RIETI-JER Workshop

Economics of Aging in Japan and other Societies

Presentation

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Health Expectancy of the Chinese Elderly: Current Trends

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Contents

Life Expectancy in China

- China:
  - about 35 years in the beginning of the 1950s
  - 71 years by 2000
  - an increase of 8.6 months per year

- The United States:
  - 68 years in 1949
  - 75 years in 1990
  - an increase of only 2.17 months per year

- Best “performing” countries:
  - an increase of 2.9 months per year

- Substantial & rapidly increase in life expectancy in China

Quality of Life: My Story!

- But, “increased longevity without quality of life is an empty prize”(WHO, 1997)

- Improvement in mortality accompanied with health deterioration is possible, for example:
  - The US (Crimmins et al., 1997; Ycas, 1987)
  - Canada (Wilkins and Adams, 1983)
  - Japan (Riley, 1990)
  - Australia (Mathers, 1990)

Three Competing Theories

- *Compression of morbidity* (Fries, 1980 and 1989)
  - Delayed onset of chronic diseases & constant life span
  - Increase in both absolute and relative time in health state
- *Expansion of morbidity* (Olshansky et al.,1991; Gruenberg, 1997)
  - Increasing prevalence of morbidity and disability
  - Increased proportion of life in poor health
- *Dynamic equilibrium* (Manton, 1992)
  - Interdependence between mortality and morbidity

Health Expectancy

- Each theory has its own explanation power

- So, estimating the trends in mortality and morbidity becomes an empirical issue (Imai and Soneji, 2007)

- The concept of health expectancy (Sanders, 1964)
  - Takes into account both mortality and morbidity
  - Reflects the multidimensionality of health
  - Extensively used for measuring population health

What is Missing?

- Most research addresses this topic in developed countries
- Differentials in measures of health status
  - Incomparision across countries
  - Inconsistent within nations
- Methodology issue
  - Sullivan's method
  - Without allowing for stationary assumptions
- Without projections into the future

Purposes & Contributions

- Purposes:
  - estimating the health expectancy of the Chinese elderly
  - public Health Policy

- Contributions:
  - China & Chinese elderly
  - Chinese Longitudinal Healthy Longevity Survey (CLHLS)
  - Sullivan's method combined with the **cohort life table**

Contents

- Introduction

- Data and Measures
  - Mortality Data
  - Health Data
  - Definitions and Measures

- Estimation
  - Sullivan's Method
  - Lee-Carter Model
  - Estimation Results

- Conclusions

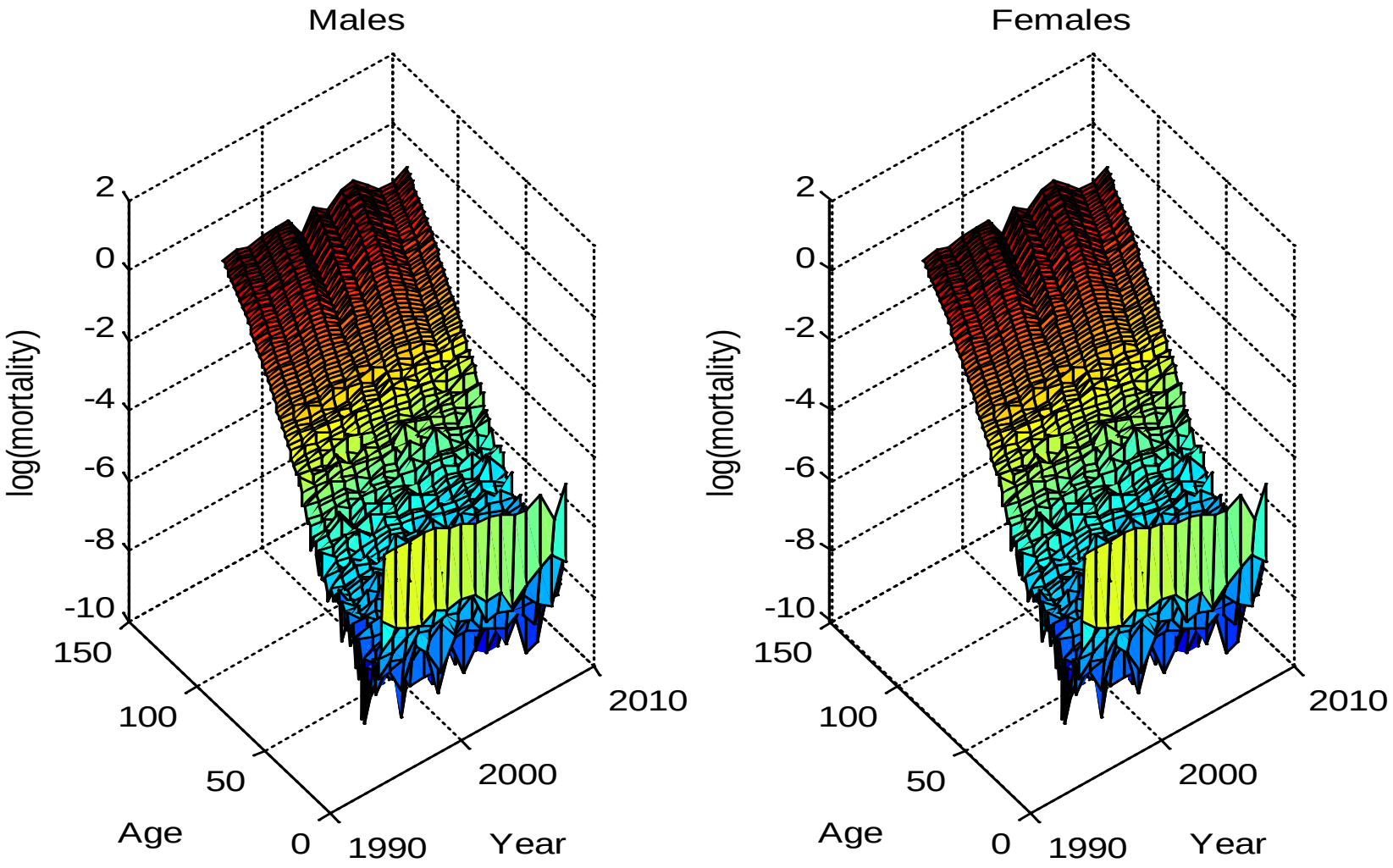
Mortality Data: Missing Data Issue

- Raw mortality data
  - Central mortality rates for age 0-90 in year 1994-2008
  - Unavailability of mortality data at advanced ages

- How to get mortality rates at advanced ages?
  - Extrapolation by the Kannisto model

$$\log it(m_{x,t}) = \ln(\partial) + \beta x + \varepsilon_{x,t}, \; x \geq \bar{x}$$

Mortality Data: Age 0-120 & 1994-2010



Health Data

- The Chinese Longitudinal Healthy Longevity Survey (CLHLS)
  - Covering 22 of China's 31 provinces
  - Accounting for about 85% of the total population
  - Four waves, namely 1998, 2000, 2002, and 2005

- The Detailed health characteristics
  - Self-rated health status
  - Activities of daily living (ADLs)

Definitions & Measures

- Disability Free Life Expectancy (DFLE)
  - Based on limitations of ADLs
  - Expected life expectancy without performing the ADLs
  - Three definitions: ADLs active, mild disability, & severe disability

- Healthy Life Expectancy (HLE)
  - Based on Self-rated health status
  - Expected life expectancy in a self-rated health state
  - Two definitions: wider & restrictive concept of good health

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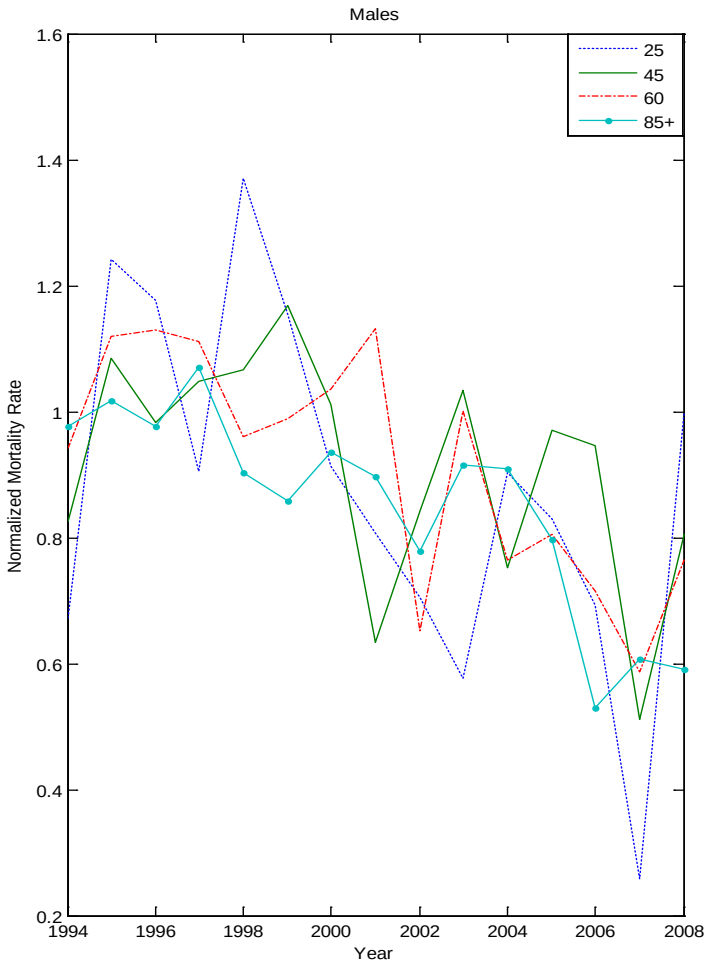
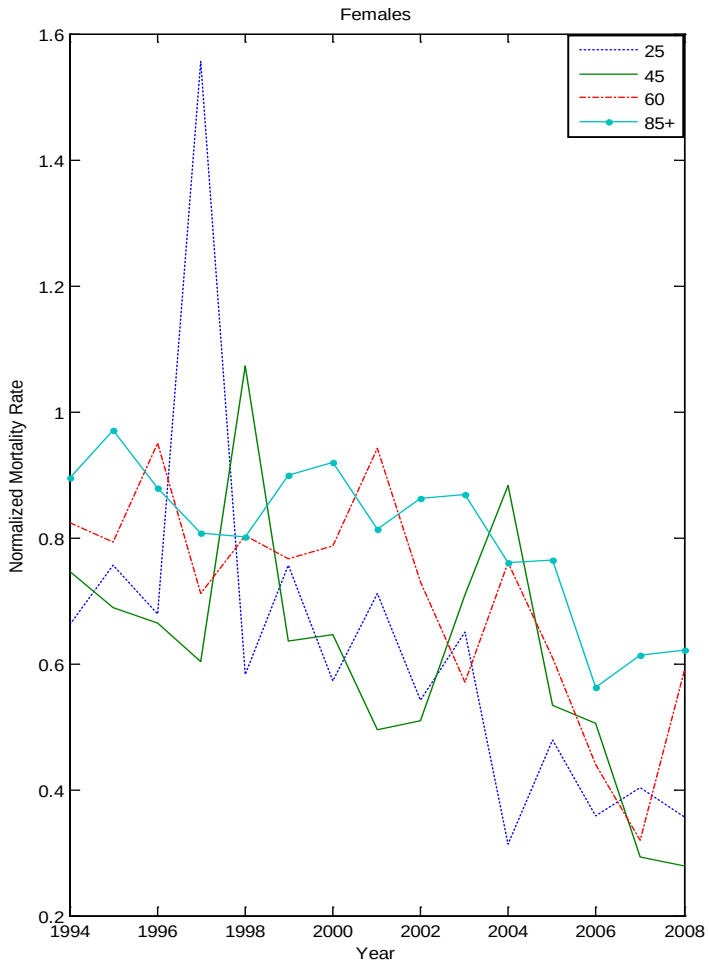
Sullivan's Method

- One of the mostly used methods for health expectancy
- Based on the combination of the **period life table** and disability prevalence
- Sullivan's estimators proved to be unbiased and consistent of the health expectancy under stationary assumptions
- However, are stationary assumptions appropriate in reality?

Death Rates are Stationary?





An Alternative Sullivan's Method

- Sullivan's method based on a **cohort life table** rather than a period life table
  - ➢No need to take into account stationary assumptions
  - ➢Suitable for the consecutive cross-sectional survey

- The cohort life table
  - ➢Projections on mortality rates by the Lee-Carter model
  - ➢Derives the cohort life table based the projected mortality rates

Estimations Results

- A positive trend in life expectancy
- Also improvement in both the HLE and DFLE
- Sex differentials
  - Longer life expectancy for females than males
  - Mixed results of the health expectancy, depending on the definitions and measure of the health status
- Health ratio
  - Declining health ratio for both males and females
  - A larger proportion of life in good health for males

Conclusions

- Improvement in absolute health expectancy over the sample period; but deterioration in terms of relative level

- A positive trend in health expectancy in terms of functional capacity in the future; but a declining trend in terms of self-reported health

- Implications
  - Social and economic transition
  - Change in family size and structure
  - Retirement policy