Household Saving in Japan and China

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Purpose of This Talk

To analyze household saving behavior in Japan, China, and elsewhere in Asia with emphasis on the impact of the age structure of the population.

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Definition of Population Aging

Population aging refers to an increase in the proportion of the elderly in the total population (or, equivalently, to a situation in which the elderly population is growing faster than the total population) and is caused by fertility declines and/or mortality declines (= increases in life expectancy) .

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Trends in Population Aging

- **Population aging is a global trend, and the share of the elderly in the world's total population is projected to more than double in the next half century.**
- **The share of the elderly in the total population is highest in the developed countries, but it is increasingly more rapidly in the less developed countries.**

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The Impact of Population Aging

Population aging will have a variety of effects on the world economy, but in this talk, I will focus on the impact of population aging on saving—on household saving, private saving, government saving, and national saving.

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Theoretical Considerations (1)

- **The life cycle hypothesis predicts that the age structure of the population will affect the household and private saving rates.**
- **According to this hypothesis, people work and save when they are young and retire and dissave their previously accumulated savings when they are old.**

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Theoretical Considerations (2)

- **Thus, the life cycle hypothesis predicts that the overall saving rate will be higher, the lower is the ratio of the elderly population to the working-age population (called the elderly dependency ratio).**

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Theoretical Considerations (3)

- **Conversely, the life cycle hypothesis predicts that, as the population ages and the elderly dependency ratio increases, the saving rate will decline.**

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Theoretical Considerations (4)

- **However, one would also expect a country's youth dependency ratio, defined as the ratio of children to the working-age population, to exert downward pressure on its saving rate because, like the elderly, children contribute to consumption without contributing to income.**

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Theoretical Considerations (5)

- **Moreover, the youth dependency ratio typically declines as the population ages, exerting upward pressure on the saving rate, and this will at least partially offset the downward pressure on the saving rate caused by the increase in the elderly dependency ratio.**

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Theoretical Considerations (6)

- **Generally, however, the downward pressure on the saving rate caused by the increase in the elderly dependency ratio will more than offset the upward pressure on the saving rate caused by the decline in the youth dependency ratio, as a result of which population aging will cause the saving rate to decline.**

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Empirical Evidence on the Impact of Population Aging on the Household and Private Saving Rates

(1) Cross-country evidence

(2) Time-series evidence for individual countries

(3) Micro evidence from household surveys

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Cross-country Evidence (1)

(1) Modigliani (1970)
(2) Horioka (1989)
(3) Loayza et al. (2000)
(4) Schrooten and Stephan (2005)
(5) Bosworth and Chodorow-Reich (2006)

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Cross-country Evidence (2)

For example, Bosworth and Chodorow-Reich (2006) find for their sample of Asian countries that a one percentage point increase in the youth dependency ratio and the elderly dependency ratio lower the national saving rate by 0.45 percentage points and 1.20 percentage points, respectively (full sample: 0.19/0.54).

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Cross-country Evidence (3)

Horioka (1989) finds that the low elderly dependency ratio was by far the most important cause of Japan's high private saving rate during the 1975-84 period.

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Time-series Evidence

Time series analyses for individual countries have also tended to find significant demographic effects (see, for example, Horioka (1997) for Japan and Modigliani and Cao (2004) for China).

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Case Study: Japan (1)

- In Japan, the youth dependency ratio has shown a long-term downward trend, while the elderly dependency ratio has shown a long-term upward trend.

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Case Study: Japan (2)

- However, the decline in the youth dependency ratio was more pronounced than the increase in the elderly dependency ratio until the early 1970s, and as a result, Japan's household saving rate showed an upward trend until the early 1970s.

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Case Study: Japan (3)

- By contrast, the increase in the elderly dependency ratio has been more pronounced than the decline in the young dependency ratio since the early 1970s, and as a result, Japan's household saving rate has shown a downward trend since the early 1970s.

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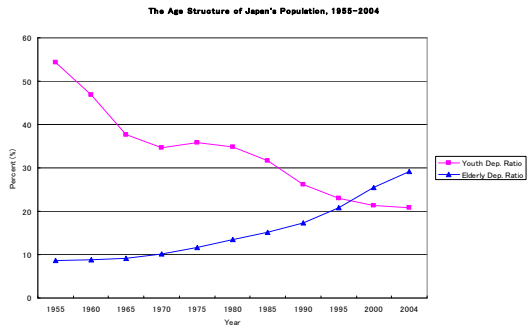

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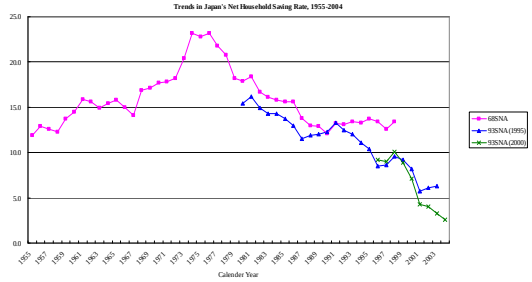

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Case Study: Japan (4)

- Moreover, the increase in the elderly dependency ratio is expected to continue and even accelerate, and this can be expected to cause a further decline in Japan's household saving rate, perhaps to zero or negative by 2010.

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Case Study: China (1)

- In China, the youth dependency ratio has shown a long-term downward trend (due in large part to the one-child policy and other population control measures), while the elderly dependency ratio has shown a long-term upward trend.

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Case Study: China (2)

- However, the decline in the youth dependency ratio has been more pronounced than the increase in the elderly dependency ratio, and as a result, China's household saving rate has shown an upward trend until now.

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Case Study: China (3)

- **However, the increase in the elderly dependency ratio is expected to become more pronounced than the decline in the youth dependency ratio after about 2010, and as a result, China's household saving rate can be expected to show a downward trend after about 2010.**

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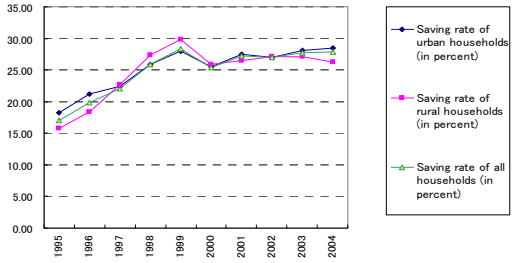
Figure 6: Household Saving Ratio in China, 1995–2004



Source: Authors' calculations based on China Statistics Yearbook, 1996–2005

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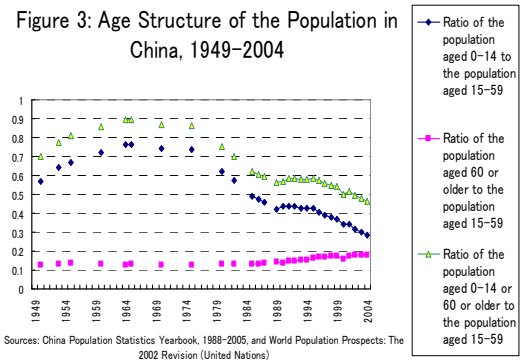
Figure 3: Age Structure of the Population in China, 1949–2004



Sources: China Population Statistics Yearbook, 1988–2005, and World Population Prospects: The 2002 Revision (United Nations)

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Future Trends in the Age Structure of China's Population

	2000	2005	2010	2015	2020	2025
YOUNG	0.383	0.323	0.299	0.293	0.294	0.291
OLD	0.155	0.160	0.182	0.225	0.261	0.319
DEP	0.538	0.484	0.481	0.517	0.555	0.610

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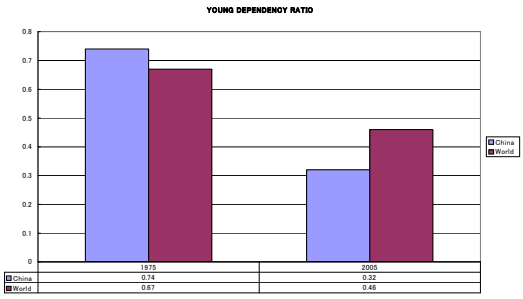
Young Dependency Ratio



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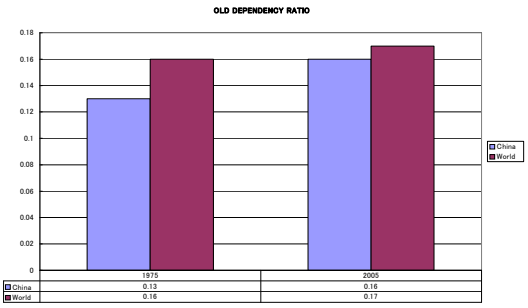
Old Dependency Ratio



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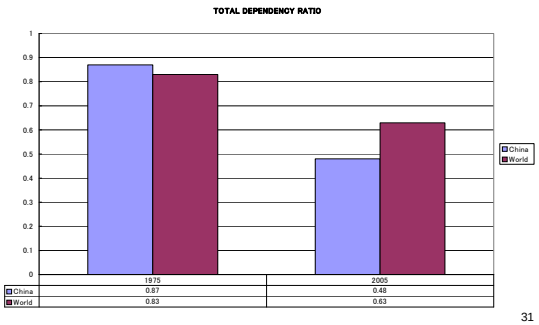
Total Dependency Ratio



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Summary re Speed of Aging in Asia

- The year in which the proportion of the elderly reaches 14%
- 1995: Japan
- 2020: Hong Kong and Korea
- 2030: China and Thailand
- 2040: Vietnam
- 2045: Indonesia and Malaysia
- 2050: India and Philippines

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Micro Evidence from Household Surveys (1)

- Micro evidence from household surveys show that the elderly (especially the retired elderly) dissave, as assumed by the life cycle hypothesis (see, for example, Horioka's (2006) analysis of Japanese data).

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Micro Evidence from Household Surveys (2)

- This suggests that the life cycle hypothesis holds and that population aging will have a significant impact on the household and private saving rates.

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Summary re Household and Private Saving Rates (1)

- Population aging can be expected to have a significant negative impact on the household and private saving rates.
- However, the population aging process is proceeding at different speeds in different countries, and thus the decline in the household and private saving rates can be expected to begin at different times and proceed at different speeds in different countries.

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Summary re Household and Private Saving Rates (2)

- Thus, there is no danger of a region-wide (or worldwide) collapse in saving rates in the near future.

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The Determinants of Household Saving in China: A Dynamic Panel Analysis of Provincial Data

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Purpose of This Paper

To conduct an econometric analysis of the determinants of the household saving rate in China using an estimation model based on the life cycle model with habit formation and panel data on Chinese provinces for the 1995-2004 period.

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Variable Definitions (1)

- Dependent variable
  SR = the household saving rate, defined as the ratio of household saving to household disposable income
- Independent variables
  CHY = the income growth rate, defined as the real rate of growth of per capita household disposable income (net household income in the case of rural households)

  YOUNG = the young dependency rate, defined as the ratio of the population aged 0-14 to the population aged 15-64

  OLD = the old dependency rate, defined as the ratio of the population aged 65 or older to the population aged 15-64

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Variable Definitions (2)

- **DEP** = the total dependency rate, defined as the ratio of the population aged 0-14 or 65 or older to the population aged 15-64
- **RINT** = the real interest rate, defined as NINT – INFL, where **NINT** = the nominal interest rate on one-year bank deposits
- **INFL** = the rate of change of the consumer price index
- **Constant term =** corresponds to the coefficient of a time trend because first differences are taken
- **Rural dummy** = corresponds to the coefficient of a time trend in rural areas because first differences are taken
- **SR(-1)** = the one-year lag of the saving rate

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Variations in the Variables

Household saving rate

- **Urban: 12-35%; Rural: 10-44%**
- **Total: 13-39%**

Total dependency ratio

- **Urban: 29-48%; Rural: 34-66%**
- **Total: 31-56%**

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Estimation Method

- **Alternative "system GMM estimator" for dynamic panel proposed by Arellano and Bover (1995) and Blundell and Bond (1998), which reduces the potential biases and imprecision associated with the usual difference estimator by combining, in a system, the regression in differences with the regression in levels.**
- **As Windmeijer (2005) notes, the estimated asymptotic standard errors of the efficient two-step GMM estimator will be severely downward biased in small samples, and thus we correct the standard errors for this bias using the method proposed by Windmeijer (2005).**

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	Urban	Rural	All	Pooled sample of urban & rural
SR(−1)	+	+	+	+
CHY	+	+	+	+
RINT	insig.	+	+	+
YOUNG	insig.	insig.	insig.	insig.
OLD	insig.	insig.	+	insig.
DEP	insig.	insig.	+	(−)
INFL	insig.	(−)	−	(+)
Rural dummy				(+)
Constant	insig.	insig.	insig.	(+)
No. of observations	272	272	272	544

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Summary of Our Findings

- The main determinants of China's household saving rate are the lagged saving rate, the income growth rate, the real interest rate, and (in some cases) the inflation rate. The age structure of the population usually does not have a impact on the household saving rate.
- These results provide mixed support for the life cycle hypothesis, are consistent with the existence of inertia or persistence, and imply that China's household saving rate will remain high for some time to come.

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Implications of Our Findings

- The main determinants of China's household saving rate are the lagged saving rate, the income growth rate, and (in some cases) the real interest rate and the inflation rate. The age structure of the population usually do not have a impact on the household saving rate.
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Policy Implications (1)

It may become necessary for China to adopt one or more of the following steps to alleviate economic frictions with other countries:

(1) Improve the infrastructure of the economy
(2) Increase the availability of consumer credit
(3) Improve social security
(4) Relax the one-child policy and other population control measures

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Policy Implications (2)

- Such measures will not only reduce China's saving-investment imbalances and hence her current account surpluses but will also improve the quality of life in China, thereby enabling two birds to be killed with one stone.
- In the long run, however, China's household saving rate can be expected to taper off assuming the growth rate tapers off. Thus, China may well suffer from current account deficits rather than current account surpluses.

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THE END

Thank you for your attention!

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