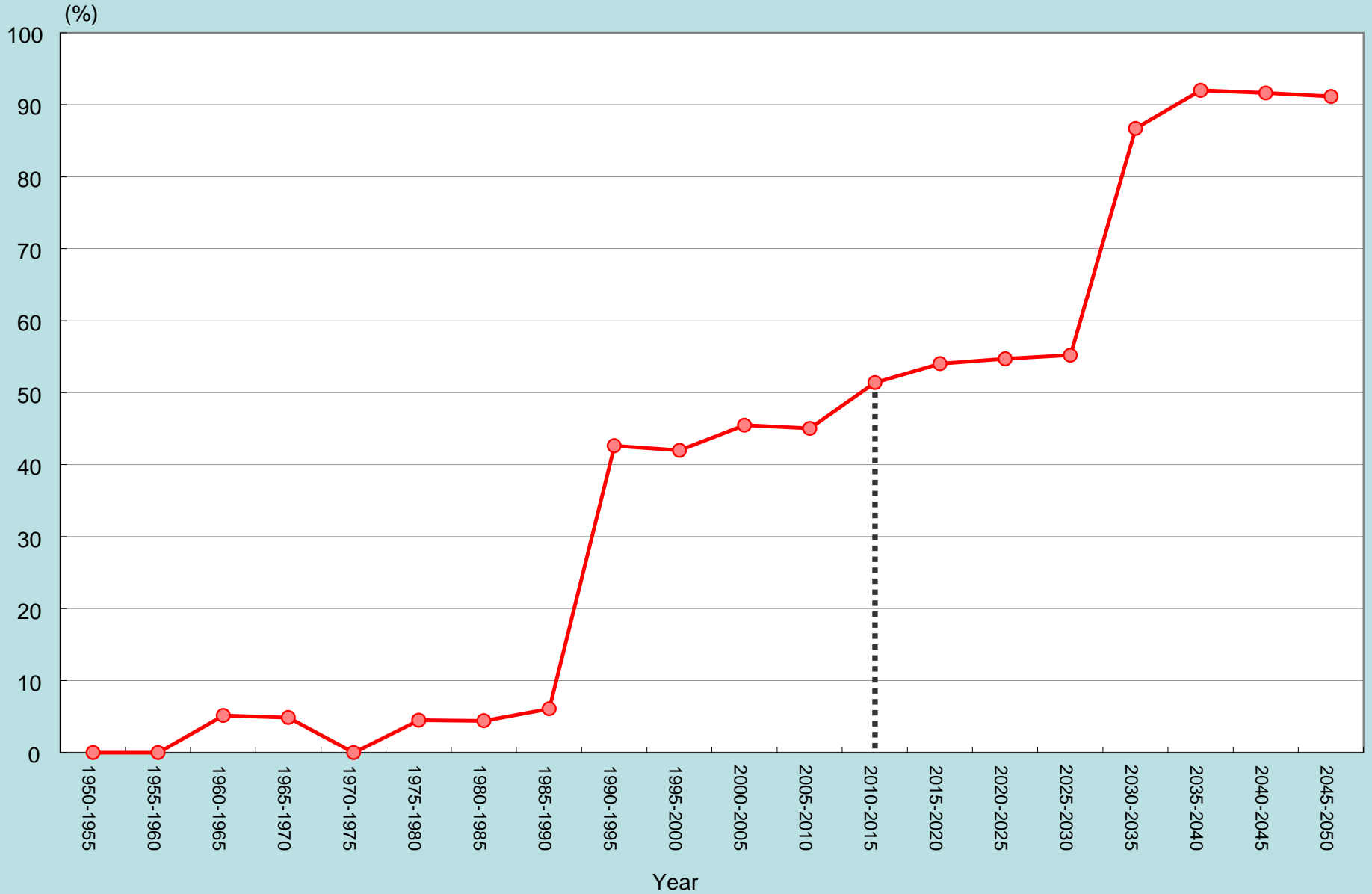


Population Aging and Changing Generational Transfers in Japan and Other Selected Asian NTA Countries

**Naohiro Ogawa
Sang-Hyop Lee
Andrew Mason
Qiulin Chen
An-Chi Tung
Nicole Mun Sim Lai
Rikiya Matsukura**

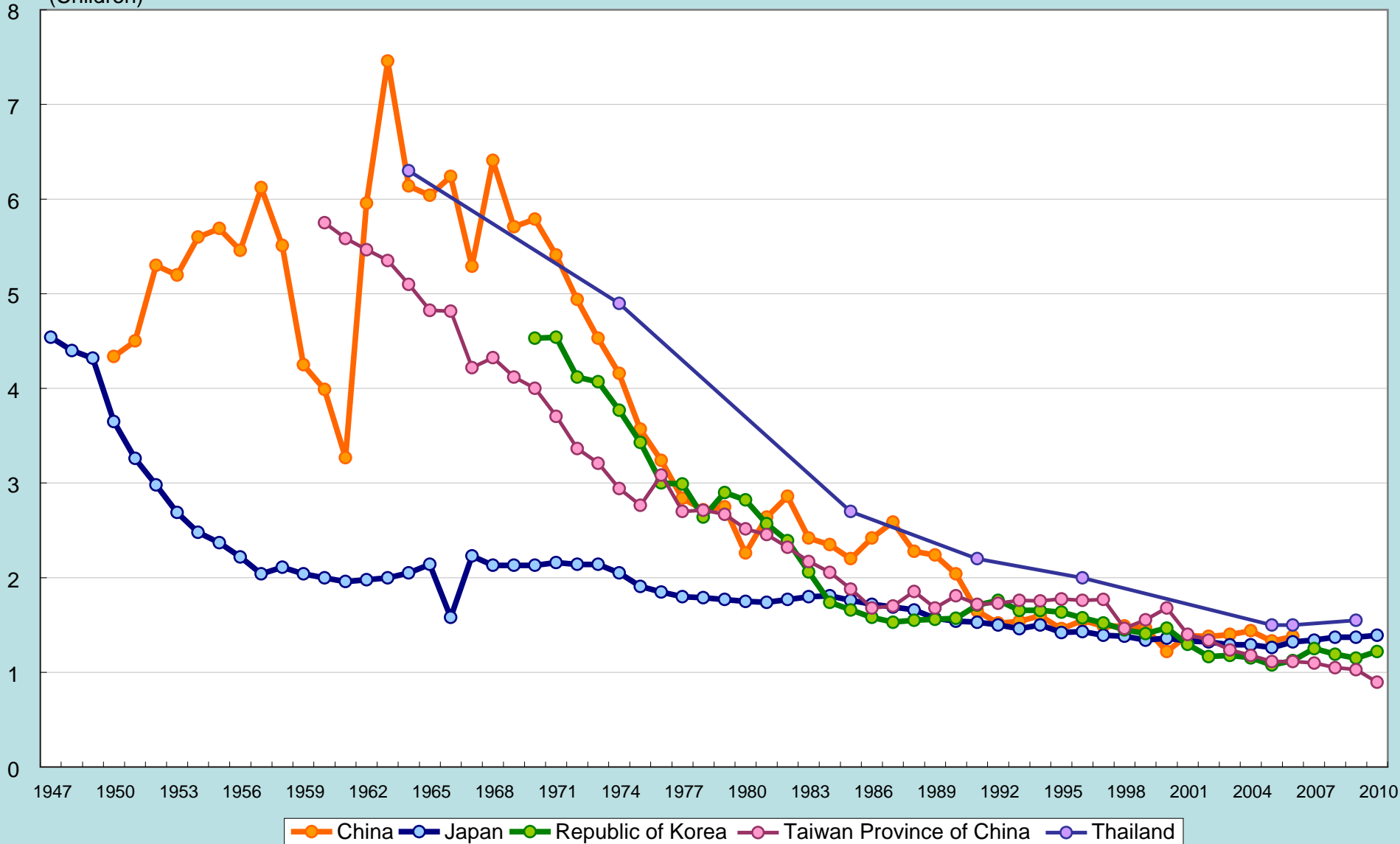
Workshop on Intergenerational Economics 2011, Beijing, 6 September 2011

Proportion of the population with below replacement-level fertility in Asia's total population



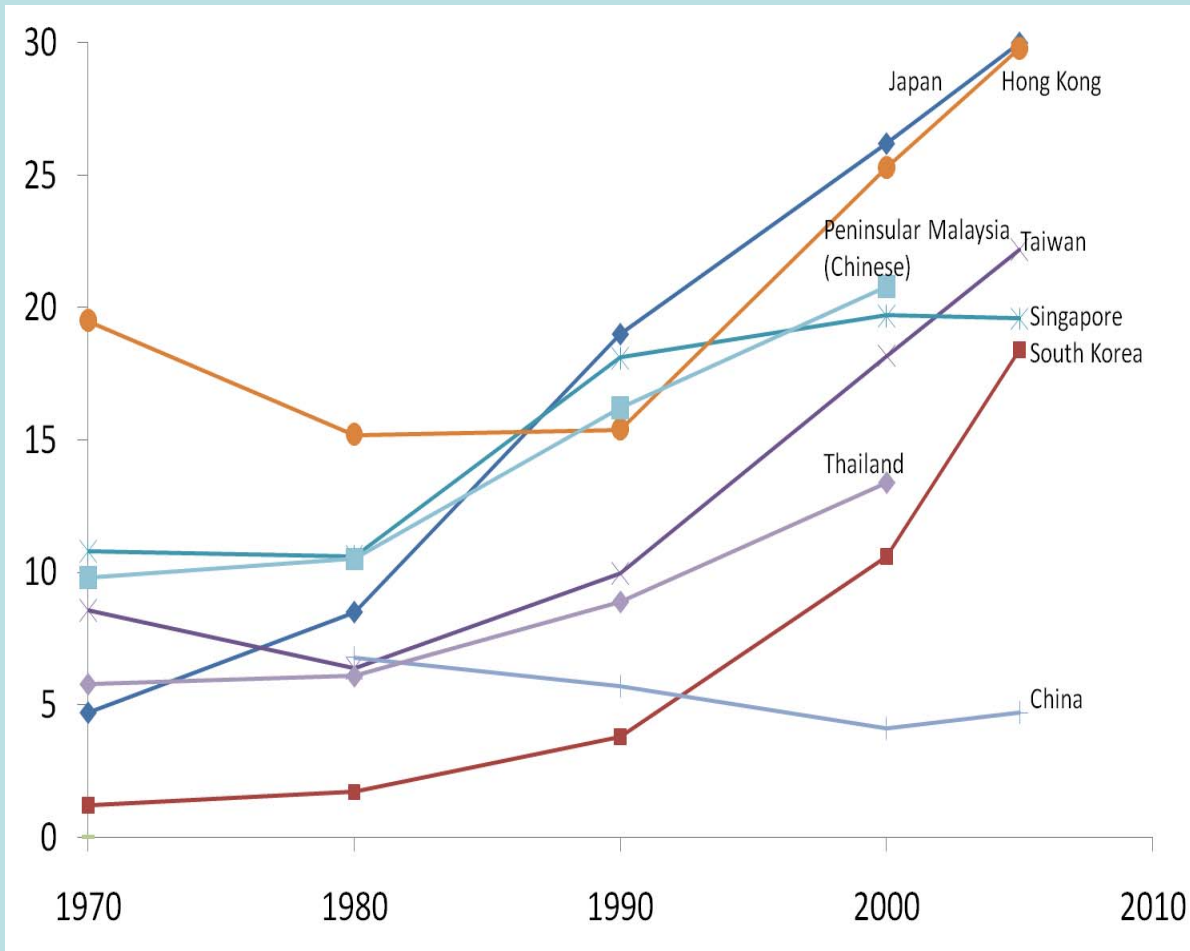
Trends in total fertility rate in five Asian countries

(Children)



Sources: China: Data obtained from Dr. Qiulin Chen. Japan: Ministry of Health, Labour and Welfare (various years) *Vital Statistics of Japan*. Korea: (1) Statistics Korea (Date unknown) data downloaded from Korean Statistical Information Service. Taiwan: (1) For 1960-2009: Council for Economic Planning and Development (2010) *Population Projections for R.O.C (Taiwan): 2010-2060, B. Appendixes*. (2) For 2010: Department of Statistics, Ministry of the Interior, Date Unknown, *Statistical Yearbook of Interior*. Thailand: Data obtained and adopted from Patama Vapattanawong and Pramote Prasartkul (2011) "Chapter2 fertility transition and its impact," *Impact of Demographic Change in Thailand*, UNFPA/NESDB publication.

Trend in % single among men aged 35-39, selected East Asian countries, 1970-2005



Provided by Gavin Jones

**Dire prospects of
Japanese young men:**

**If today's marriage market
remains unchanged,**

**more than 30% young
men will remain
unmarried!**

● Although a substantial part of the decline in the TFR has been due to later marriage and less marriage, **marital fertility has been playing a considerably important role, too.** Thus, the **government** has been making **a series of strenuous efforts to boost marital fertility.**

Major Obstacles to Marital Fertility

- 1. Financial obstacles** (e.g., economic model of fertility developed by Gary Becker in the 1960s; the **direct cost of having children**)
- 2. Work-related obstacles** (i.e., the **indirect cost of children**, also known as the opportunity cost of children)
- 3. Normative obstacles** (there are elements of the normative system of societies that not only influence **the desired or expected number of children but also their 'quality'**, that is, the amount of money, time, and energy parents are expected to devote to their children.)
- 4. Other obstacles** (e.g., partial or total **infecundity**, especially in the context of later age at childbearing; the **lack of stable partnership or marriage** that some individuals may be confronted to when considering having children, or **disagreement** between spouses regarding family sizes.)

Major Japanese government measures aimed at raising fertility

TFR	Year	Action
2.14	1972	Establishment of child allowances (no pronatalist intent at first)
1.54	1990	Establishment of inter-ministry committee on "Creating a sound environment for bearing and rearing children"
1.53	1991	Enactment of Childcare Leave Act
1.50	1994	Announcement of Angel Plan for FY 1995-99
1.42	1995	Enactment of Childcare and Family Care Leave Act
1.34	1999	Announcement of New Angel Plan for FY 2000-04
1.33	2001	Amendment to the Employment Insurance Law, specifying 40 percent of salary to be paid to regular full-time employees during child-care leave
1.32	2002	Announcement of "plus one" plan
1.29	2003	Enactment of "next-generation" law Enactment of law on "Basic Measures to Cope with a Declining Fertility Society"
1.29	2004	Cabinet office approves "Outline of Measures to Cope with a Declining Fertility Society" Announcement of New Angel Plan for FY 2005-09 Revision of Child Care and Family Care Leave Act
1.26	2005	Extension of childcare leave to part-time workers, with some limitations
1.32	2006	Announcement of New Policy to Cope with Low Fertility
1.34	2007	Announcement of Work-Life Balance Charter and Guidelines Announcement of Japan's Priority Strategies for Support Children and Family
1.37	2008	Announcement of "New Strategy for Eliminating Kindergarten Waiting Lists"
1.39	2010	Cabinet office formulates the "Vision for Children and Child Rearing" for FY 2010-14 Decision to establish Council for Consideration of a New System for Children and Child Rearing Payment of student allowances (expected to be abolished) Formulation of the "Project for Early Elimination of Kindergarten Waiting Lists"

Net result of fertility-raising measures so far

- **Fertility has continued to decline**
 - **TFR** was 1.26 in 2005, and **1.39 in 2010**
 - TFR for 1989 was 1.57 (which was a base for newly coined term “1.57 shock”)
- **But it probably would have declined even more without these measures**

Republic of Korea's recent pronatalist programs



Policy Responses to Low Fertility

▪ In June 2006, the 1st five-year basic plan on low fertility ('06-'10) was initiated with hopes of fostering a climate conducive to childbearing and childrearing, and the plan included **230 specific measures** in the following areas:

- Strengthening social role and financial supports
- Family-friendly and gender-equal social climate
- Nurture healthy future generations

Policy Responses to Low Fertility

Major Goals of the 2nd five-year Basic plan('11-'15)

**Low
Fertility**

1st Plan



2nd Plan

Target : Low-income families

Double-income families

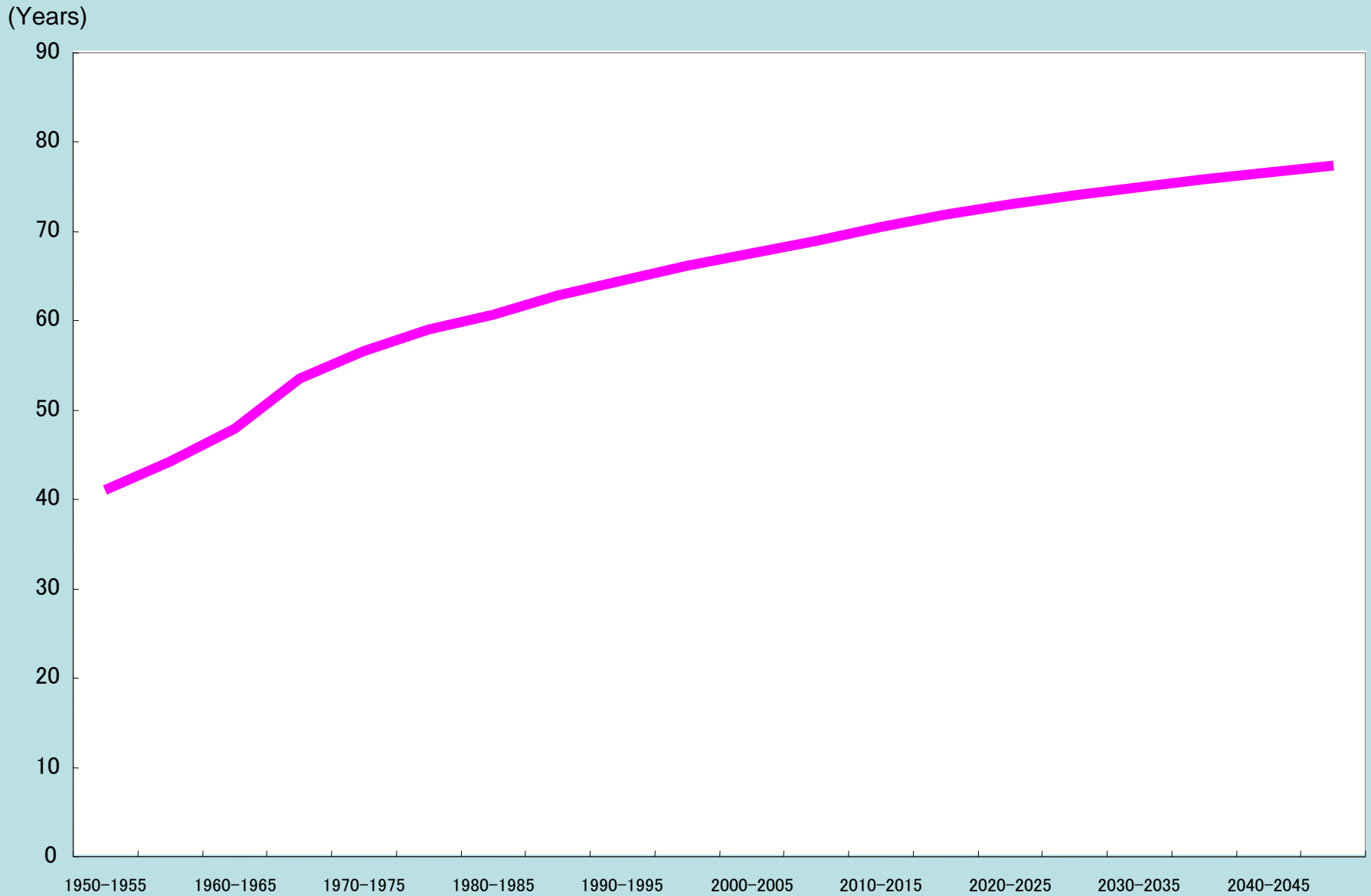
Benefit : **Childrearing support**

Comprehensive approaches
such as the **work-family
balance**

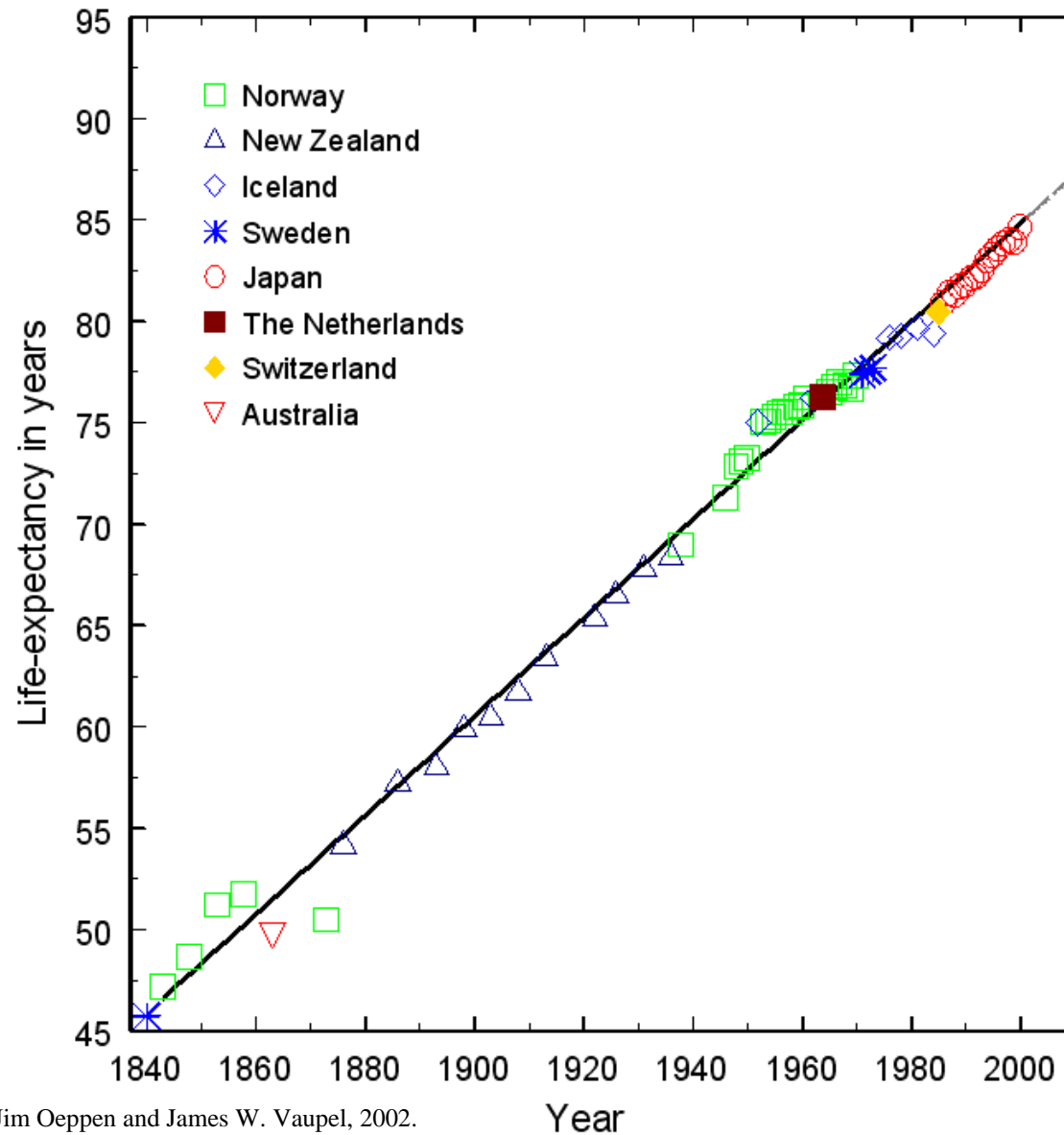
Declining Mortality

Increasingly important demographic source of population aging at a later stage, particularly when e_0 exceeds 70 years

Changes in life expectancy for entire Asia, 1950-2050



Broken limits to life expectancy since 1840



Source: Jim Oeppen and James W. Vaupel, 2002.
'Broken Limits to Life Expectancy,' Science: Vol.296

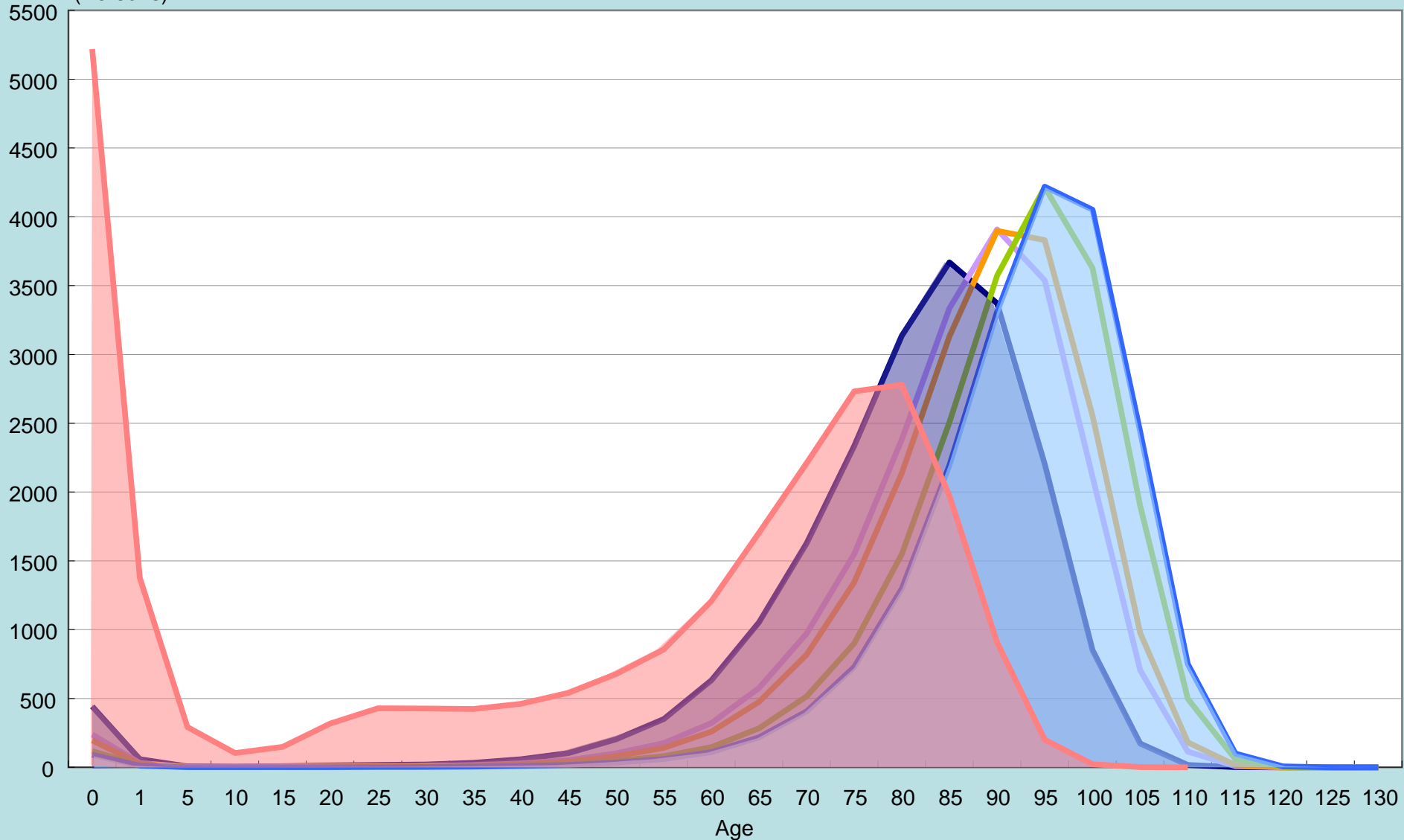


Not only a **linear growth** of human longevity but also...

Compression of mortality/morbidity risks over time

Age-specific pattern of female deaths for the case of Japan, 1950-2100

(Persons)



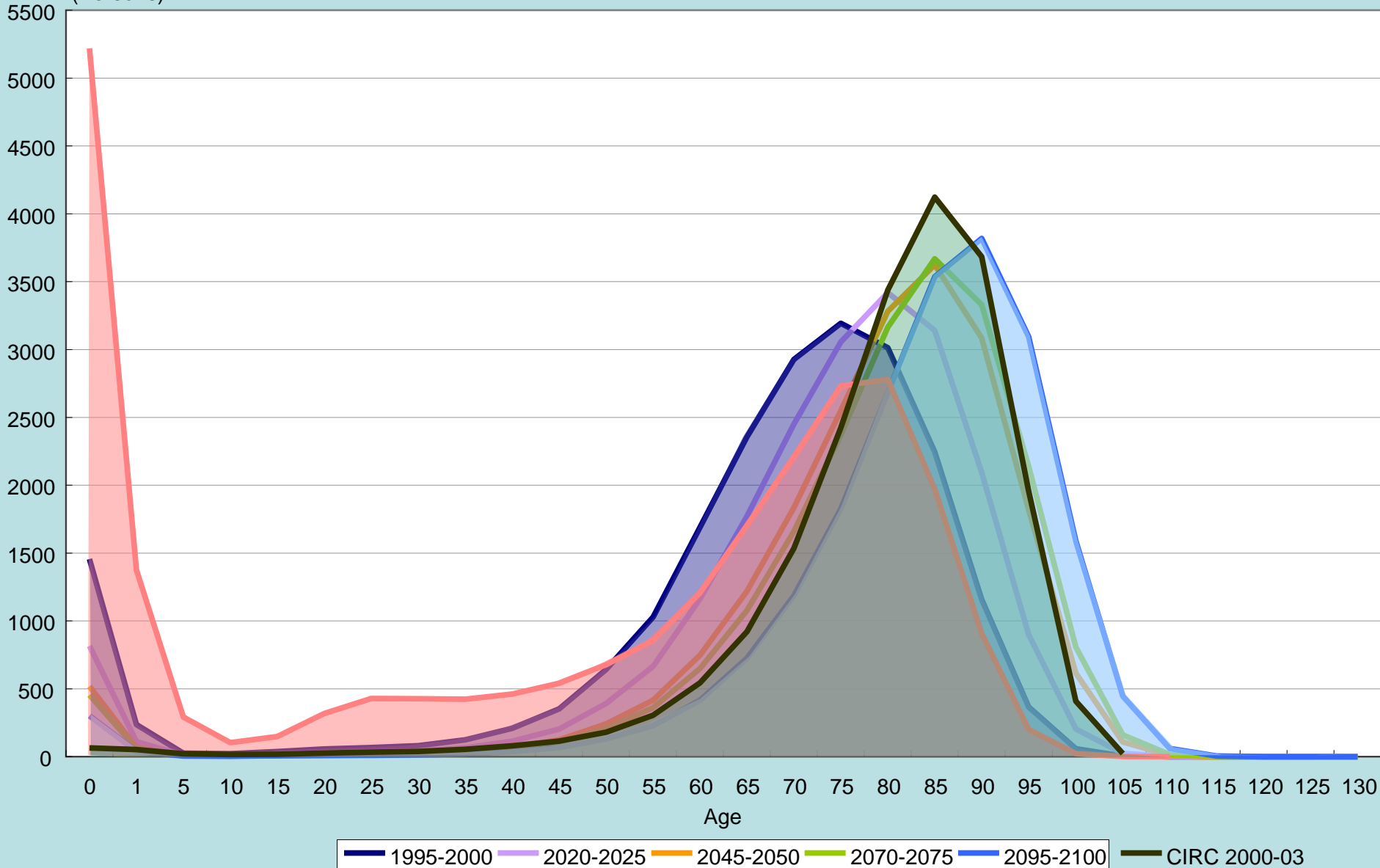
1995-2000 2020-2025 2045-2050 2070-2075 2095-2100 1950

Note: calculated using the following data
(1) 1950: data downloaded from *Human Mortality Database*. University of California, Berkeley (USA), and Max Planck Institute for Demographic Research (Germany).
(2) 1995-: United Nations, Department of Economic and Social Affairs, Population Division, (2011) *World Population Prospects: The 2010 Revision*.

Comparison between general population and those who enrolled in health insurance schemes

Age-specific pattern of female deaths for the case of China, 1950-2100

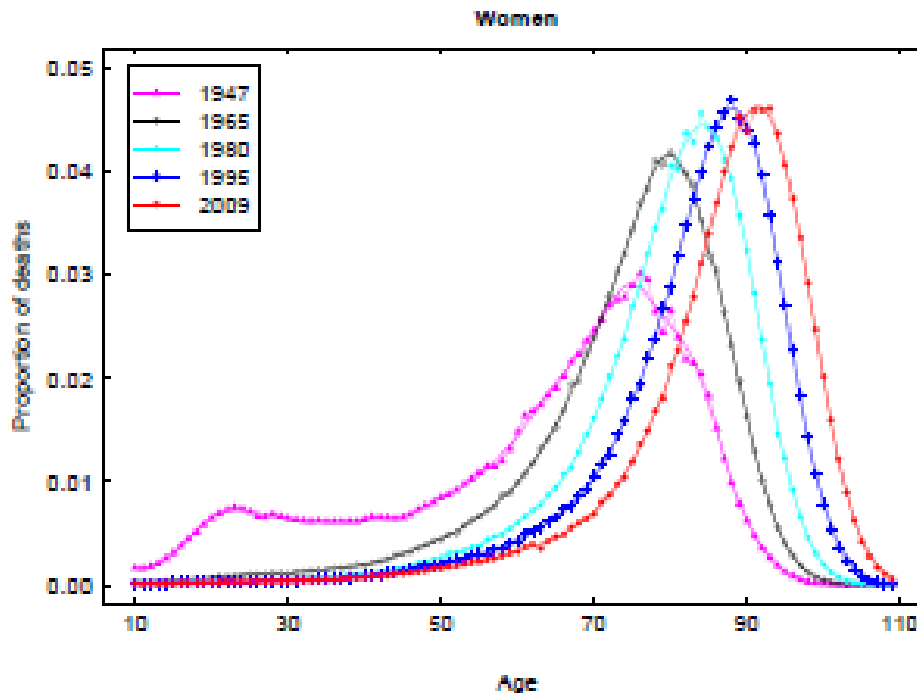
(Persons)



Note: Calculated using data from United Nations, Department of Economic and Social Affairs, Population Division, (2011) *World Population Prospects: The 2010 Revision*. We obtained data of China Insurance Regulatory Commission from Dr. Qiulin Chen.

A new finding

Figure A3: Comparison between HMD life table age-at-death distributions (overplotted points and lines) and smoothed density functions (plain solid lines) resulting from nonparametric P-spline estimations of Poisson regression models, Japan, selected years between 1947 and 2009



Adopted from Nadine Ouellette & Robert Bourbeau (2011) Research Article: "Changes in the age-at-death distribution in four low mortality countries: A nonparametric approach," *Demographic Research*, Volume 25, Article 19, p. 595-628, published on 9 September, 2011, DOI: 10.4054/DemRes.2011.25.19, downloaded from <http://www.demographic-research.org/Volumes/Vol25/19/>. (p. 627).

Compression of mortality and morbidity risks over time



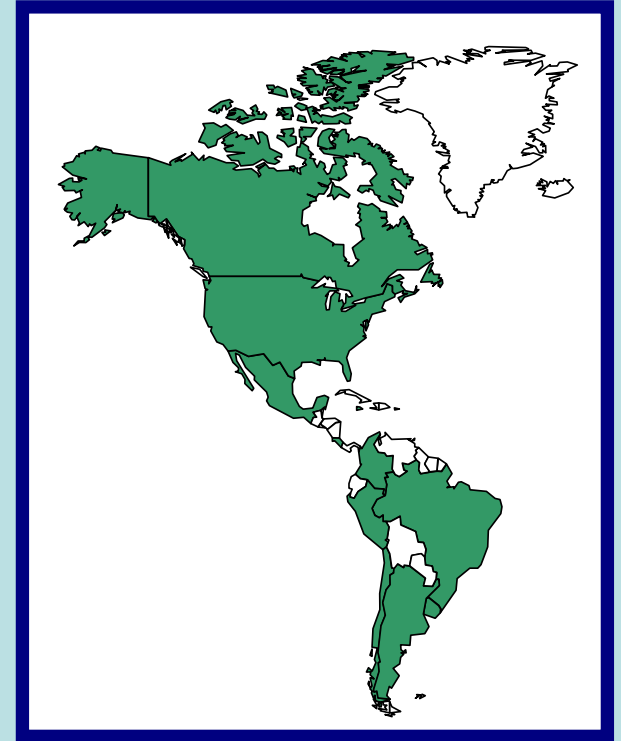
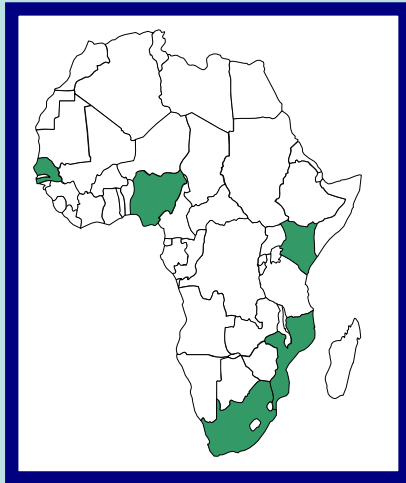
Likely to affect each individual's long-term human and financial capital planning

**An innovative approach to
analyzing some of the aging-
related problems:**

National Transfer Accounts (NTA)

NTA Member Countries

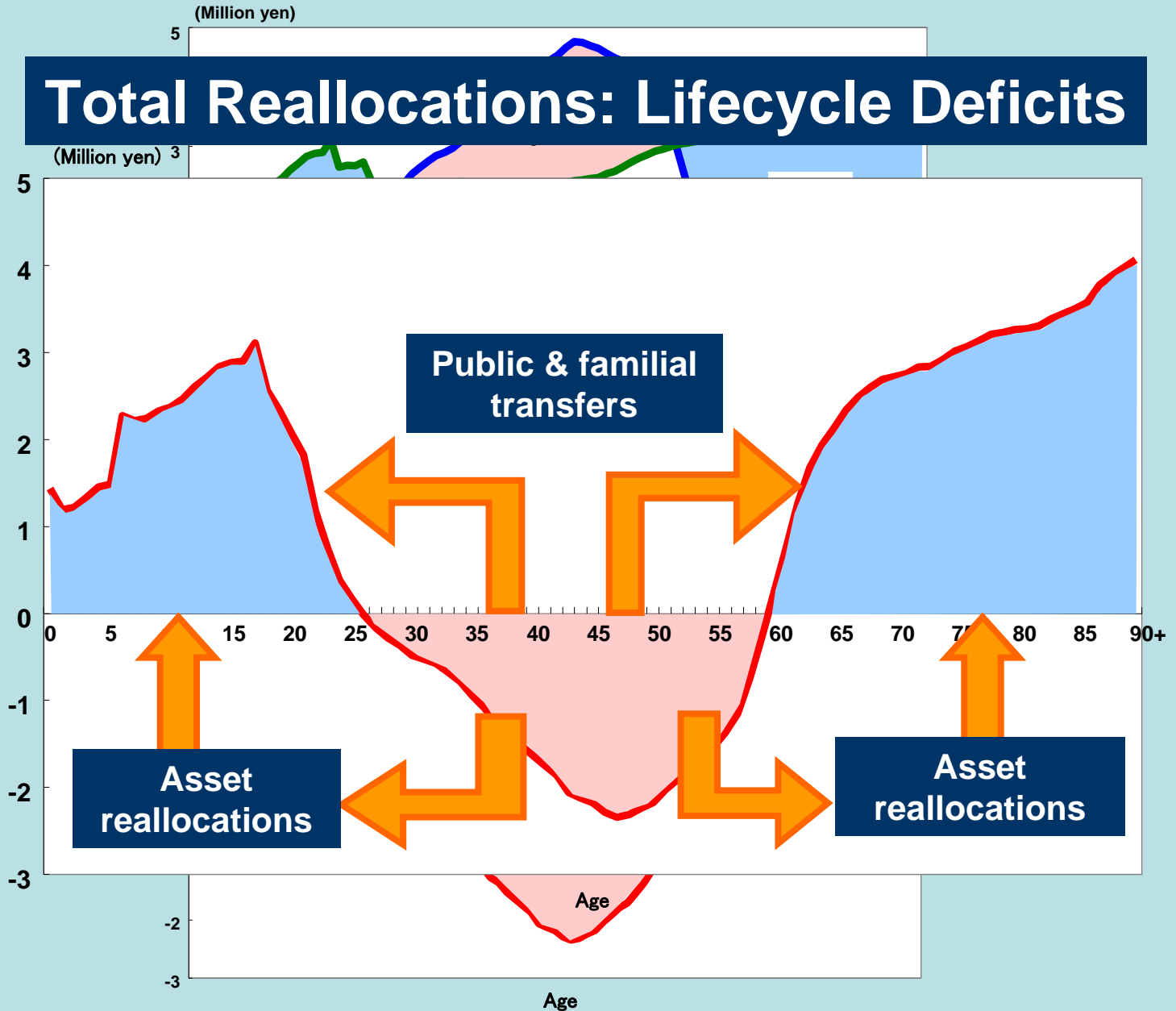
40 countries as of August, 2011
(including 4 future member countries)



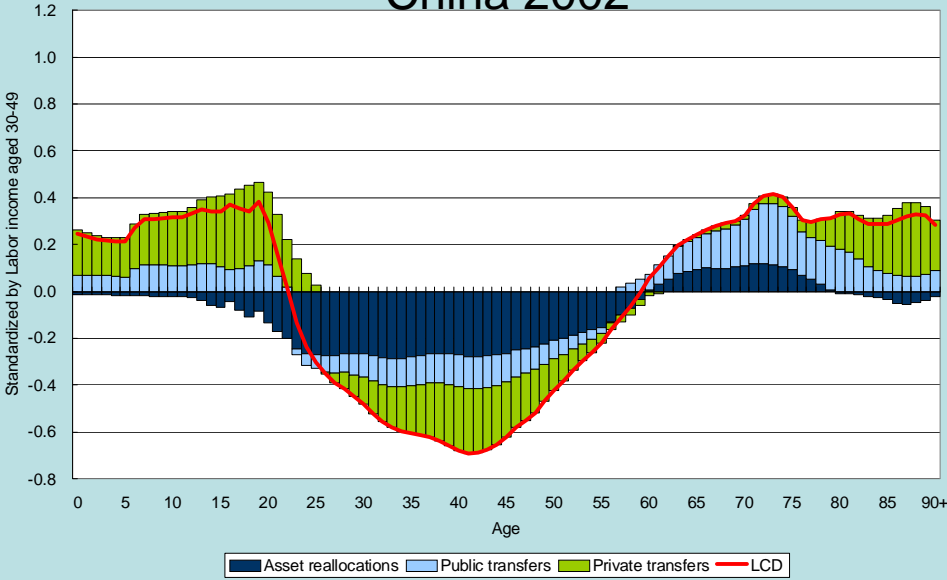
Asia-Pacific			The Americas			Europe		Africa
Australia	Philippines	Lao PDR	Argentina	Costa Rica	Uruguay	Austria	Italy	Kenya
China	Republic of Korea	Cambodia	Brazil	Jamaica		Finland	Slovenia	Mozambique
India	Taiwan	Malaysia	Canada	Mexico		France	Spain	Nigeria
Indonesia	Thailand	Sri Lanka	Chile	Peru		Germany	Sweden	Senegal
Japan	Viet Nam		Colombia	United States		Hungary	United Kingdom	South Africa

Age specific profile of per capita consumption and labor income
Japan: 2004

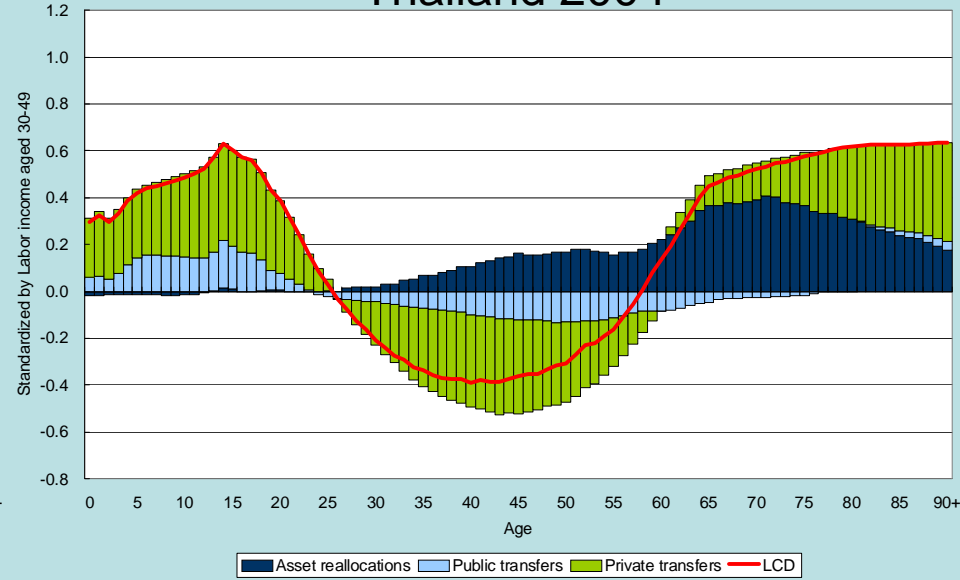
Total Reallocations: Lifecycle Deficits



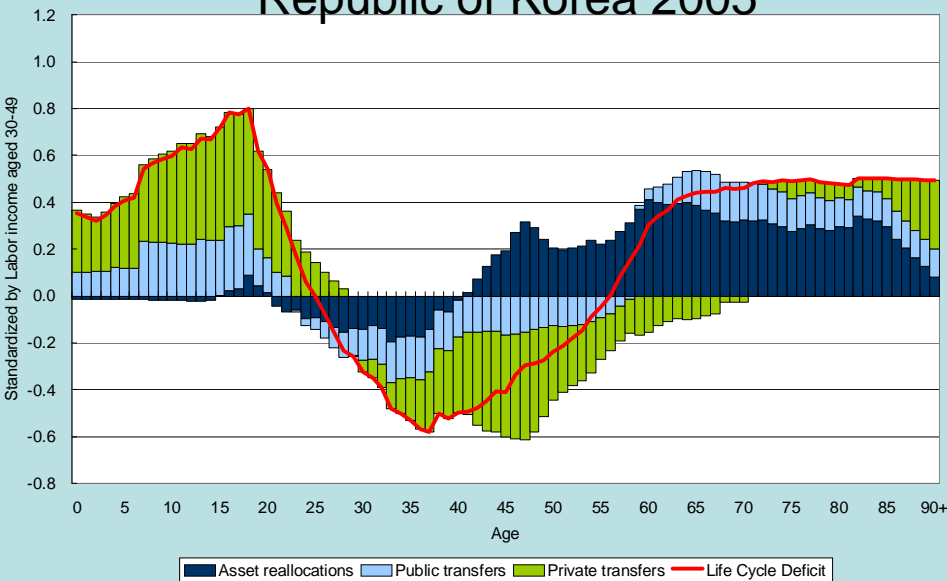
China 2002



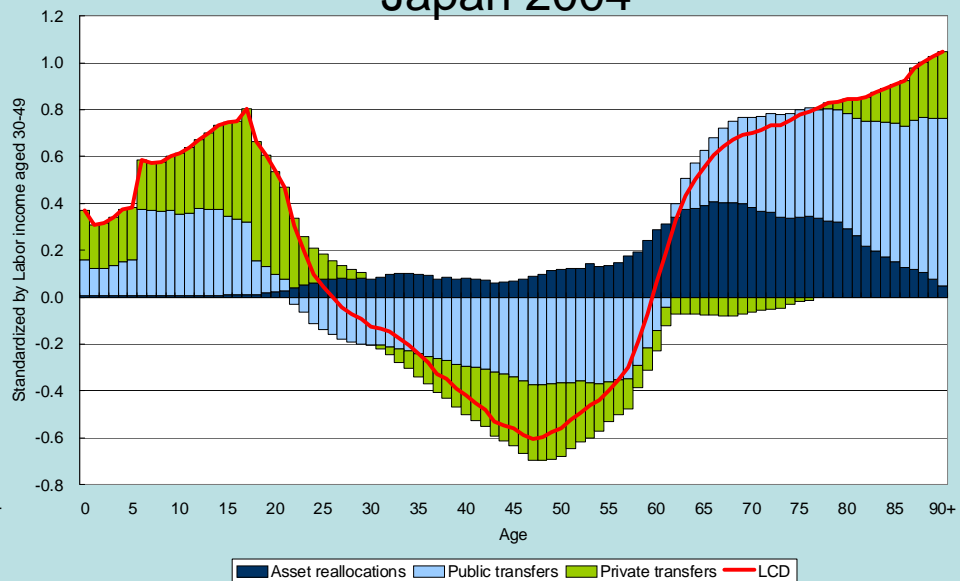
Thailand 2004



Republic of Korea 2005

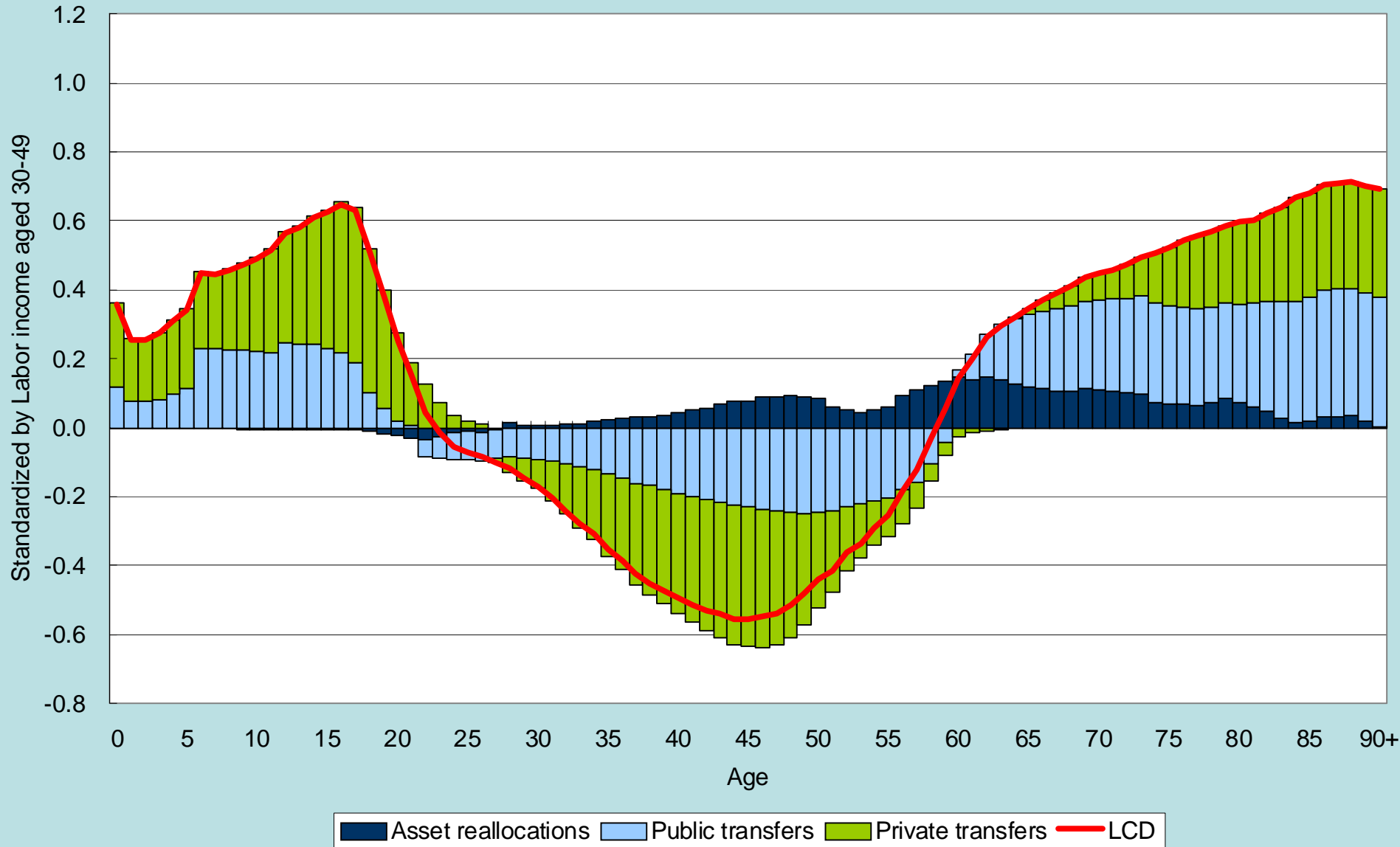


Japan 2004

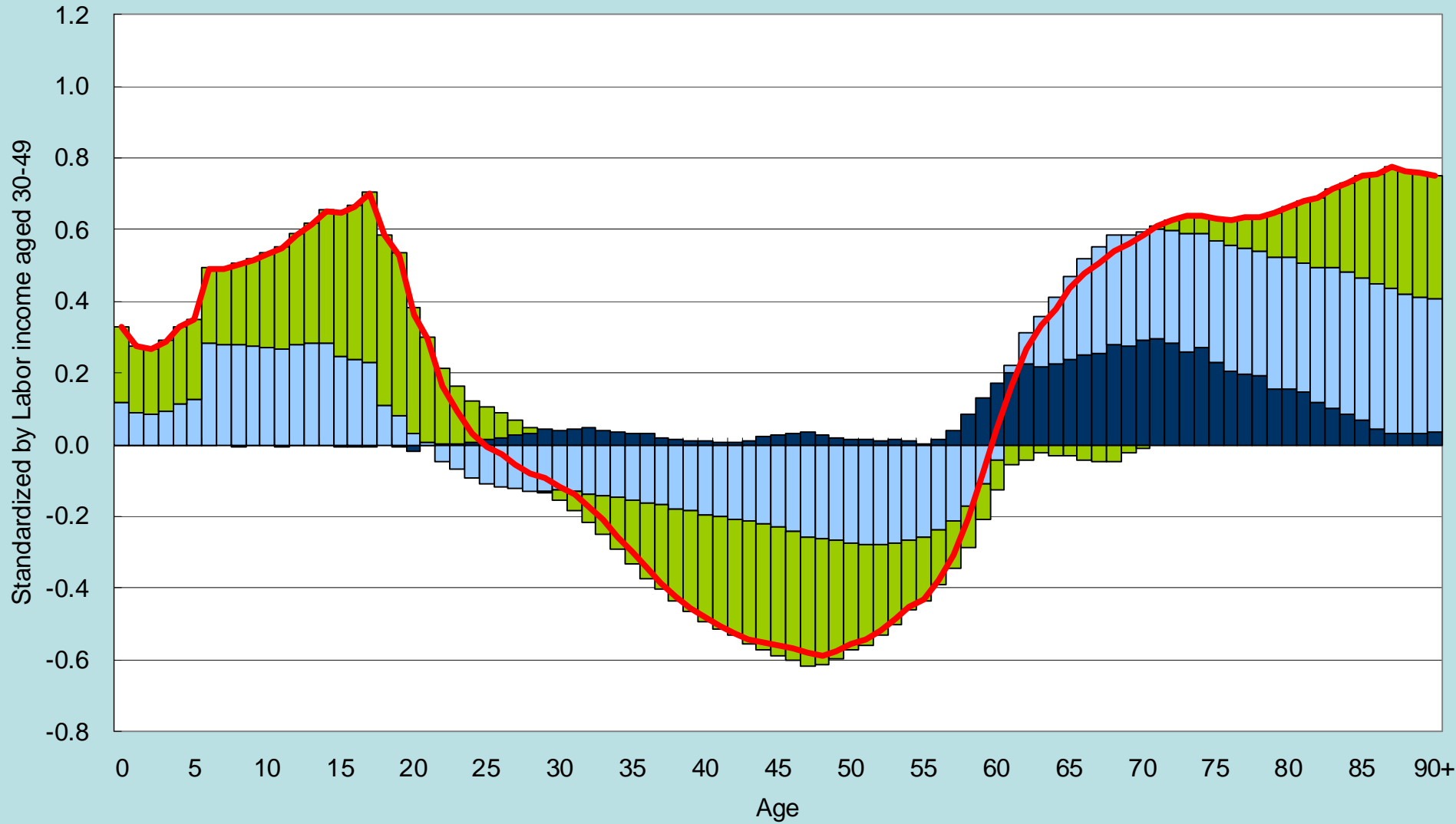


The case of Japan

Japan 1984

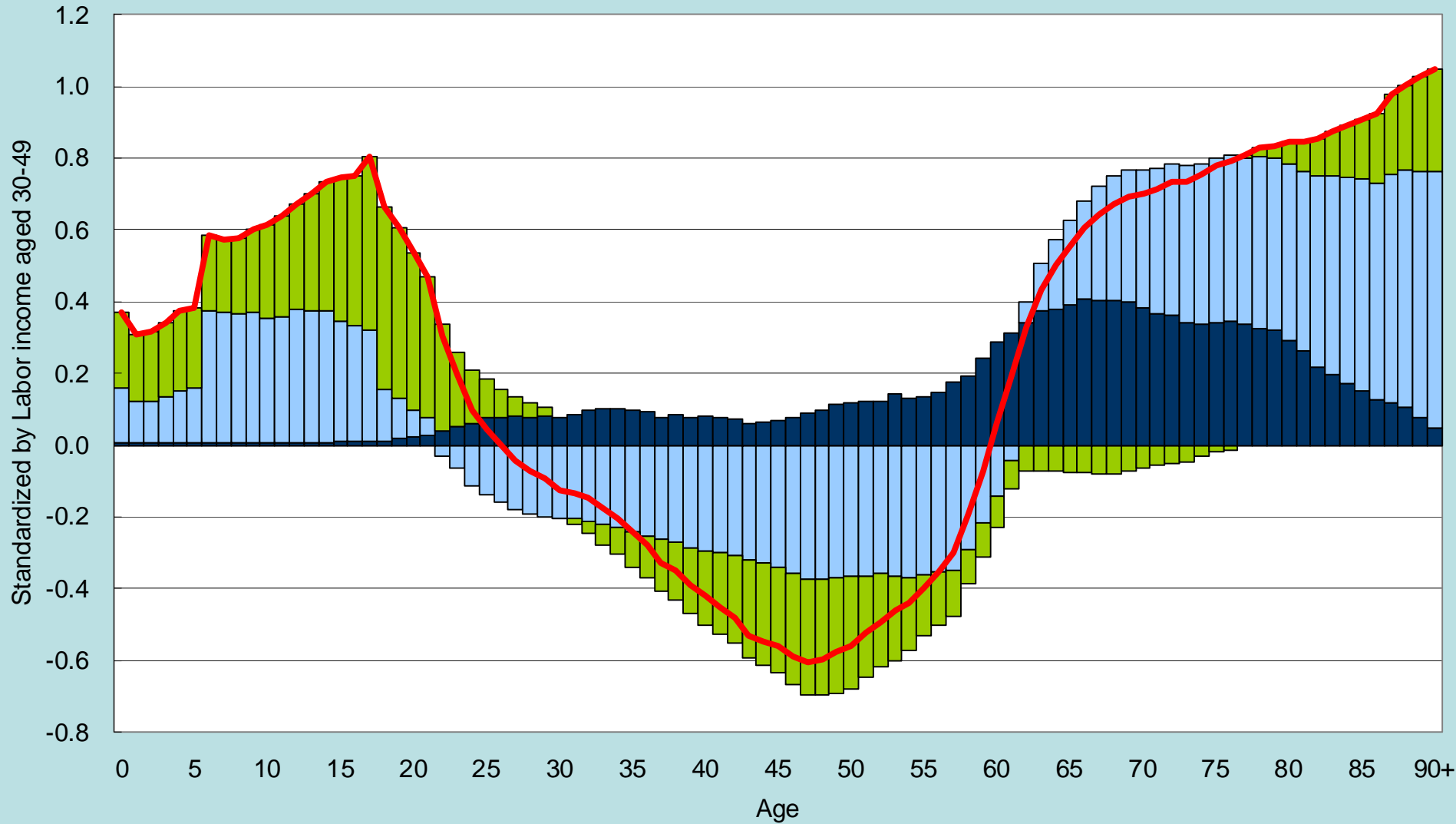


Japan 1994



Asset reallocations Public transfers Private transfers LCD

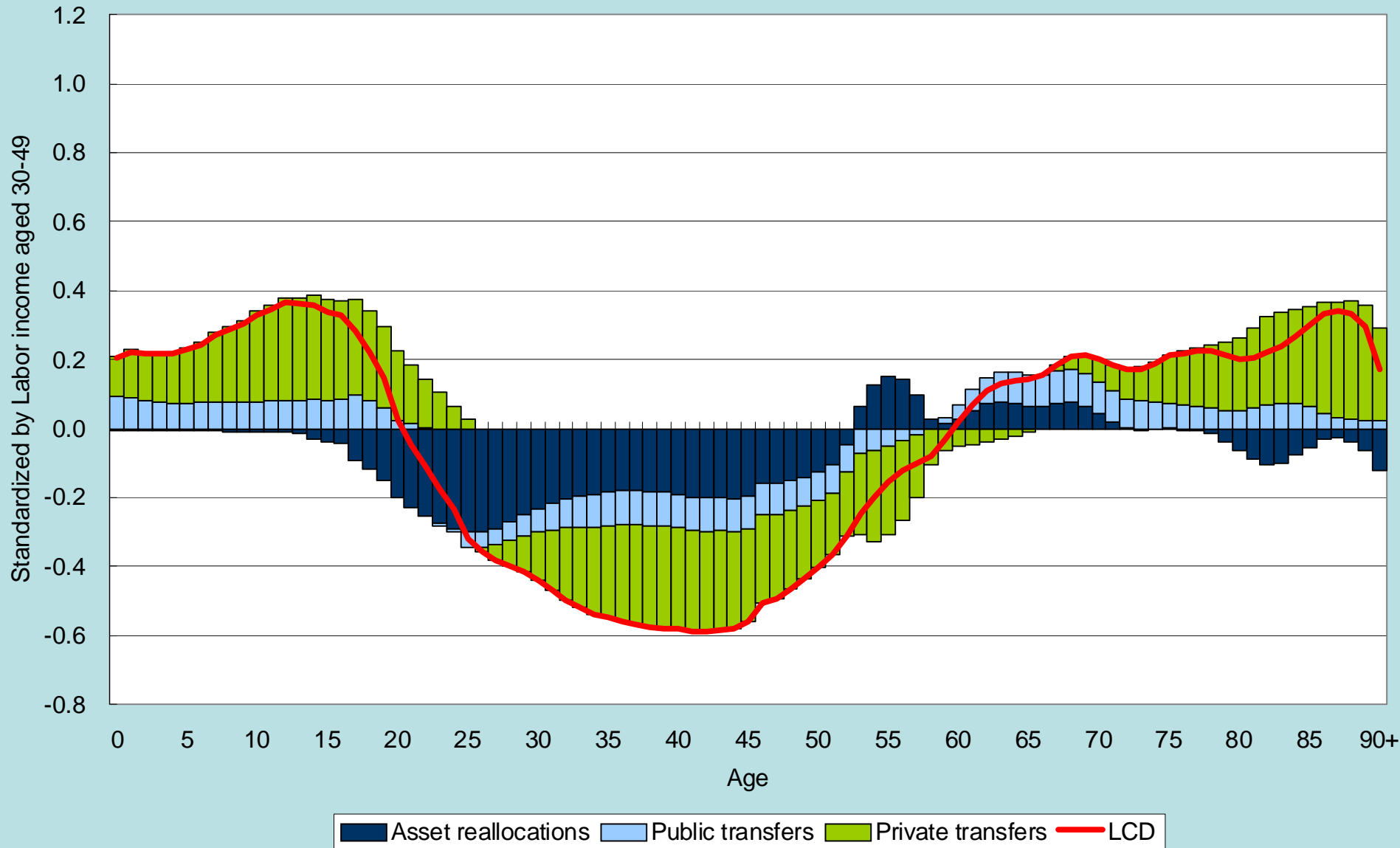
Japan 2004



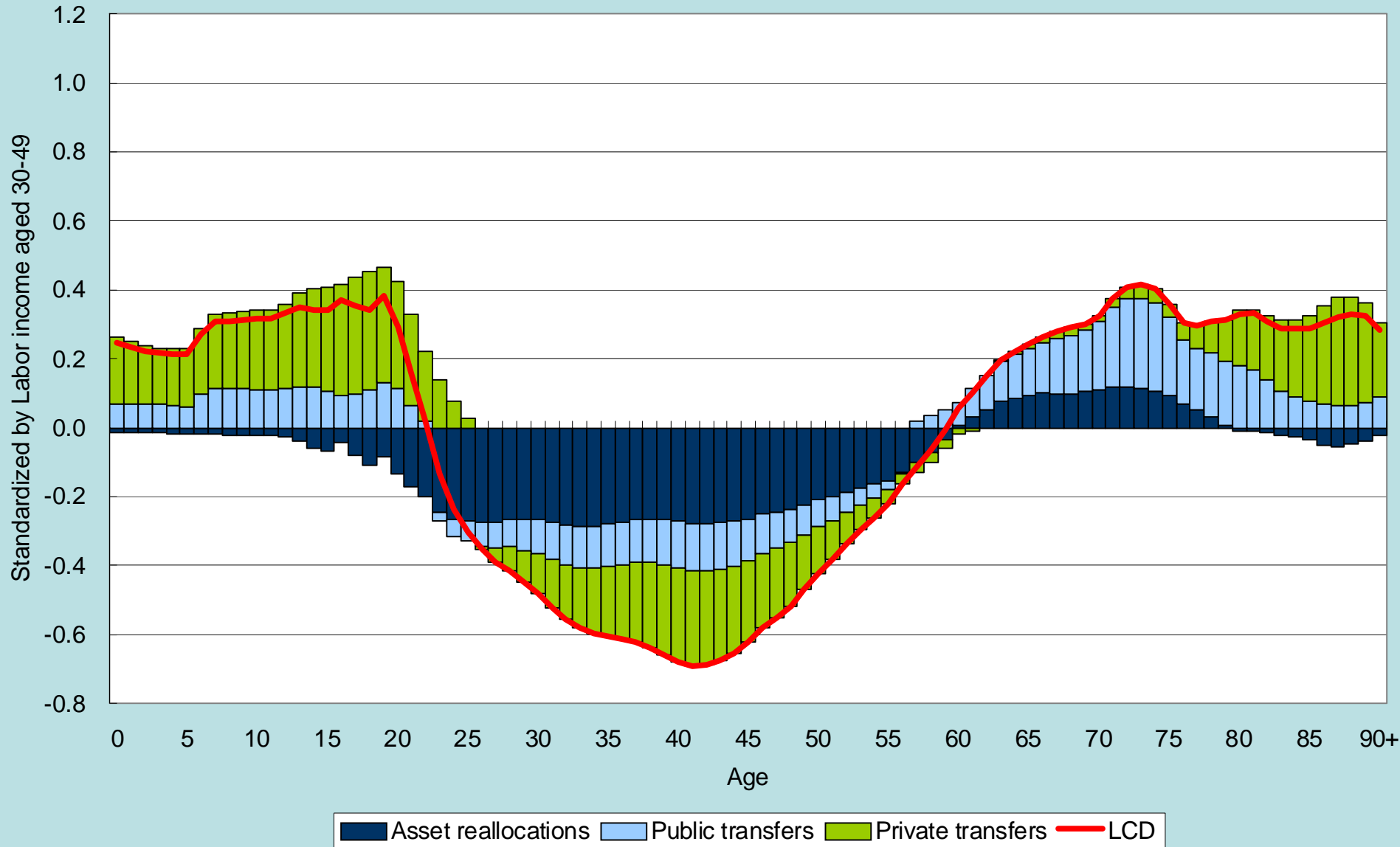
Asset reallocations Public transfers Private transfers LCD

The case of China

China 1995



China 2002



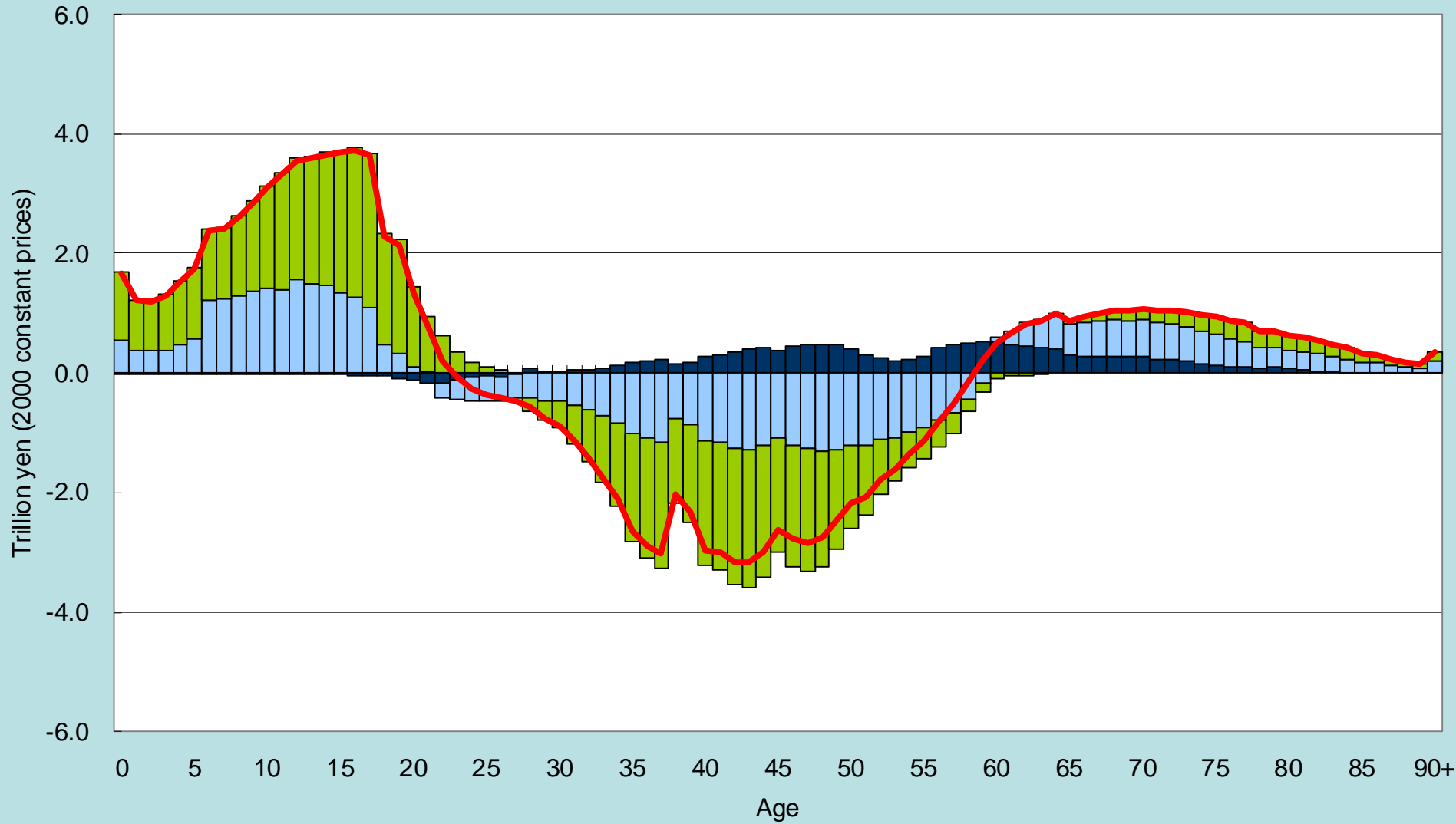
Impact of Population

Aging:

**from per capita to total
population**

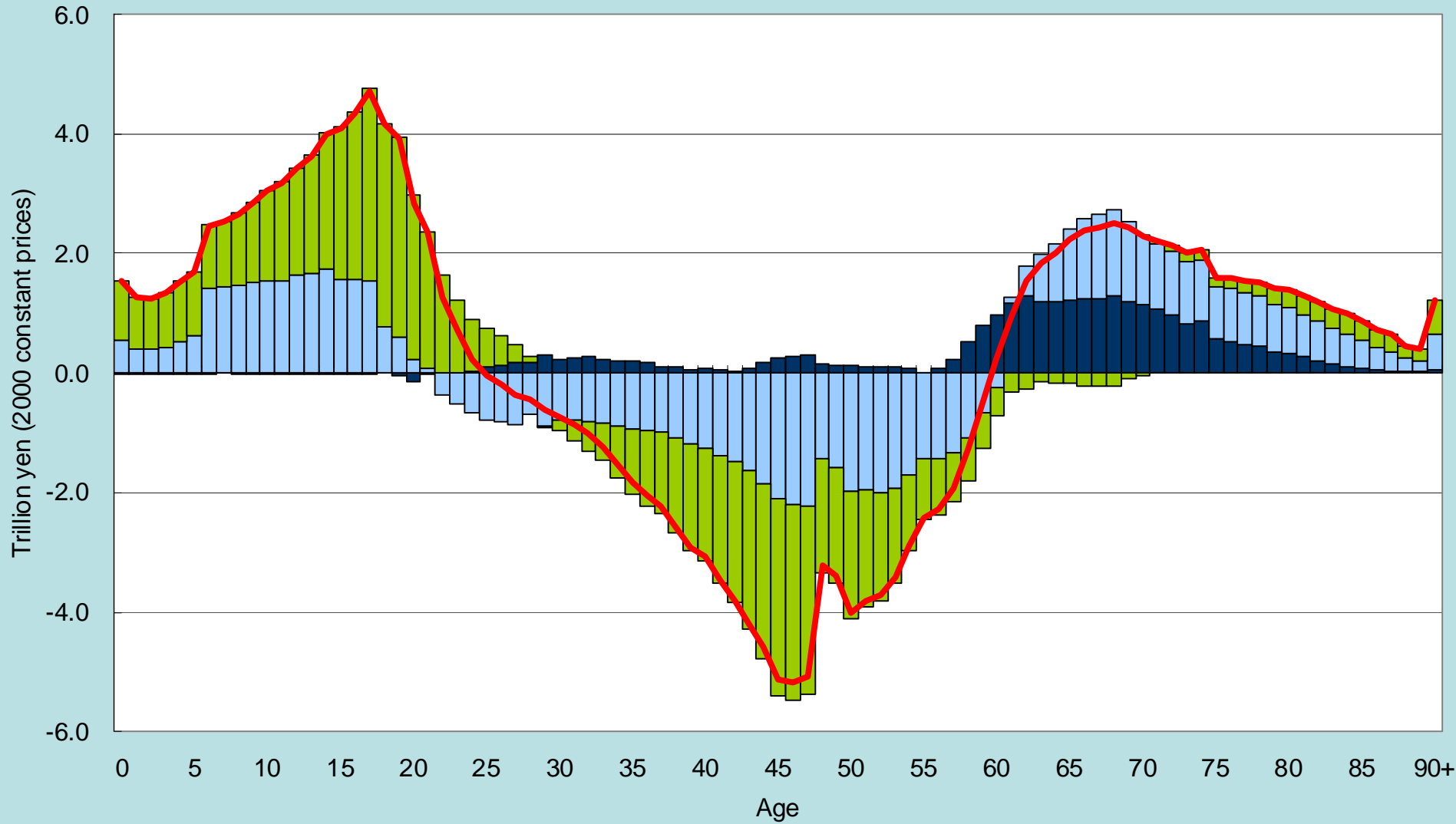
The case of Japan

Japan 1984



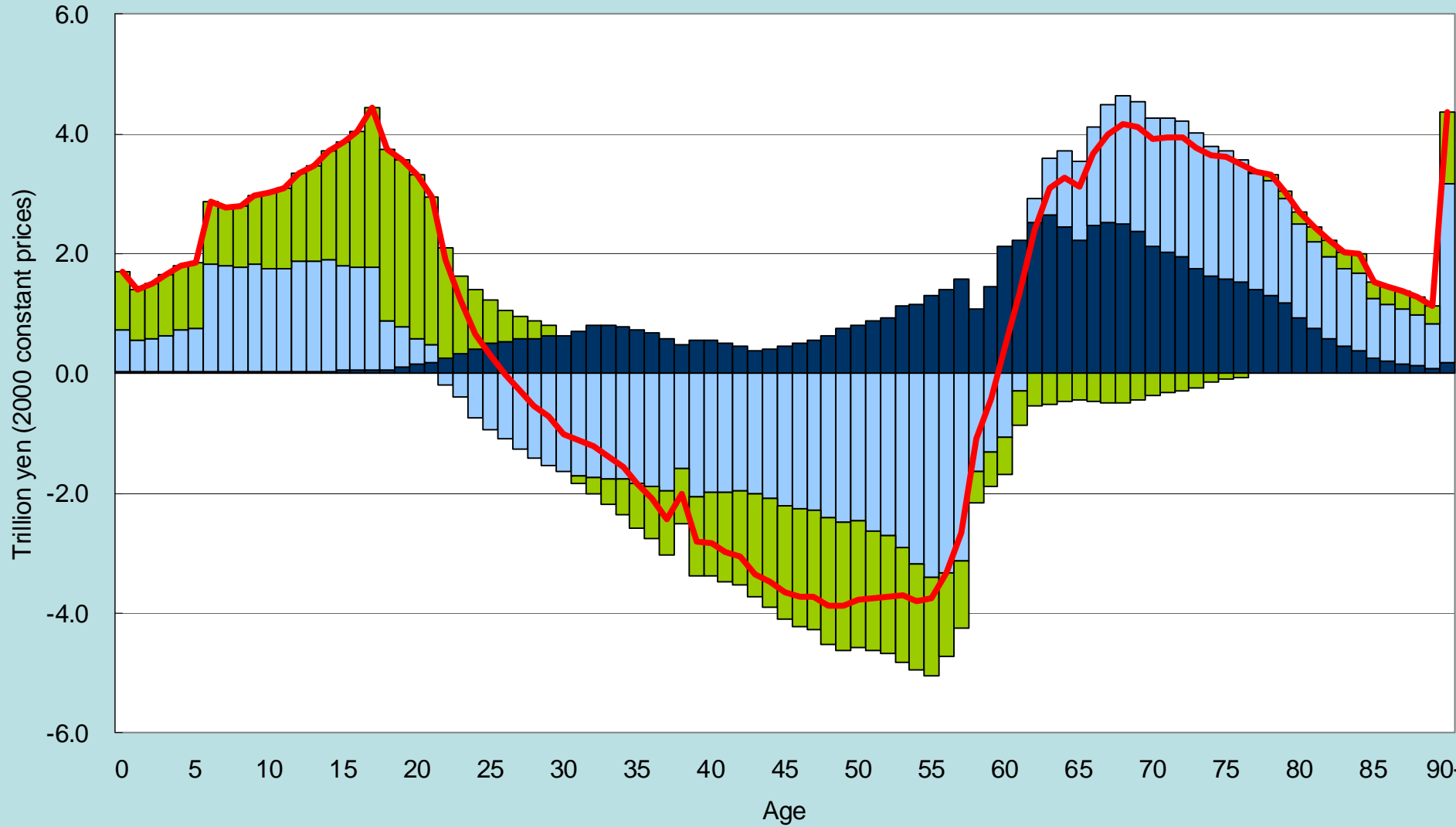
Asset reallocations Public transfers Private transfers LCD

Japan 1994



Asset reallocations Public transfers Private transfers LCD

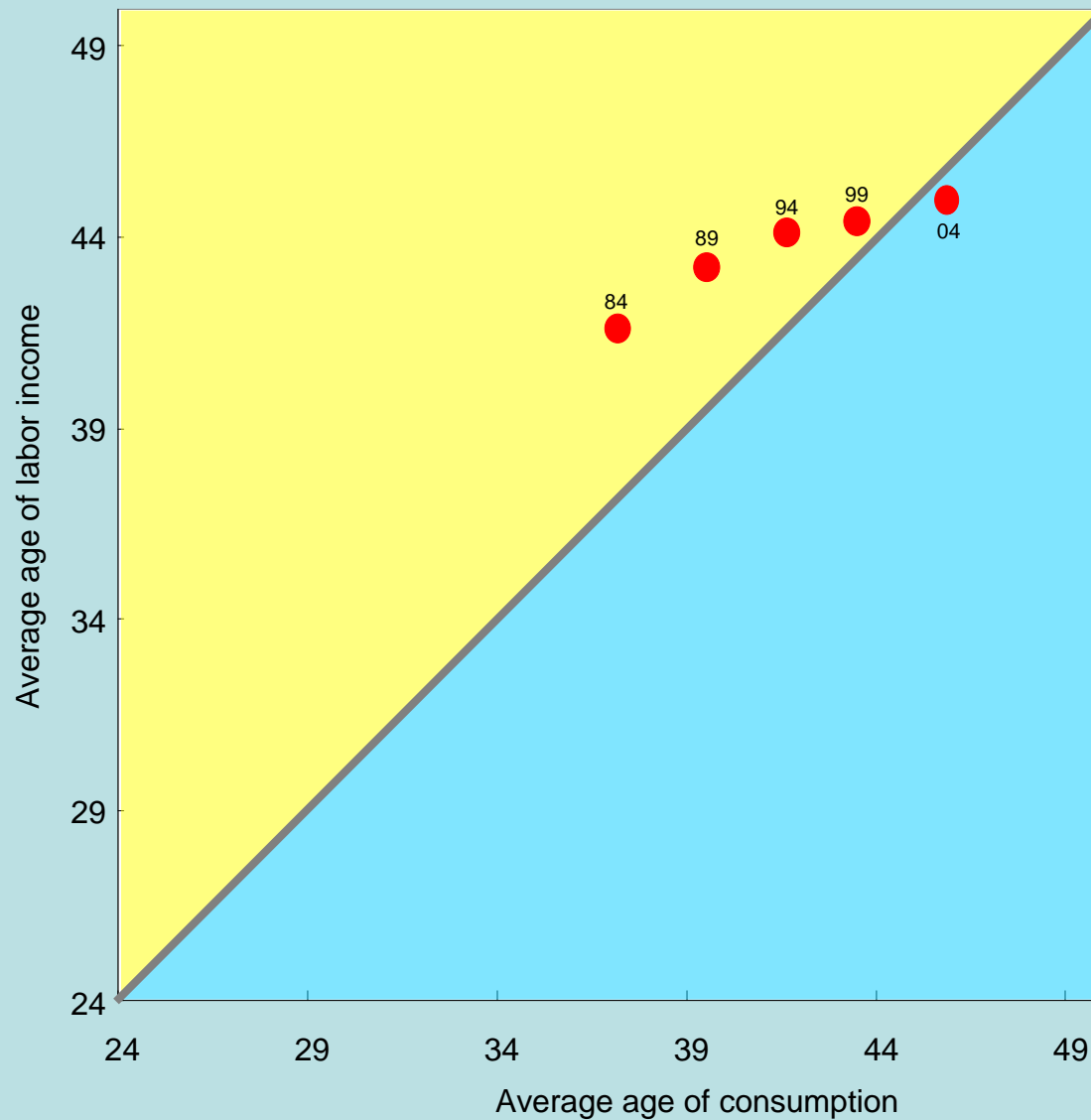
Japan 2004



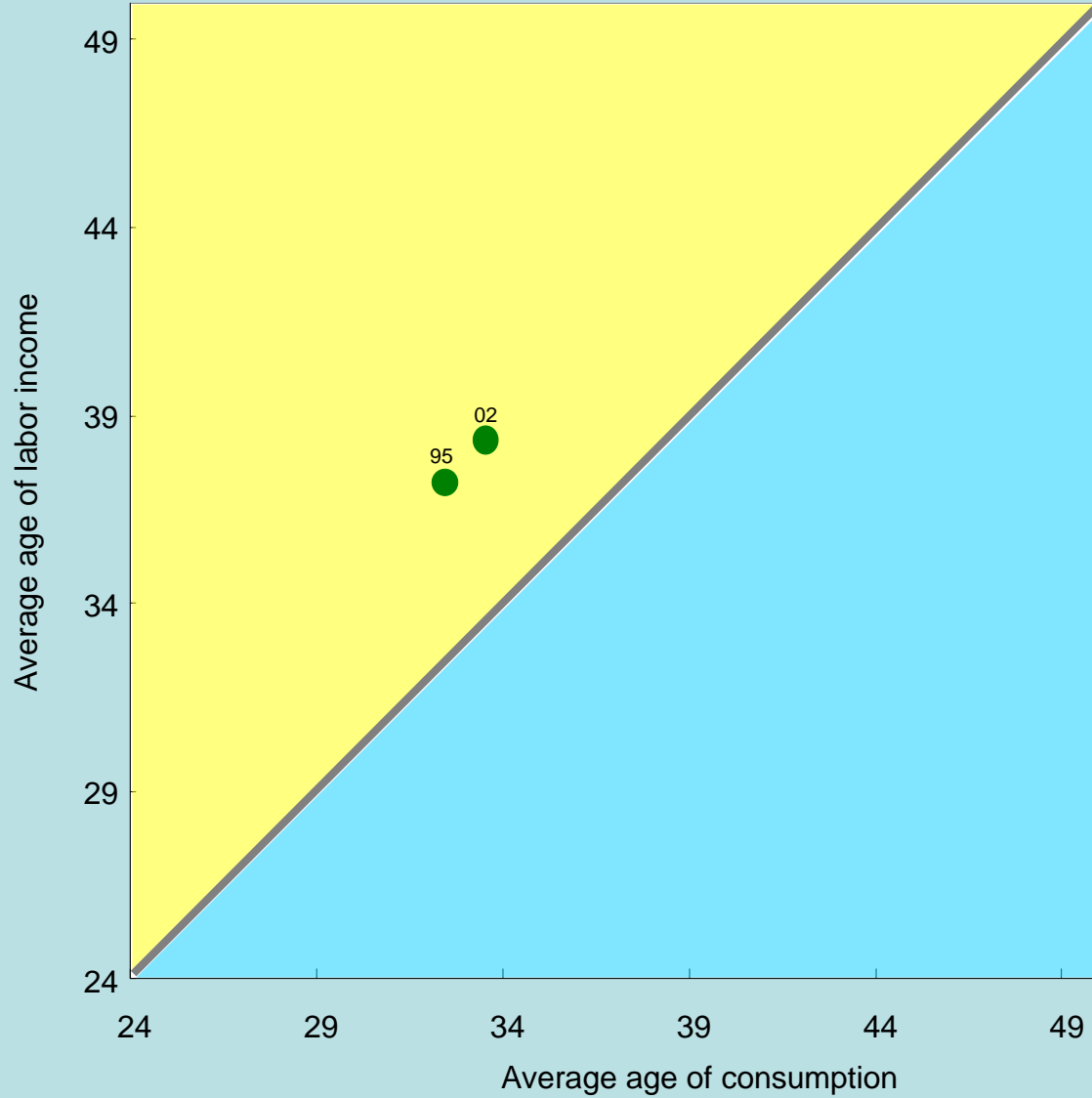
■ Asset reallocations ■ Public transfers ■ Private transfers — LCD

**Changing pattern of
the mean age of
consumption and
the mean age of
labor income**

Japan



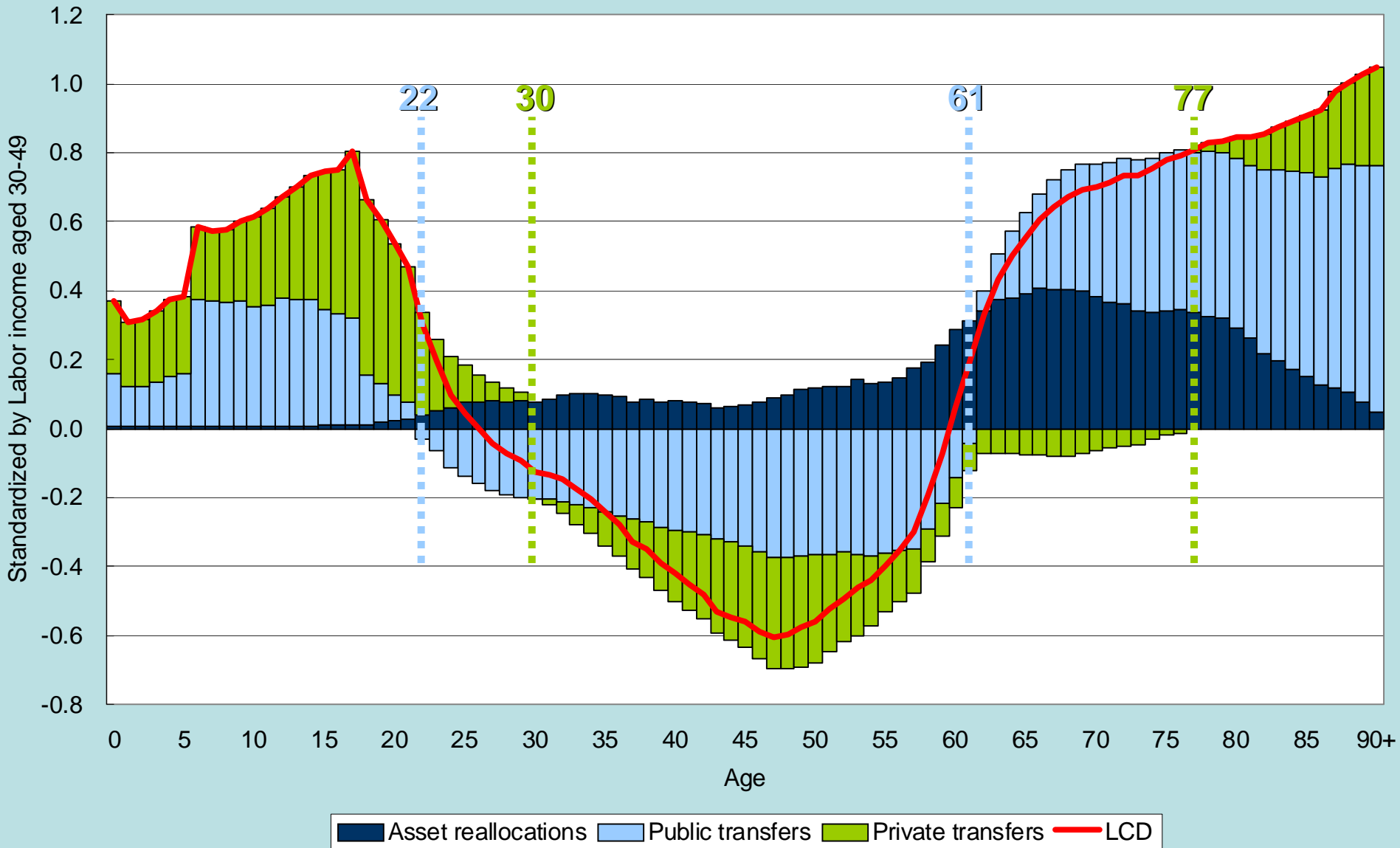
China



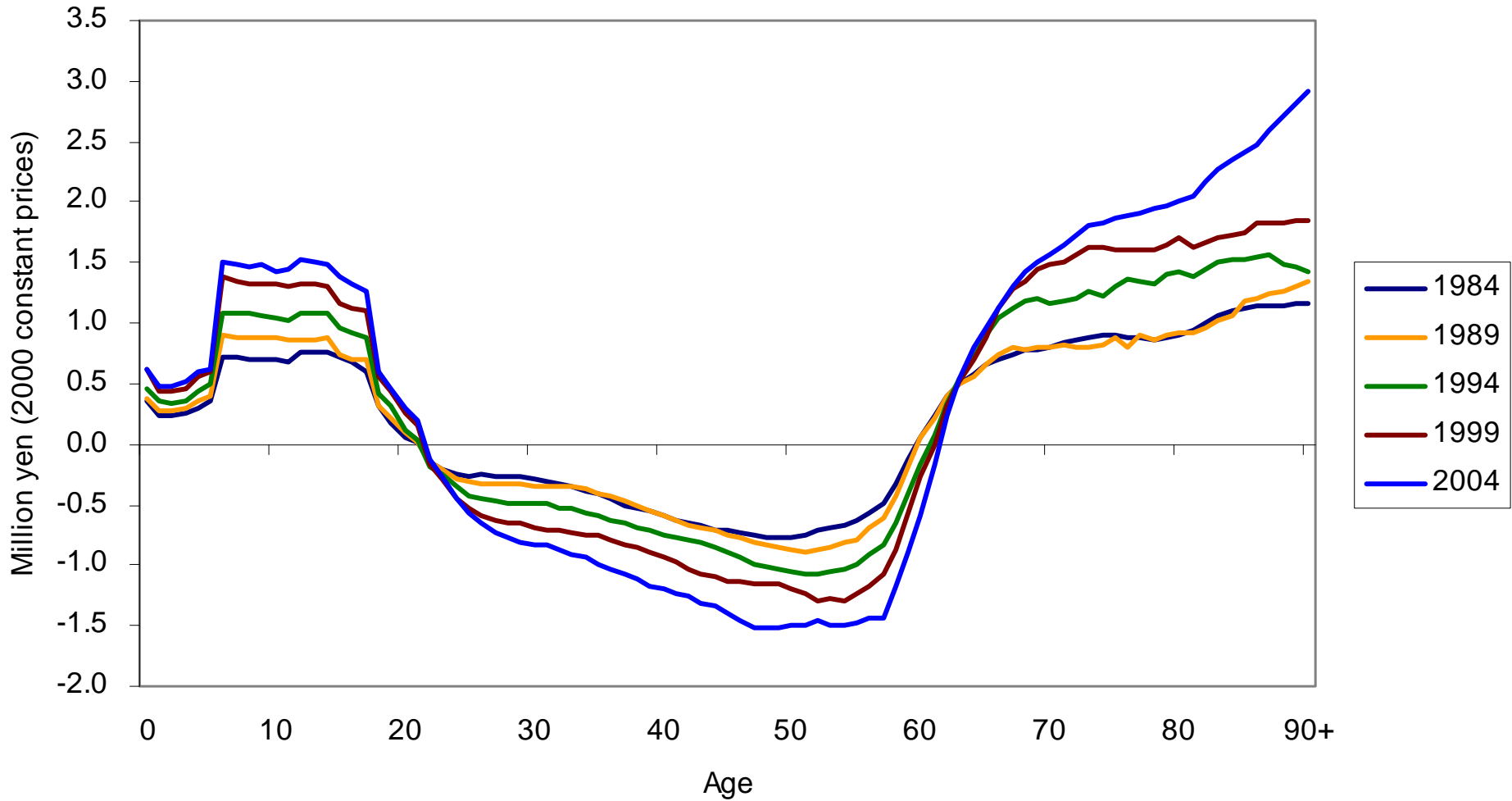
Now, let us look at two types of intergenerational Transfers:

- Public intergenerational transfers**
- Private intergenerational transfers**

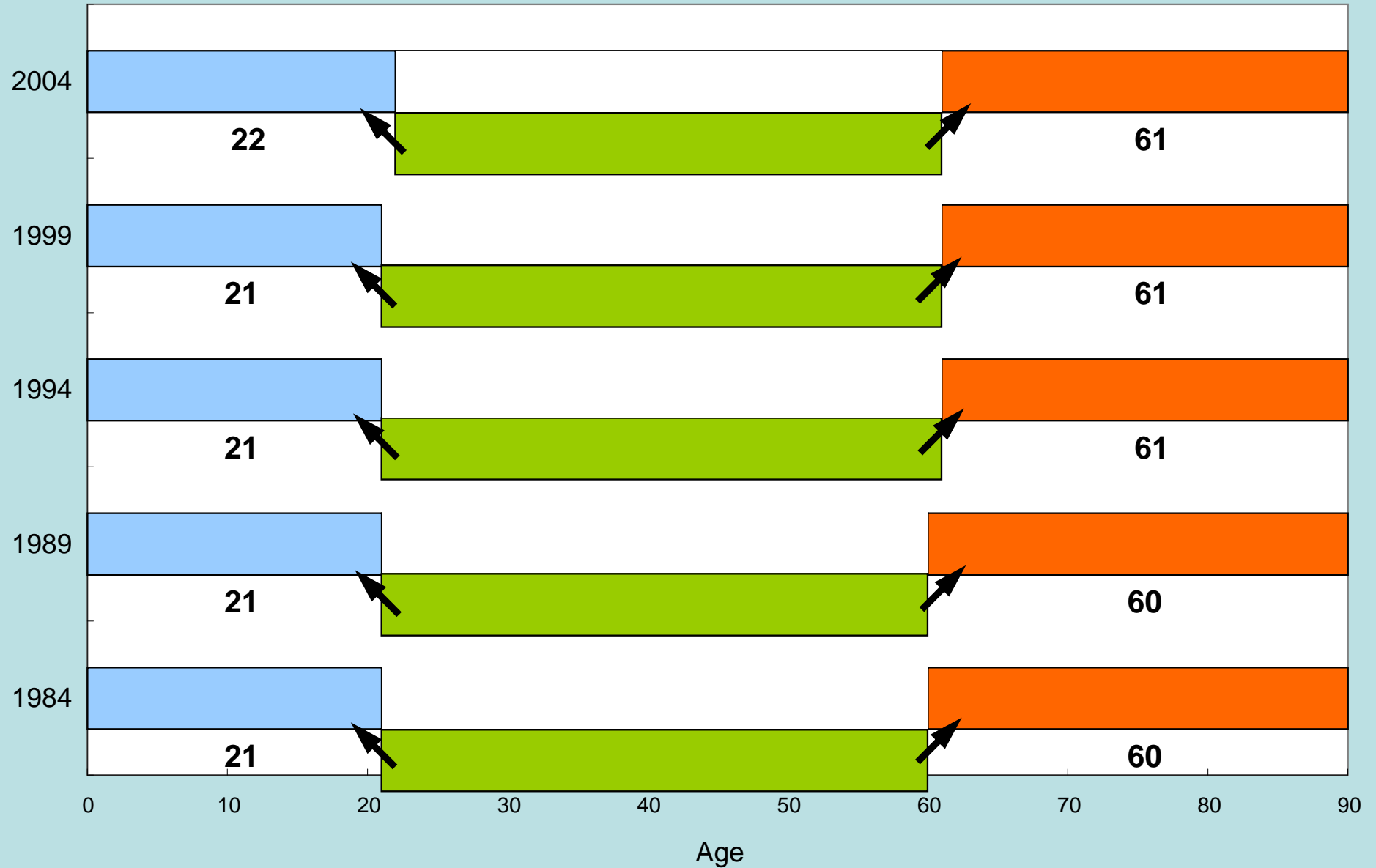
Japan 2004



Per capita net public transfers received, Japan, 1984-2004



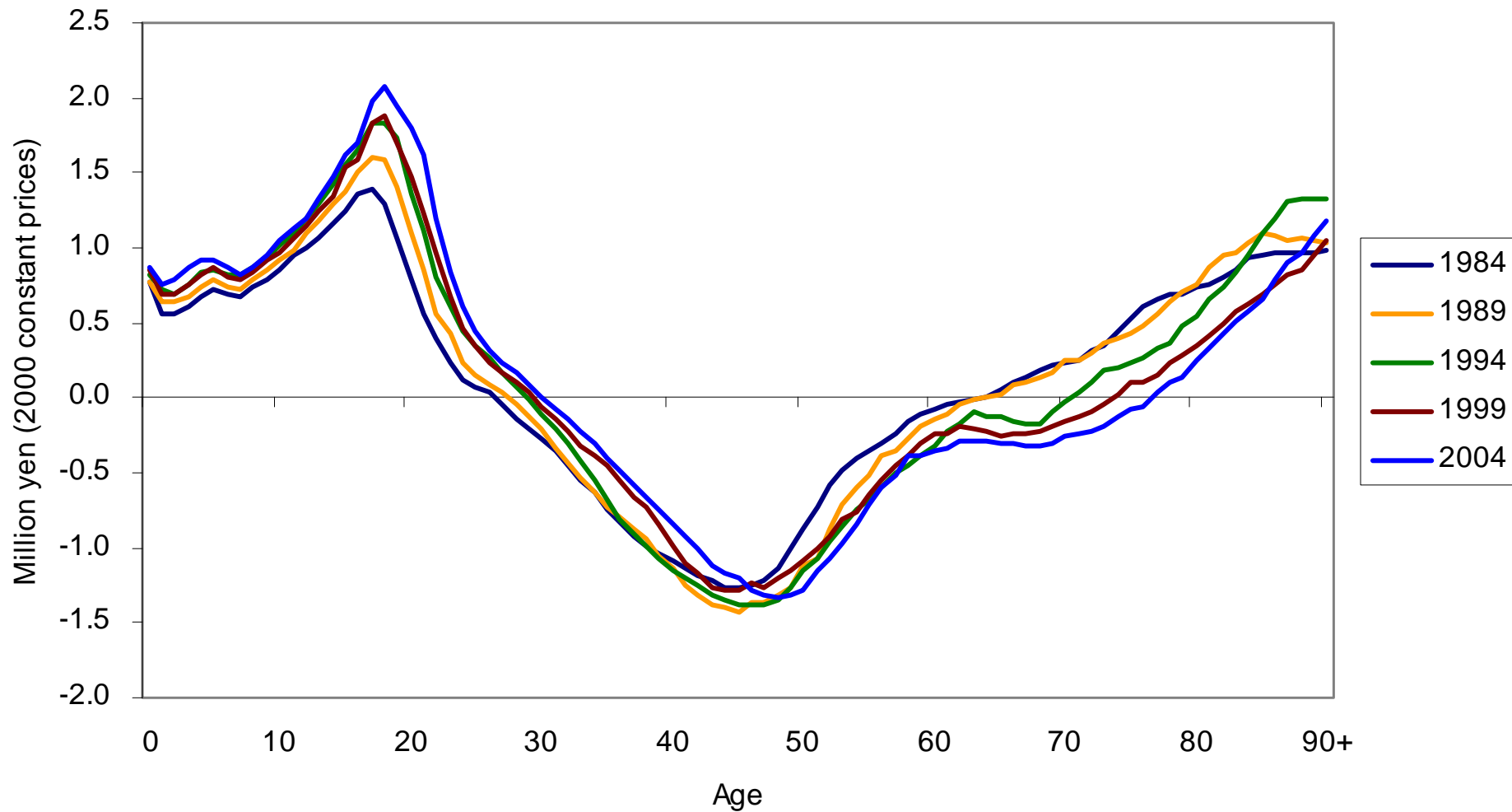
Change in crossing ages for net public transfers, Japan, 1984-2004



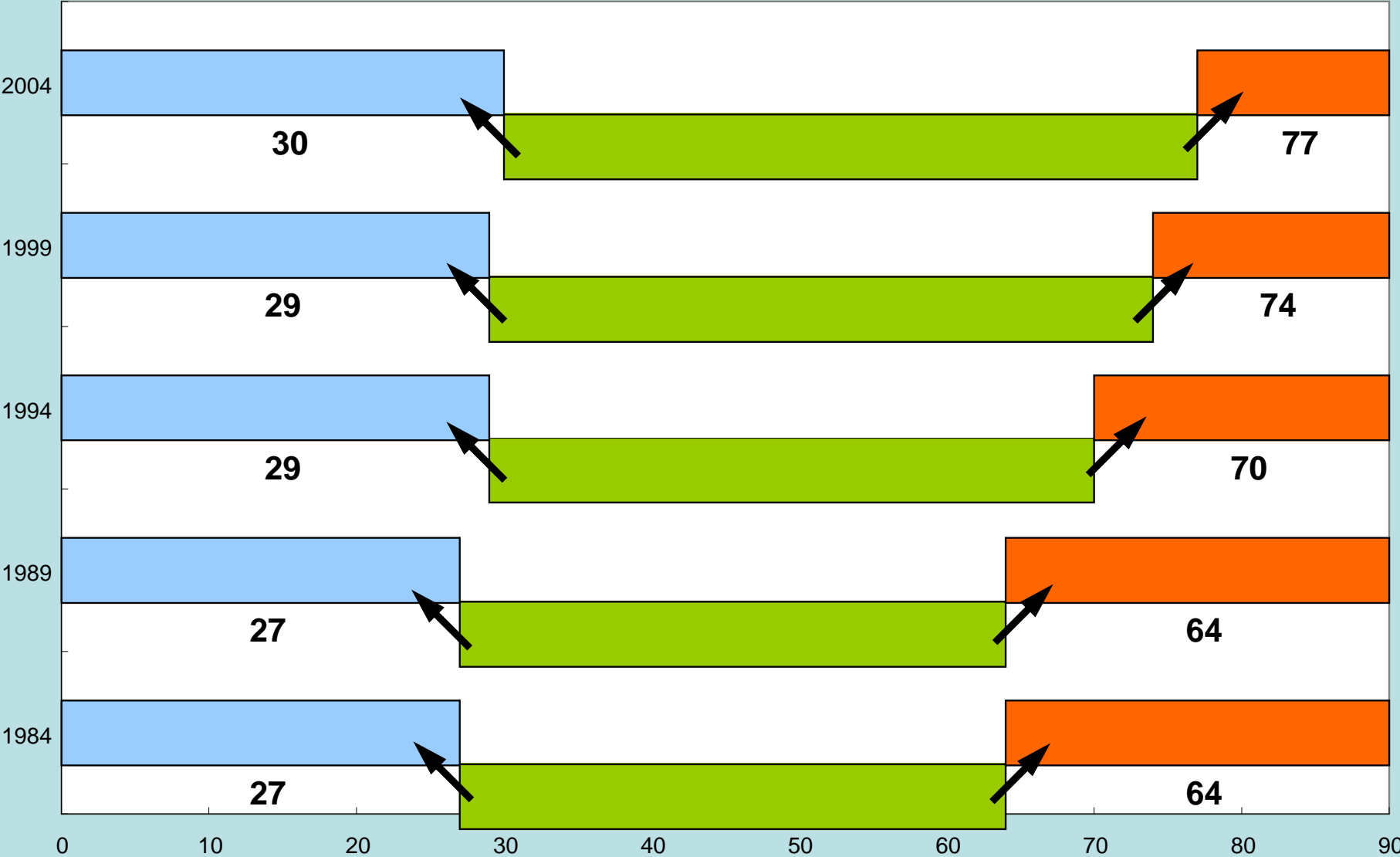
● **The public sector tends to be tardy in responding to Japan's rapidly changing age structure and social needs.**

The private sector responds more rapidly like...

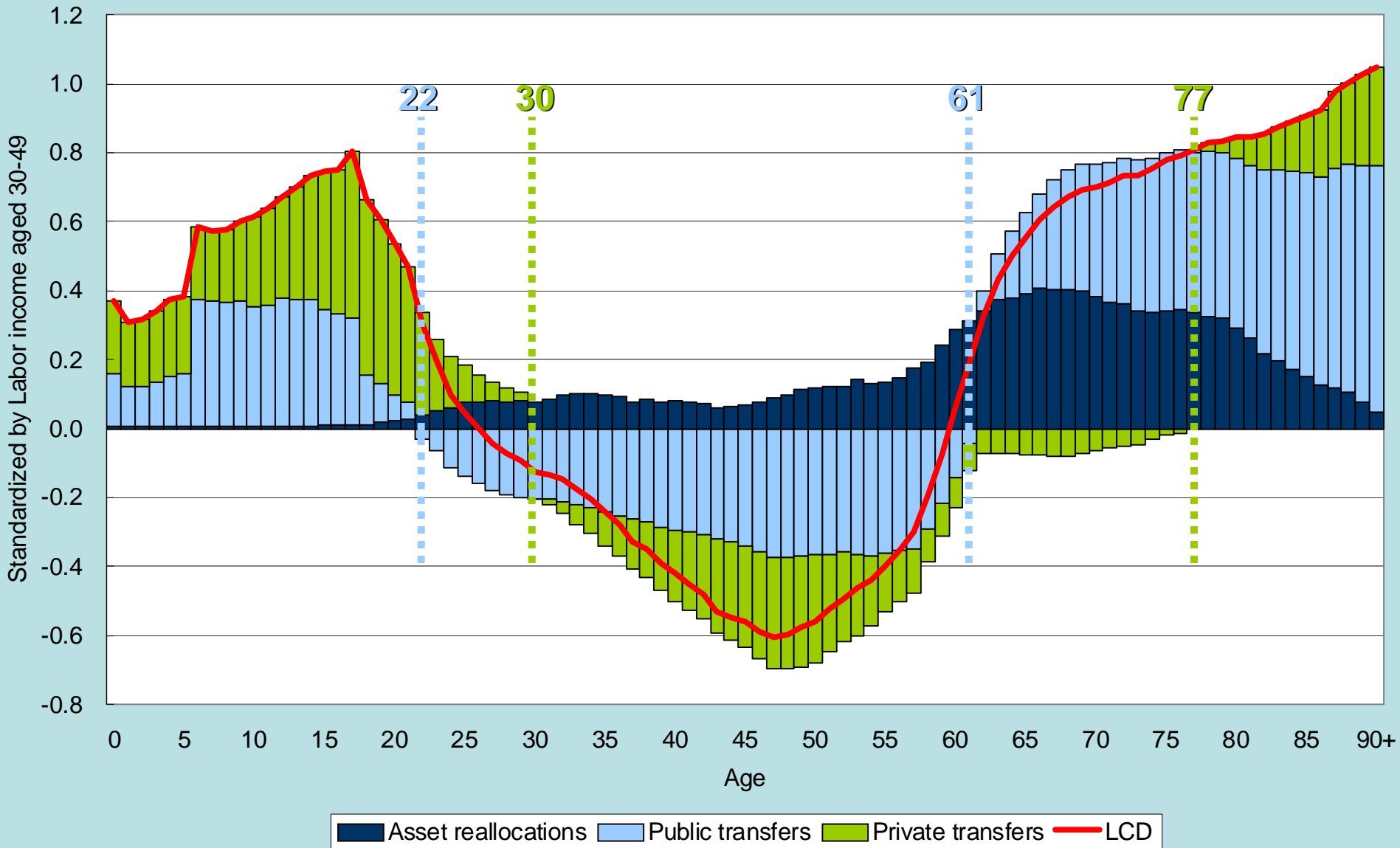
Per capita net private transfers received, Japan, 1984-2004



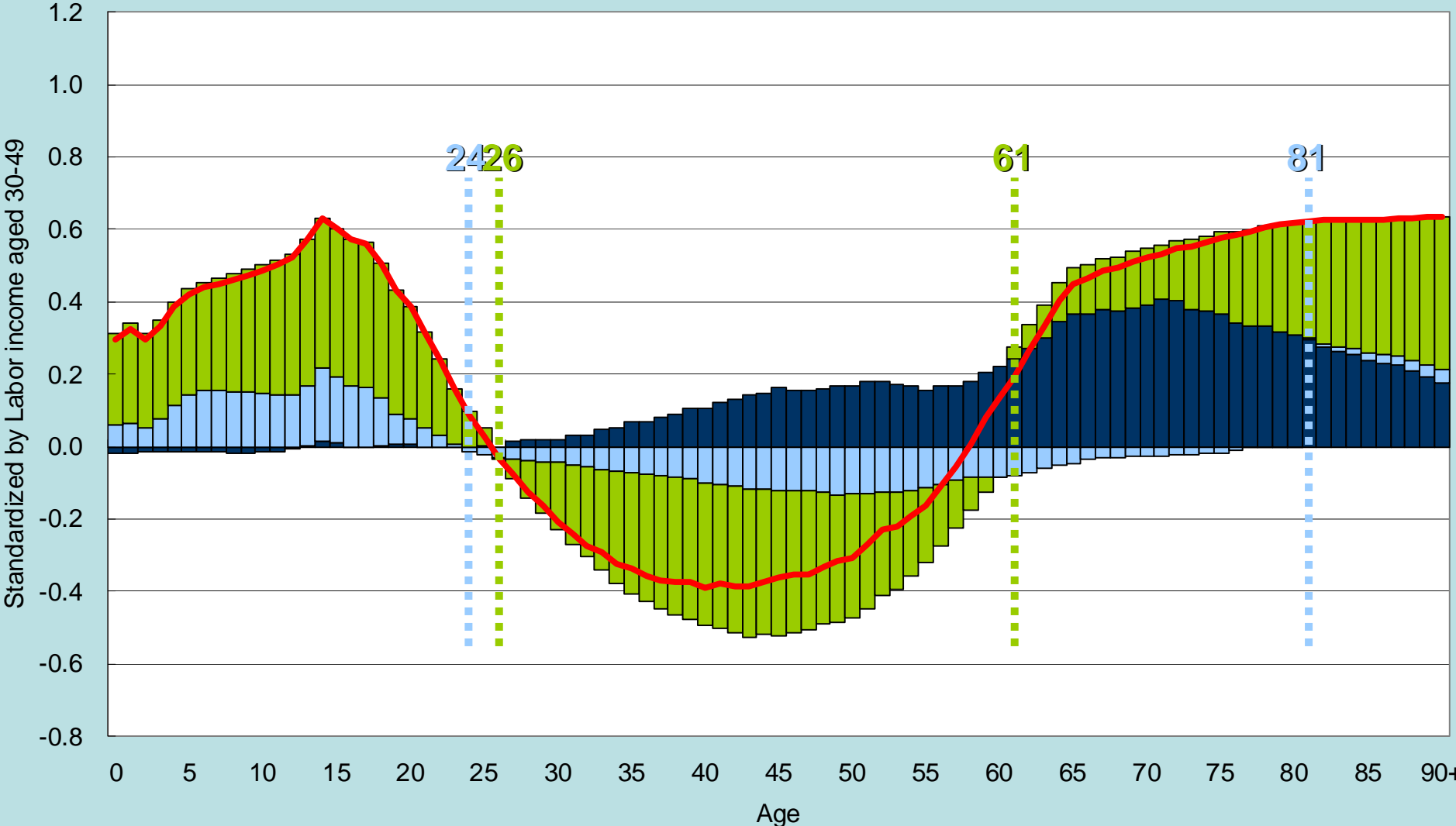
Change in crossing ages for net familial transfers, Japan, 1984-2004



Japan 2004

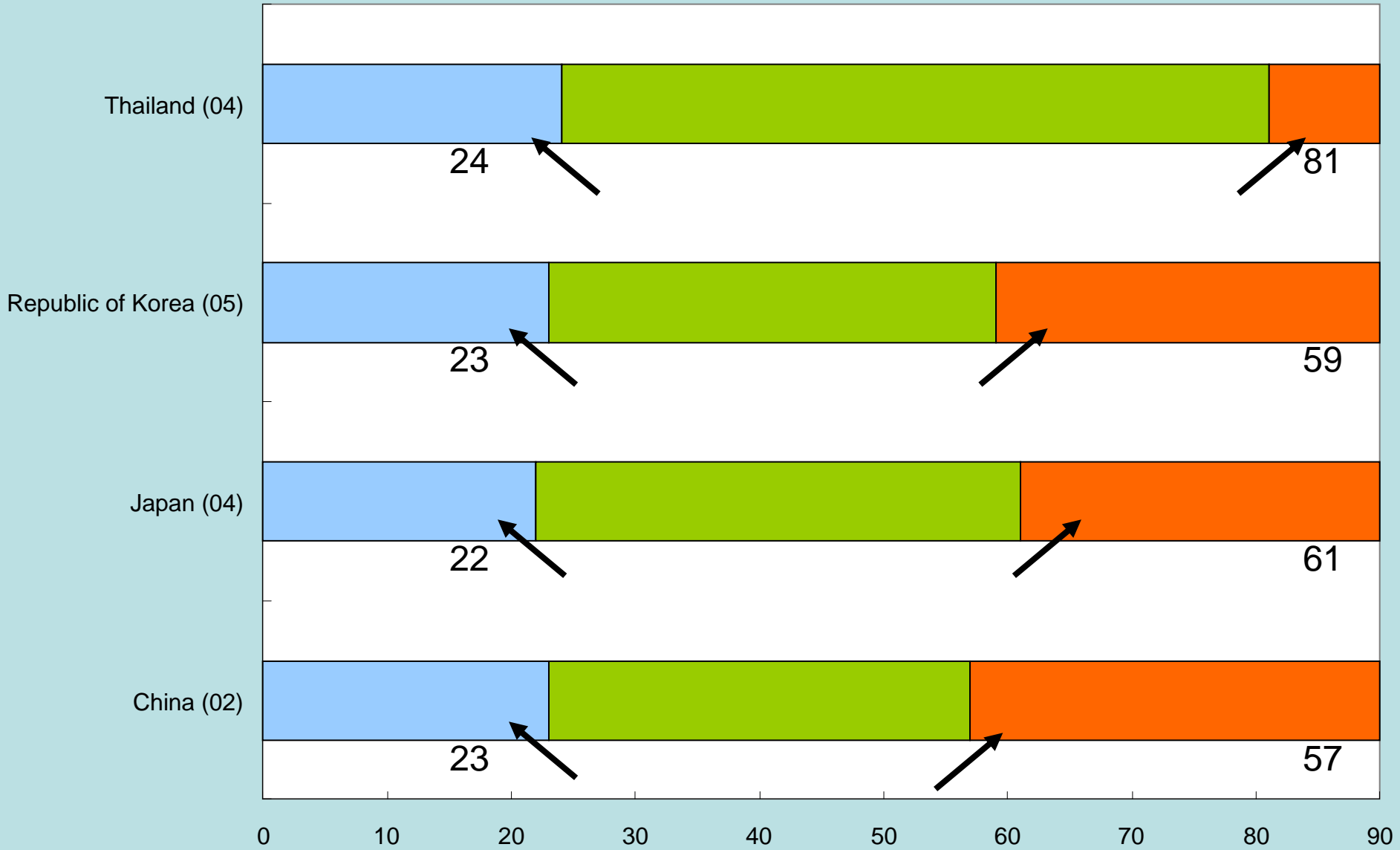


Thailand 2004

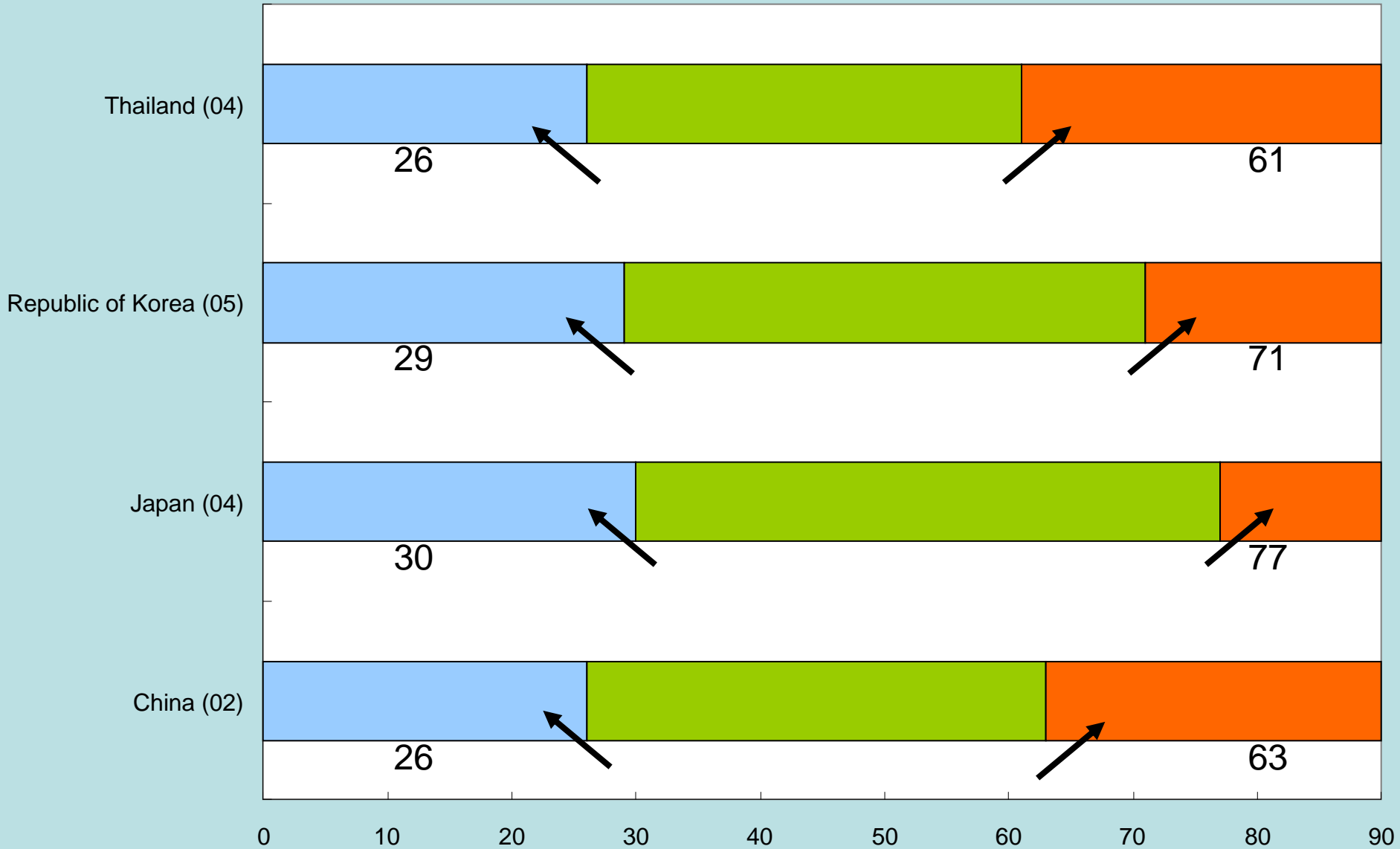


Asset reallocations Public transfers Private transfers LCD

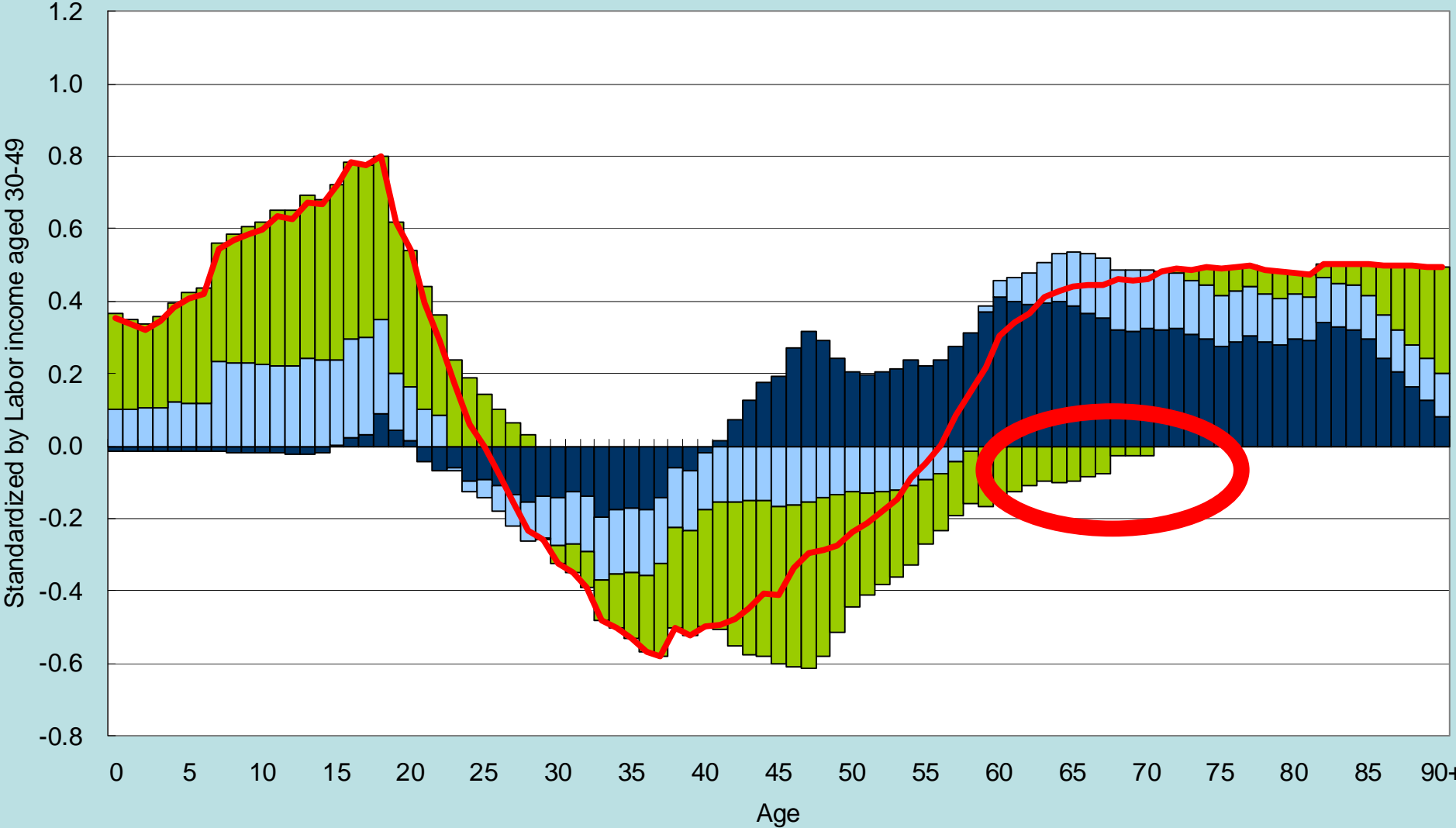
Change in crossing age for net public transfers



Change in crossing age for net private transfers

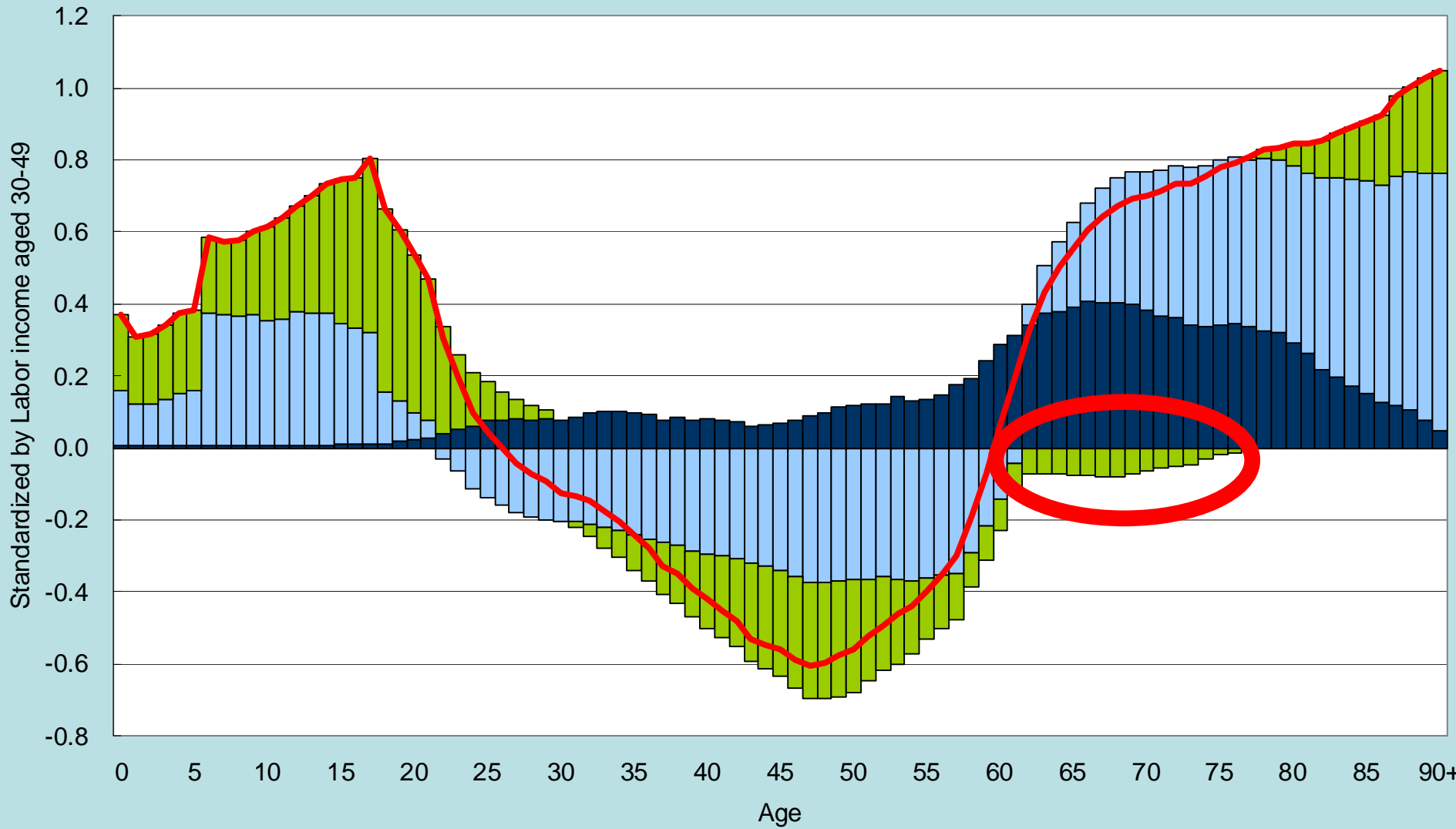


Republic of Korea 2005



Asset reallocations Public transfers Private transfers Life Cycle Deficit

Japan 2004



Asset reallocations Public transfers Private transfers LCD

**In Japan, the elderly are
playing the role of the
society's safety net...**

Public pensions are a highly dependable source of income for the elderly.

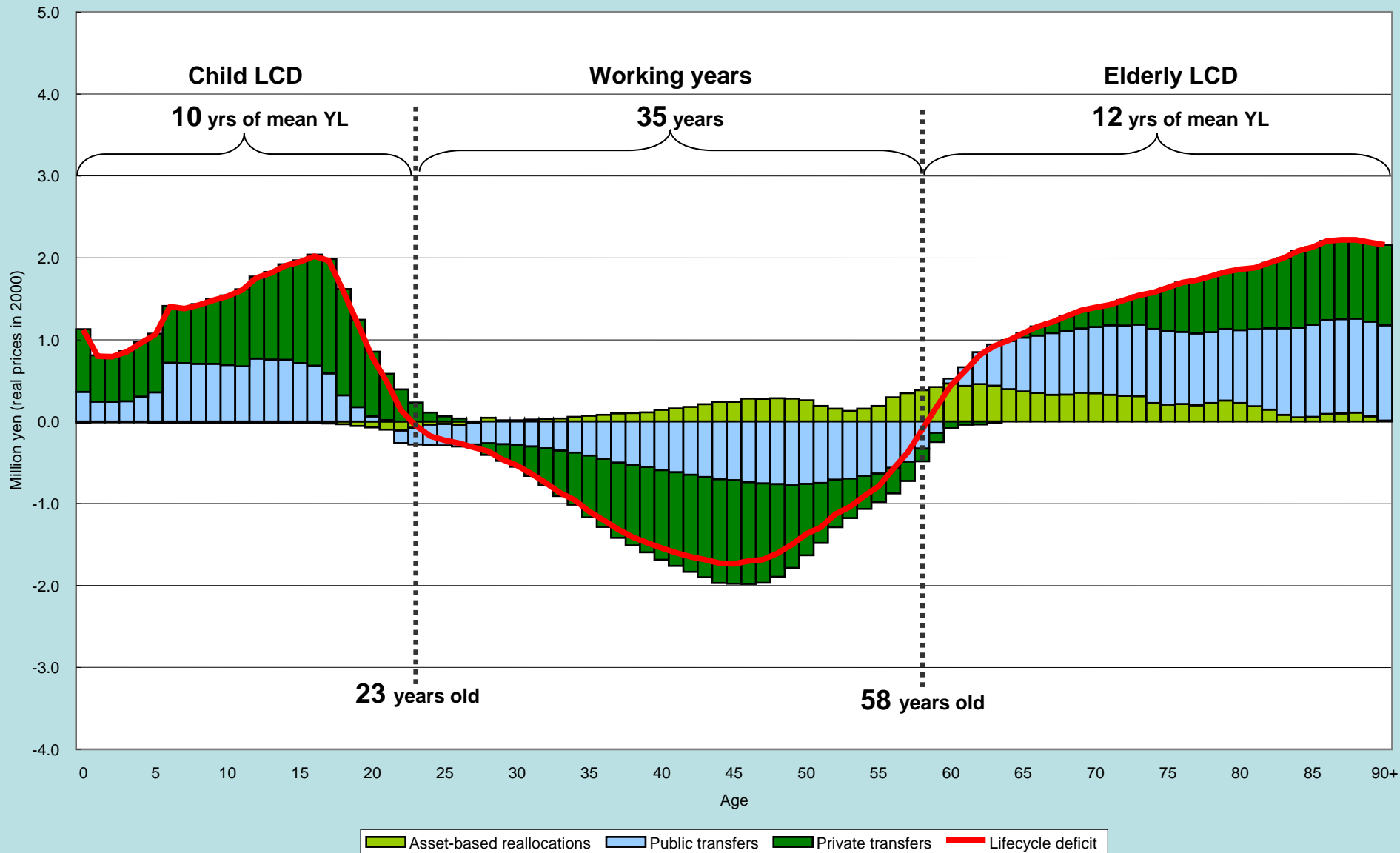
The employment for their middle-aged sons and daughters has been unstable since the beginning of “Japan’s lost decade”.

Rising costs of children and the elderly

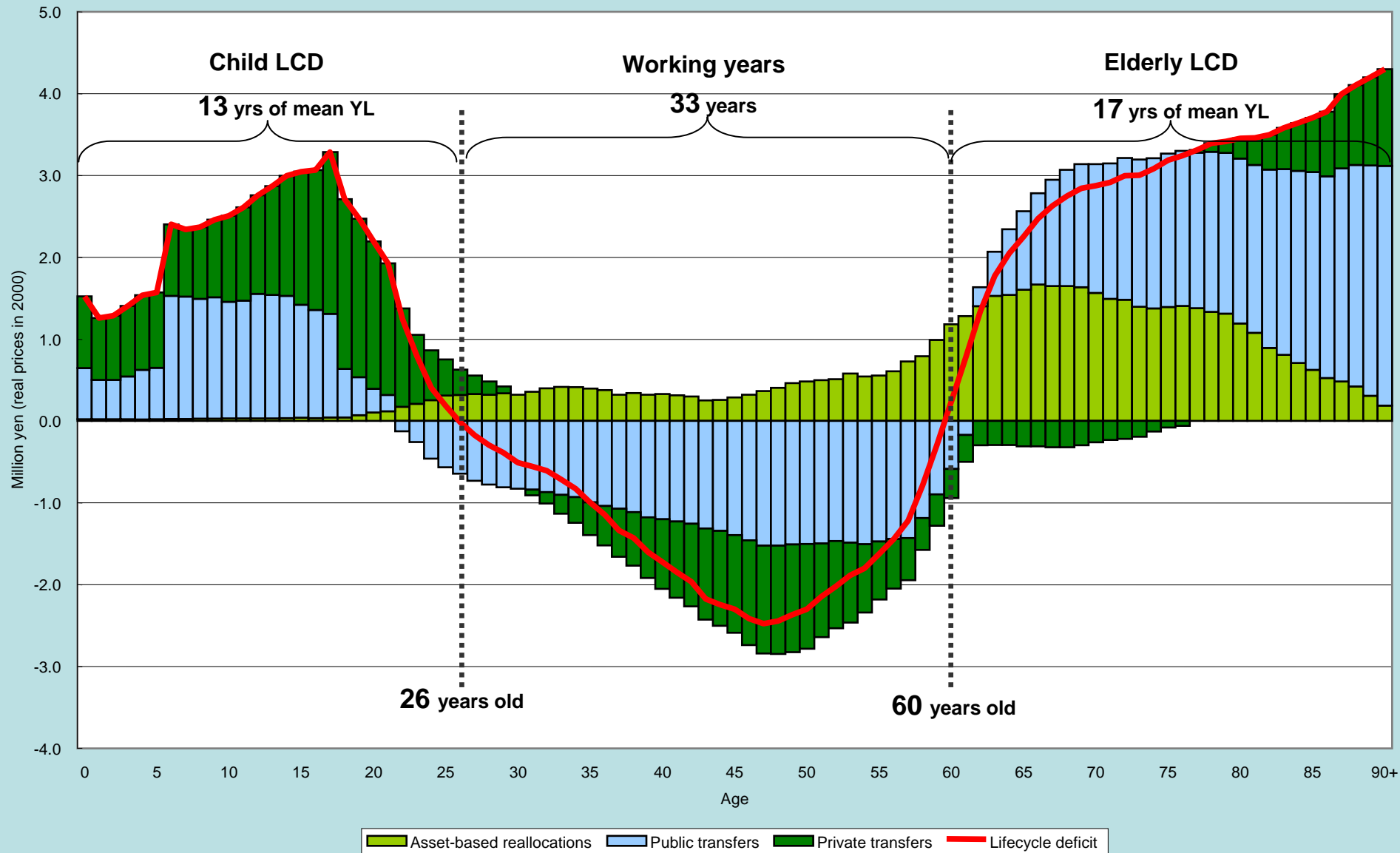
In Japan, the cost of the elderly has been rising, and so is the case of the cost of children, as shown in the following two graphs:

Changing pattern of three components of per capita reallocation of lifecycle deficits in Japan

1984

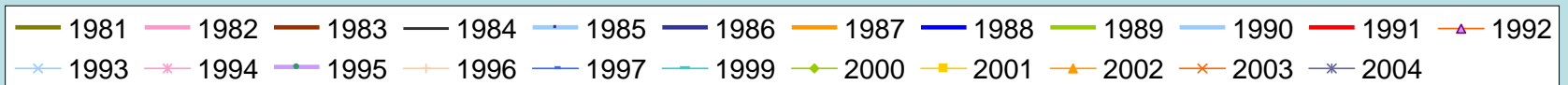
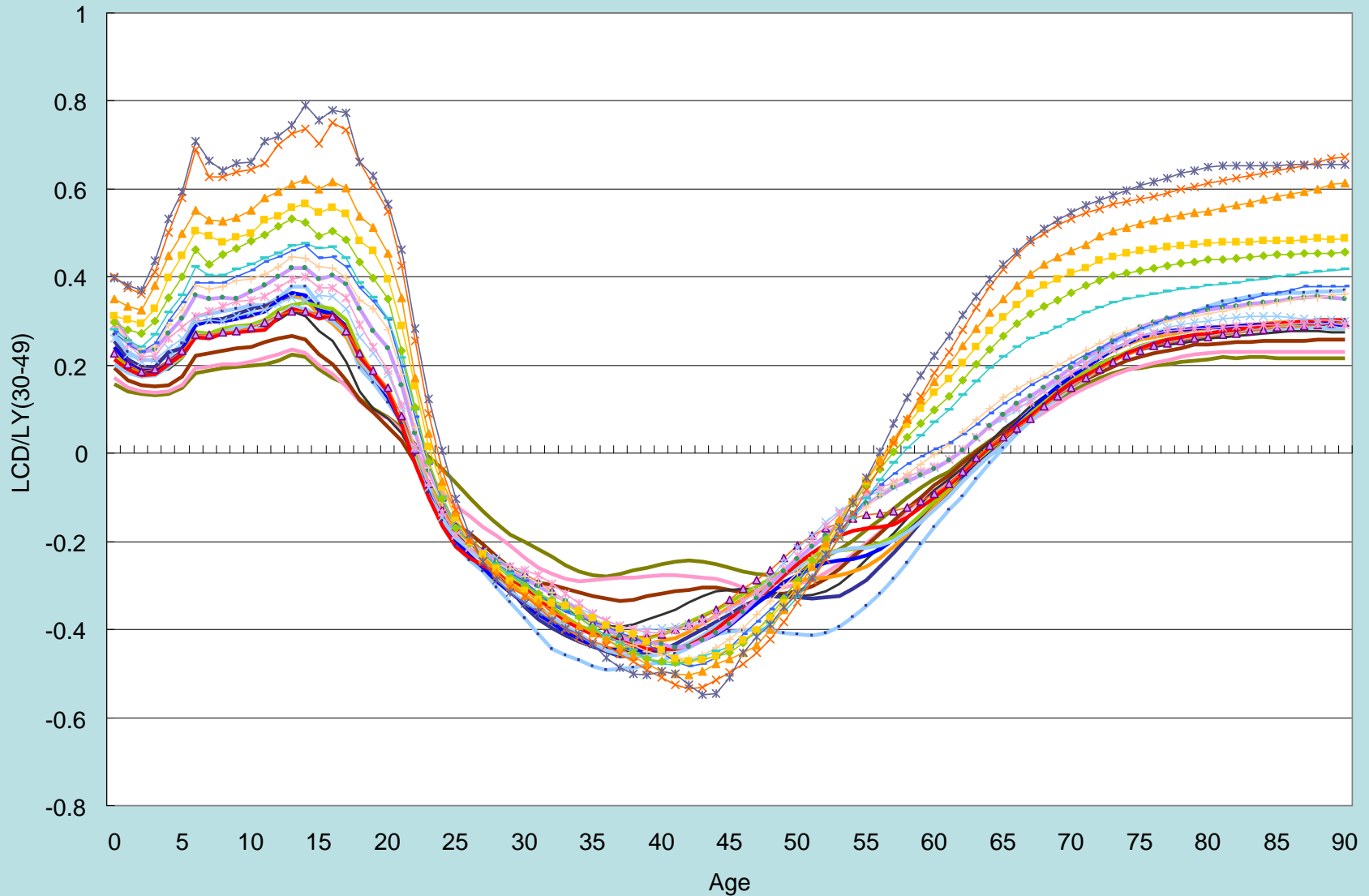


Changing pattern of three components of per capita reallocation of lifecycle deficits in Japan 2004



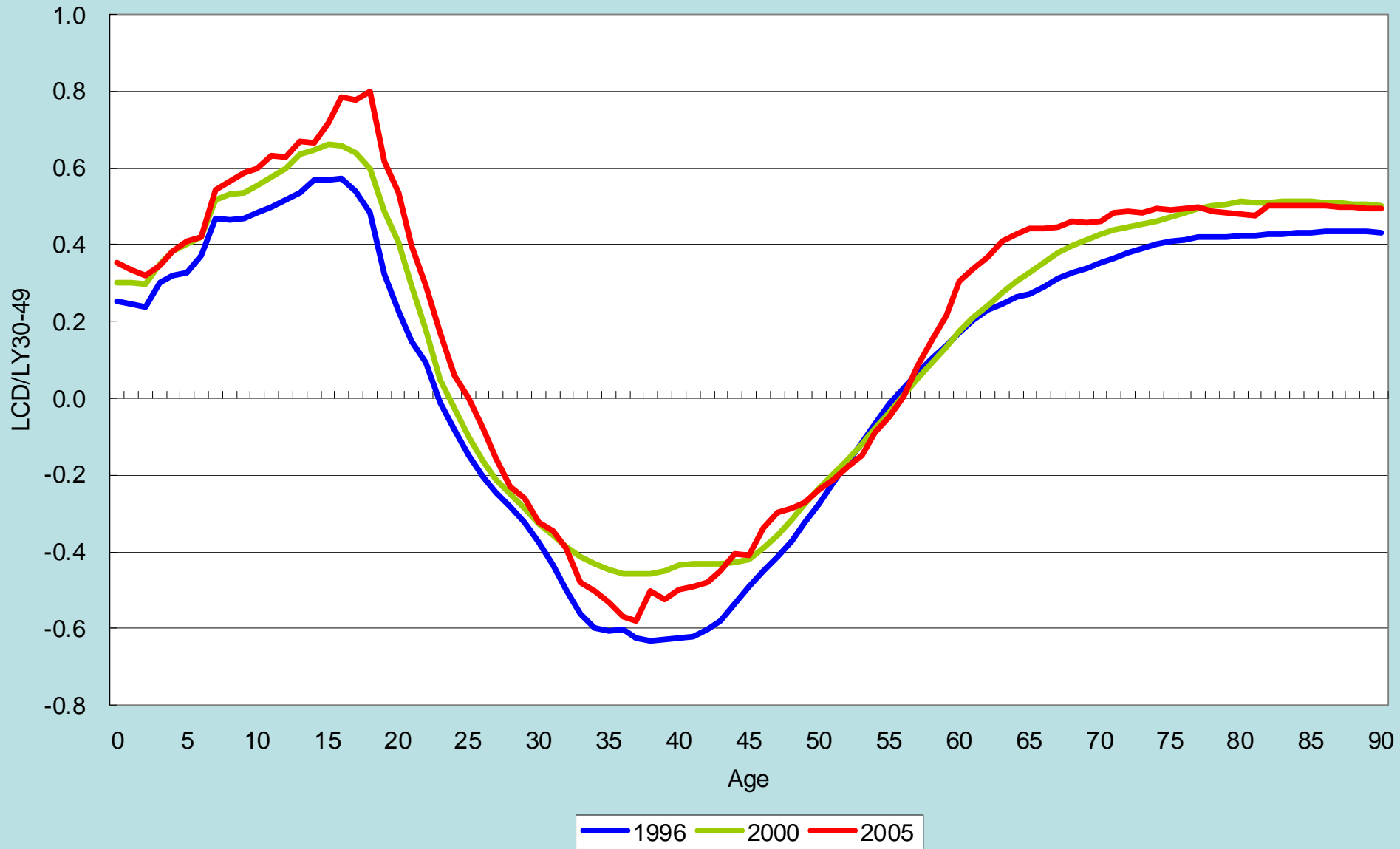
**How about Taiwan
Province of China?**

Lifecycle deficit of Taiwan, 1981-2005



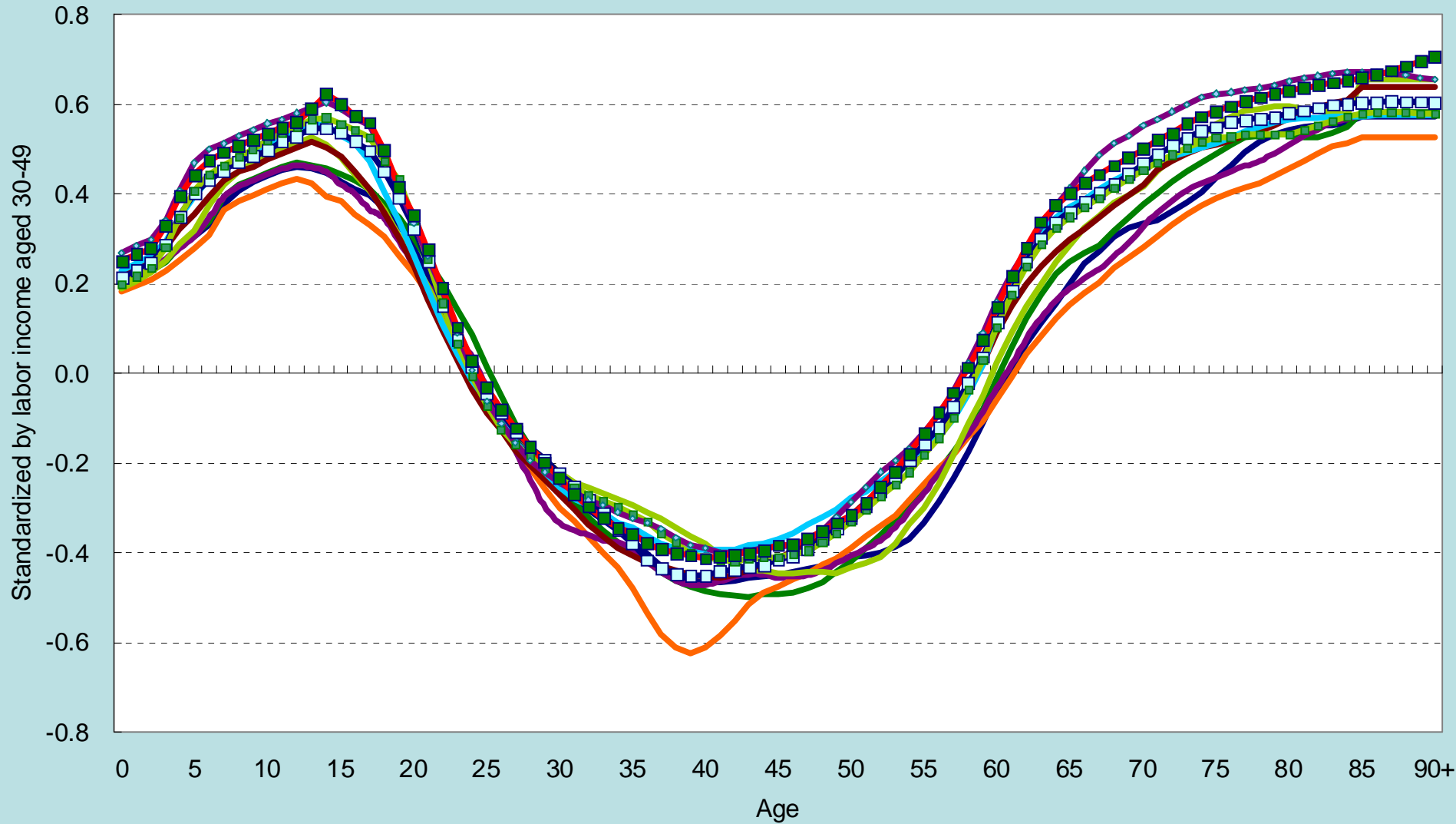
**How about
Republic of Korea?**

Lifecycle deficit of South Korea, 1996-2005



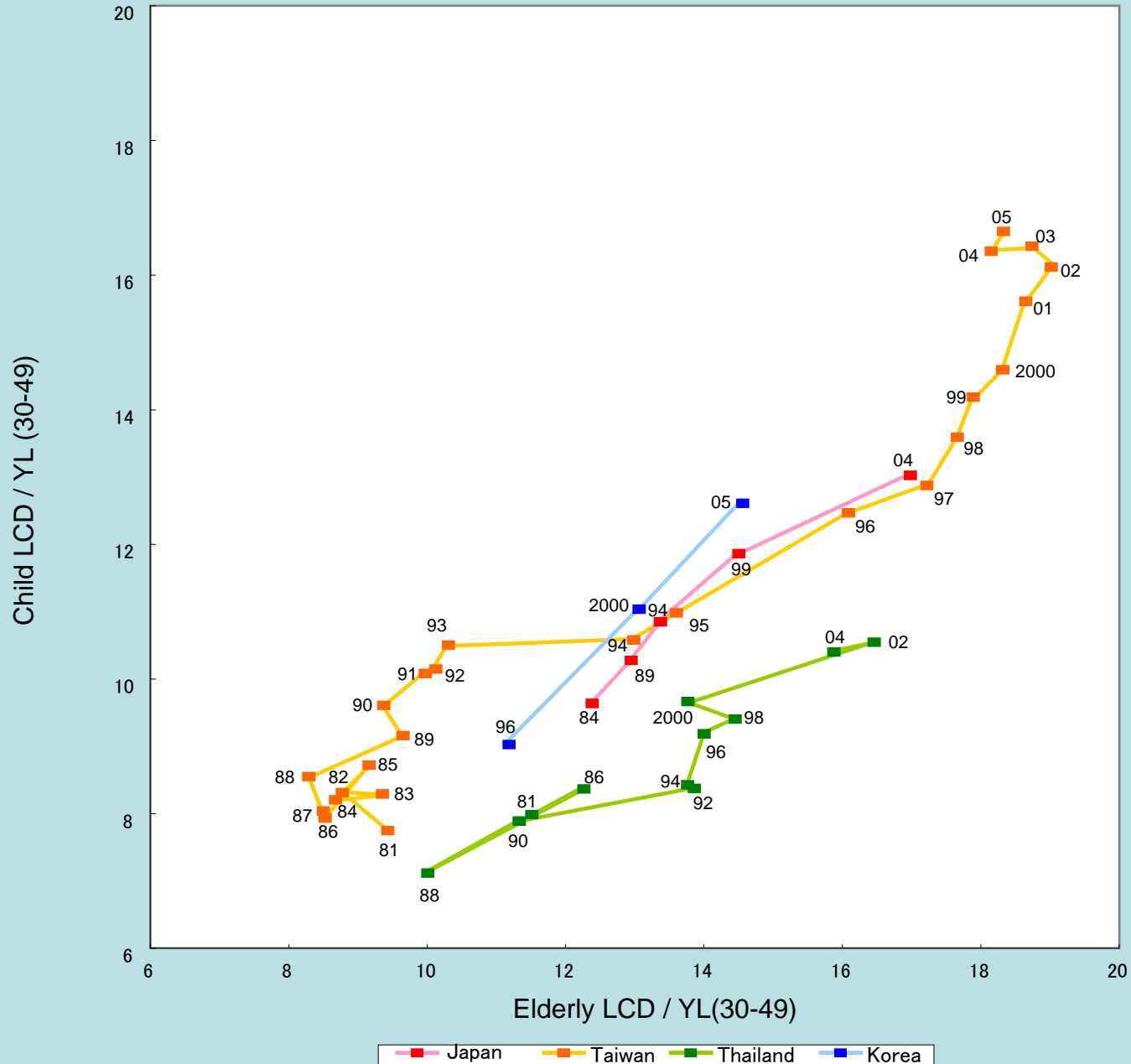
**How about
Thailand?**

Lifecycle deficit of Thailand, 1981-2004



Are they (children and the elderly) competing for the limited financial resources? Is there any evidence of the “crowding-out” effect between them?

Time-series relationship between cost of children and elderly in Japan, Republic of Korea, Taiwan Province of China, and Thailand



**Can we really rely
on our future
children?**

**If not, what else do we
have in the next few
decades?**

Demographic Dividends

- **Two demographic dividends**
 - Changes in the **economic support ratio**
 - Changes in **lifecycle wealth**

**The First Demographic
Dividend
is generated when**

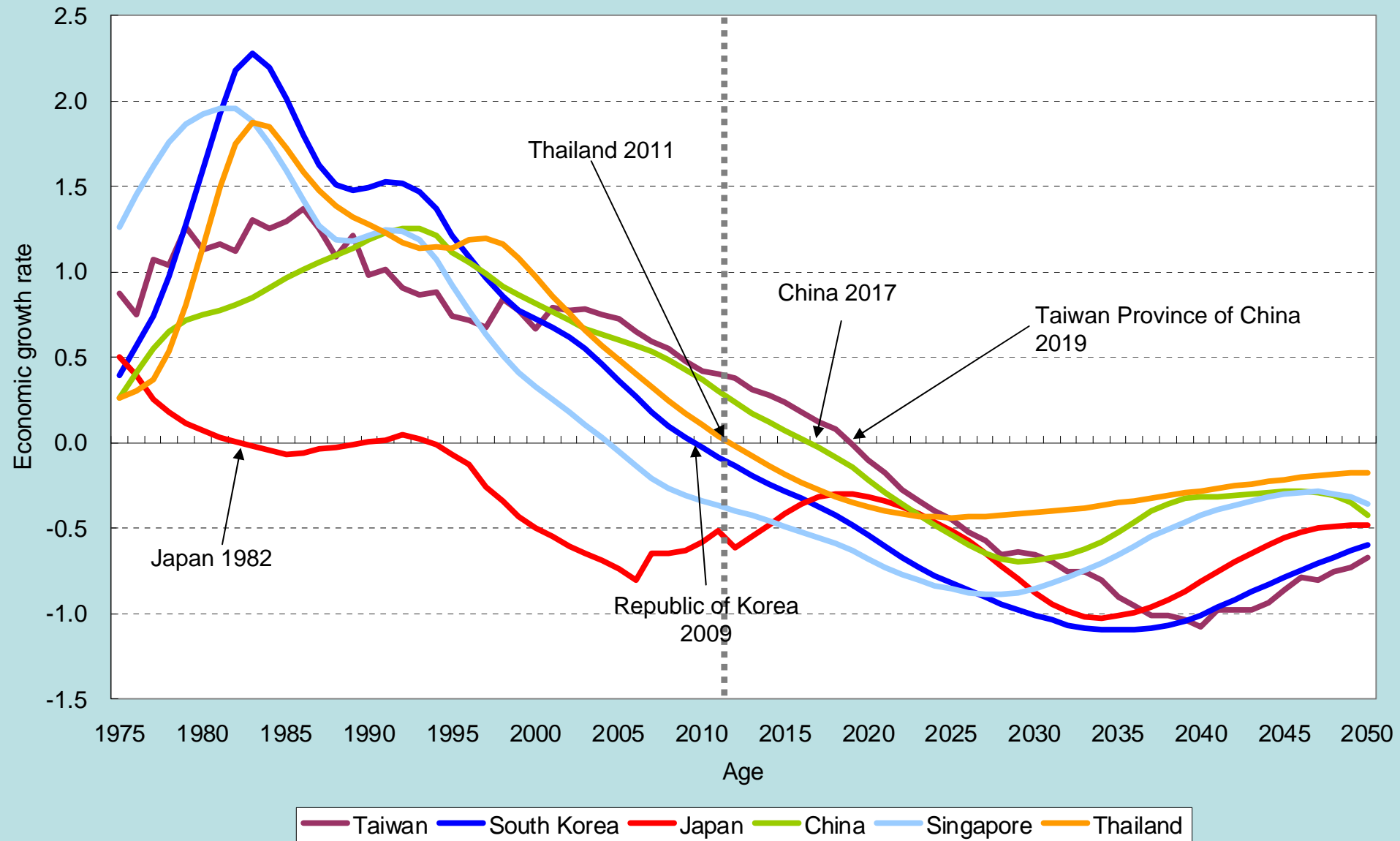
Support ratio ↑

Support Ratios

- **Effective** workers are calculated as a weighted sum of pop using labor income age profile.
- **Effective** consumers are calculated in a similar fashion, using consumption age profile.
- Ratio of effective labor to effective consumers is the “**Support Ratio**”
- **The balance of workers and consumers for the whole population is summarized by the support ratio**

$$\text{Support Ratio} = \frac{\text{Effective Workers}}{\text{Effective Consumers}} = \frac{\sum_0^{\omega} \text{Pop}(x) y_l(x)}{\sum_0^{\omega} \text{Pop}(x) c(x)}$$

First demographic dividend in selected Asian countries: 1975-2050



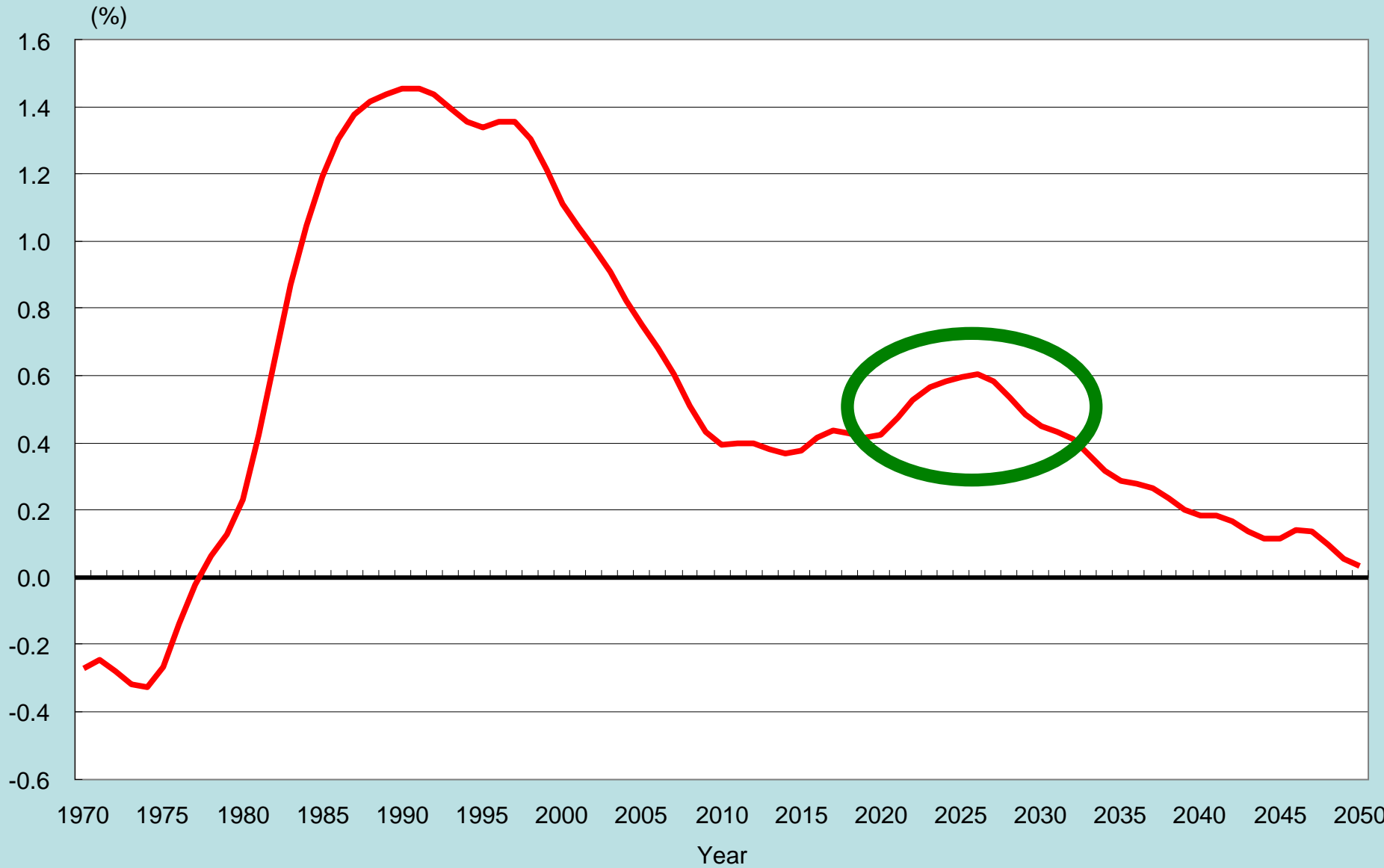
Japan's last resort

**Use of the second
demographic
dividend**

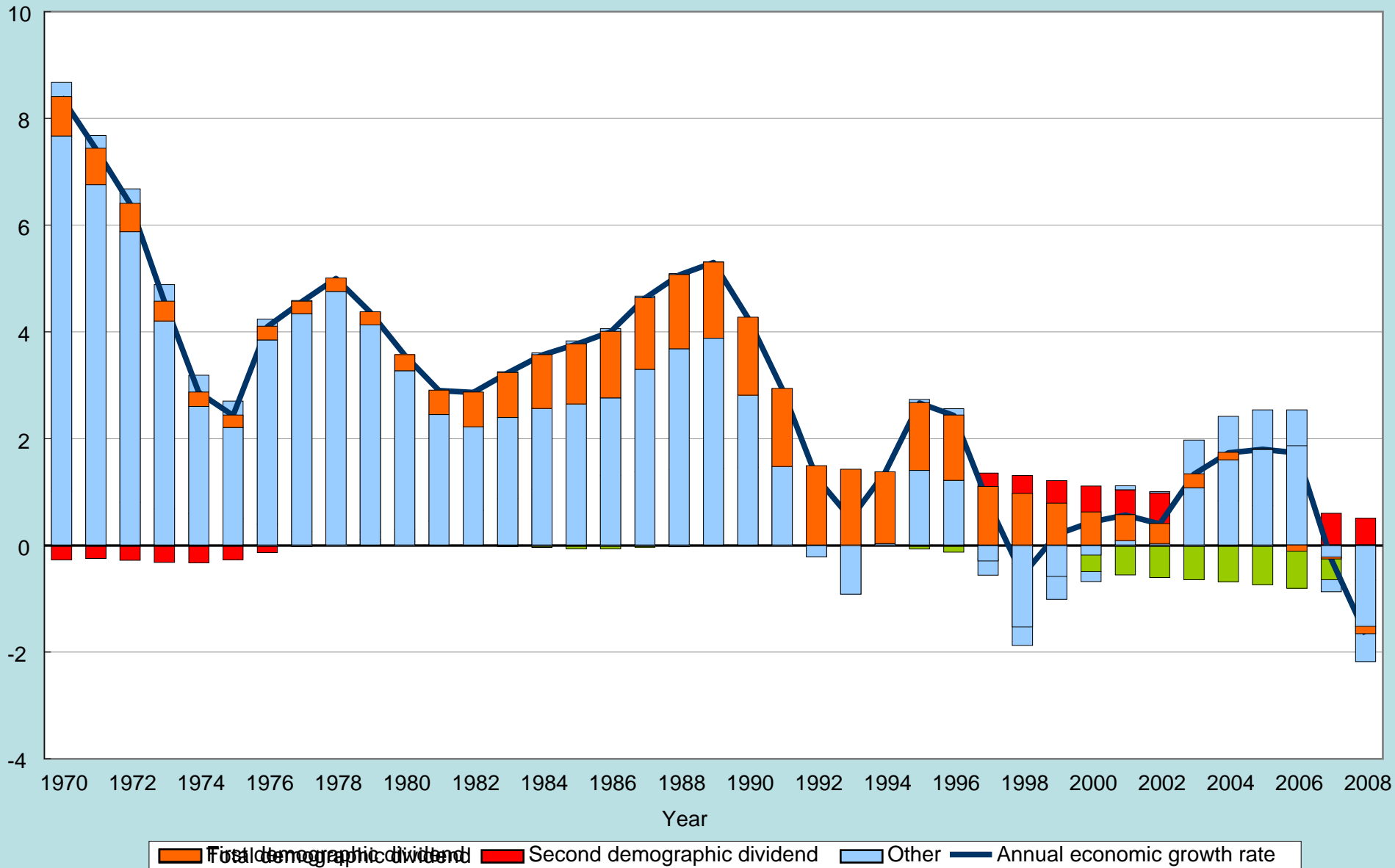
The Second Dividend (age compositional and behavioral effects)

- Life expectancy is increasing
- Lower fertility (fewer children)
- Stimulates the accumulation of wealth
- More wealth leads to a **permanent** increase in income

Second demographic dividend of Japan: 1970-2050

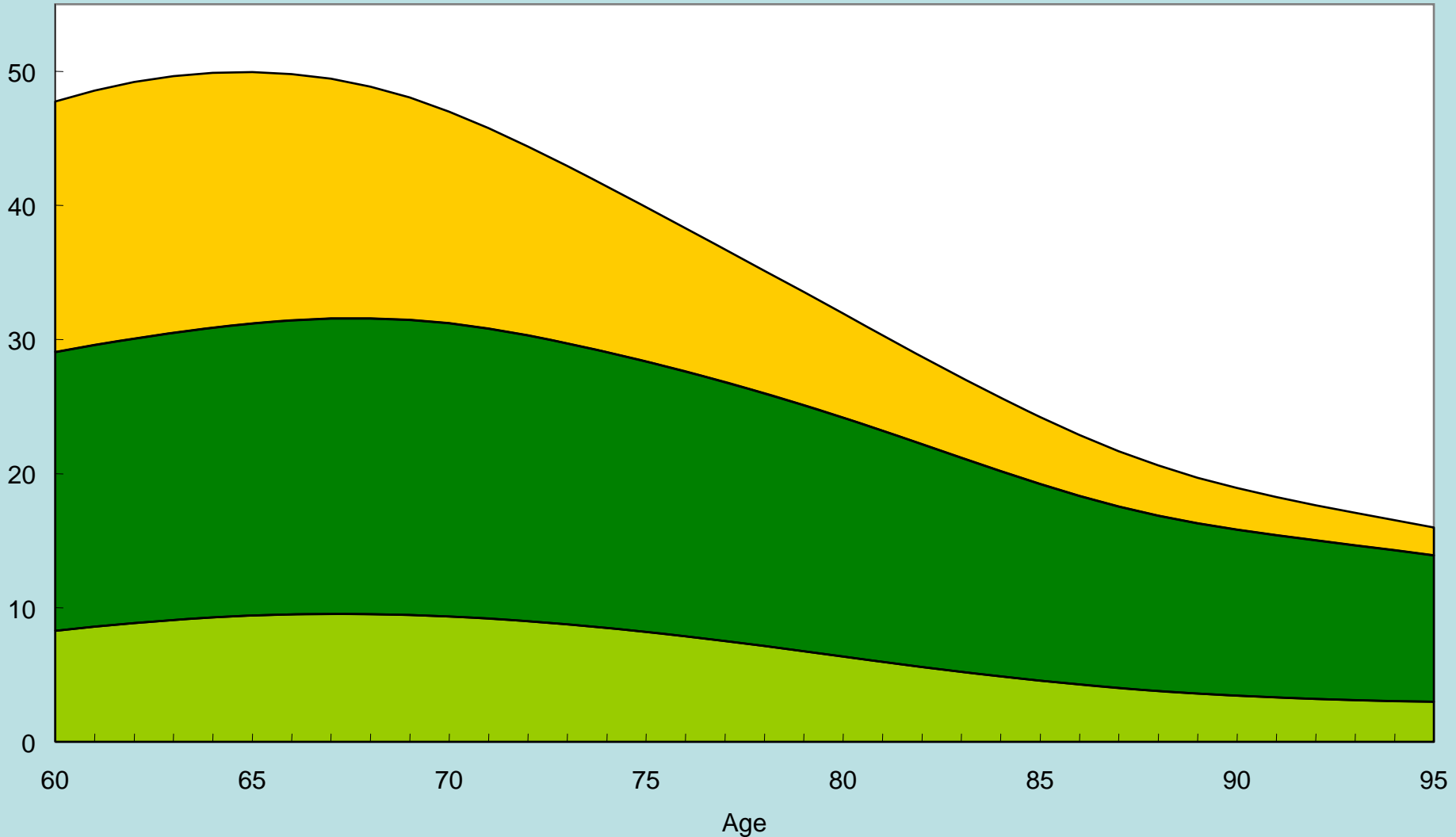


Effects of demographic changes on economic growth in Japan, 1970-2008



Age profiles of assets and pension wealth transfers in Japan, 1999

(Million yen)



Financial assets Real assets Present value of future pension benefits

Caution

OECD's warning!

71 % of Japanese adults
have **no** knowledge about
investment in equities and
bonds

Second demographic dividend in Asian countries, 2000-2050, expressed in terms of the annual growth rate

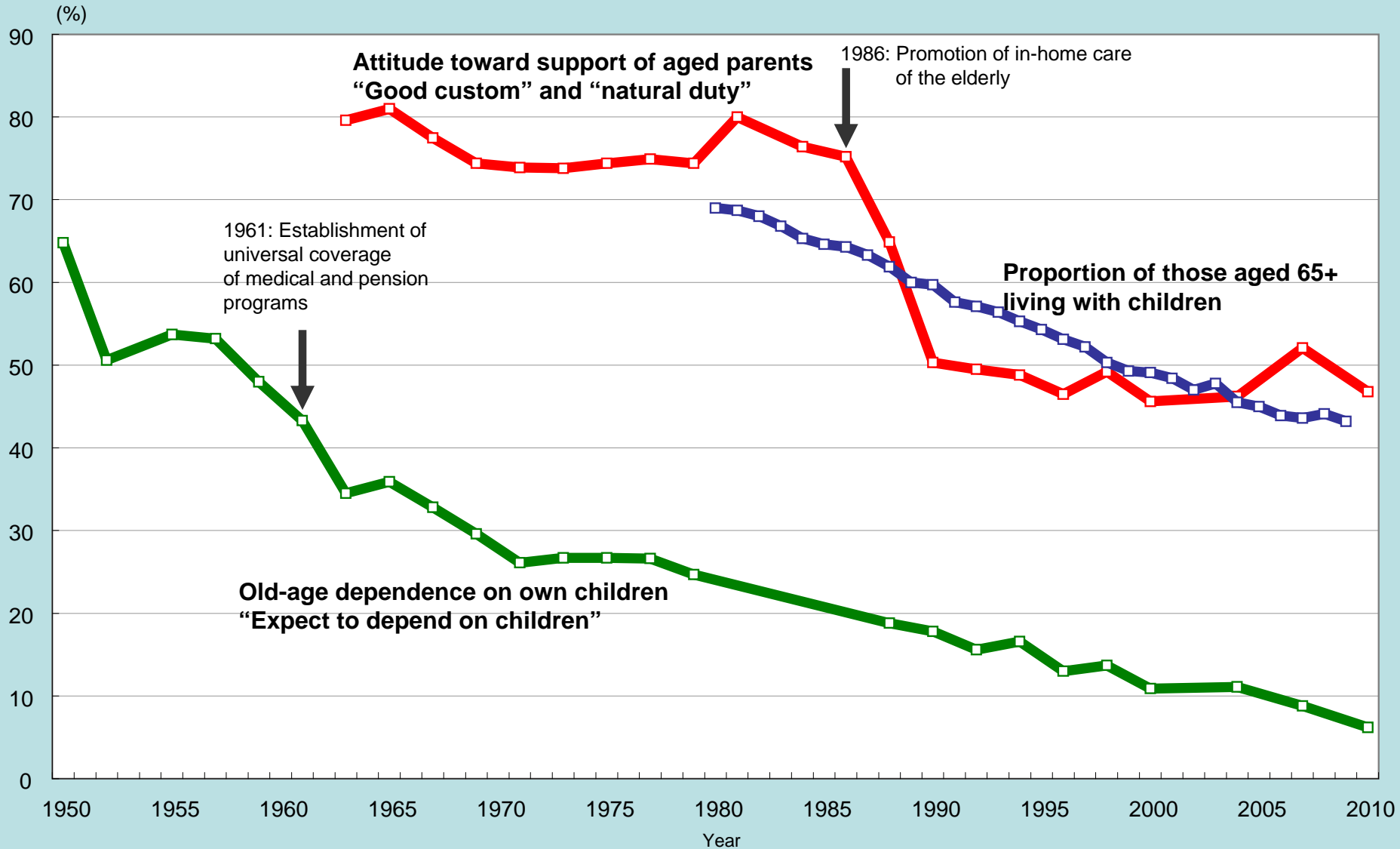


Note: Population data: United Nations Population Prospects (Long Range): 2004 Revision.
Profile: * For China, the averaged Asian profiles were used. For Thailand, the country specific age profiles (2004) were used.

**More serious
sources of
uncertainties for
Japan**

Deteriorating family values

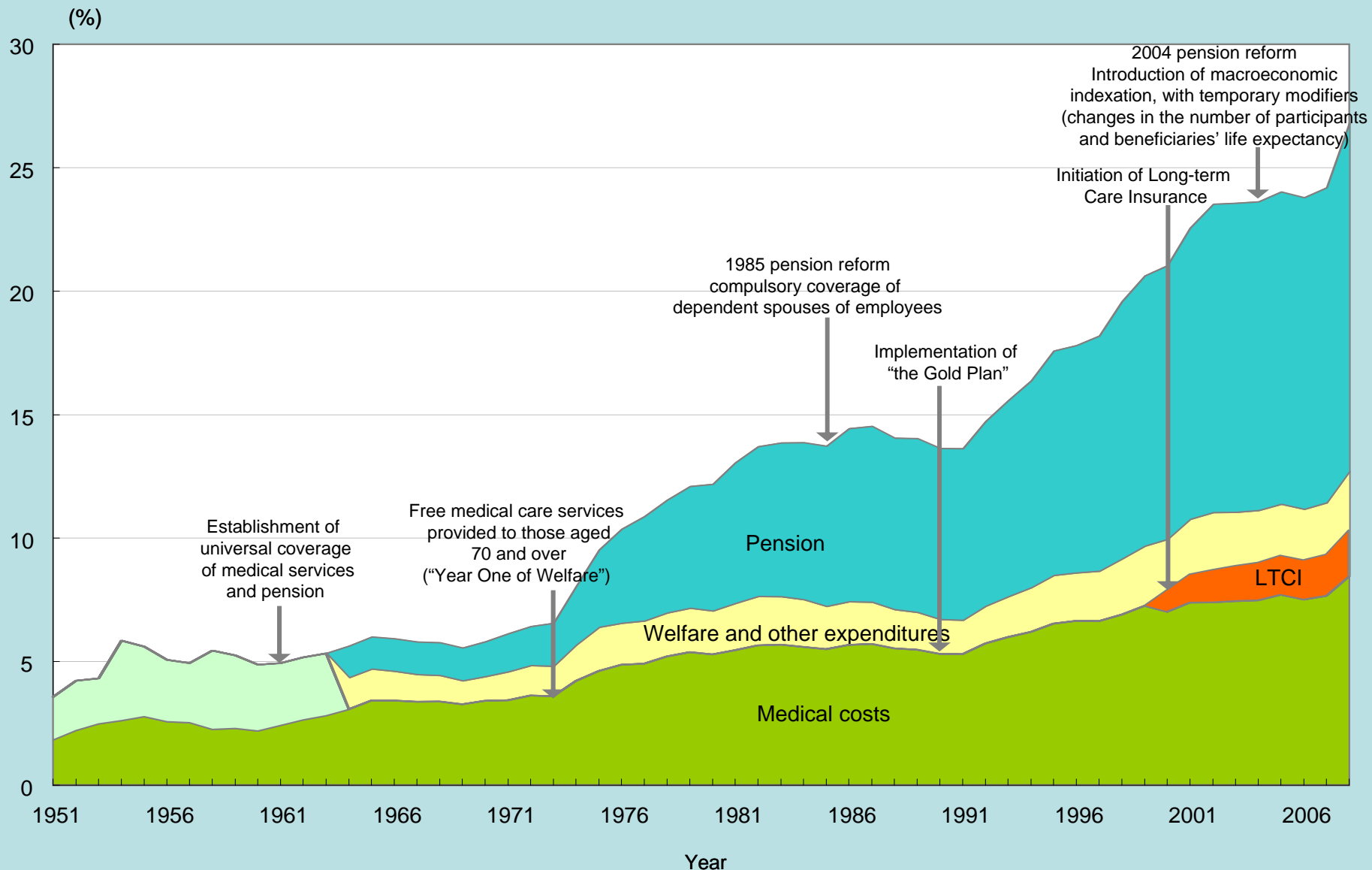
Trends in values and expectations about care for the elderly: Japan, 1950-2010



Sources: Mainichi Newspapers of Japan, *Summary of Twenty-fifth National Survey on Family Planning, 2005*. Mainichi Newspapers of Japan, *Summary of the 2004 round of the National Survey on Population, Families and Generations, 2004*. Nihon University Population Research Institute, *National Survey on Work and Family, 2007 and 2010*. Japan: Ministry of Health, Labour and Welfare, Japan (various years) *Basic Survey Report on Health and Welfare*. Ministry of Health, Labour and Welfare, Japan (various years) *Basic Survey of Living Conditions of the People*.

Gloomy prospect of Japan's social protection programs

Social security expenditure as percentage of national income in Japan, 1951-2008



Source: National Institute of Population and Social Security Research (2010) *The Cost of Social Security in Japan FY2008*.

Welfare policy orientations

- Welfare-state building, starting from the late 1950s in the West
- For the East Asian models: “Welfare orientalism,” “Confucian welfare state,” and “East Asian regime”
- In the 1970s, Japan came up with the “employment regime”, while the Republic of Korea established its “workfare regime”.

Which model will China choose?

Thank you !