The Demographic Transition and SDGs Around the World

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Plan of talk

- Brief discussion of Demographic Transition and NTA

- Main topic: How are these related to SDGs?

- NTA relevant for 7 or 8 SDGs which I group under 4 headings
    1. ECONOMIC GROWTH, CONSUMPTION, and the Dividends
    2. SUSTAINABLE CONSUMPTION AND INTERGENERATIONAL TRANSFERS
    3. HEALTH AND EDUCATION
    4. POVERTY, INEQUALITY AND GENDER

What is the Demographic Transition?

- Movement of a population from high fertility and mortality to low fertility and mortality, and changes in population size, growth rate and age structure that result, unfolding over a century or more.

- Why is this relevant to SDGs?
  - ➢First and second demographic dividends promote economic growth
  - ➢Population aging
  - ➢Longer life and better health
  - ➢Lower fertility, fewer kids, mean a fundamental change in women's lives
  - ➢Slower population growth or even decline

National Transfer Accounts (NTA)-- A natural and intuitive interface of demographic transition and SDGs
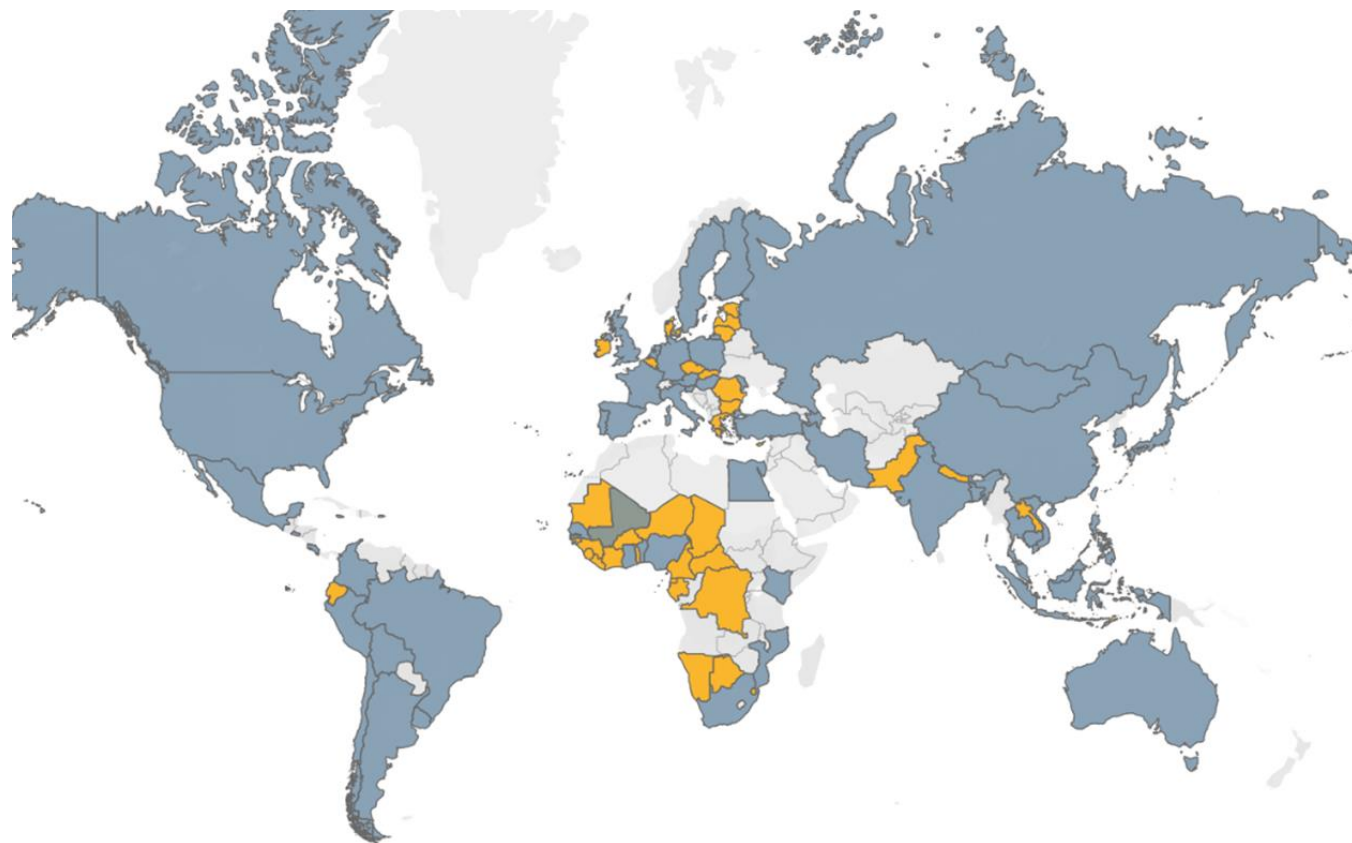
Member teams in 55 countries (dark grey)
Estimates done for additional 40 countries (gold)

Generous support from United Nations agencies for NTA in developing countries

- Also from
  - National Institute on Aging (US NIH)
  - IDRC (Canada)
  - European Union
  - Hewlett Foundation (US)
  - Many others

NTA: Quantifying the economic life cycle – income, consumption, dependency, transfers, and assets

- First step: describe labor income and consumption by age
  - ➢Labor income includes wages, fringe benefits, and self-employment income.
  - ➢Consumption includes private household expenditures plus in-kind transfers from the government such as public education and health care.
- These age profiles are NTA starting point, but NTA is much more.
- For comparative work express as ratio to average labor income ages 30-49.

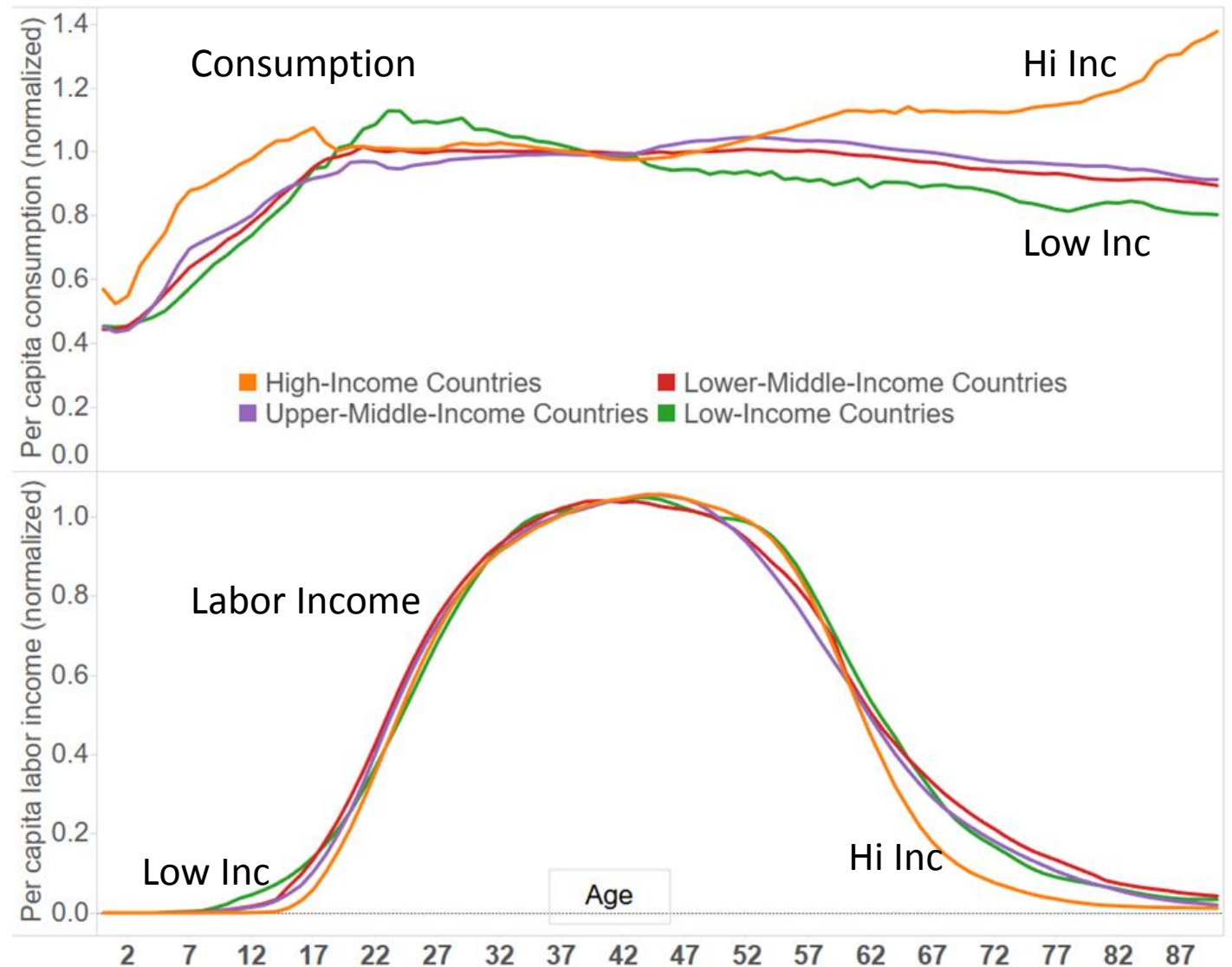# NTA age profiles by income group (simple averages)

High inc elderly consume more than younger adults, low inc consume less

Education investment rises with inc level

Low inc kids start work early, high inc late.

Hi inc elderly retire early, all others late.

These averages conceal great country diversity

Source: Mason, Abrigo, R.Lee, SH. Lee (2019) "Global Trends of Population and the Economy"

I. Economic growth, consumption, and the Dividends

A. How will the unfolding transition affect global GDP growth in coming decades?

- Global pop gr will decline from 1.2% (2000-15) to 0.7% in (2020-2060; UN, 2019), or by .5% per yr.

- How affect GDP growth?

- First, what matters is labor force growth, not population growth.
    - For each country calculate labor force size as weighted sum of labor income age profile times population age distribution = "effective labor".

- Second, global pop growth is fast where per capita incomes are low, mainly in Sub-Saharan Africa. It is slow or negative in high income countries.
    - To capture this effect, just use age profiles without standardizing.

Results for GDP growth

	GDP Gr	Labor Gr	Pop Gr
1950-75	0.045	0.016	0.019
1975-00	0.031	0.022	0.016
2000-15	0.036	0.015	0.012
2020-60	n.a.	0.006	0.007

Pop gr will drop by .5% over next four decades, but **labor gr by .9%.**

Expect a bigger drop in GDP gr than population would indicate.

Pop change accounted for 70% for 1975-2000.

Dropped to 42% 2000-2015.

If productivity growth continues at .02 per year, pop **will account for only 22% of GDP growth in the coming decades**.

(Calculation is very rough, and there are great differences across countries.)

Source: Mason, Abrigo, R.Lee, SH. Lee (2019) "Global Trends of Population and the Economy"

Why care about global GDP growth?

- Environmental impact, an SDG. Slower GDP growth is encouraging.
- Global investment demand when future growth expectations are reduced. "Secular stagnation" – low or negative interest rates, unemployment, limited central bank options.

- But for SDGs, per capita income or consumption growth most relevant.

B. Growth in per capita income per effective consumer

- Support ratio = effective labor/effective consumers

- Use baseline NTA age profiles and UN past and projected population.

- Other things equal, income per effective consumer is proportional to support ratio.

- When support ratio rises, income per consumer rises: this is first demographic dividend = rate of gr of support ratio.

- When support ratio falls, e.g. with pop aging, inc per consumer falls.

NTA based support ratios and first demographic dividend by income group 1950-2060 (simple avgs).
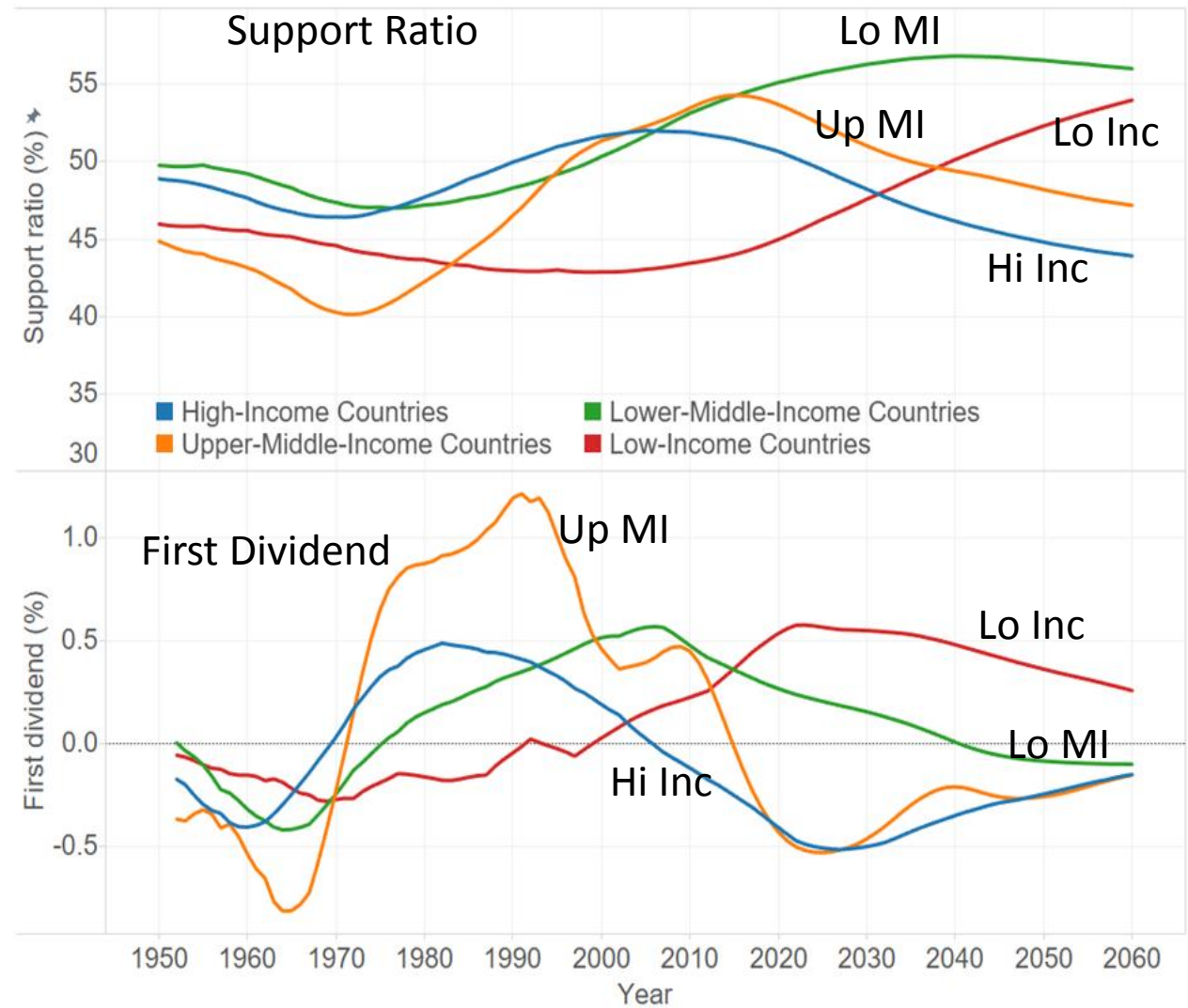
Source: Mason, Abrigo, R.Lee, SH. Lee (2019) "Global Trends of Population and the Economy"

C. Will a second demographic dividend preserve the gains from the first?

- Gains of first dividend are erased by pop aging.

- Second dividend brings permanent increases in productivity
  - Increased investment in human capital of children as fertility falls
  - Increased capital per worker as growth rate of labor falls and population share of asset-holding elderly rises.
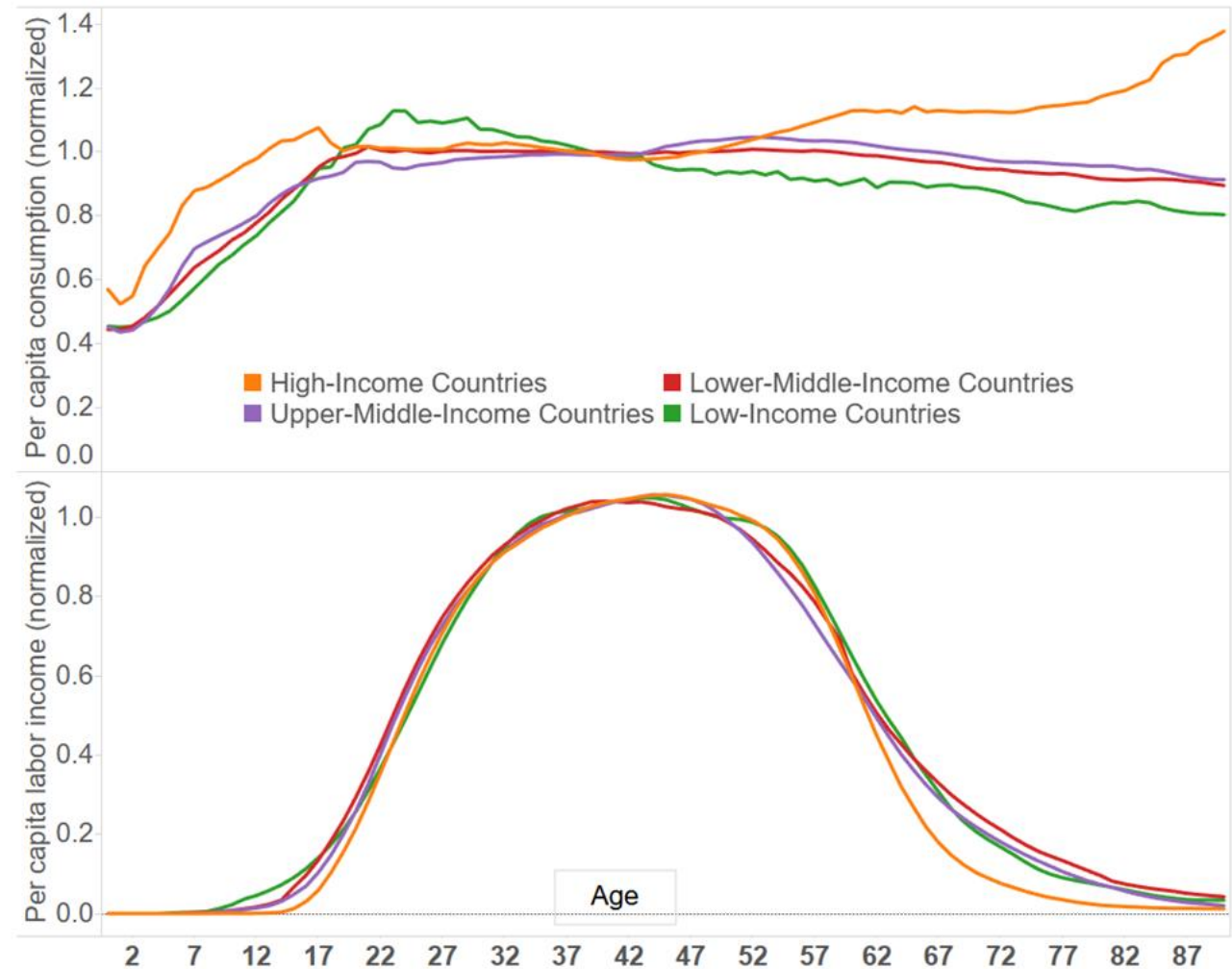 - Increased participation of women in market labor

II. Sustainable consumption and intergenerational transfers

A. Consumption by age

SDG: "Promote wellbeing for all at all ages"

Age profiles again….

How do elderly consume when nowhere do they have much labor inc?

Source: Mason, Abrigo, R.Lee, SH. Lee (2019) "Global Trends of Population and the Economy"

B. The elderly (65+) are substantially self-supporting, and only partially dependent
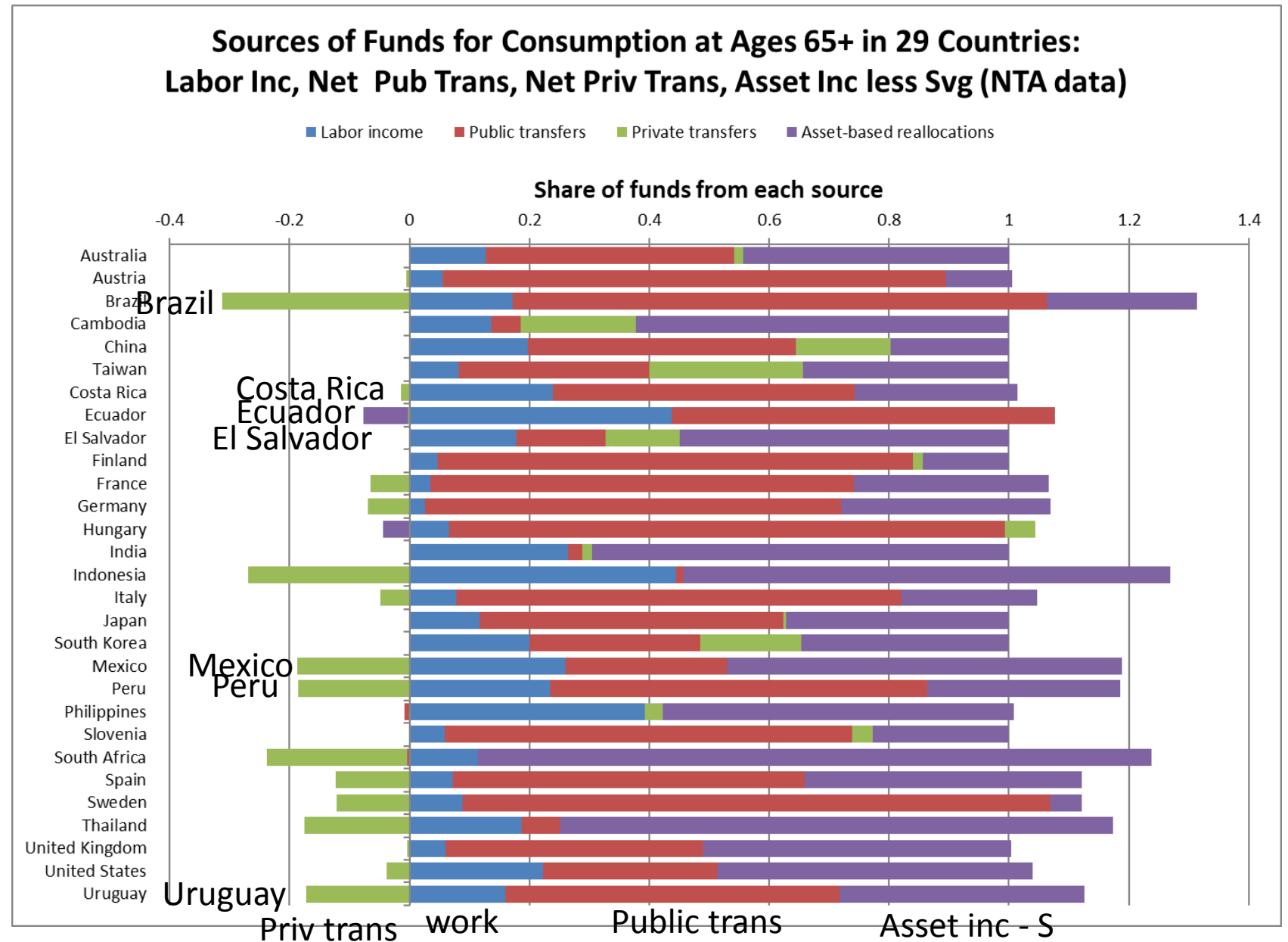
How elderly fund cons

*Work (S. Asia, Ecuador)

*Public transfers (Europe, LAC)

*Priv trans (E. Asia) but mostly elderly make net transfers to others.

*Asset inc – All over the map

Sources of Funds for Consumption at Ages 65+ in 29 Countries: Labor Inc, Net Pub Trans, Net Priv Trans, Asset Inc less Svg (NTA data)

Labor income   Public transfers   Private transfers   Asset-based reallocations

Share of funds from each source

Elderly are only 43% dependent on others = sum of pub and priv net transfers.

- Are elderly "dependent"? Only 43%.

- Averages for 29 countries
  - ➢Labor Inc: 16%
  - ➢Asset Inc: 40%
  - ➢Pub trans: 46%
  - ➢Private trans: -3%

Elderly are only partially dependent on others to fund their consumption.

- Are elderly "dependent"? Only 43%.

- Averages for 29 countries
  - Labor Inc: 16%
  - Asset Inc: 40%
  - Pub trans: 46%
  - Private trans: -3%

- LAC elderly only 47% dependent.
  - Labor Inc: 24%
  - Asset Inc: 29%
  - Pub trans: 56%
  - Private trans: -9%

C. But even so, will transfer systems be sustainable as populations age?
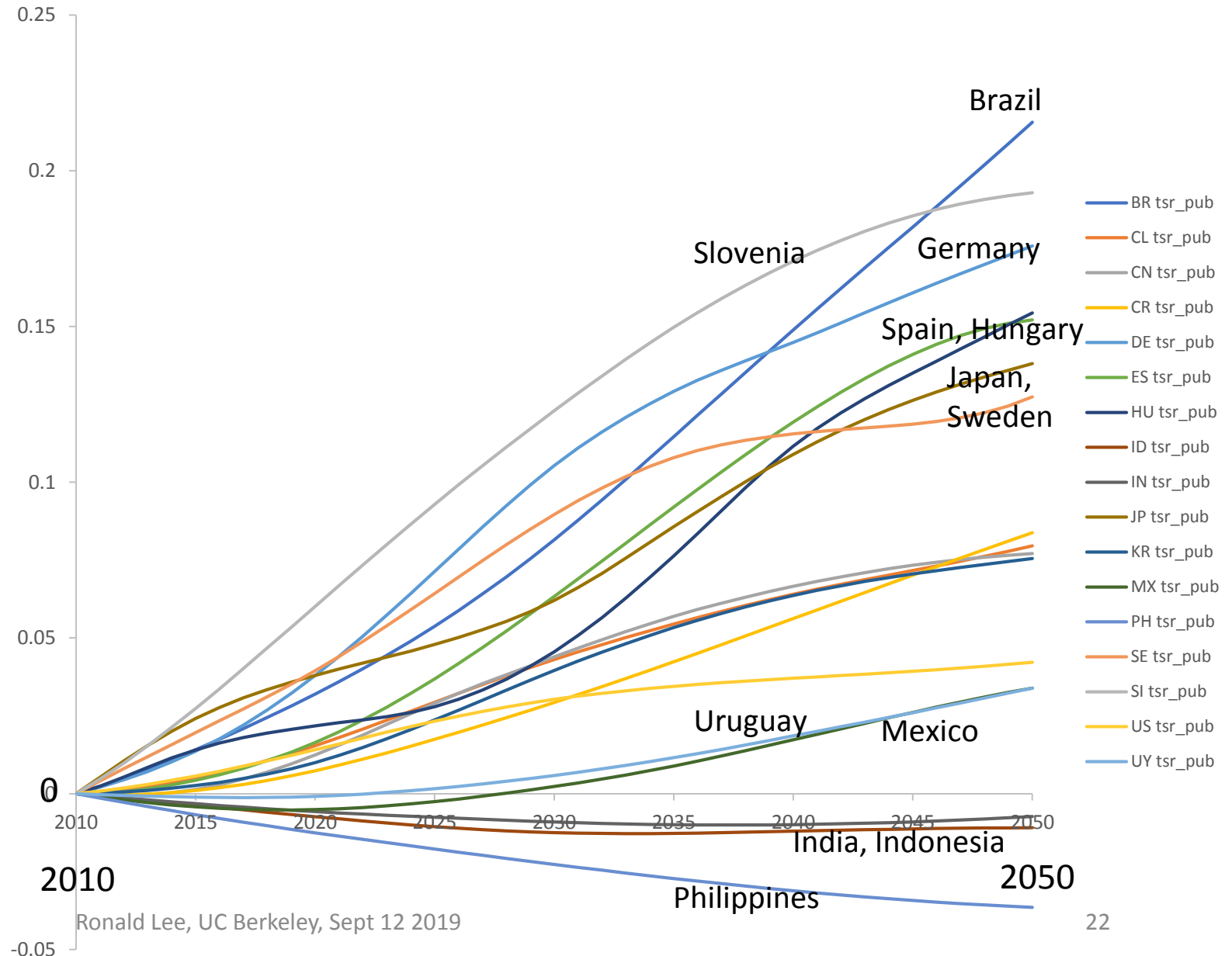
- Effective net transfers are calculated like effective labor.
  - ➢ Zero in base year by construction, then diverges.
- "Transfer Load" is ratio: total net trans as share of total consumption.

Public Transfer Load

Public trans load = 0 in 2010 base year. By 2050:

**Would look different if we modeled public transfers to approach OECD levels over time.**

Public Transfer Load as Populations Age in Selected Countries (Programs constant)

Brazil

Slovenia

Germany

Spain, Hungary

Japan, Sweden

Uruguay

Mexico

India, Indonesia

Philippines

2010

2050

BR tsr_pub
CL tsr_pub
CN tsr_pub
CR tsr_pub
DE tsr_pub
ES tsr_pub
HU tsr_pub
ID tsr_pub
IN tsr_pub
JP tsr_pub
KR tsr_pub
MX tsr_pub
PH tsr_pub
SE tsr_pub
SI tsr_pub
US tsr_pub
UY tsr_pub

Private Transfer Load as Populations Age in Selected Countries (behavior constant)

Private Transfer Load in Selected Countries
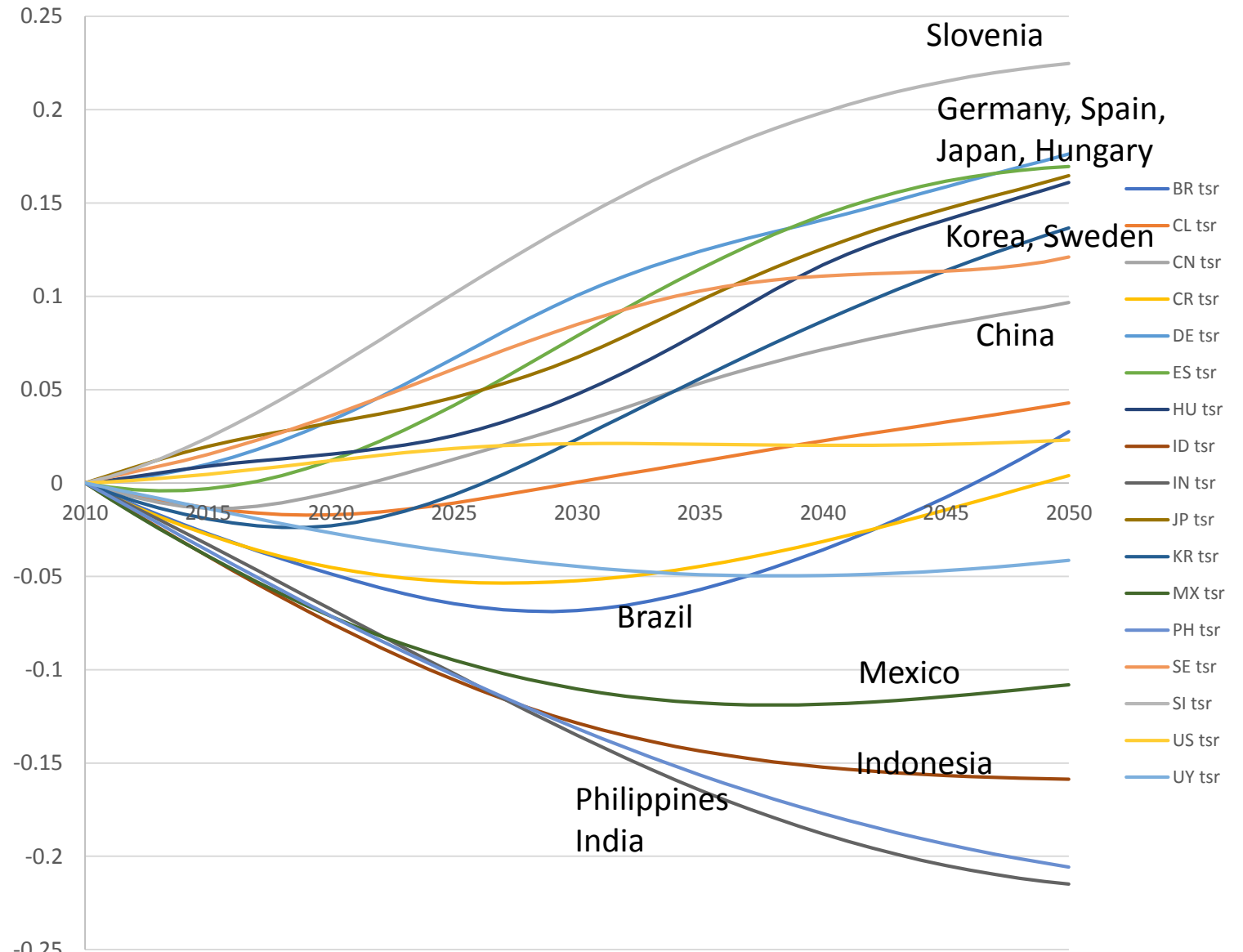
Note enormous load reduction in Brazil.
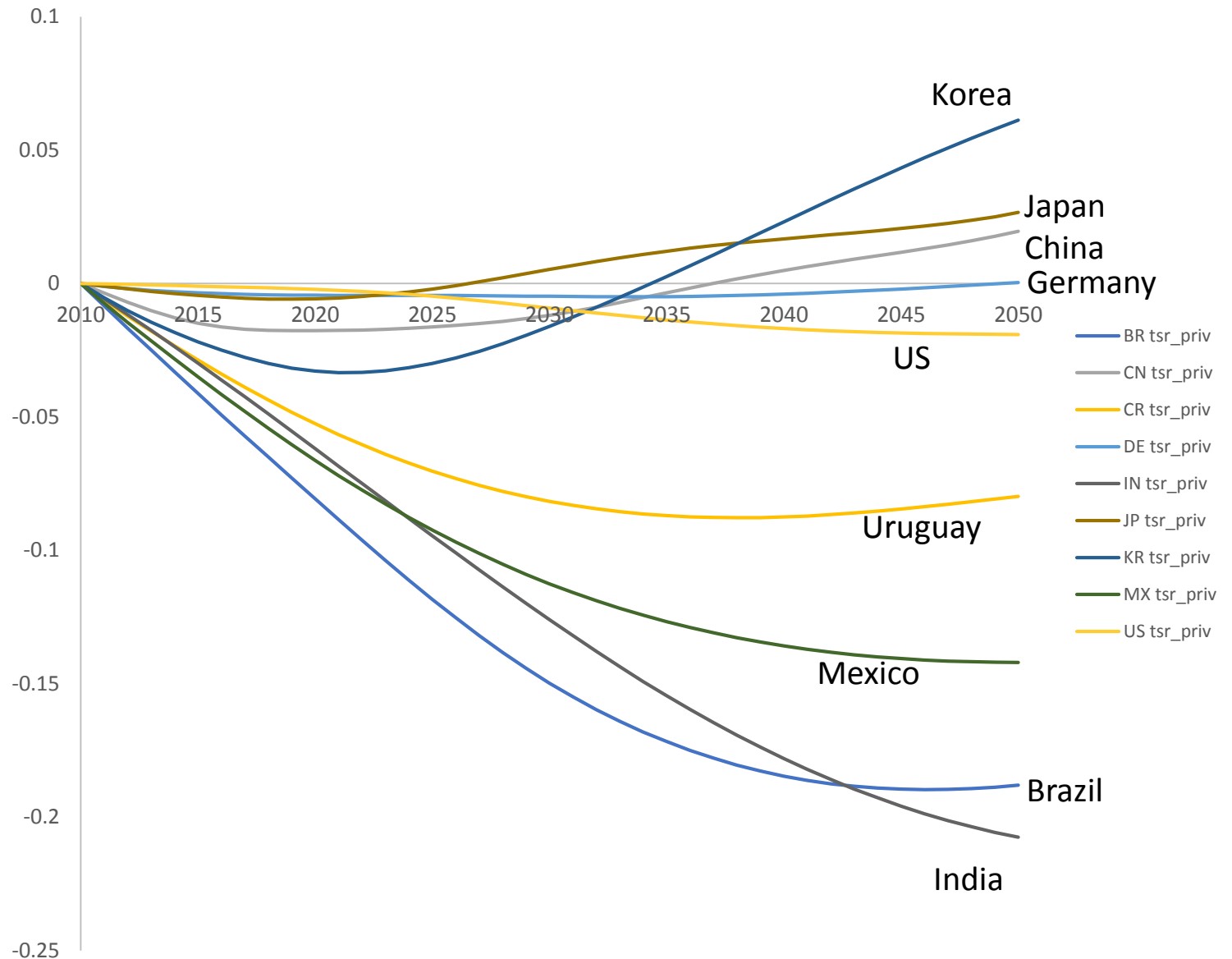
Total Transfer Load in Selected Countries for public and private combined

Looks much better for Brazil, because public and private cancel. Is this realistic? Still have to raise taxes and cut benefits for elderly.

Total Transfer Load as Populations Age in Selected Countries (const age profiles)

D. Personal thoughts on public policy for sustainable transfers

- Raise the retirement age in public pension programs
  - ➤ Why should fewer younger people pay higher taxes to support longer retirement for increasing numbers of healthy and vigorous elderly?
  - ➤ Perhaps tie retirement age to socioeconomic group to protect low income folks who have shorter life expectancy.
- Introduce automatic pension adjustments to life expectancy and rising old age dependency, e.g. like Sweden or Germany, so
  - ➤ Pension is fiscally stable and believable.
  - ➤ young people know what to expect and can plan
  - ➤ It is not a political battle every time fiscal problems arise.
- Make sure transfer systems are fair across socioeconomic groups.
- Invest in human capital of future workers to speed productivity growth.
- Many special problems for LAC due to large informal sector.

III. Health and Education

A. Health

- NTA does not cover health per se but does cover health expenditures.

- Excellent paper by Carl Mason and Tim Miller about a new way to use this information for projecting health care expenditures.

- "Our model predicts rapid increases in healthcare consumption during the rapid phase of population aging but more modest increases thereafter once the great transformation to aged societies is complete."

Public + private health care spending as **share of GDP per capita** in 2015

Carl N. Mason and Timothy Miller (2017) "International projections of age specific healthcare consumption: 2015–2060" Journal of the Economics of Ageing, http://dx.doi.org/10.1016/j.jeoa.2017.04.003
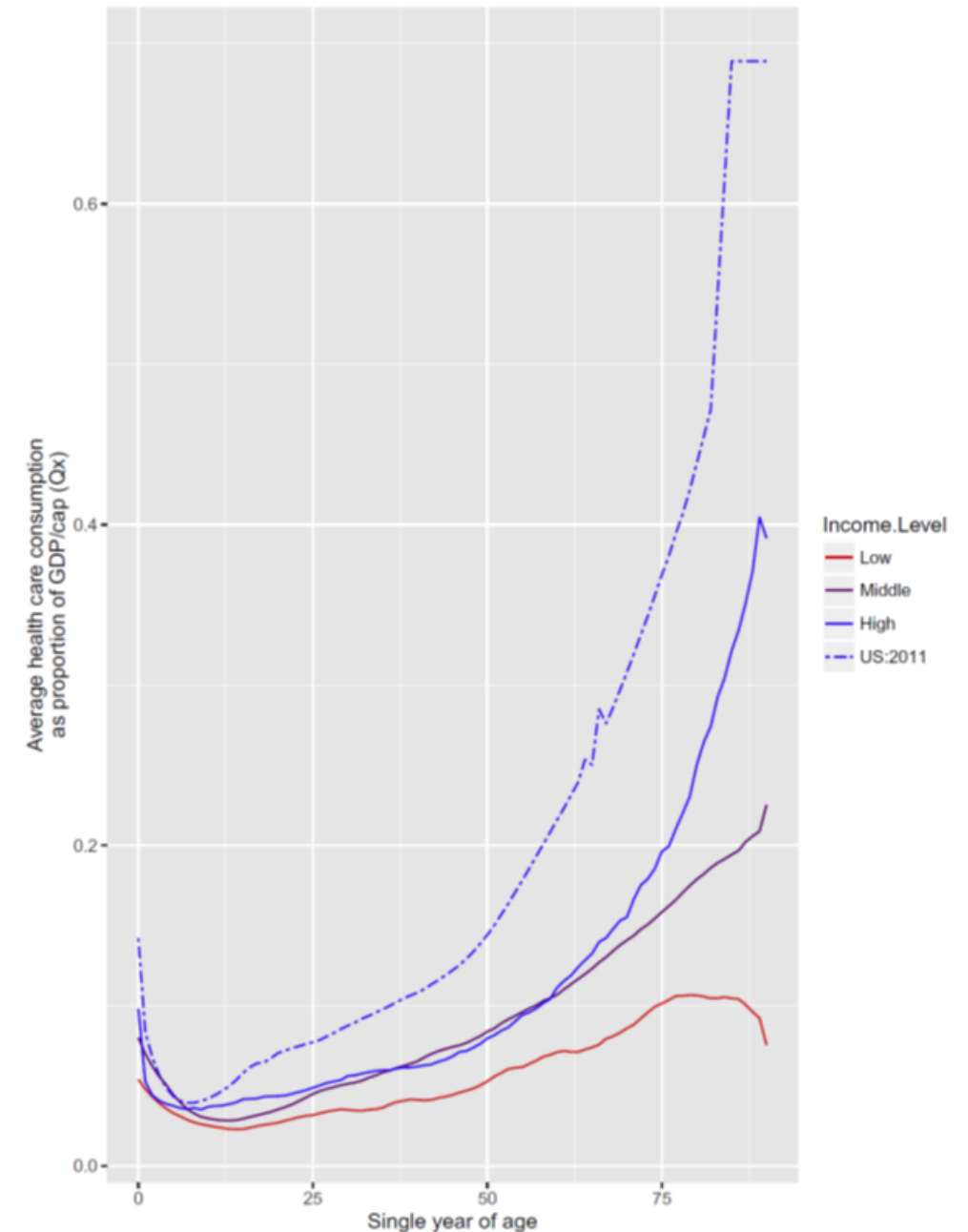
Health care spending, pub + priv, as share of GDP in 2015 and projected to 2060.

Carl Mason & Tim Miller, Jrnl of Ec of Aging (JEOA) 2017.

Share GDP in 2015

Share GDP in 2060

Increase share if no pop aging

Number is share that is **not** due to pop aging.
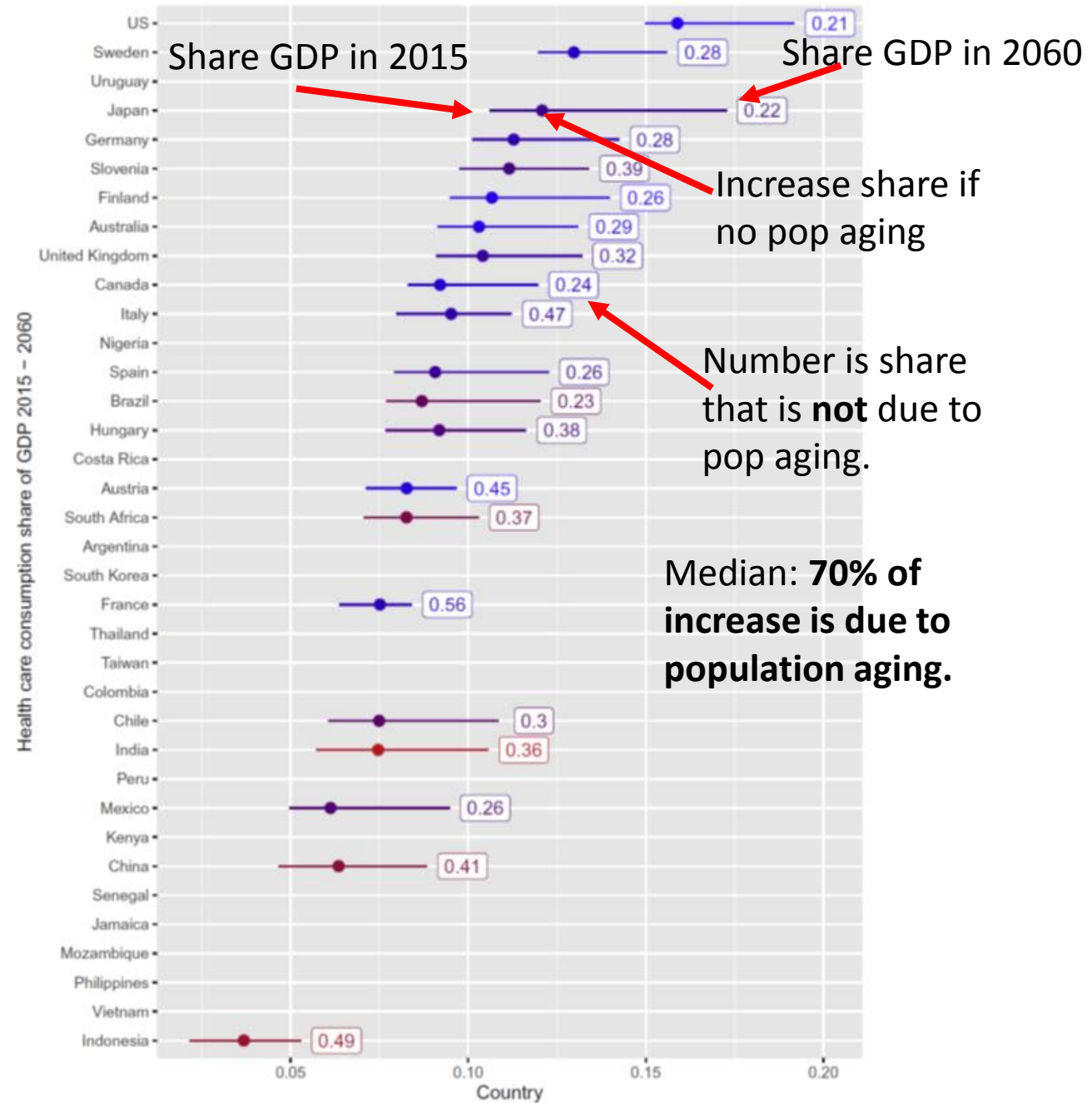
Median: **70% of increase is due to population aging.**

Fig. 9 Projected healthcare consumption as share of GDP in 2015 and the end of the simulation with projected and fixed population age structures. The line segments show the growth in the healthcare share of GDP between 2015 and the end of the simulation; the dot shows the healthcare share at the end of the simulation if the population age

B. As fertility falls during demog transition, human capital investment per child rises

- Policy can help or hinder this general tendency

- Do patterns of human capital investment replicate socioeconomic disparities in next generation or do they give opportunities to lower income children?

Human capital spending is higher relative to labor income when fertility is lower

Total human capital spending versus total fertility, 39 countries (public + private spending on education and health added ages 3-26 & 0-17.
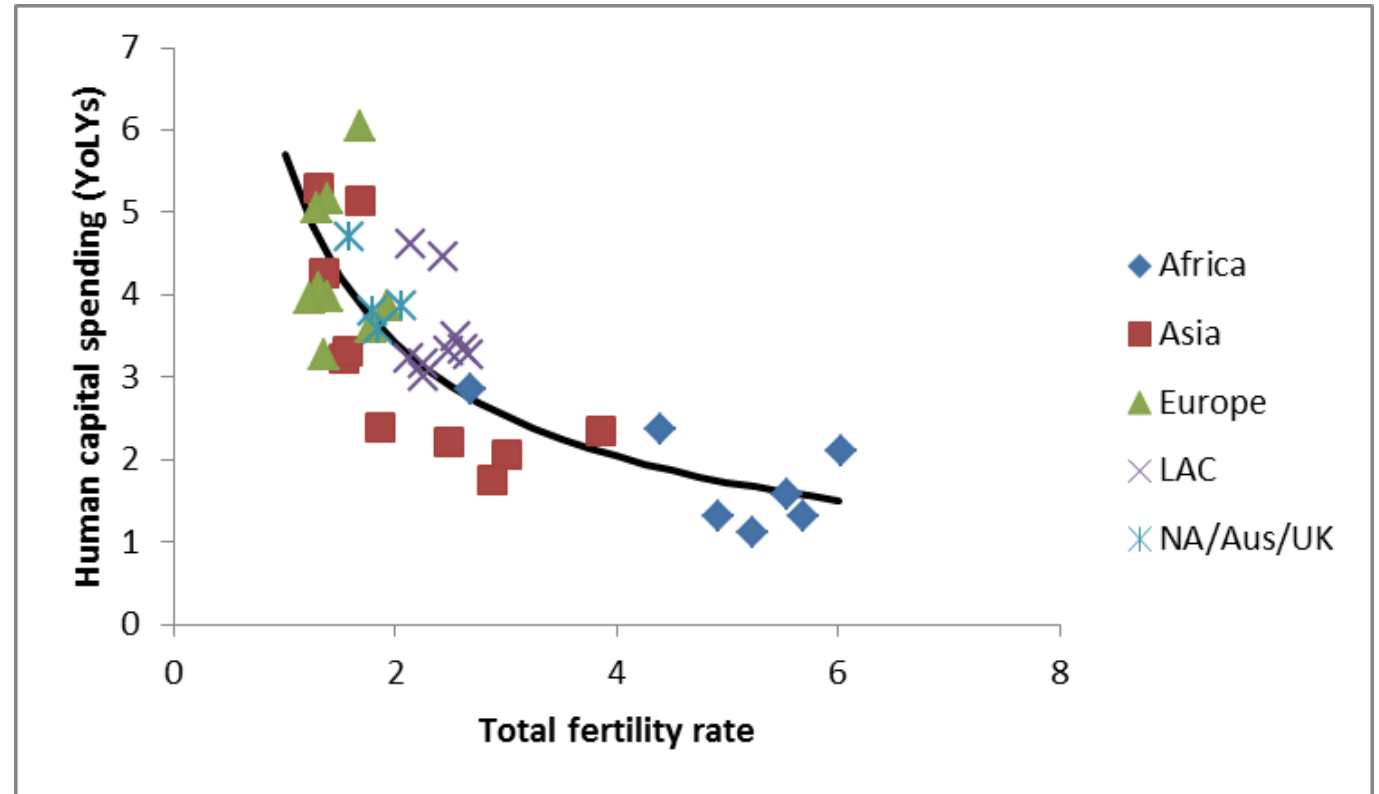
Fitted line is constructed by regressing ln of human capital on ln TFR. Estimated elasticity is -0.74. Source: Calculated by authors. File: ntadata.xlsx

Andrew Mason, **Ronald Lee** and Jennifer Xue Jian (2016) "Demographic Dividends, Human Capital, and Saving" *Journal of the Economics of Aging*. Volume 7, April 2016, Pages 106–122.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4918060/

# IV. Poverty, Inequality and Gender

- Original NTA was unisex population averages by age.
    - ➤ Little scope for poverty, inequality or gender.

- Now NTA has more to say
    - ➤ NTA by gender including care time (Counting Women's Work; NTTA)
    - ➤ NTA by Socioeconomic Status (SES)
    - ➤ NTA by generation (Full Generational Accounts and Generational Wealth Accounts)
    - ➤ New frontier: distribution across individual outcomes like consumption based on NTA micro-files.

A. Gender equity

1. "Care economy" is about a third of standard GDP, varying by country. (Includes housework, child and elder care, etc.)

2. Women's production in care economy dominates; men do more market production.

3. Children and elderly are costly in terms of unpaid family labor as well as money. Taking care economy into account, children are more costly relative to elderly.

4. Consequently, taking time costs into account, the first dividend becomes bigger, and the cost of pop aging becomes smaller.

With care time, total net production by gender becomes quite similar
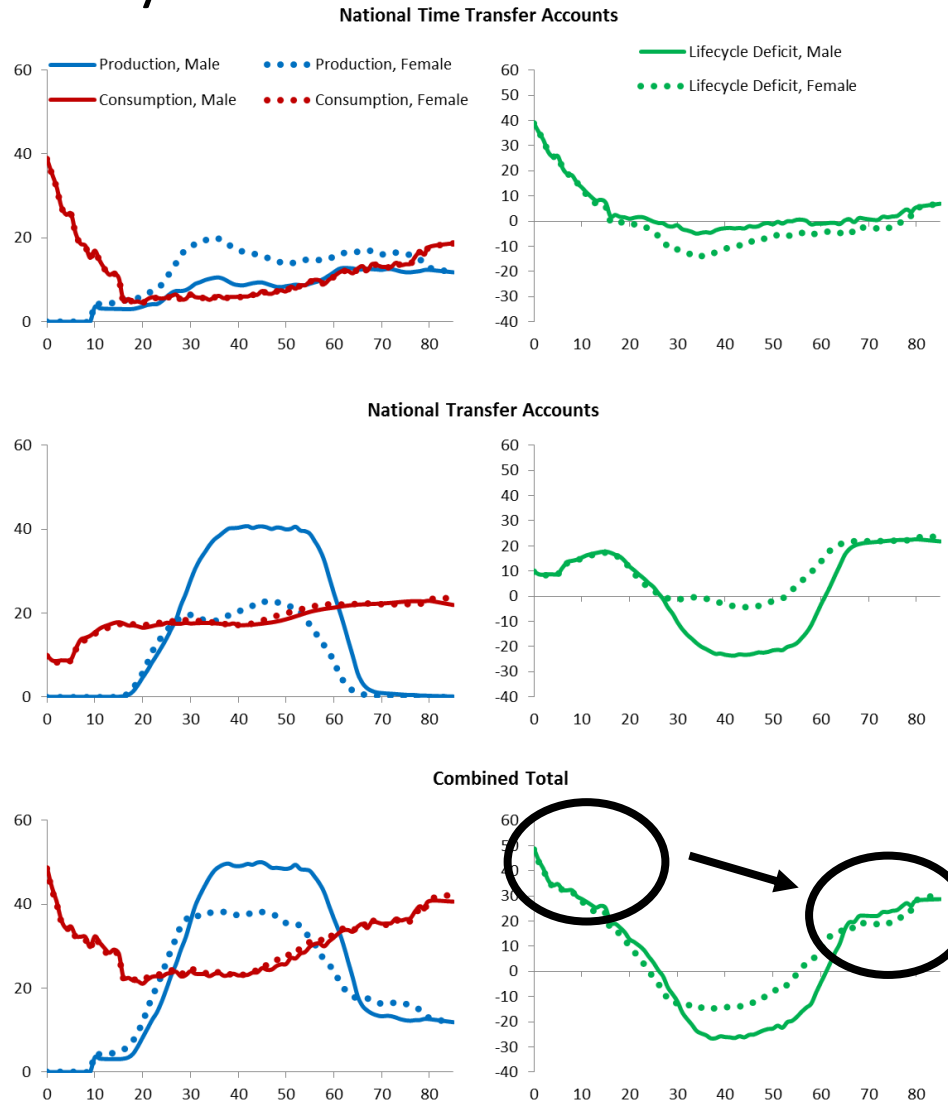
Germany
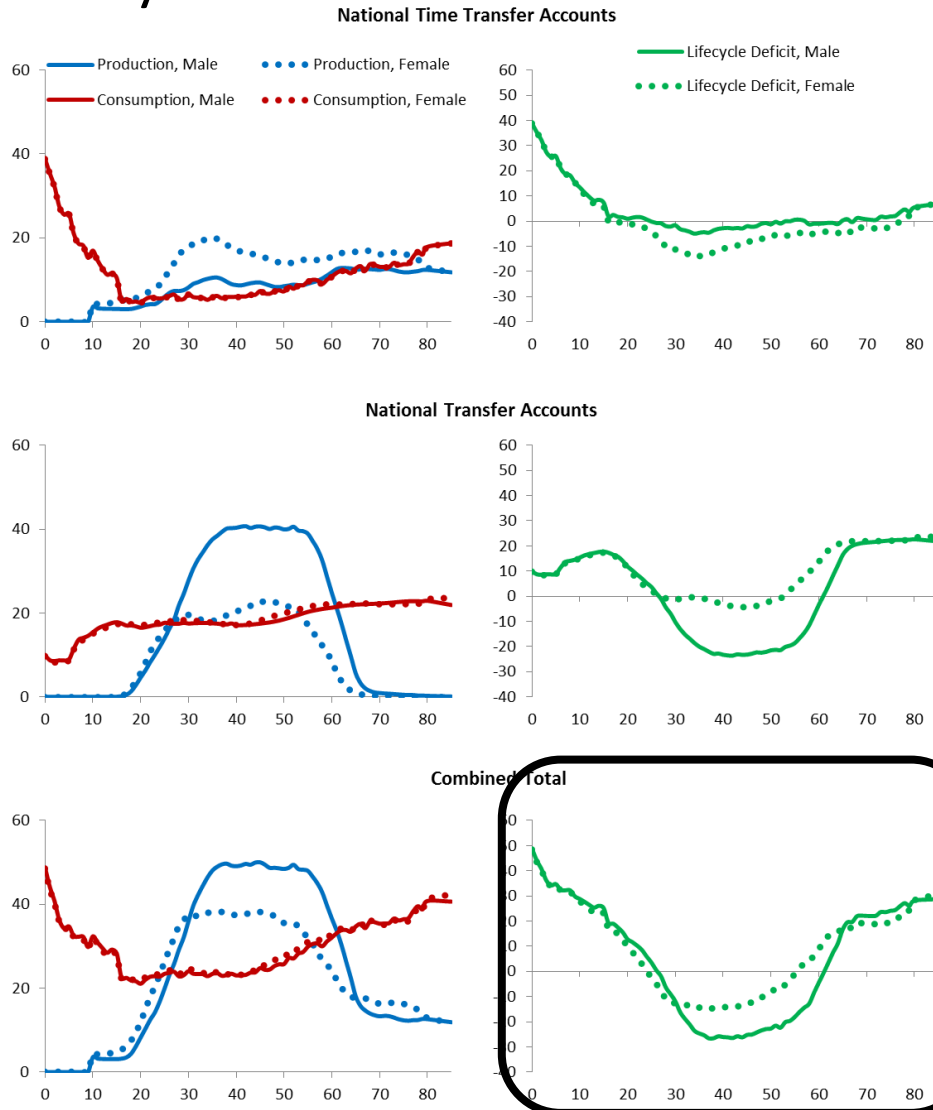
Mexico

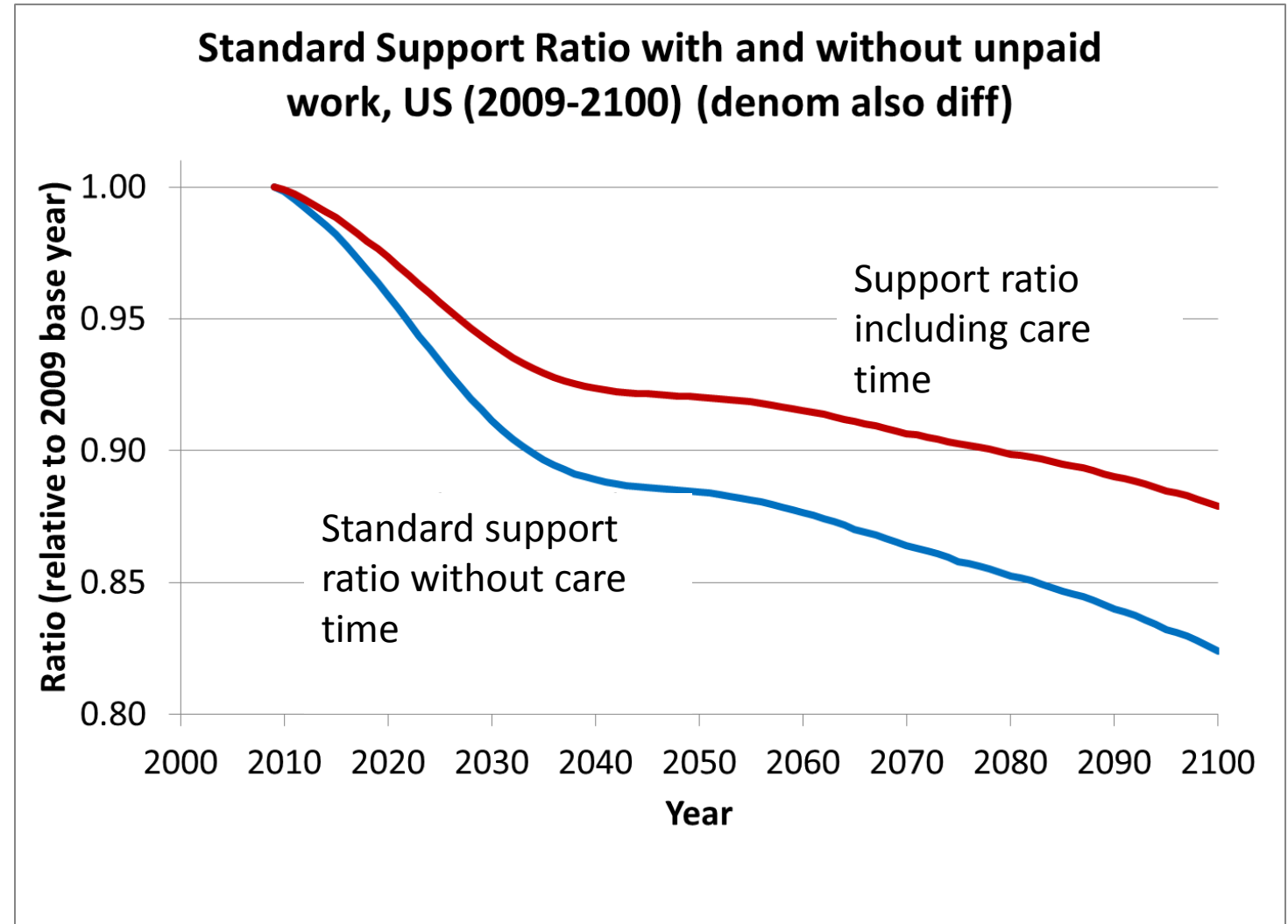# With care time, children are more costly than elderly

Germany

Mexico

If we count care time:

* Demog dividend is larger
* Pop aging is less costly

Example:

Declining support ratio with pop aging in US

2009-2050 standard support ratio declines **.3%/yr,** but with care time counted, by only **.2%/yr**.

Standard Support Ratio with and without unpaid work, US (2009-2100) (denom also diff)

Support ratio including care time

Standard support ratio without care time

Y-axis: Ratio (relative to 2009 base year)
X-axis: Year

B. Public transfers by SES in LAC

Publication education by education quartile of household head, from Luis Rosero-Bixby at Senegal

- In Ecuador (2011), until age 15 or so low SES children receive more public education than others, and high SES children get little public.

- Pattern reverses after 15 with high SES getting more than lower SES groups.

- Similar in Mexico and Costa Rica.

- I think true in a number of other LAC countries
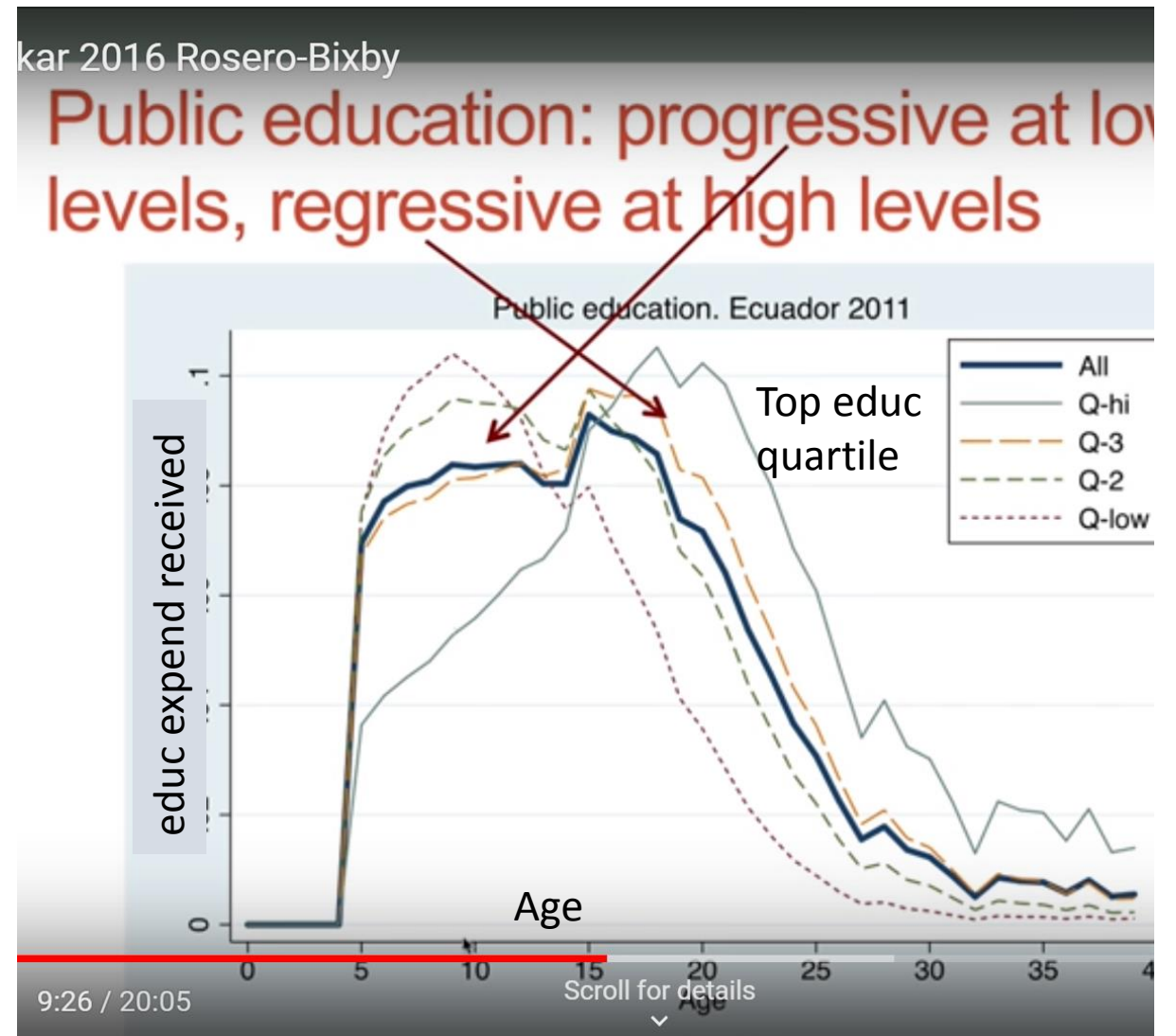
Colombia Net public benefits

Two SES measures: MQLI is multidimensional

HHE is education of household head

Appears that only high SES or tertiary education groups receive net public benefits in old age. Others pay net taxes.

By MQLI, a multidimensional index of SES

By HHE, four categories of educational attainment.

Tertiary > 0; All others < 0

Fig. 9 Net public transfers by MQLI and HHE. Colombia 2008
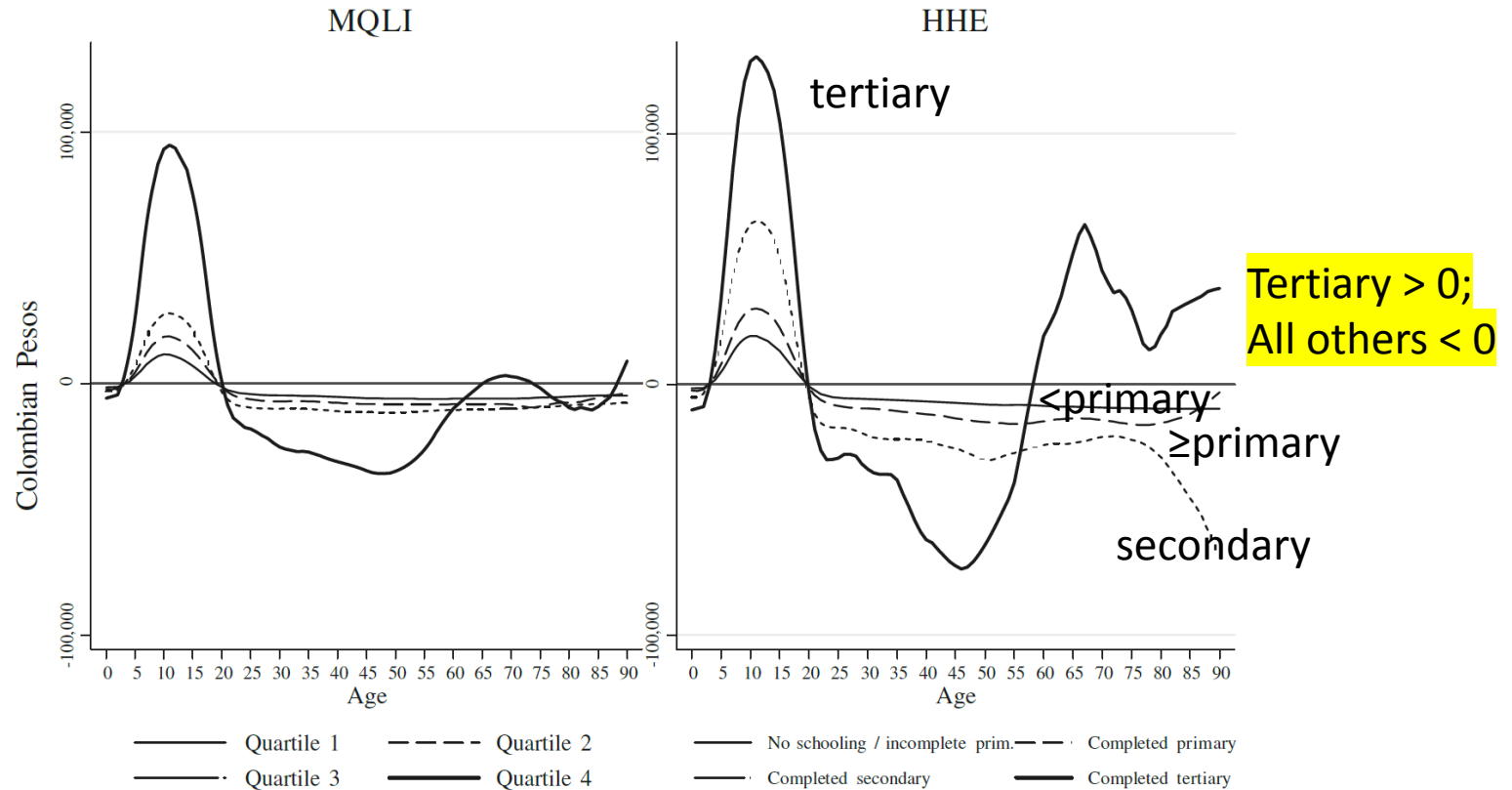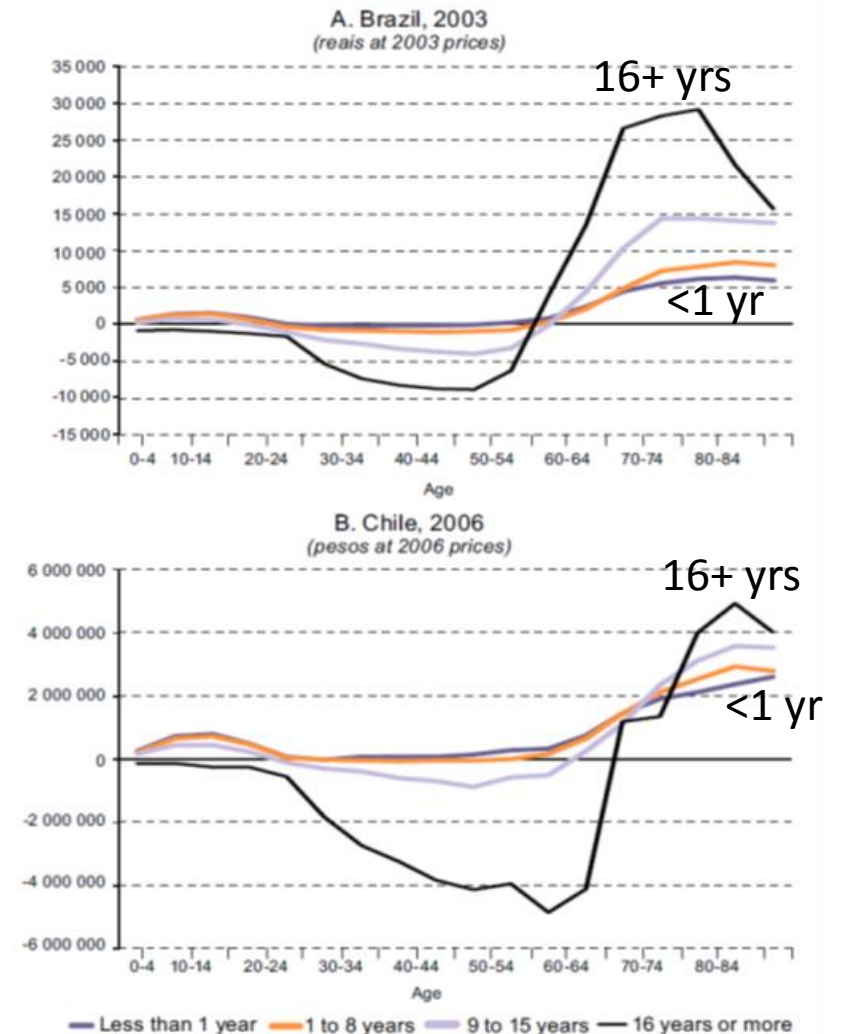
Source: DANE- ECV08. Own Calculations

Jorge A. Tovar & B. Piedad Urdinola (2014) "Inequality in National Inter-Generational Transfers: Evidence from Colombia" **International Advances in Economic Research v19 n4 (Nov)**

Brazil and Chile seem less extreme than Colombia

Net public transfers received by age and by education of household head:
<1 yr; 1-8 yrs; 9-15 yrs; 16+ yrs.

Taken from Chapter 4 of 2010 *Social Panorama of Latin America* (ECLAC) (prepared for ECLAC by Cassio Turra; NTA data).

Figure IV.20
PER CAPITA NET PUBLIC TRANSFERS BY AGE GROUP AND YEARS OF SCHOOLING OF THE HEAD OF HOUSEHOLD[a]

A. Brazil, 2003
(reais at 2003 prices)

B. Chile, 2006
(pesos at 2006 prices)

Less than 1 year — 1 to 8 years — 9 to 15 years — 16 years or more

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from the Brazilian National Household Survey (PNAD), 2003 and Family Budgets Survey (POF), 2006/2007, in the case of Brazil, and the National Socio-economic Survey (CASEN) 2006 and Budgeting and Expenditure Survey (EPG) 2006/2007, in the case of Chile.
[a] Per capita net public transfers are calculated as the difference between benefits received from the State and taxes paid.

Conclusion --

- These are just some of the many ways that NTA can inform policy efforts to achieve the SDGs.

END