Policy Responses to Population Aging:
A Welfare Approach

David Canning

Harvard T.H. Chan School of Public Health

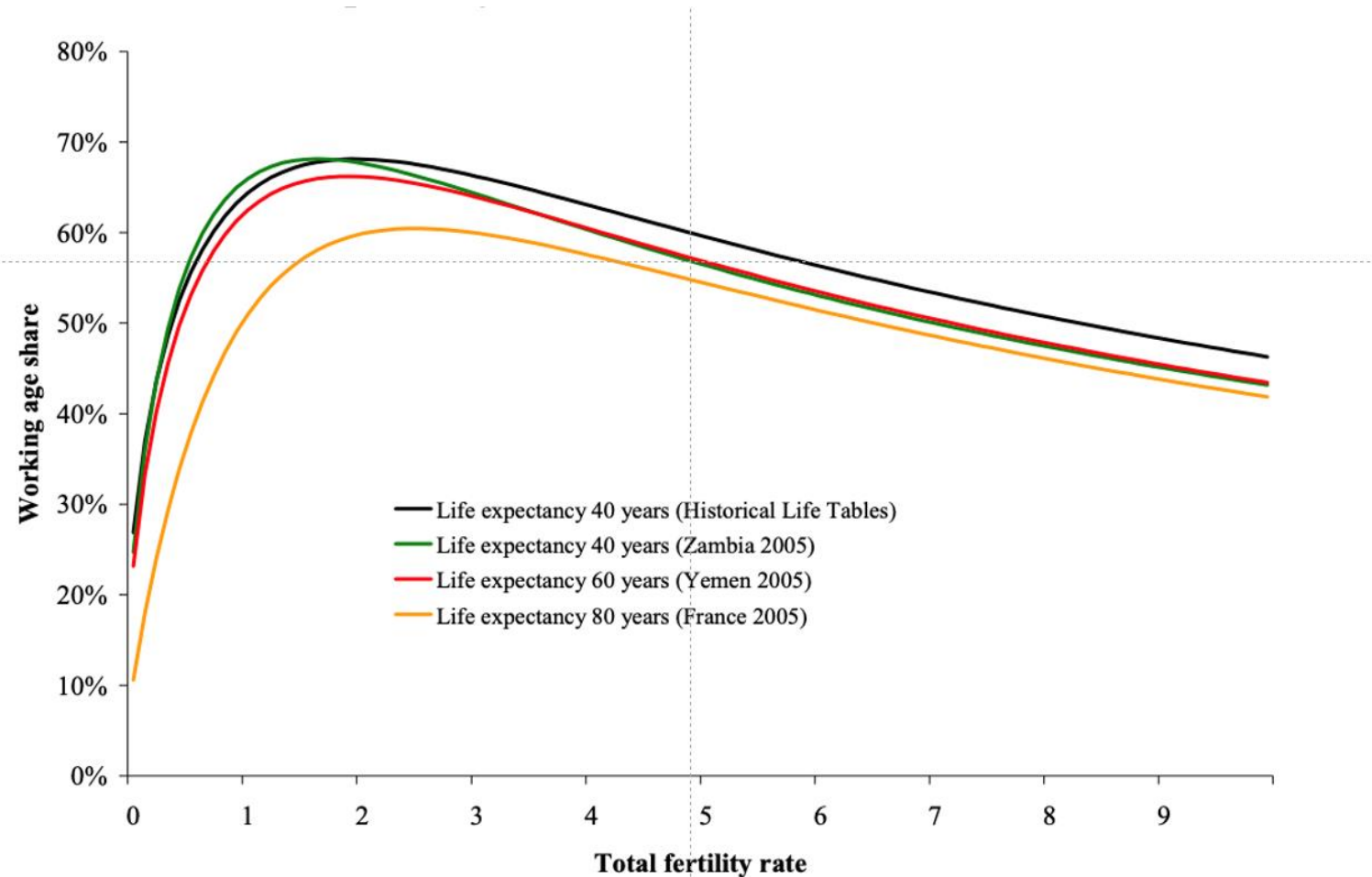**BE/CEMPI Conference on Aging**

Banco de Espana, Madrid, Spain, 17 November 2023

Overview

- Longer healthy lifespans are an enormous gain to human welfare, but increase inequality because healthy life span is much longer for the highly educated and rich

- Modern populations and historical institutions are incompatible: institutions should change to serve the population

- Old age dependency – partly biological, but mainly a social and institutional construct

- Income per capita is not a welfare measure – an over emphasis on policies for economic growth harms human welfare

Working Age Share at Different Levels of Life Expectancy and Fertility

Legend:
- Life expectancy 40 years (Historical Life Tables)
- Life expectancy 40 years (Zambia 2005)
- Life expectancy 60 years (Yemen 2005)
- Life expectancy 80 years (France 2005)

Y-axis: Working age share
X-axis: Total fertility rate

Are the Old "Dependents"?

- Longer life spans - increased old age "dependency" rate

  - UN definitions – youth 0-14, old age 65+ , working age 15-64.

- Are the old really dependent?

  - Do mental and physical disabilities make them dependent?

    - Compression of morbidity

  - Can they keep working?

  - Do they save for their old age retirement consumption and health care?

    - Work and saving depend on institutions

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Age and productivity

- Economics:

  - Mincer experience model predicts wages rise with age as a quadratic with a peak (turning point) at retirement. On the job learning investments a latent variable. Age minus schooling as a proxy for work experience.

  - Grossman health capital model– depends on health investments and depreciation – no biological aging effect

- Epidemiology:

  - Real age effects due to physical and cognitive development in children and physical and cognitive decline in older adults though biological processes – not captured in economic models.

Prevalence of Disability USA 2014

Share of Population with Disabilities by Age Group (Percent)
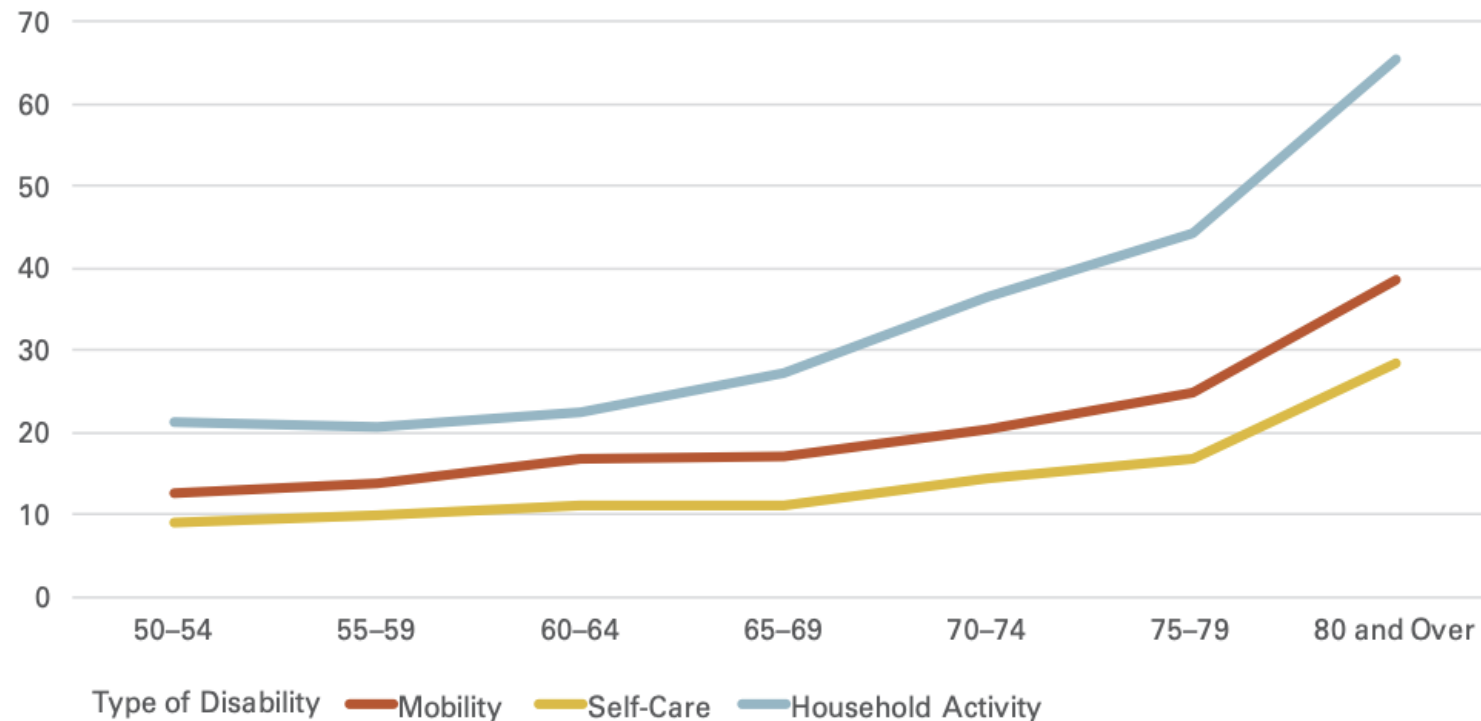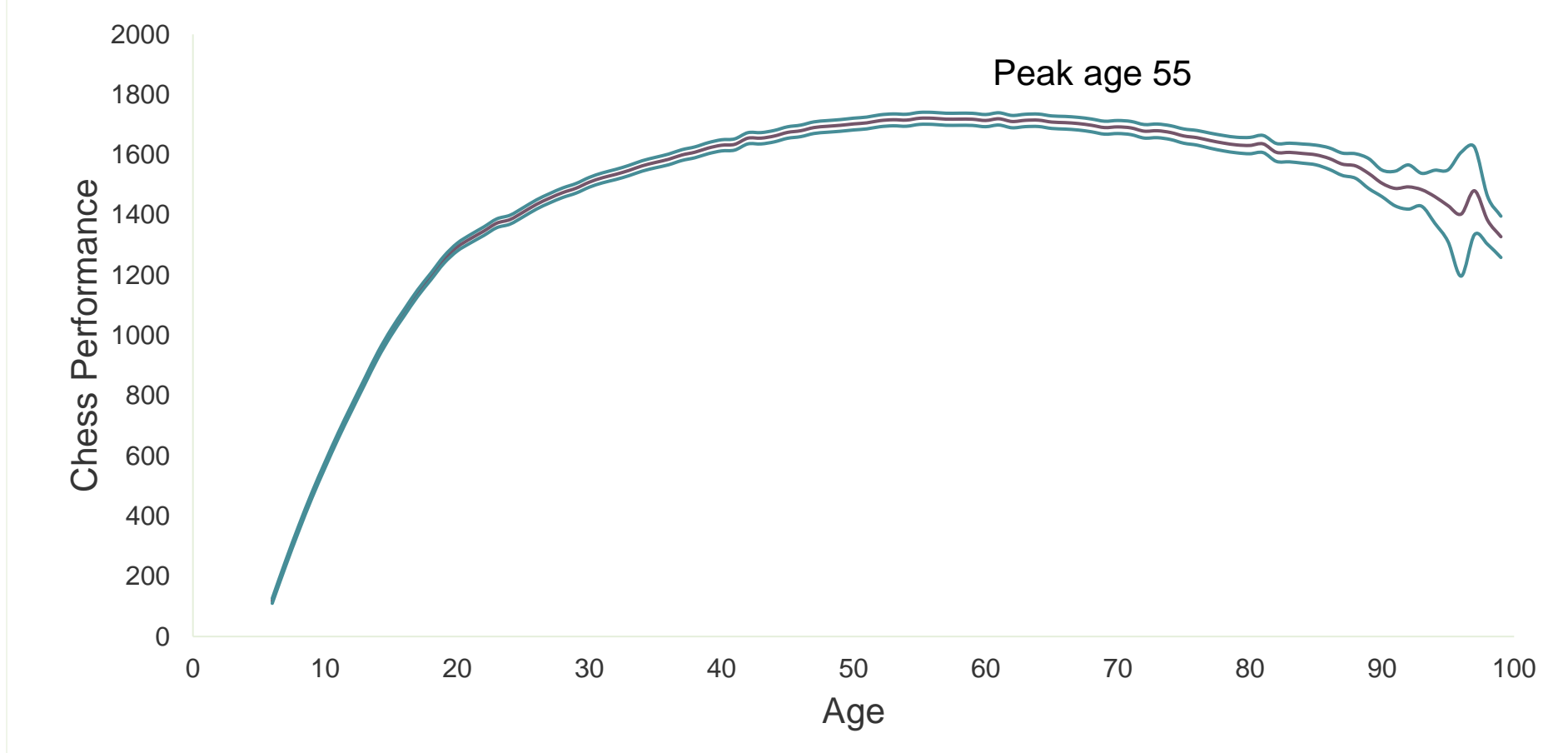

Notes: Mobility disability is defined as difficulty walking, getting in and out of bed, and climbing one flight of stairs; self-care disability as difficulty eating, dressing, toileting, and bathing; and household activity disability as difficulty with meal preparation, food shopping, using the telephone, taking medication, money management, housework, and driving.

Prevalence of Dementia by Age and Education USA, 2018
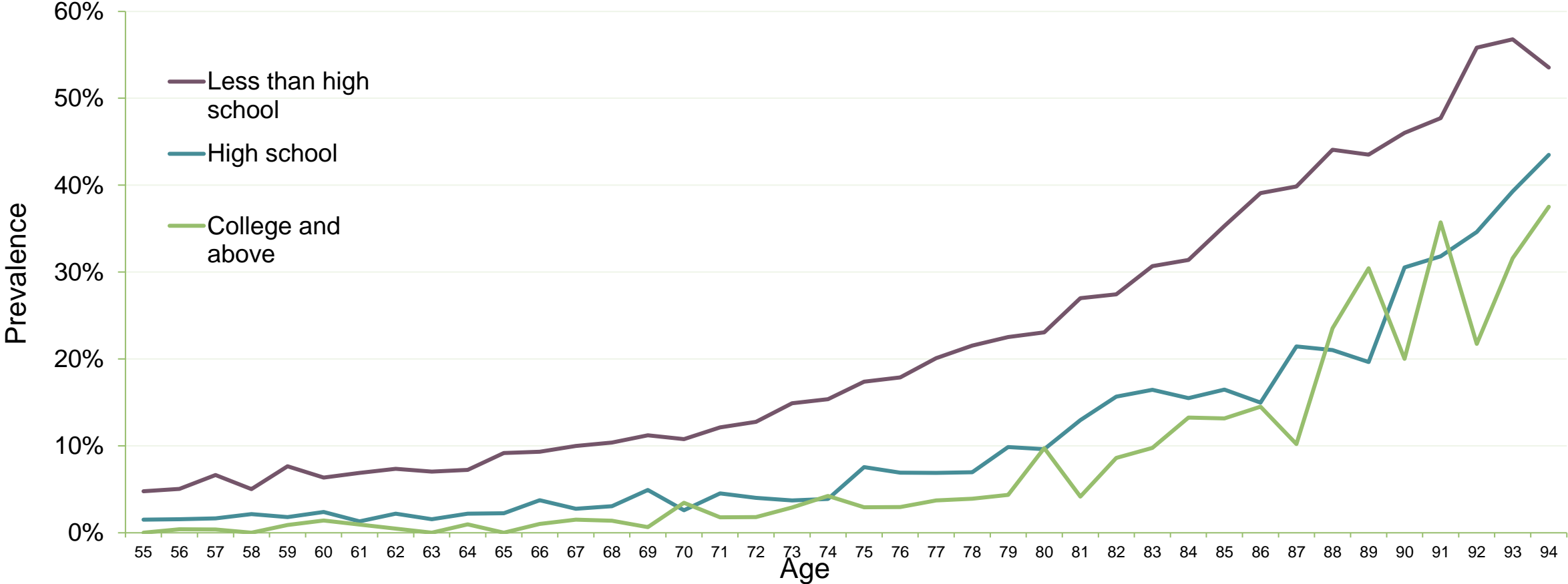
USCF Chess Performance by Age:
Adjusted for experience and selection effects

Peak 56

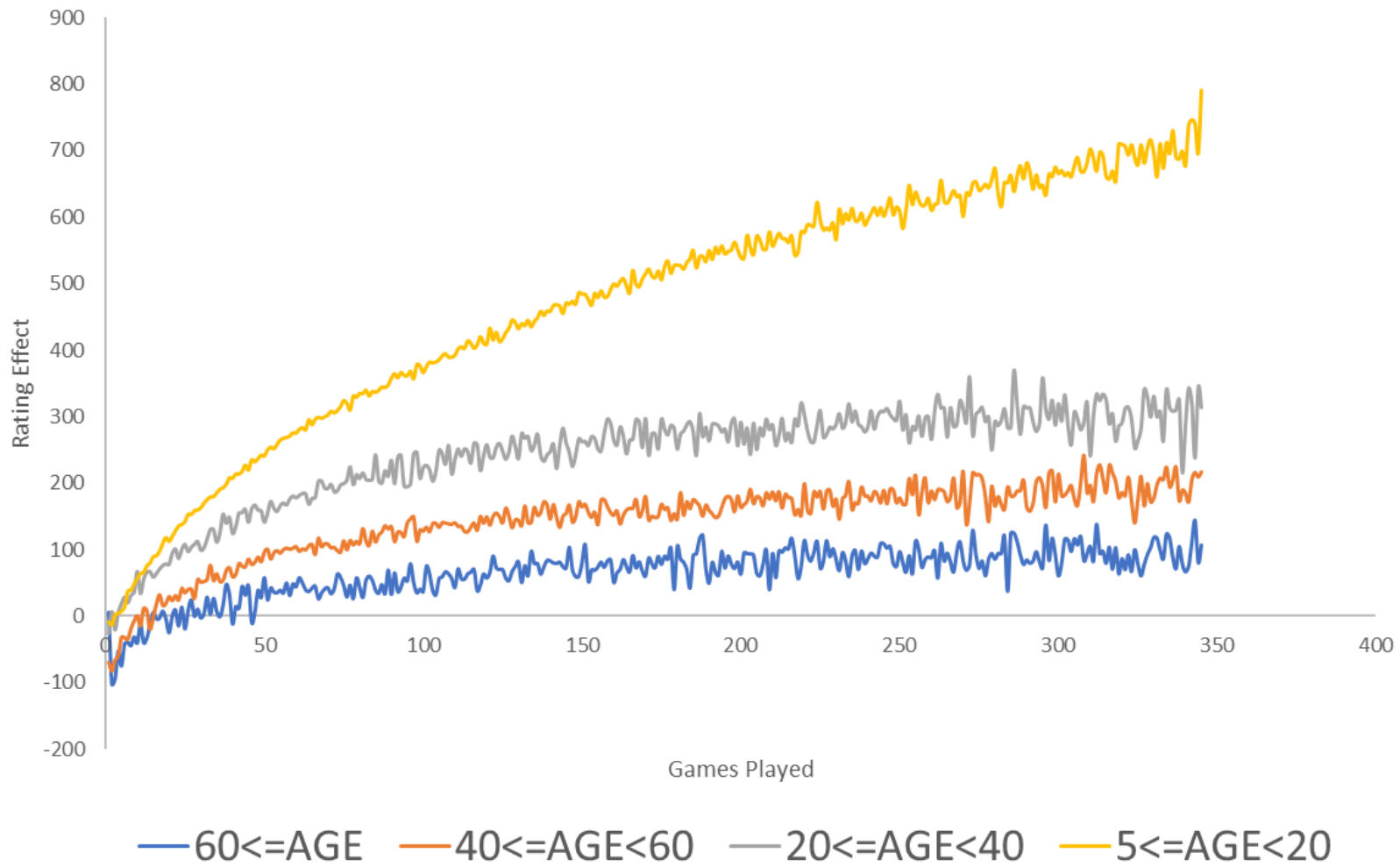Peak 38
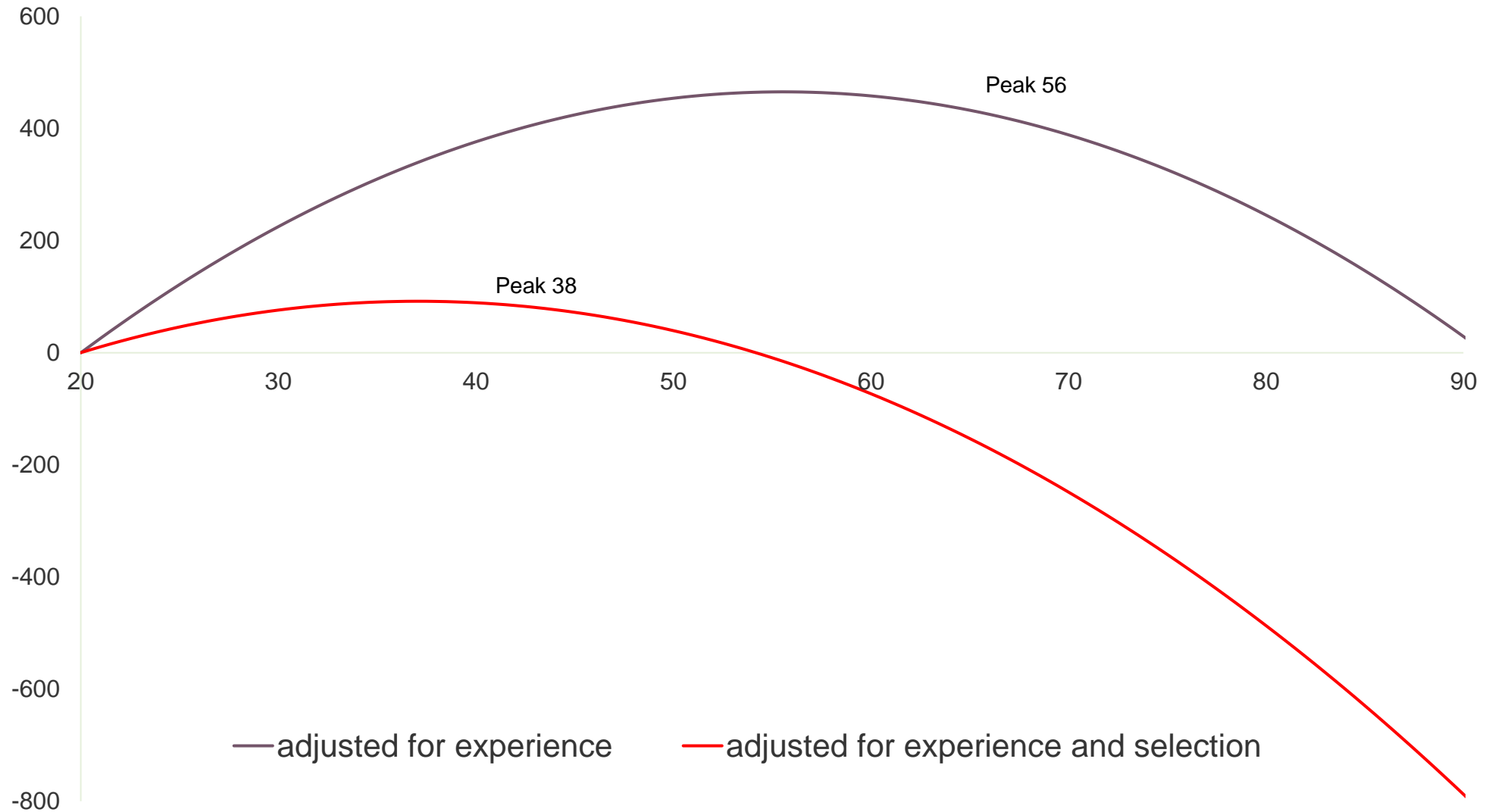
adjusted for experience — adjusted for experience and selection

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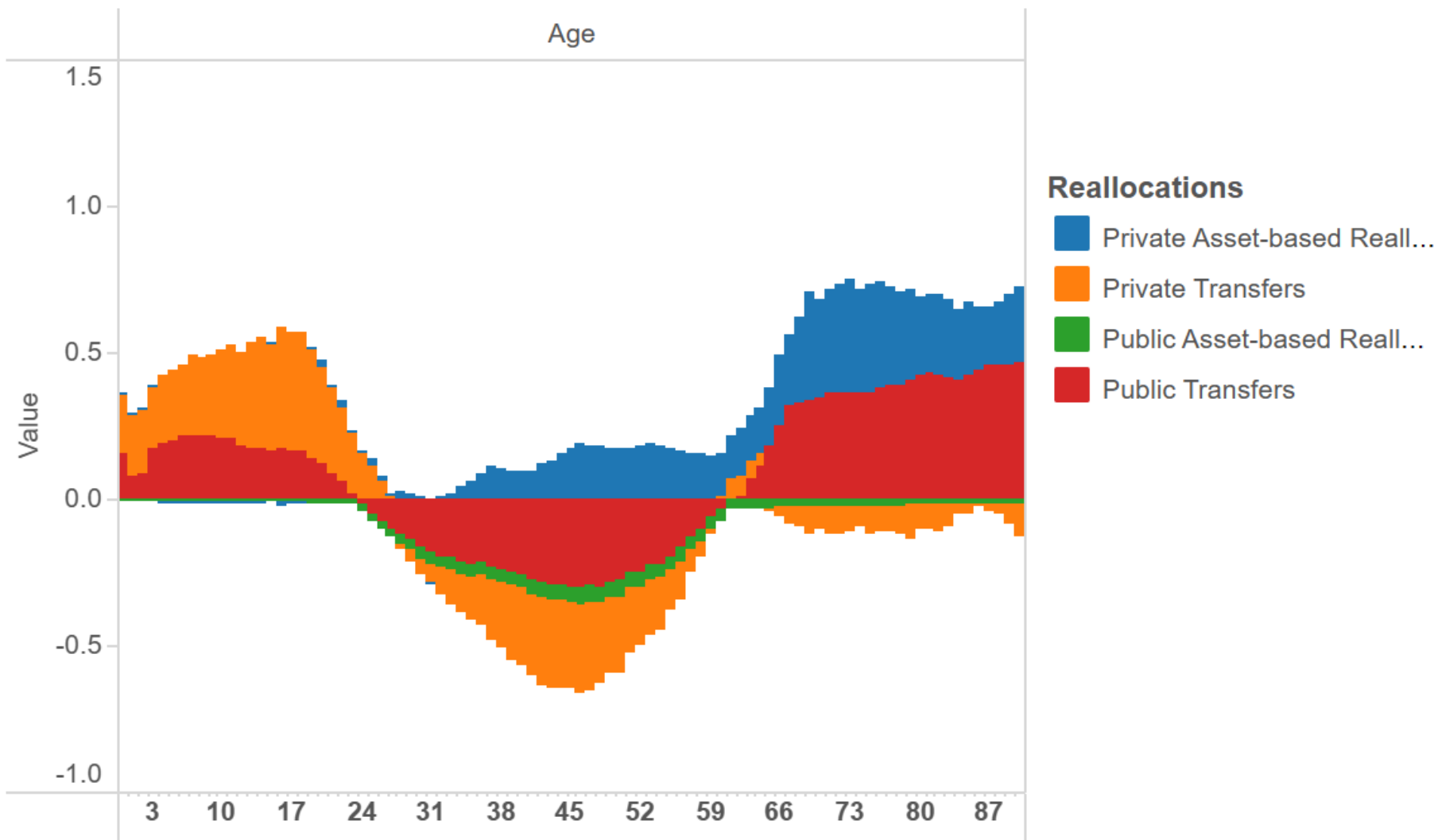T.H. CHAN | SCHOOL OF PUBLIC HEALTH

Chess: Experience Effects by Age Group

Compression of Morbidity

- Age of onset of disability increasing over time – compression of period of morbidity at the end of life

- Across countries age onset of disability increases with life expectancy – shorter absolute period of disability with higher life expectancy

- Counterexamples

  - United States – compression 1860 – 2000 but evidence of expansion of morbidity since 2000. Behaviors: obesity, addictions.

  - Some evidence of emergence of expansion recently in UK
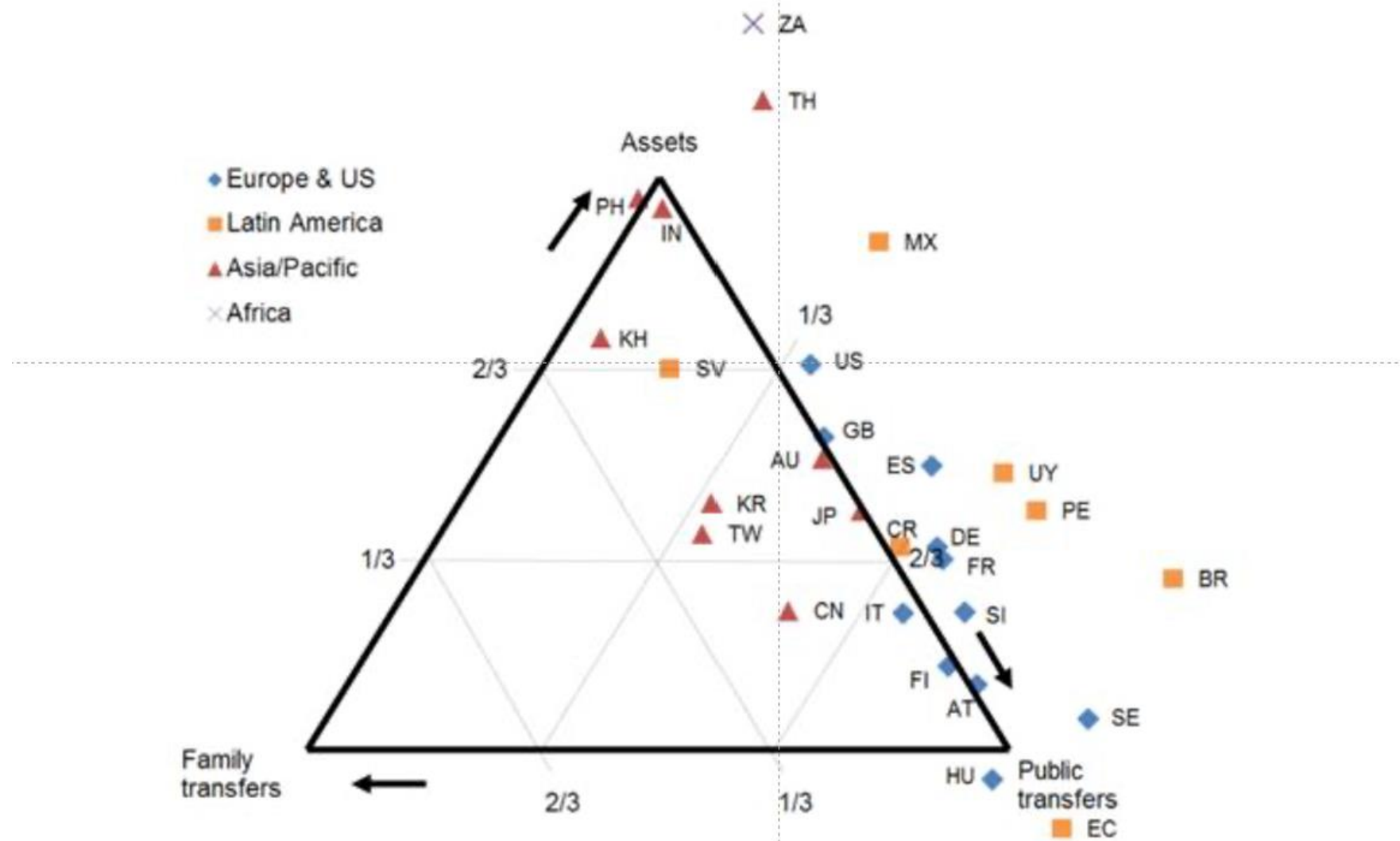
Spain2000 Reallocations, per capita

Lee and Mason, National Transfer Accounts
ntaaccounts.org

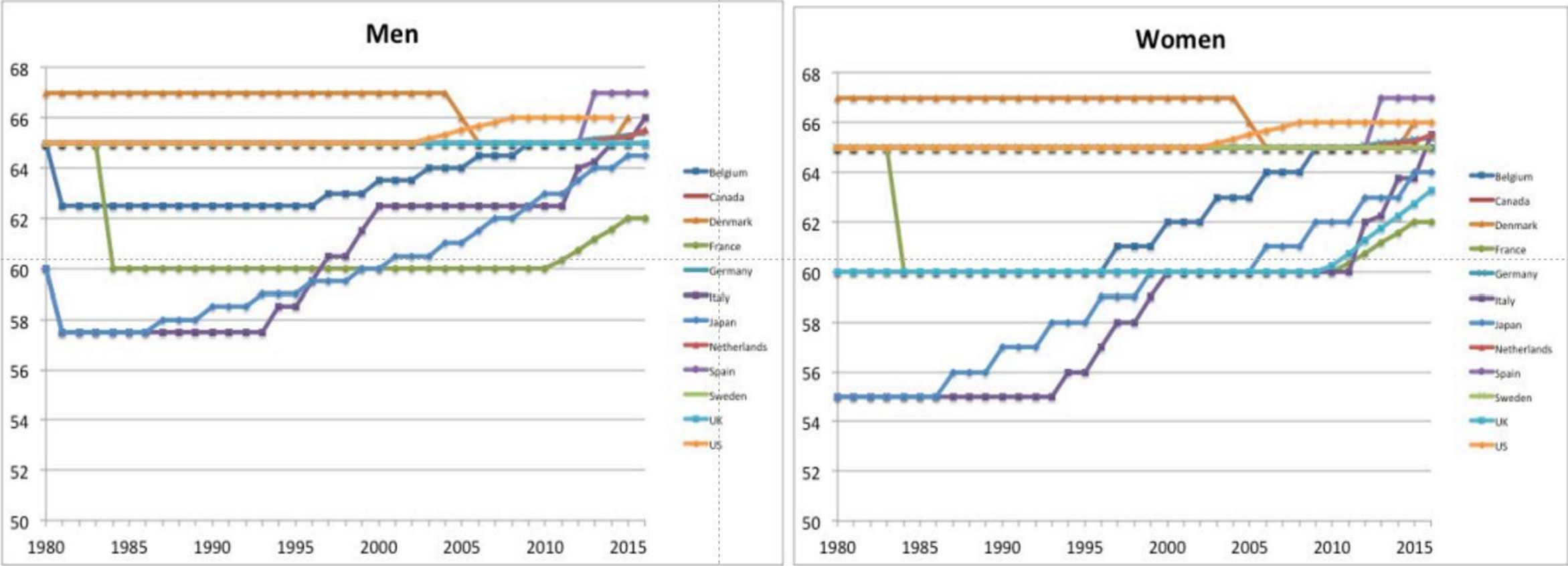# Old-age Support System, Selected Countries.

Social Security Sustainability

- Pay as you go pension systems are not sustainable with population aging

- Observed Solutions

  - Increase the retirement age

  - Reduce real benefit rates

  - Increase contribution rates

  - Increase fertility

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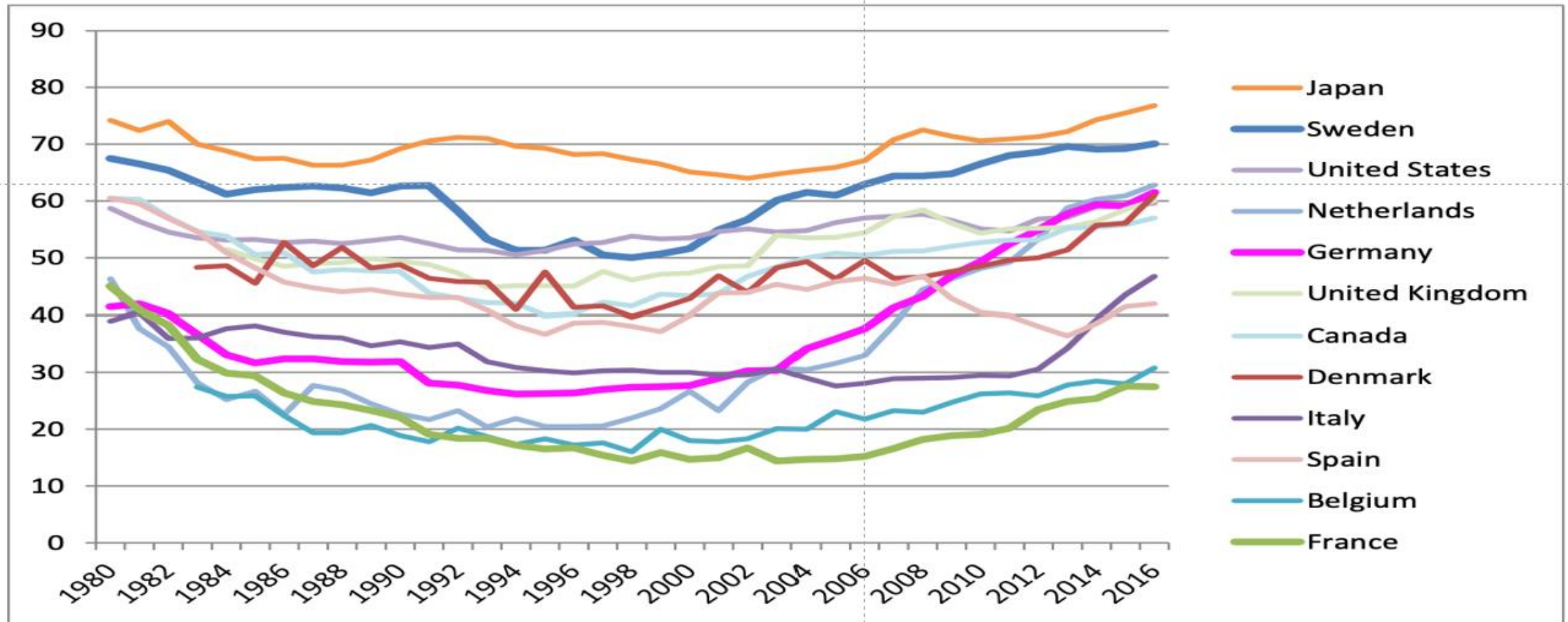T.H. CHAN | SCHOOL OF PUBLIC HEALTH

Social Security Eligibility Age by Sex

Börsch-Supan, Axel H., and Courtney Coile. *Social security programs and retirement around the world: reforms and retirement incentives–introduction and summary*. No. w25280. National Bureau of Economic Research, 2018.

Percent Employed, Men aged 60-64

Why do we have a social security system?

- In rational agent models social security is not efficient – private savings is better

- There is a redistribution element – anti-poverty in old age

- Efficiency argument is that people are myopic – not rational - and do not save enough. Social security corrects this through forced saving.

- When system is not sustainable two approaches:

  - What changes are required to make it sustainable?

  - What changes would allow it to mimic the first best outcome with rational agents?

Optimal Savings and Retirement

$$U = \int_0^T e^{-\delta t} s(t, z) \{u[c(t)] - \chi(t) v[h(t, z)]\} \, dt,$$

Parameters used in calibration

Interest rate	r	0.03
Wage growth rate	σ	0.0127
Rate of time preference	δ	0.03
Disutility of work	d	0.87
Coefficient of relative risk aversion	β	2

Age of onset of disability proportional to life expectancy

Optimal Retirement Age by Birth Cohort

Calibrated retirement ages

Cohort birth year	Life expectancy at age 20	Wage index at age 20		
		100	189	334
1901	41.9	**65.1**	59.3	54.5
1951	49.4	68.1	**62.3**	57.6
1996	54.3	70.3	64.4	**59.5**

Social Security

- A policy objective of sustaining the social security system is stupid

- The policy objective should be to maximize human welfare subject to sustainability constraints.

  - Income effect dominates longevity effect and optimal retirement age is decreasing

  - Optimal policy may be lower, not higher, retirement age

- Fully funded systems with forced savings are sustainable – eg personal accounts – but should encompass i) insurance aspect, and ii) redistribution aspect, of pooled systems

Do Institutions exist to serve people or do people live to serve institutions?

- Black death in Europe 1348-1350 – 1/3 to 1/2 population mortality

- Labor shortages

- Break down of feudal system and serfdom – move to wage labor

- England policy response: Statute of Laborers 1351

  - Serfdom: peasants bound service to age 68, failure punishable by imprisonment

  - Wages fixed to 1347 levels: penny a day for haymaking, 5 pence per acre for mowers, etc

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Better Ways of Measuring Welfare

- Measuring, and maximizing, human welfare, not GDP per capita. Policies can reduce GDP per capita and increase welfare.

- Weekends, retirement, health insurance, unemployment insurance

- Alternative measures: Include at least income, health and longevity, leisure.

- Adjusting welfare measures for value of risk – important for policies that redistribute risk

- Declining marginal utility of income: further income gains are less important in rich countries and emphasis should be on other dimensions of welfare

Output, consumption, work, and Welfare Effects of Rural Health Insurance in China
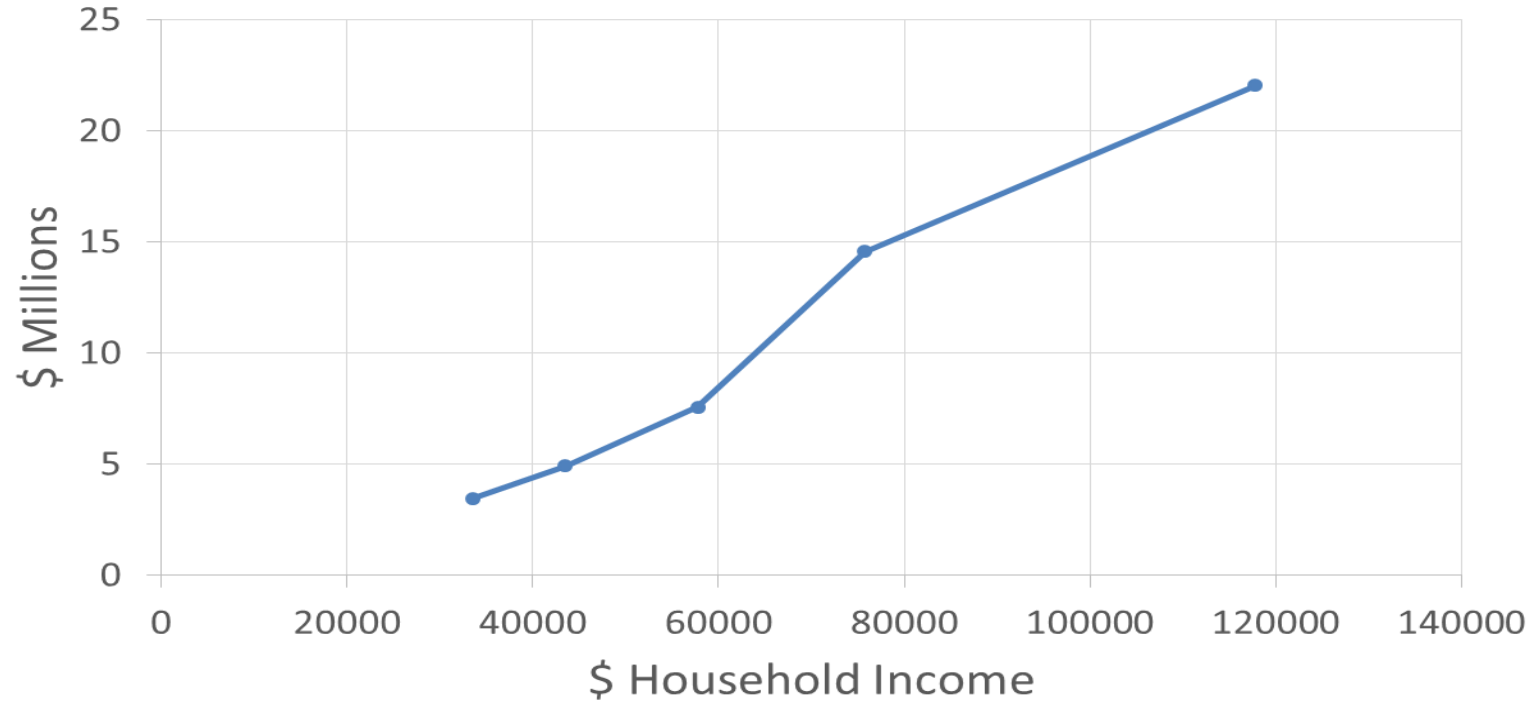
	Health Insurance
Output	-2.80
Consumption	-3.33
Capital	-2.43
Hours worked	-9.03
CEV (%)	11.35

Percent changes from baseline of no health insurance
CEV : Consumption equivalent variation of the policy change

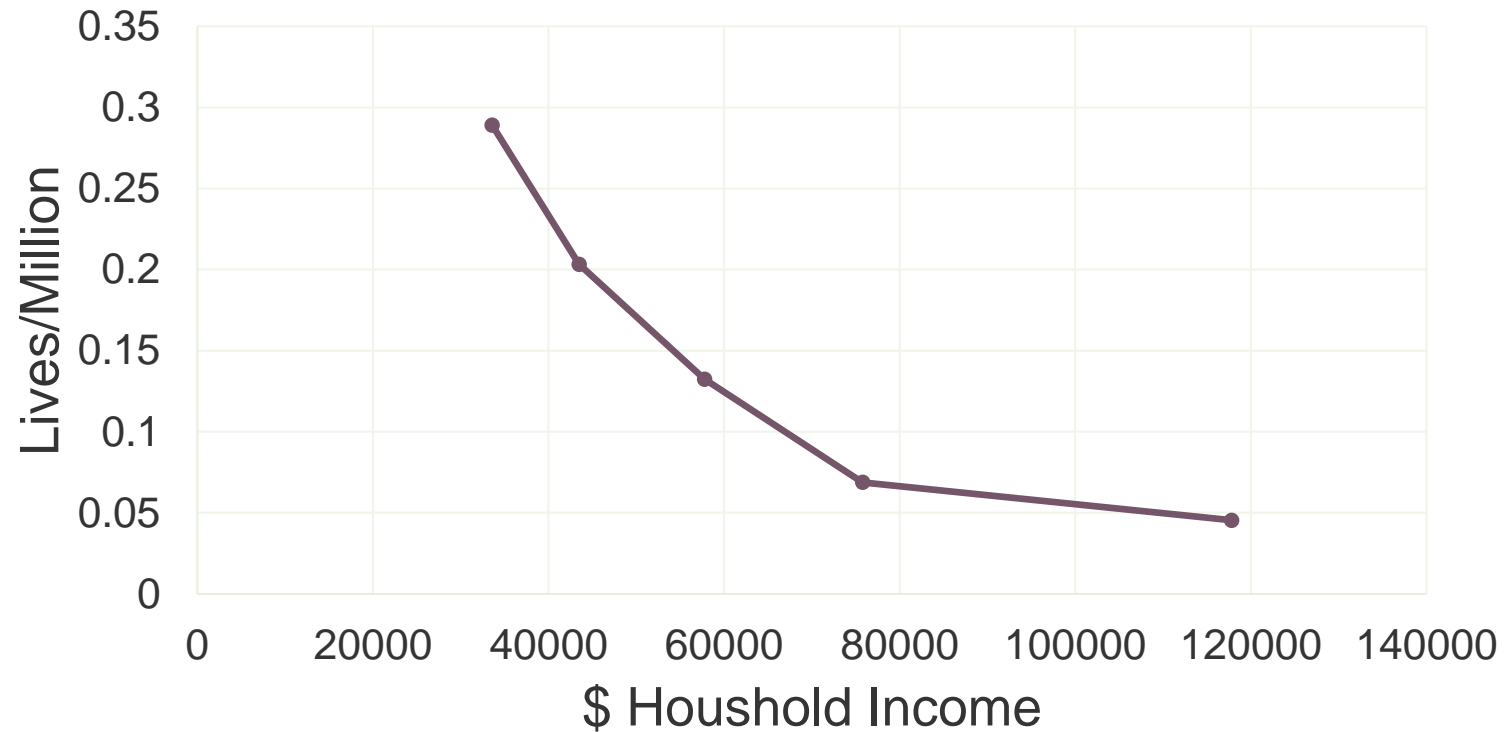HARVARD T.H. CHAN | SCHOOL OF PUBLIC HEALTH

"Value" of Life by Income Quintile: United States
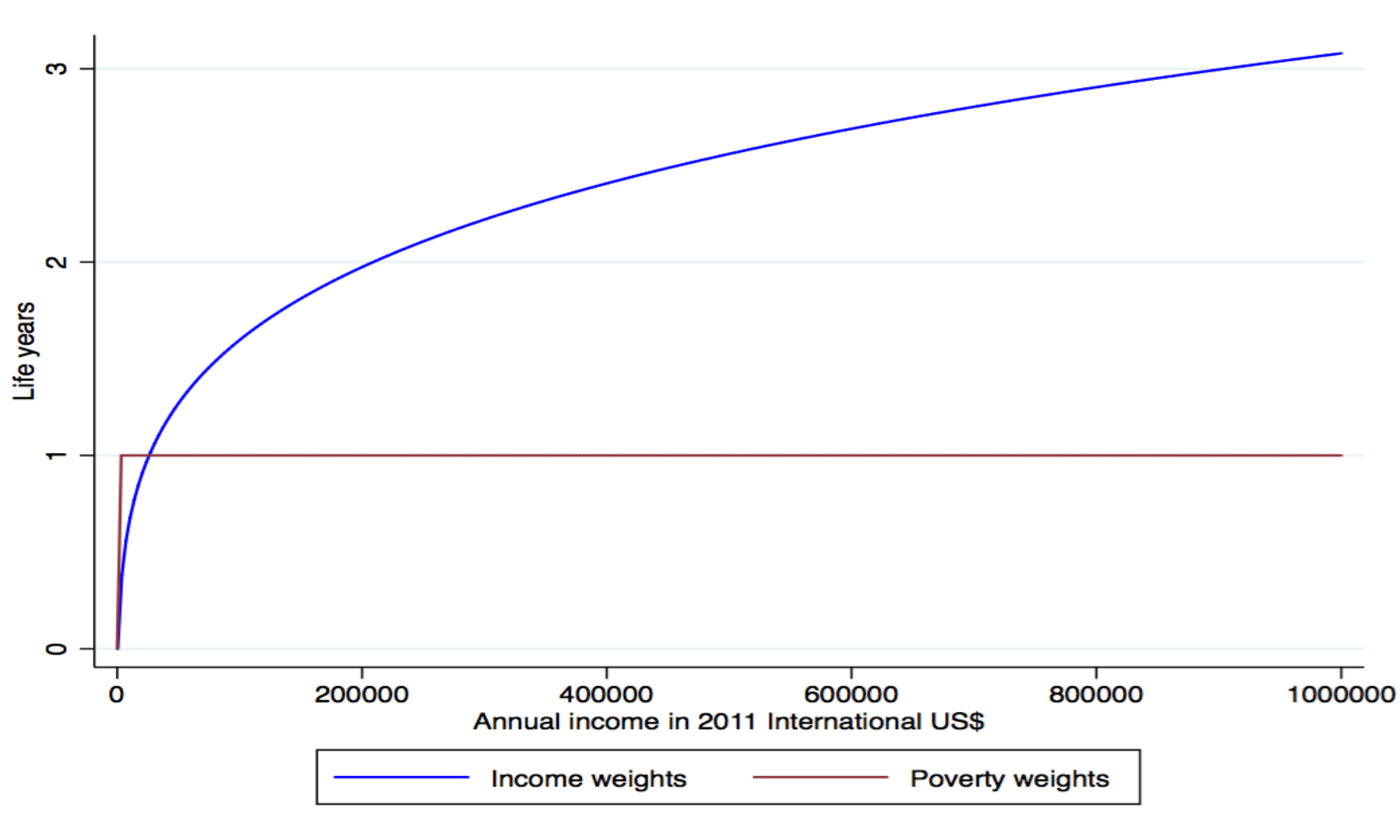
Marginal willingness to pay money to avoid a small probability of death

Value of Money by Income Quintile

Marginal willingness to pay a small probability of death to get money
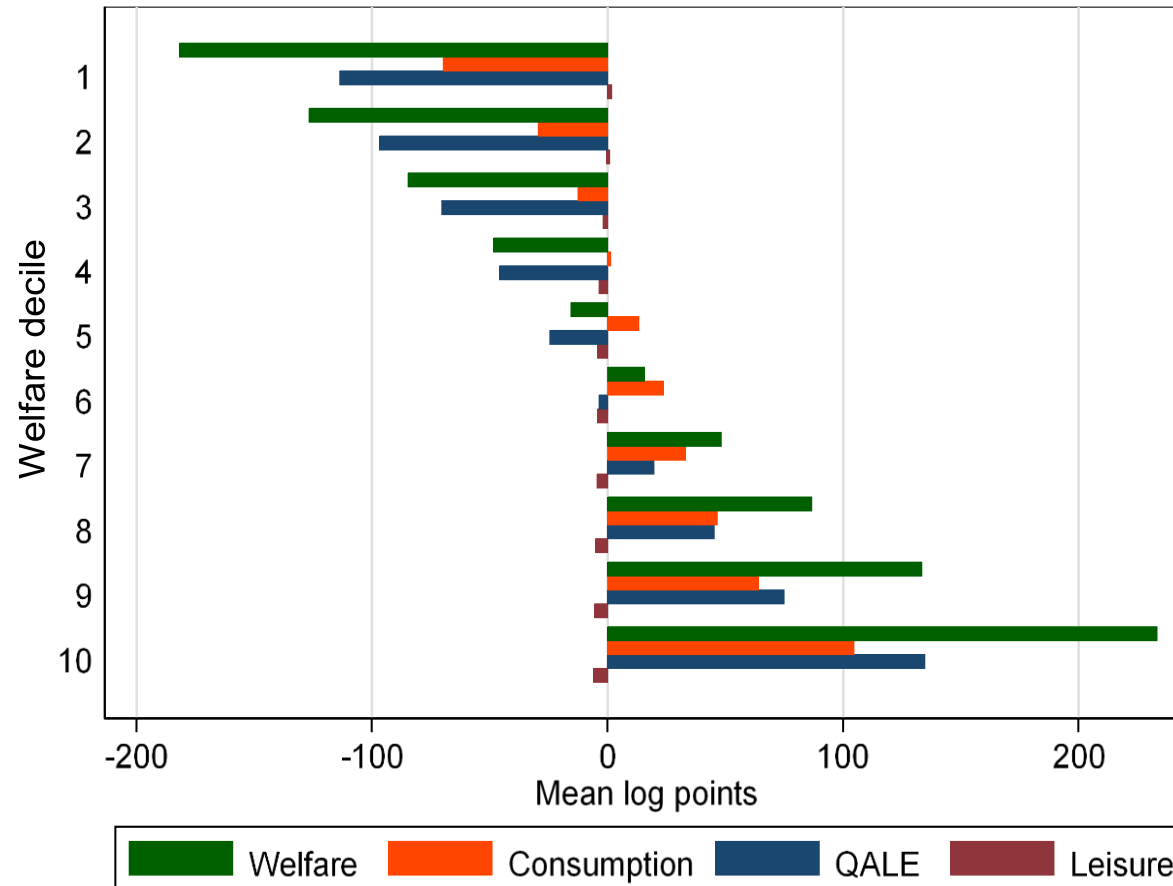
Utility of Money in Life Year Equivalents

Normalized to US GDP per capita 2011 of $49782 to one

Lifetime Welfare at Age 60
By Decile USA 2016

Inequality is worse than we think
Welfare Ratios at age 60 by welfare deciles

Measure	10/50 ratio	90/50 ratio	90/10 ratio
Lifetime Welfare	0.23	5.22	23.08
Lifetime Consumption	0.35	2.65	7.50
Lifetime Health QALE	0.61	1.22	2.00

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Agism

- Widespread evidence of agism

- Negative effects on health and wellbeing of the elderly

- "Old People Should Volunteer to Die to Save the Economy"

  - Dan Patrick Texas Lt. Governor

- Young views: Resources, Promotions, age inappropriate behavior: dancing, sex.

- Philosophical difference with racism / sexism

  - Young will become old – agism is ethical when young if you accept it when old

Reserve Bank of Kansas: Jackson Hole

"No-one over the age of 65 should hold a position of power or responsibility"

Larry Summers

Overview

- Longer healthy life spans are an enormous gain in human welfare – a positive development

- Welfare inequality is a concern: much higher than income inequality because income, health, and longevity move together

- Current institutional arrangements in many countries are unsustainable given population aging

- **Aging is not the problem – institutions are the problem.** Institutions should be changed to improve welfare we should not change people to sustain existing institutions.

- We should change institutions, economic incentives, and social norms

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