more frugal with savings. However, it is easier to dismiss the third and the fourth hypotheses. Just think about financial development. When I first came to the U.S. in 1994, it was my first time seeing a credit card. But now, if you go back to China, you can see credit cards everywhere, and also people can get mortgages to buy a house or to get loans to purchase a car. So, you can see a tremendous increase in financial development; but, Chinese savings rates still rise. On the contrary, this weak counter-argument explains the savings rate, but only on that level, and cannot explain the rise in savings rates. But, for the life-cycle hypothesis, Modigliani, a Nobel laureate, and his co-author wrote a paper using time-series STATA to argue that this is a major explanation to China’s rise in savings rates. However, the reasons stated by Chamon and Prasad from IMF argue against that because they have large panel household data set. In their data set they could not find that the age profile related to savings rate. So, in terms of precautionary savings, we acknowledge that may be a very important explanation but we will try to take that into account in our analysis. Here we offer an alternative explanation: that China’s high savings rate issue relates to demographic tradition, in particular the rate in sex ratio imbalance.

In the early 1990s, China implemented the “One Child” policy and it led to a very dramatic increase in sex ratio imbalance. If you look at the figure in the late 1970s, China had a very balanced sex ratio of about 105 and 100, which is a natural ratio. But, in 2005, the latest figure available shows that the ratio is about 122 and 100. That means that for every 6 men there are 6 women of legal marriage age, but if look at the total number, there are about 30 million excess men in the marriage market. So, mathematically these people cannot get married. If you think the size, that is all about the entire male population of Italy, about the same as the male population of Vietnam, and it is more than double the total population of North Korea, so if you think people can solve the issue by marrying girls from other countries near by, it is near impossible to solve the issue by marrying out.

Here, our explanation is that if you assume most men want to get married, also most parents want to make sure their son gets married. John has explained a lot on the background. In China, there is a strong preference for sons particularly married sons, because parents rely on their sons and their wives for support. Without that, when they get old, they will get lonely and have no one to take care of them in the absence of a social safety net. It is my key assumption if so, if the male-female ratio increases, there will be much more competition in the market, and the families with sons will compete very hard to build bigger houses and to save more in order to increase their marriage prospects. One instrument is to increase the savings rate, and some might argue that the families of girls may also have the same behavior, so that they might try to get more transferred like a bigger bride price, so they can civilize. But, there is a counter-argument that there may be a spill-over effect, particularly in the non-tradable goods, like housing in particular in cities. If families with sons compete to buy houses in the cities, the real estate market will go up, and we’ll have an externality for the families with girls because they will also need housing.

So I will point out some things like hits song by Madonna, and the Material Girl, you can sense that she found the connections between the savings account and the also the man’s chance of getting a date. Look at the last line, “Only boys who save their pennies make my rainy day.” This is common sense if you teach people that girls, given everything be equal, prefer men with money. From the biology point of view, Darwin has two famous theories: one is natural selection, and one is sexual selection. Reproduction is the utmost purpose for any species because any species wants to pass their genes on to their descendants, so he defined the sexual selection struggle between the individuals of one sex as generating the males for the possession of the other sex. If you look at how nature works you see the peacock, the male peacock has the beautiful tail that has the only purpose of attracting the females, not for their survival. The long tails actually compromise their chance for survival. If you go to the zoo, you will find many examples of these phenomena. The males are bigger than the females, and for humans too, the males are generally bigger and taller than women. This was useful in the gatherer and hunter society and agricultural society because men are specialized in more physical work, but now we come into the industrial and information age, and stature is not as important as before. Having money in their banking accounts now might be more important in attracting their mates, so this one is my inspiration.

Actually, the most important inspiration is from my own field work in 2005 when I prepared a field survey in Guizhou province. We have been doing a field panel service

there the past seven years. When I visited this household, I saw them building a house, and I asked them why they were building the house and where they got the money for this. The man was very nervous. He whispered to me that he needed to build it for his son's marriage because otherwise no matchmaker would bring over any potential bride to my home. So, this was a big signal in village, for me to ask where he got the money, and if it was from farm work or somewhere else. He said that he only did farm work. I said that I did not realize that he had money to do this, and his answer "I donate blood every two weeks", so that was about seventy-five Yuan every two weeks. There was a major cash income from his own blood as a source of income to build the house.

You can see the competition in the villages. This not only happened in the poor villages, but also in the coastal areas. So if you traveled in Zhejiang or Jiangsu province, along the coast, you see many new buildings by farmers. You can see the new buildings are always taller than the old ones, but if you visit these farmers' houses, you will even find that the top floors are not furnished, no furniture. The reason is a signal: they want to make sure their houses are taller than neighbors', so this is a lot of waste of money. If you think about it, most young people have migrated out and only come home during the Chinese New Year. They stay in the houses maybe at most one month. Most of the time the houses are empty, there are a waste of investment, and secondly, in rural China, the housing is not allowed to trade houses or sell to each other. There is no housing market so the investment is pretty much a waste from an economist's point of view. They are irrational when you try to ask them for logical explanations. Some of the evidence for my hypotheses first of all if you look at the national figures, if you put the national savings rate along with the national sex ratio for the last twenty years and can see that over the last twenty years the two lines mirror closely. It seems there are some correlations between these two variables, but we know that this doesn't suggest any causal evidence, so we need to find more evidence.

In our paper, we present a series of evidence of the provincial and household analyses, and we also look at time profiles of savings with regarding the time of wedding to sex ratios, housing values, and bank deposits. The first evidence is to look at the correlations between the sex ratios and savings rates across Chinese provinces in the period between 1980 and 2007. The lifetime variable is the savings rate and the key variable is the sex ratio, and we also have other control variables. So, before looking at the summary of statistics, you can see the Chinese savings rate has increased tremendously in the sample period. For the urban sample the savings have doubled, and in the rural sample, savings rates have more than doubled. Also, you can see large regional variations in sex ratio where the sex ratio has increased over time. In 2005 in Jiangxi, you can see the sex ratio is as high as 1.37, which is very high, also you can see in some regions with minority populations that the sex ratios are still pretty balanced, so there is some variation in the sample. In the graph, there is a very simple OLS regression. Look at the key variable of interest, the sex ratio for age cohort seven to twenty-one. Across the regressions, you see that they are all significant, so in the middle column, we only look at the subset of samples in years where we have the incoming data and you can see that the findings still hold. In our paper we have many robust checks on this.

But, if you look at the rural column sample separately, you can see the coefficient for the rural sample is bigger than that for the urban sample. But for economists we always want to find a causal relationship, so we use the instrument variable approach.

The idea is that we first want to find some exogenous variables that can predict the sex ratio variable, but those variables are not correlated to error terms of the first-stage regression of the savings variables. What variables we use for the instrument are first, fines for violating family planning in different provinces; secondly, a dummy variable for extra fines on higher-order births like a third or fourth child; also the share of population that is not subject to first order, here we use share from minority population in the province. Now I present the IV, instrument variable regression. This is the first stage. You can see that among the three instrument variables, at least two of them are always significant in all the regressions which mean that they are good instruments. In an IV-regression you can see for the first row all the columns remain significant and the magnitudes are bigger than the OLS regression.

So, what is the economic significance of this? The coefficient suggests that the increase in the sex ratio for the age cohort from seven to twelve went from 1.045 in 1990 to 1.136 in 2007, which leads to a rise in savings rate by seven percentage points accounting for over half of the average increase in household savings rate during this sample period estimate, so this gives a rough estimate.

Because I have run out of time, I will just show the household savings rate regression. Here, we only look at the family, the core family with three person family of two parents and either a son or daughter, in the first two columns. If you run them separately, you can see that the families with sons are more responsive to the areas with high sex ratios, but the families with daughters are less responsive to sex ratios. So this is consistent with our hypothesis. We also looked at families with two children, a son and daughter, they are not significant. Similarly, when looking at the pattern for household savings rates in urban China, the coefficient for the families with sons is highly significant, and in our paper we put a lot of variables to control for precautionary savings, the results remain hold, and if you look at the savings behavior regarding arranging a time for a wedding, you can see that before a wedding the families generally increase their savings, but after the wedding, you see it go down.

If you look at the housing in the 2000 Chinese census information on housing space and value so if you relate that to the local sex ratio, you also find that there are strong correlations between the sex ratios between 1990 and 2000 census. This suggests that sex ratio is related to the housing market. I looked at the bank deposit, once again, and you see at the county level, you see the positive correlation between the variables. So let me stop here. The central argument that we want to make is that sex ratio imbalance is a contributing factor to the rising savings rate in China, so in order to address the global imbalances, we need to look beyond the traditional instruments like foreign exchange rate so that we can think of other policy options. Thank you.