

Demographic Trends and Sustainability of the Old-Age Security System in China

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Banca d'Italia

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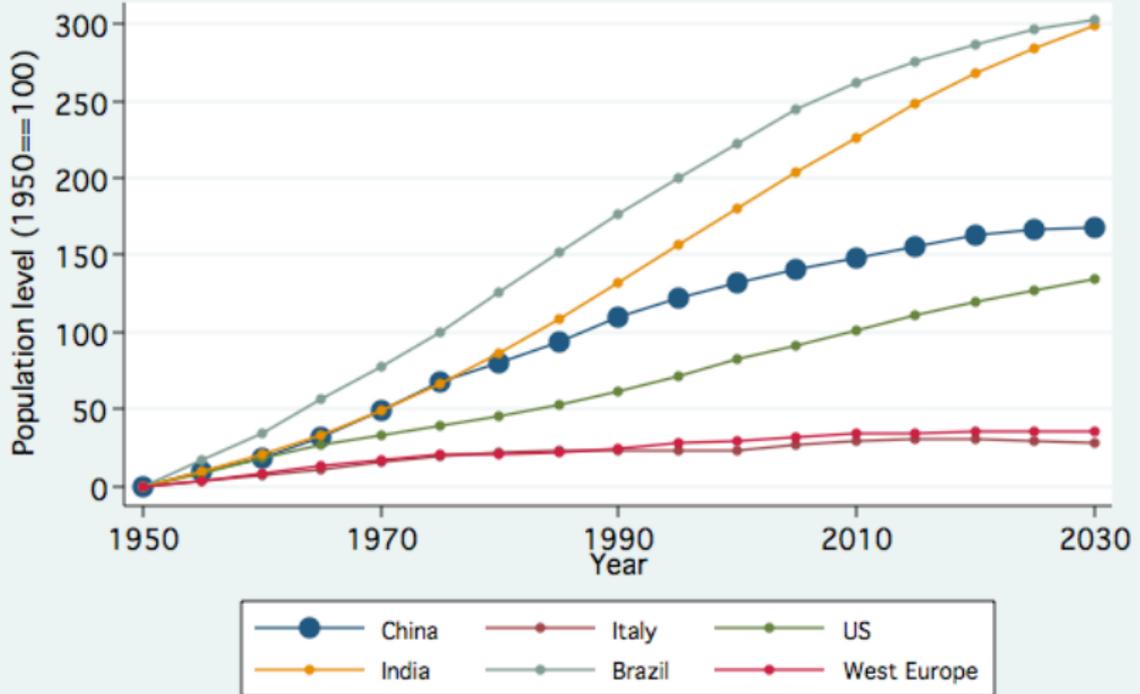
Population growth in China

Population in China has increased substantially in the last 60 years, from around 550 millions in 1950 to over 1,300 in 2010:

Year	Million
1950	545
1970	816
1990	1,142
2010	1,354

Data: UN World Population Prospects

Population growth: China vs. Others



Source: U.N. World Population Prospects, 2007

Other BRICs have experienced larger population growth in relative terms

Why is the Chinese case interesting?

Reason 1: Size. China is the largest country in the world

Table: Population in 2010

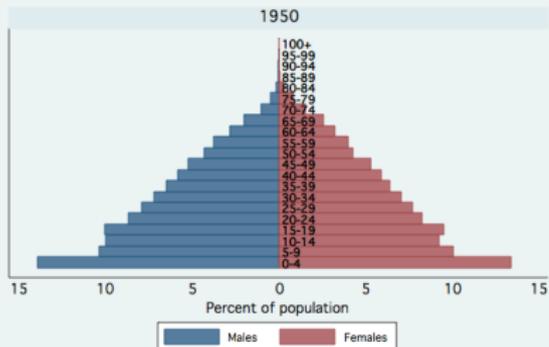
Country	Million	% of total
China	1,354	19.6
Brazil	195	2.8
India	1,214	17.6
United States	318	4.6
Europe	733	10.6
World	6,909	100
<i>Memo:</i>		
Italy	60	0.9
Western Europe	189	2.7

Reason 2:
Population increase paired by 2 large-scale
demographic transitions

1. Sharp population aging

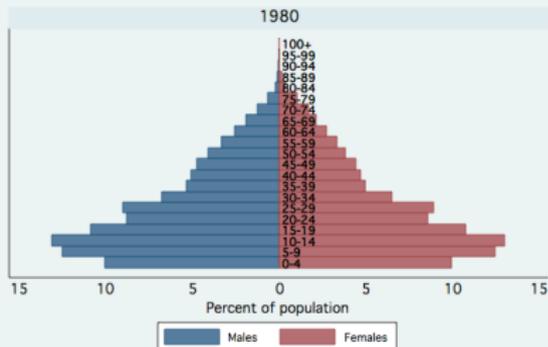
Population aging in China

Population by Age and Sex



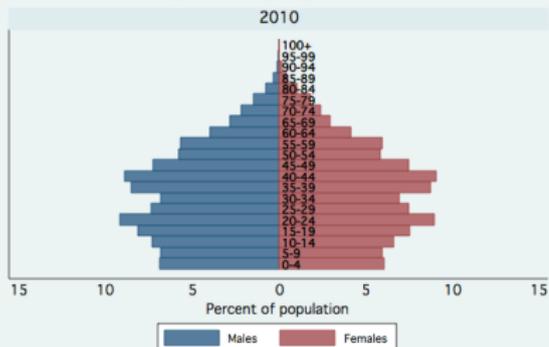
Source: U.N. World Population Prospects

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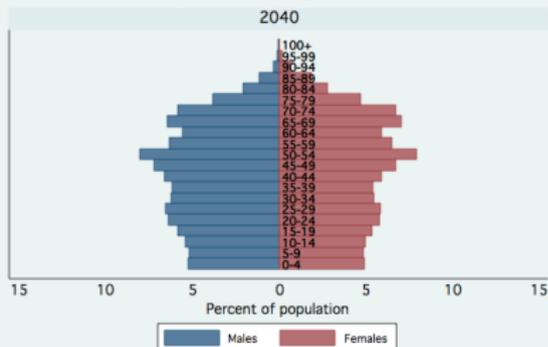
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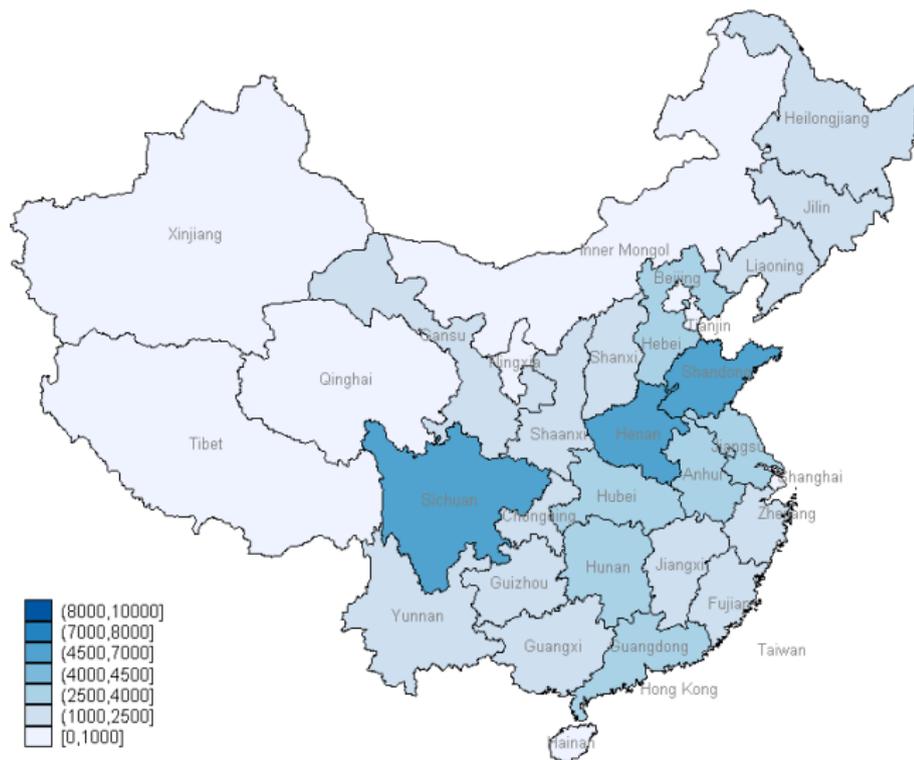


Source: U.N. World Population Prospects

2. Large Rural-Urban migration

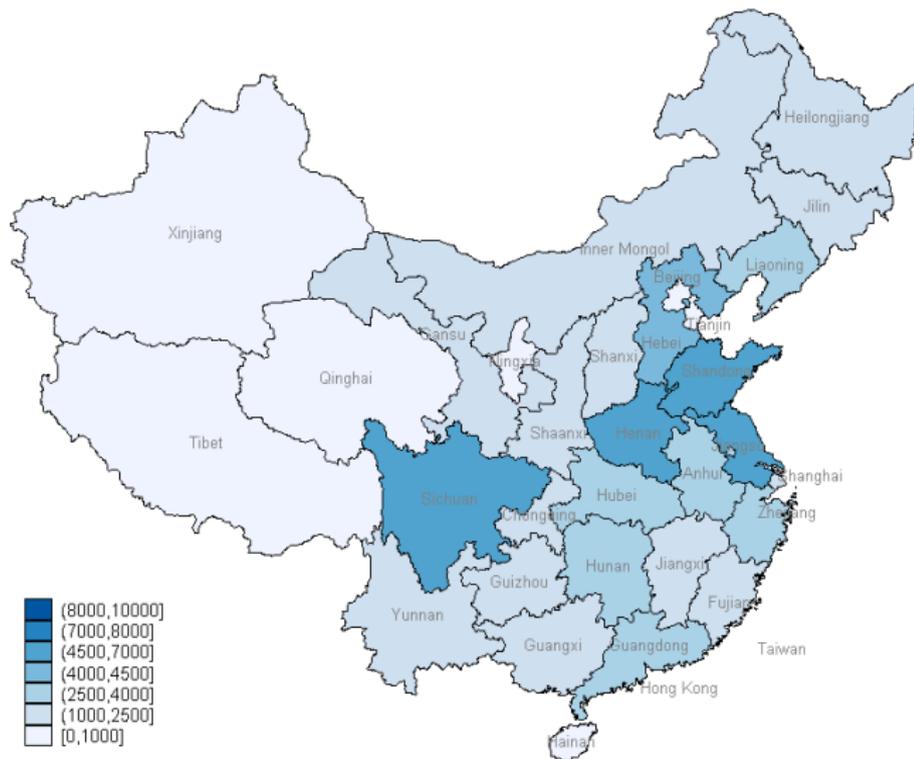
Rural-Urban migration

China's Population by Region 1955



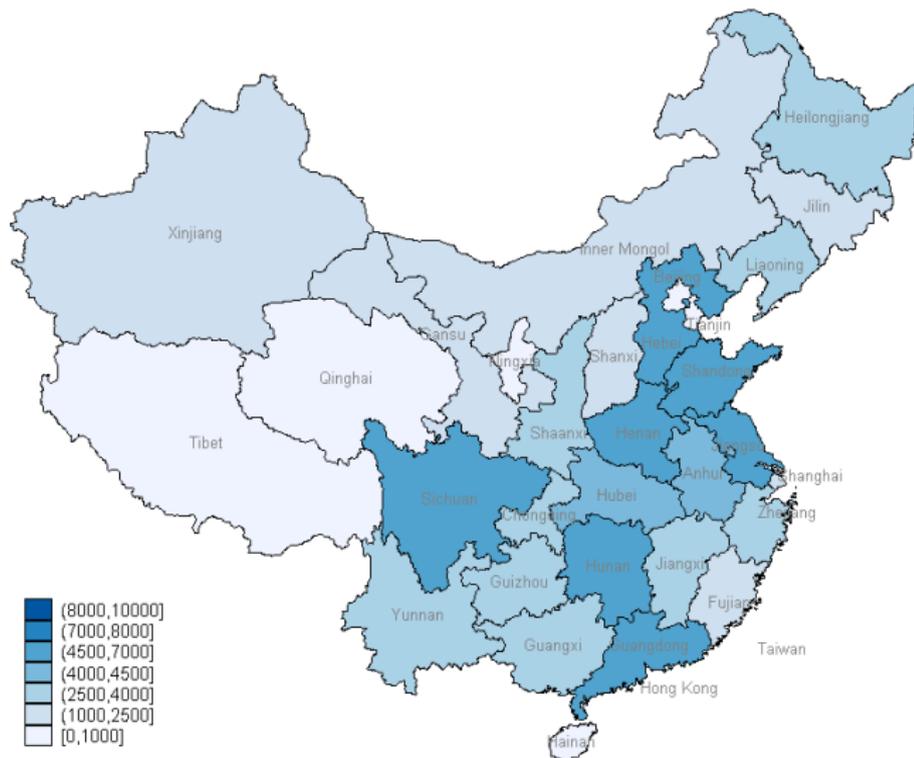
Rural-Urban migration

China's Population by Region 1965



Rural-Urban migration

China's Population by Region 1975



Rural-Urban migration

China's Population by Region 2005

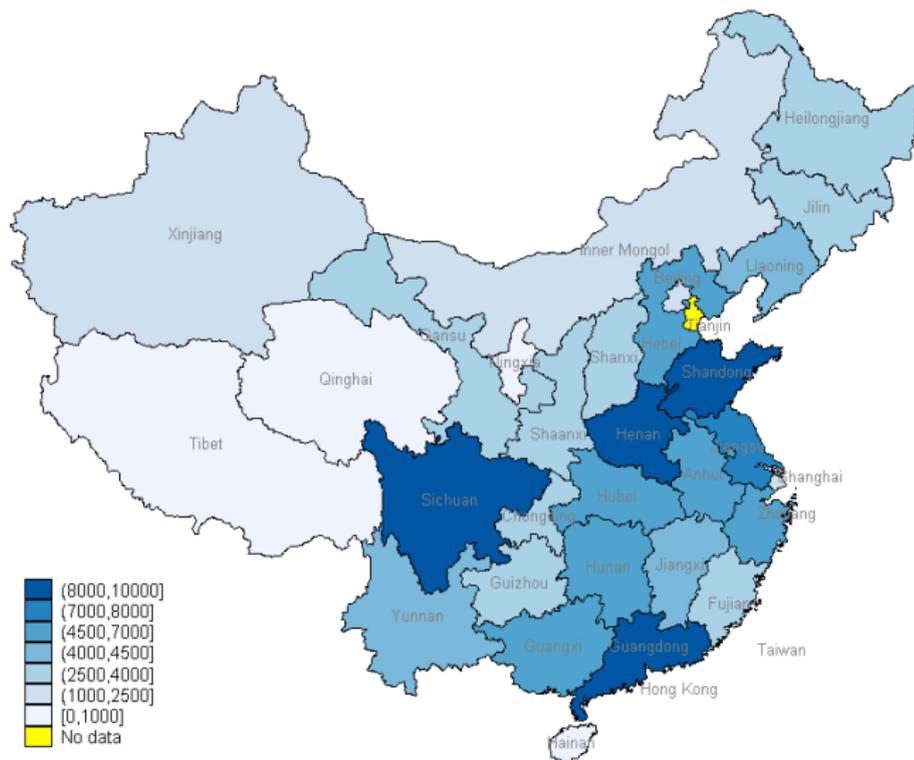


Table: Population by residence (percent)

Year	Urban	Rural
1950	11.2	88.8
1960	19.8	80.2
1970	17.4	82.6
1980	19.4	80.6
1990	26.4	73.6
2000	36.2	63.8
2005	43.0	57.0

Data: National Bureau of Statistics.

Official data do not include unofficial migration

China is still relatively young

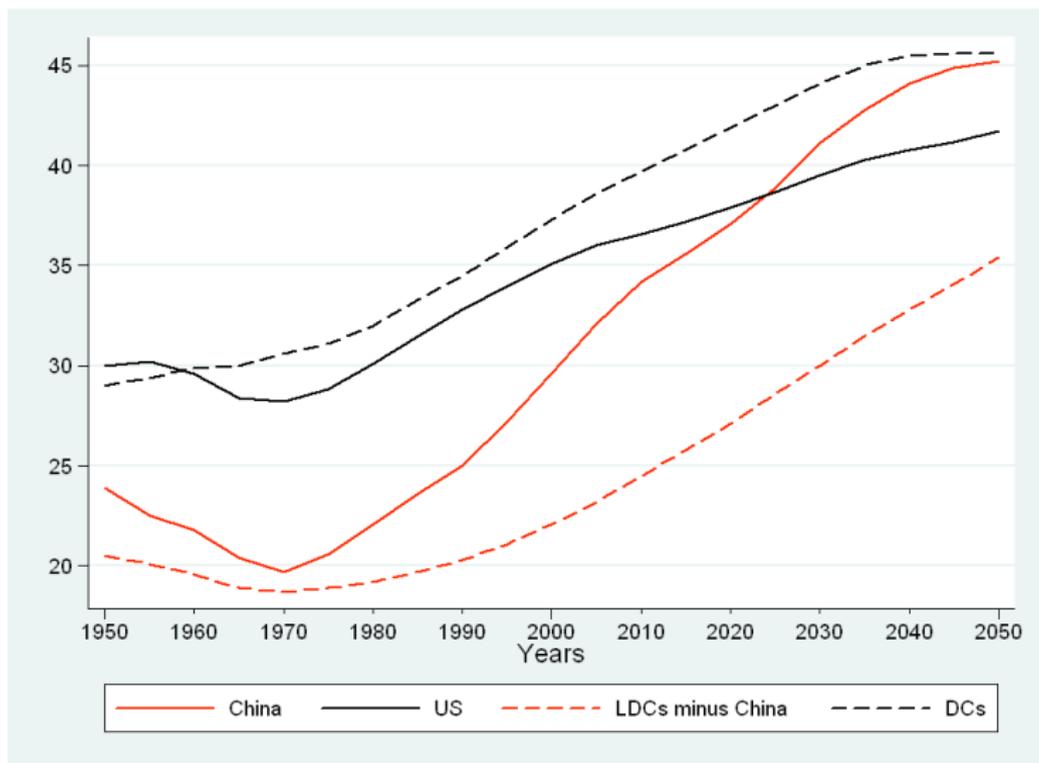
Median ages in 2010:

China	34.2
United States	36.6
Japan	44.7
Italy	43.3
Germany	44.3
Canada	25.7
Brazil	29
India	25

Source: UN World Population Prospects, 2007.

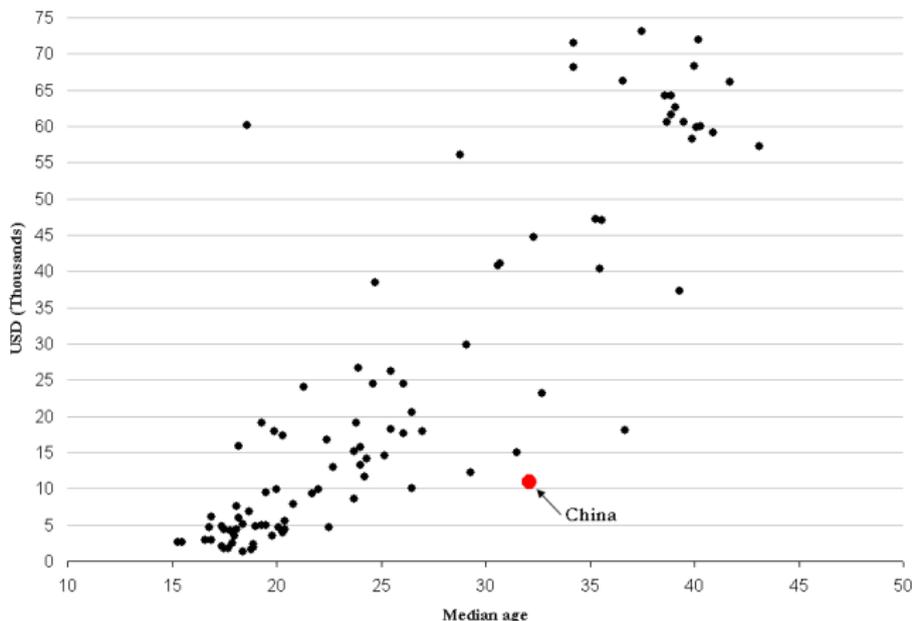
But...

... it is aging fast



China's age structure is approaching that of dev'd countries

while remaining relatively poor



Panel estimation results:	Coeff.	Std.Err.
Median age	2.22***	0.089
Constant	-23.65***	2.88

How could demographic trends & low income impact on the sustainability of the current old-age security system?

Current population trends imply that:

- Share of working population will peak in 2010
- Median age will increase further

Year	Working population	Median age	Old-age dep. ratio	Young dep. ratio
1980	53.6	22.1	10.9	35.5
1990	59.5	25.0	12.1	28.4
2000	60.3	29.6	14.0	25.7
2010	62.1	34.2	18.0	19.9
2020	57.2	37.1	24.1	18.7
2030	53.0	41.1	30.1	16.9

- In terms of the relation described above, income per worker should increase 18% per year

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Issues due to rural-urban migration:

- Older rural population with less family support
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Evidence from unofficial migrant workers survey

<i>Conditions at migration:</i>	
Median age at migration	26
Job arranged before moving (%)	51.8
Money brought when moving (Yuan) (median)	350
Yearly income at home village (median)	1,000
Type of activity at home:	
- <i>Farming</i>	64.6
- <i>Non-farming</i>	17.5
- <i>Student</i>	12.9
- <i>Other</i>	5.0

<i>Current conditions:</i>	
Self-employed	52.4
Income (median)	7,200
Percent of jobs providing:	
- <i>Pension fund</i>	6.5
- <i>Medical insurance</i>	4.0
- <i>Unemployment insurance</i>	2.7
- <i>Housing</i>	10.8

Data: CHIP (2002).

Is income of migrants lower?

$$Y^i = \beta_0 + \beta_1 \text{exp}^i + \gamma D_{\text{mig}}^i + \sum_{r=1}^R \delta_r D_r^i + u^i$$

β_0	20,233**
Migrant	-1,700*
On-the-job experience	140**
<i>Years of schooling:</i>	
5 to 10	2,799**
11 or more	7,686**
<i>Family size:</i>	
2 to 3 people	7,686**
4 or more	9,297**

Data: CHIP, 2002.

Significance is at 1 (**) and 5 percent (*).

Migrant coefficient negative under alternative specifications as well

Is income of migrants lower?
Yes.

Are migrants saving enough?

Age of head of the hh	Avg saving rate	Avg saving rate (net of remittances)	Median saving rate (net of remittances)
20-24	25.0	15.0	9.8
25-29	26.4	17.6	13.2
30-34	25.8	17.7	12.9
35-39	24.8	17.6	12.5
40-44	27.4	19.2	11.4
45-49	23.9	14.7	9.2
<i>Memo:</i>			
Avg urban hh saving rate		24.3	

Source: CHIP and China Statistical Yearbook.

- Migrants save same as urban
- Savings net of remittances are low
- Median savings net of remittances are even lower

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Are migrants saving enough?
Maybe not.

Population trends combined with low income may challenge current old-age security system sustainability

- 1 Shrinking working population may put pressure public pension balance sheet
- 2 Older rural population need assistance
- 3 Migrants may not be able to save for the future

What policies?

- 1 Increase retirement age
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