Accounting for Intergenerational Transfers: An Overview

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The demographic transition and population aging raise many policy questions and challenge our understanding of how the population age distribution interacts with the macro-economy.

National accounts provide valuable information for addressing these problems.

- National accounts cover market transactions and public transfer programs.

However:

- National accounts do not
  - cover private or familial transfers.
  - include the age dimension of flows or exchanges.

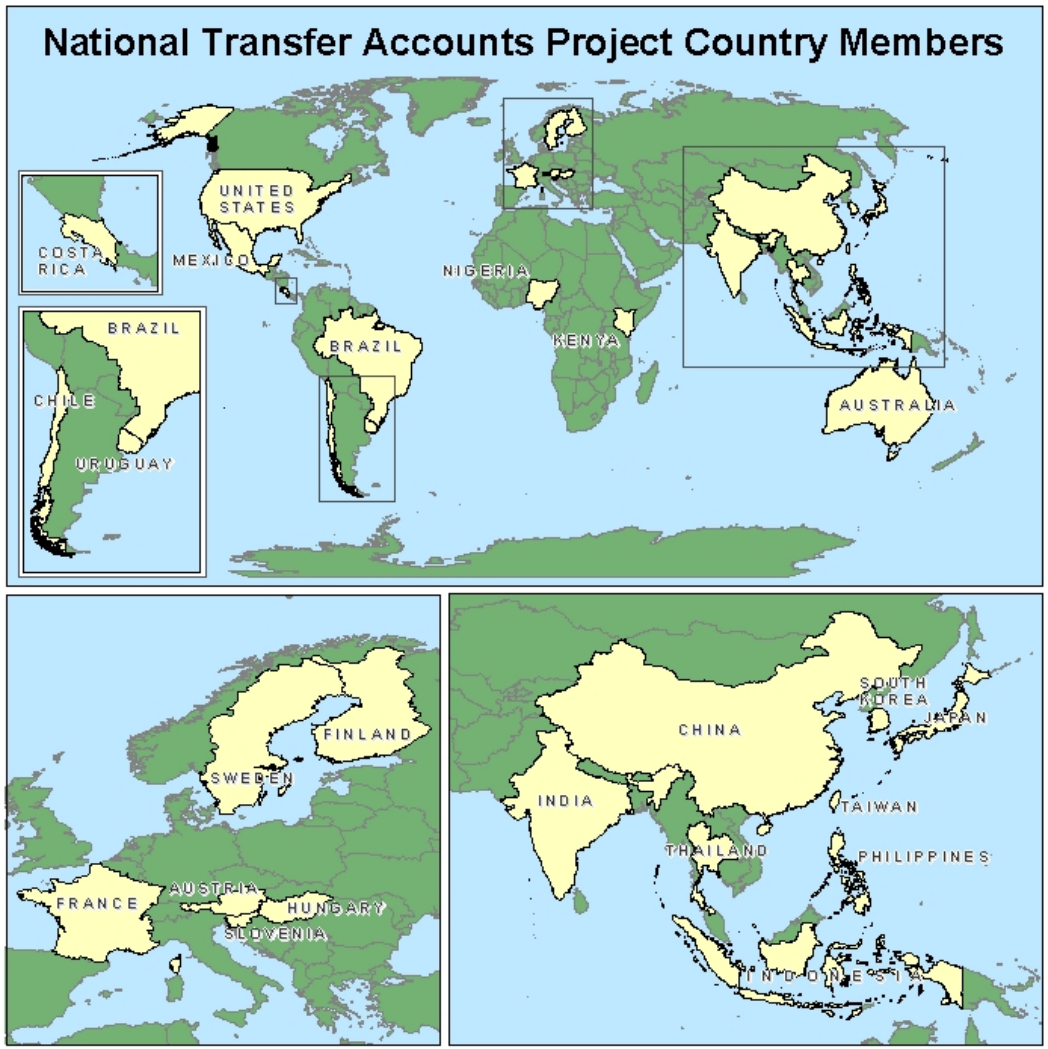
National Transfer Accounts (NTA)

- Extends standard National Accounts in both ways
  - Adds the age dimension
  - Adds private transfers occurring within and between households
    - parents rear children.
    - Adults care for co-resident elderly parents
    - Bequests at death

II. Organization of the NTA project

- Lead Institutions: East-West Center and CEDA, UC-Berkeley
- Asia Regional Office: Nihon University Population Research Institute
- Funding
  - National Institute on Aging
  - United Nations Population Fund
  - Academic Frontier Project (Japan)
  - International Development Research Centre (Canada)
  - MacArthur Foundation
  - Others
- www.ntaccounts.org

Research Teams for 23 Economies



The National Transfer Accounts project is a collaborative effort of
East-West Center, Honolulu
and
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Langer, Ellen

Kenya
Mwabu, Germano

Nigeria
Soyibo, Adedoyin

III. Flow identity

- Basic accounting identity for flows for individuals at each age: Inflows=Outflows
- Here is a somewhat simplified version

Inflows:

labor income

+ asset income

+ private transfers received

+ public transfers received

+ borrowing

+ sale of assets

Outflows

consumption

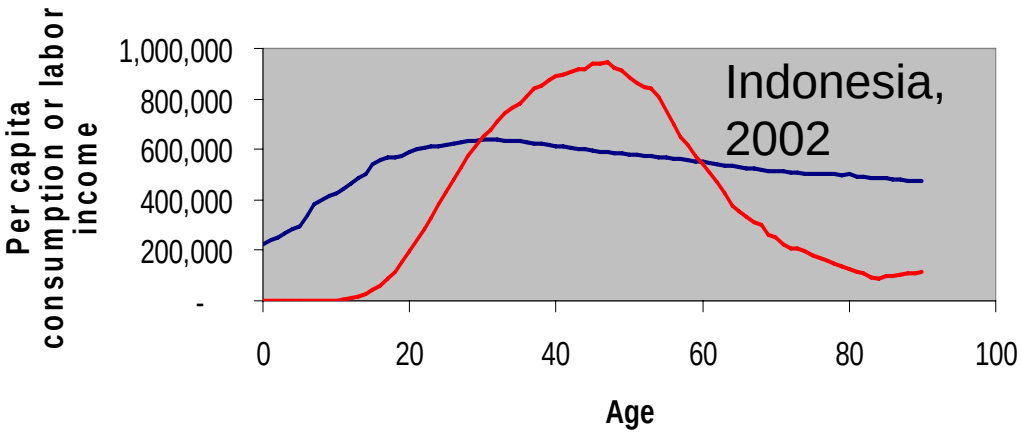
+ public transfers made (tax payments)
+ private transfers made
+ purchase of assets
+ lending
+ payment of interest

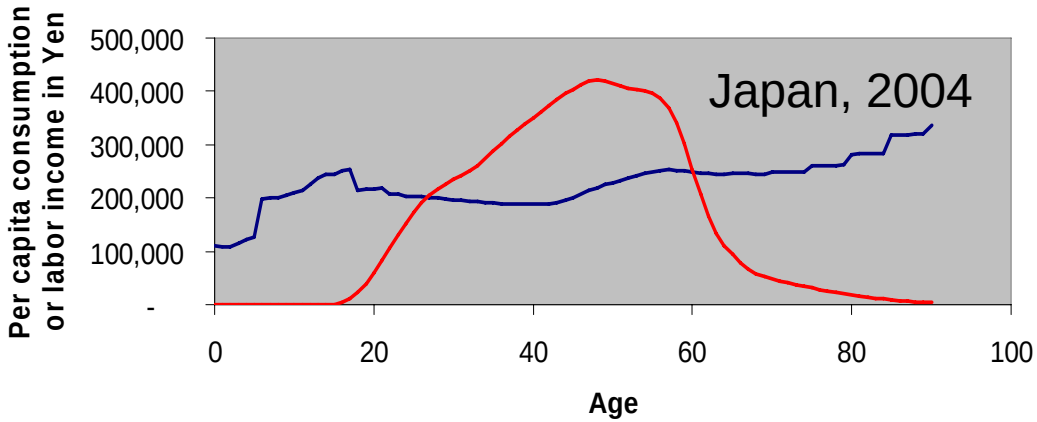
Stocks can be derived from these flows

- Capital stock
- Credit
- Transfer wealth (at each age, present value of expected future net transfers)
- Each has a public and private dimension.

- convenient to focus on labor income and consumption
  - Strong biological component to productivity by age, e.g. children and elderly are less productive
  - Strong biological component to consumption by children

Per capita consumption and labor income by age for Indonesia and Japan

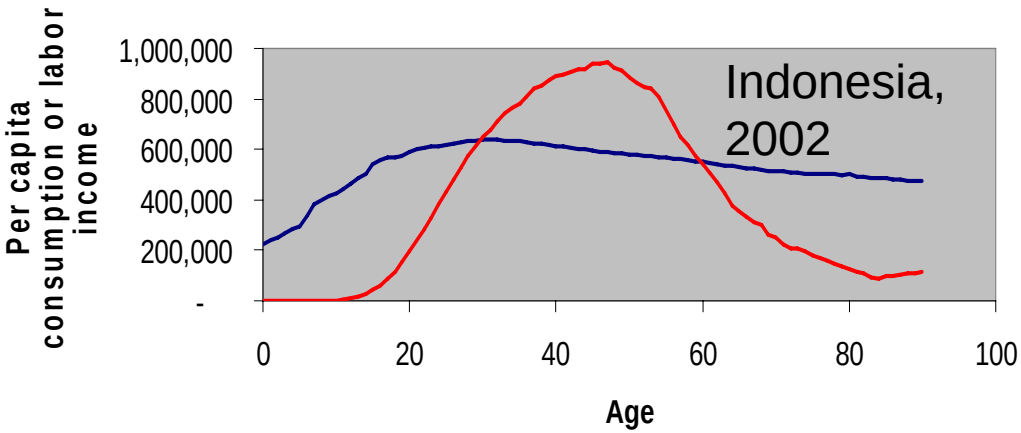


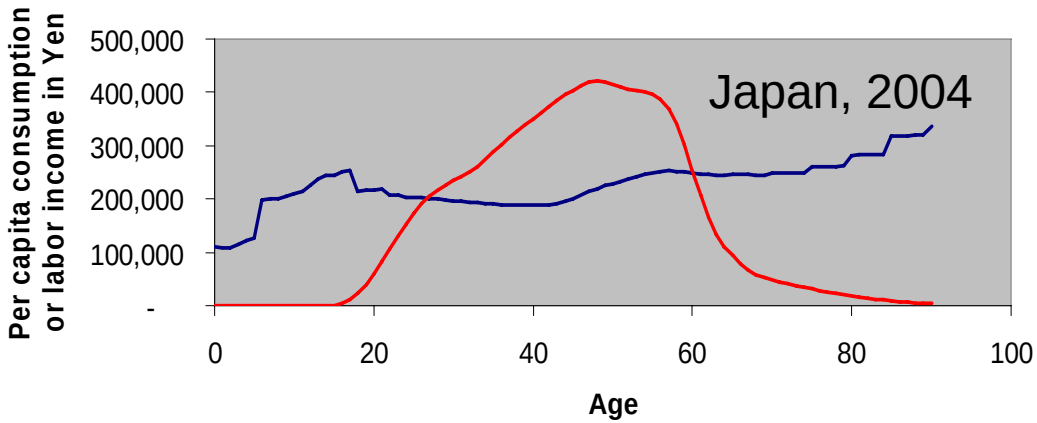


Labor includes wages, a share of self employment income, fringe benefits, and more.

Consumption includes private consumption and in-kind govt transfers (health and education, e.g.) and housing services.

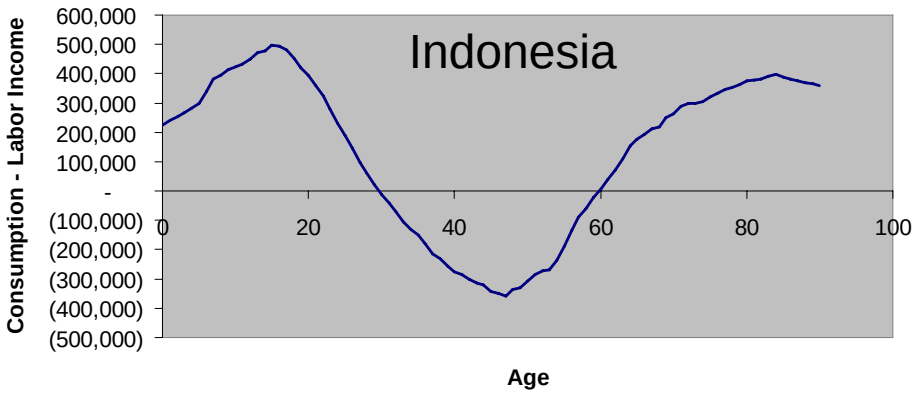
Periods of consuming more than labor income in childhood and old age

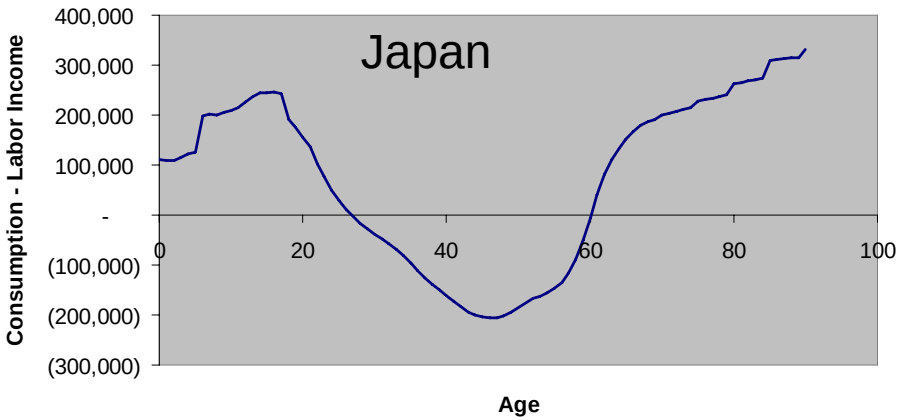




- Striking differences in consumption patterns.
  - Education in Japan
  - Rising consumption in old age in Japan
- The difference $c(x) - y_l(x)$ is called the Life Cycle Deficit.

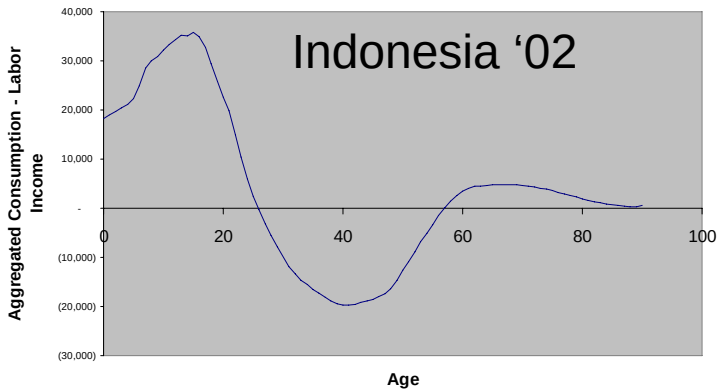
Per Capita Life Cycle Deficit: $c(x)-y_l(x)$

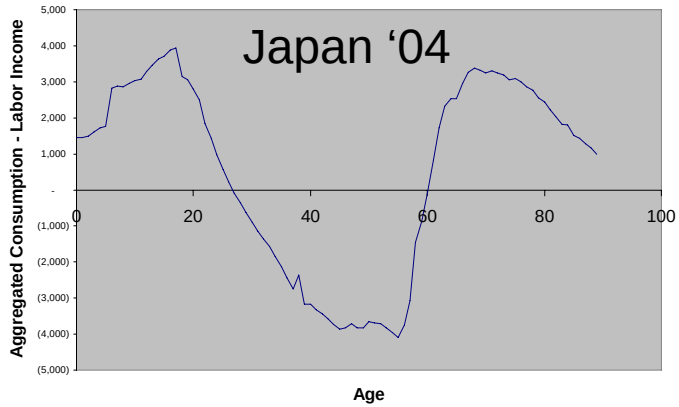




- The life cycle deficit patterns look remarkably similar
- Japan's becomes more extreme at very old ages.
- Because these are per capita, they don't convey the macro patterns of flows.
- To appreciate the full implications, we must take the population age distributions into account.

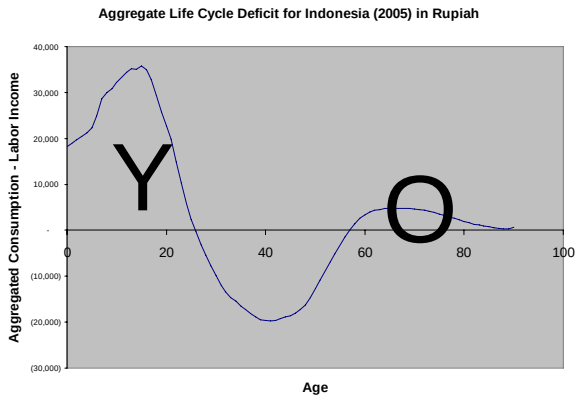
Aggregate Life Cycle Deficits (Age profiles weighted by actual population by age)

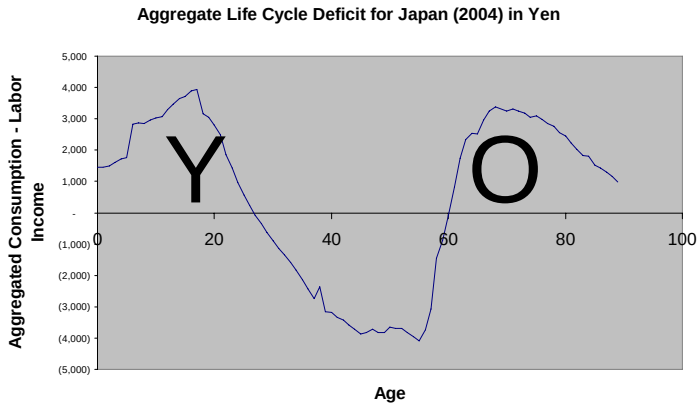




- The graphs show the total amount consumed by all people at a given age minus the total amount of labor income earned.
- The area above the line is the amount that must be covered by funds other than labor income.
- The area below the line is labor income that is not consumed at that age.

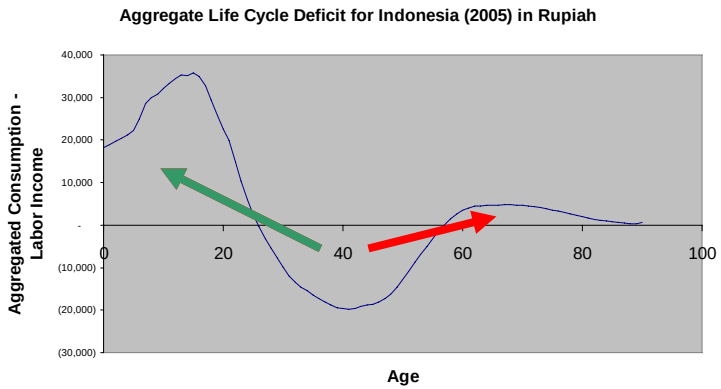
Reallocations to the young dominate in Indonesia and are roughly equal to young and old in Japan

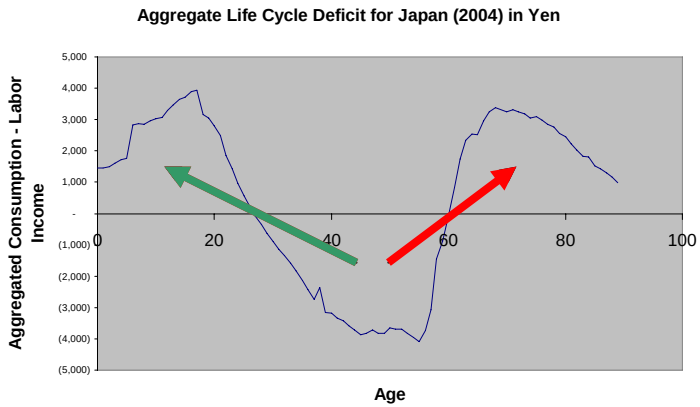




- in Indonesia O/Y is only .15.
- In Japan, O/Y is 1.12.

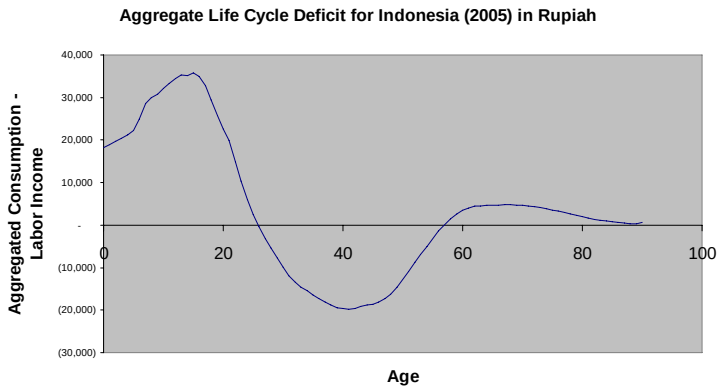
Consumption at these deficit ages is funded partly by transfers from the surplus labor income

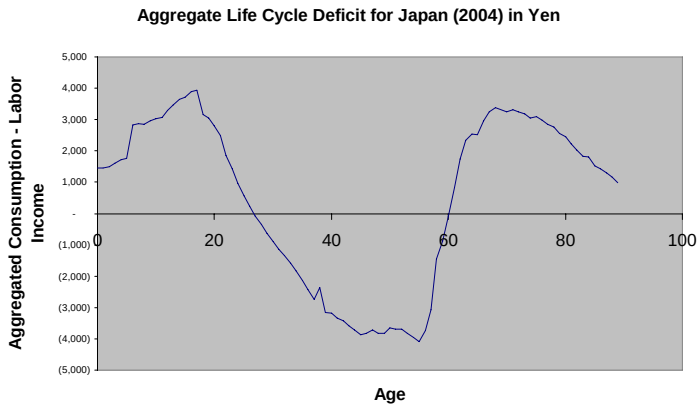




- Green arrows show transfers downward to youth
- Red show transfers upward to elderly.

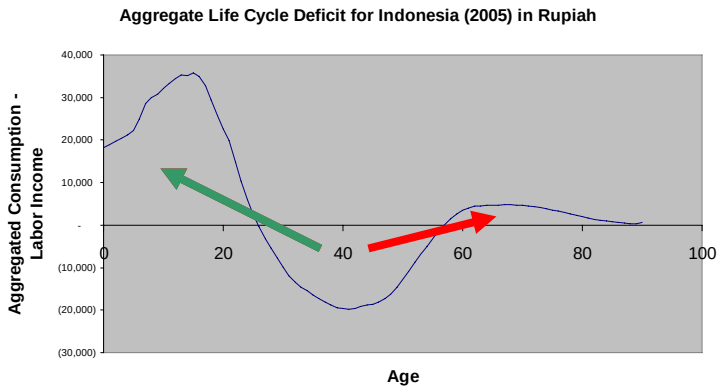
Assets from earlier saving can also be used to fund the deficits.

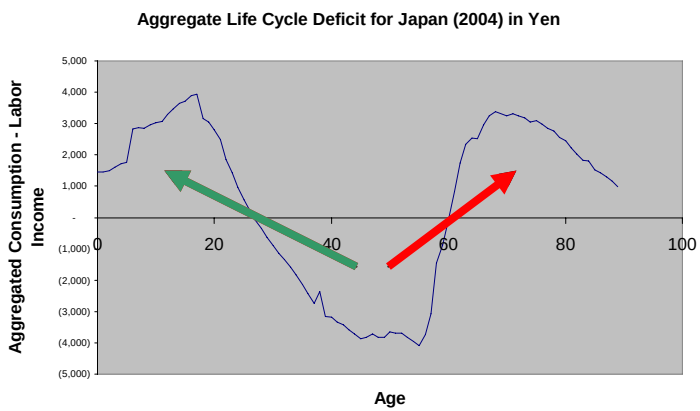




- We expect it is mainly the elderly who fund consumption from assets, but is that true?
- Workers may save during working years to accumulate assets.
- The need to fund the old age deficit is a strong motivation for workers to save.

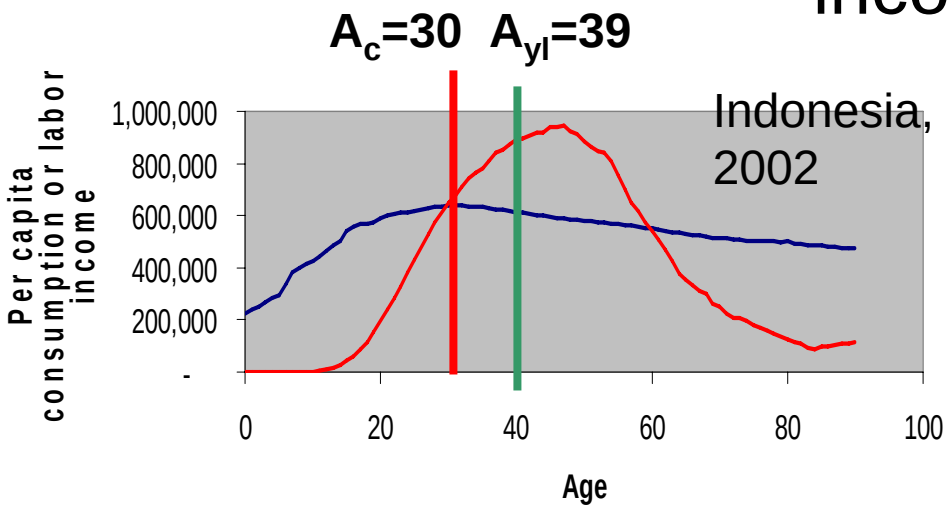
If working age people expect to fund their old age consumption through transfers from family or public pensions, they may save less

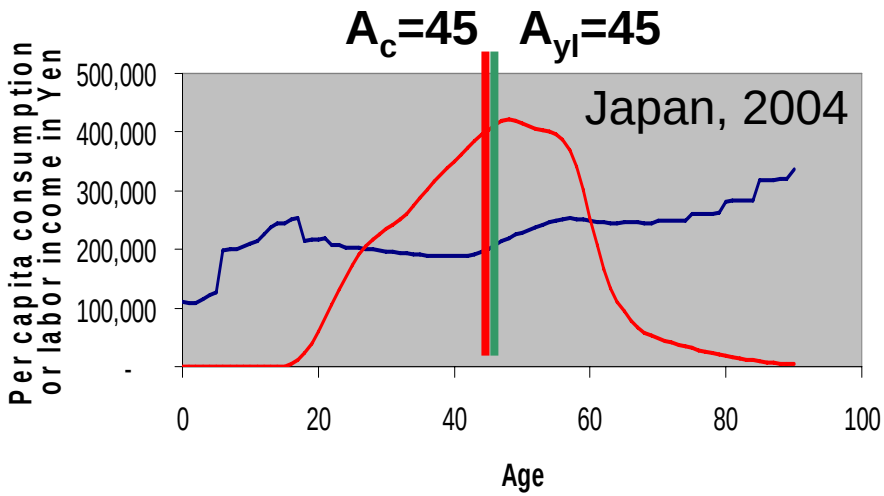




- The present value of expected future net transfers (received minus given) is “transfer wealth”.
- Transfer wealth substitutes for assets in life cycle planning.

What is the net direction of flows? Summarize it using average ages of consumption and labor income





$$A_c = \frac{\sum_0^{100} xPop(x)c(x)}{\sum_0^{100} Pop(x)c(x)}$$

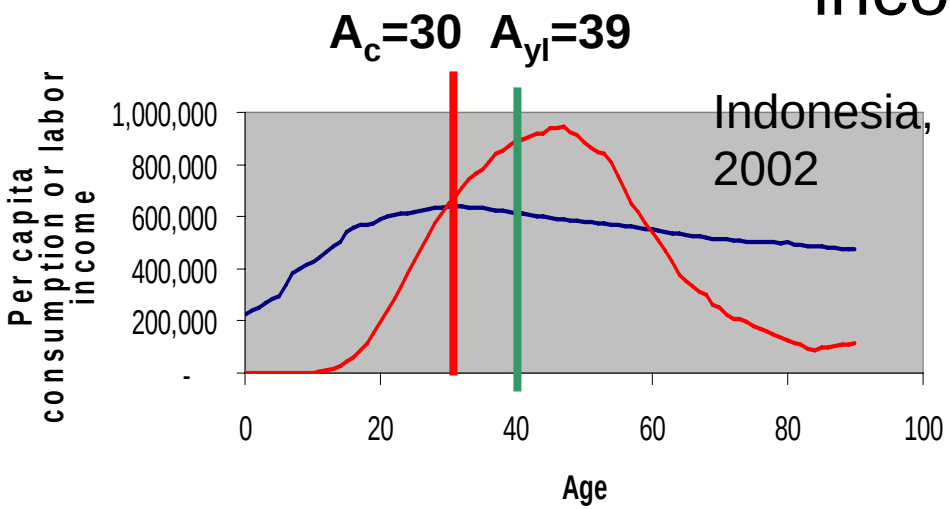
Pop(x)=population age x

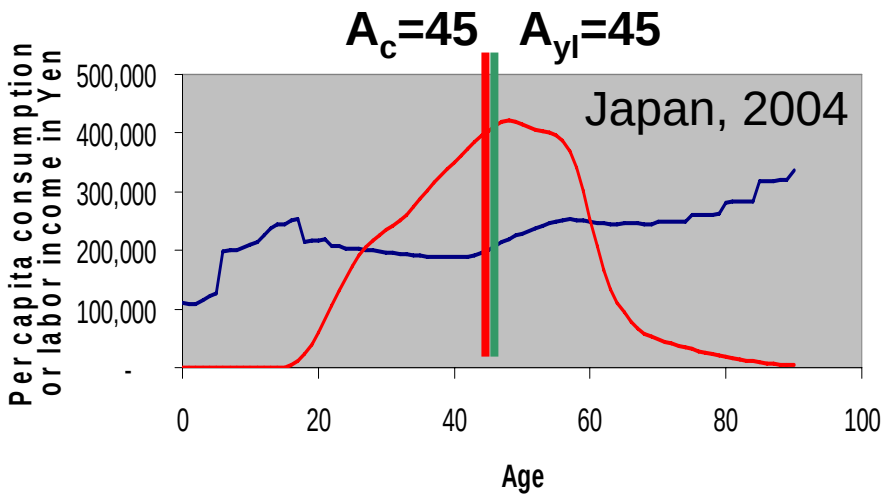
c(x) = consumption at age x

A_{yl} is defined similarly

Population weighting not shown on charts

What is the net direction of flows? Summarize it using average ages of consumption and labor income





- In Indonesia, average unit of income is earned at 39 and consumed at 30
- Travels 9 years down the age scale.
- In Japan, it is earned and consumed at nearly the same age.

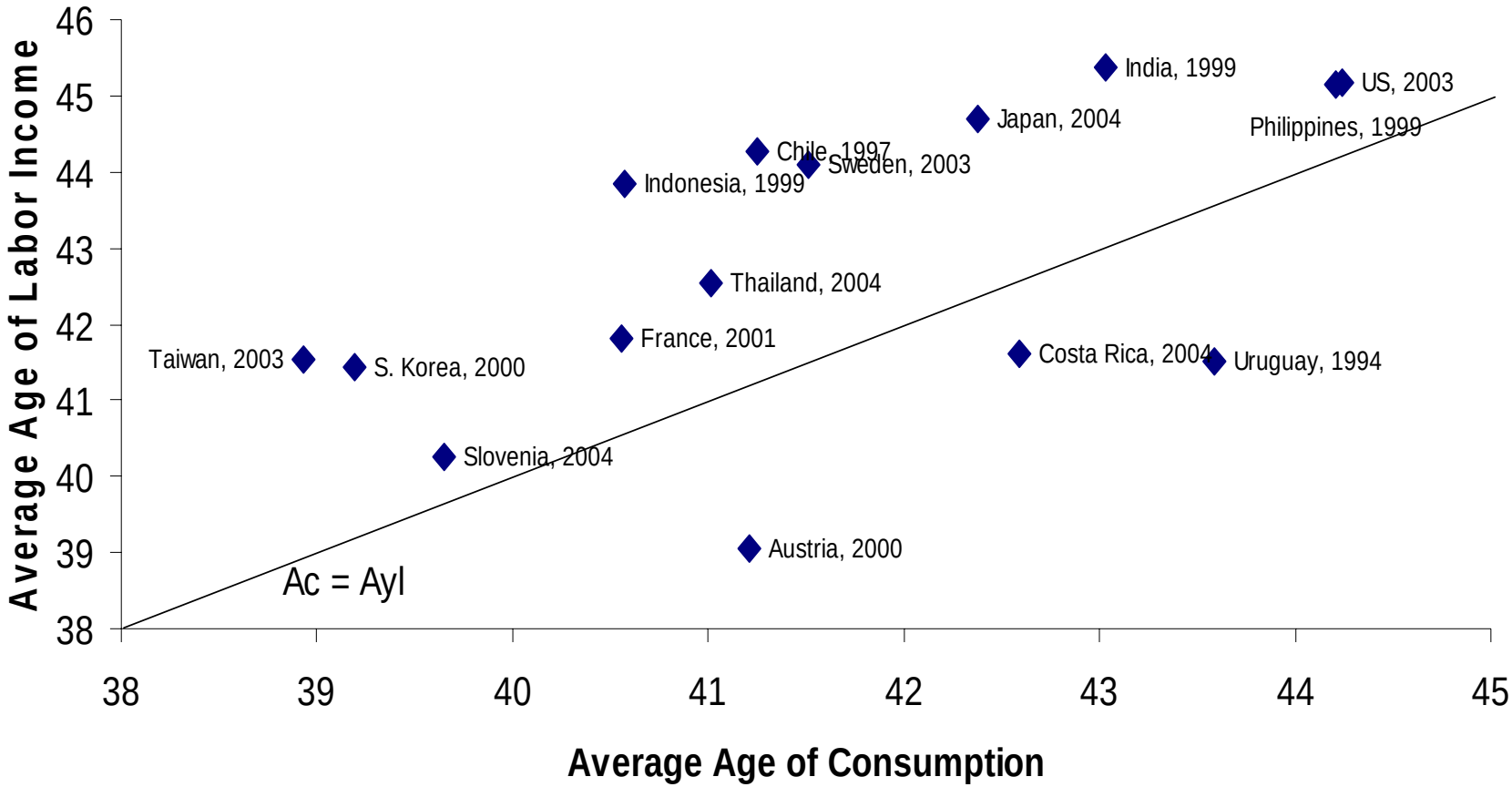
Why does $A_c - A_{yl}$ vary across countries?

- The age profiles of consumption and labor earnings have different shapes.
  - Child labor in poor countries, early retirement in rich countries.
  - High consumption of health care in rich countries etc.
- Some countries have older populations and others have younger populations.

First consider the importance of different shapes of the age profiles.

- Last Thursday I looked at differences in the average age profiles for high, medium and low income groups using the same population age distribution for all.
  - Differences in the gap were small, only .5 years between the highest and lowest income group.
- Now look at individual countries instead of by income groups.
  - Hold age distribution constant again
  - Isolate the effect of the shapes of c(x) and $y_l(x)$

Average Age of Labor Income and Consumption with Population Held Constant (stationary, e0=75)



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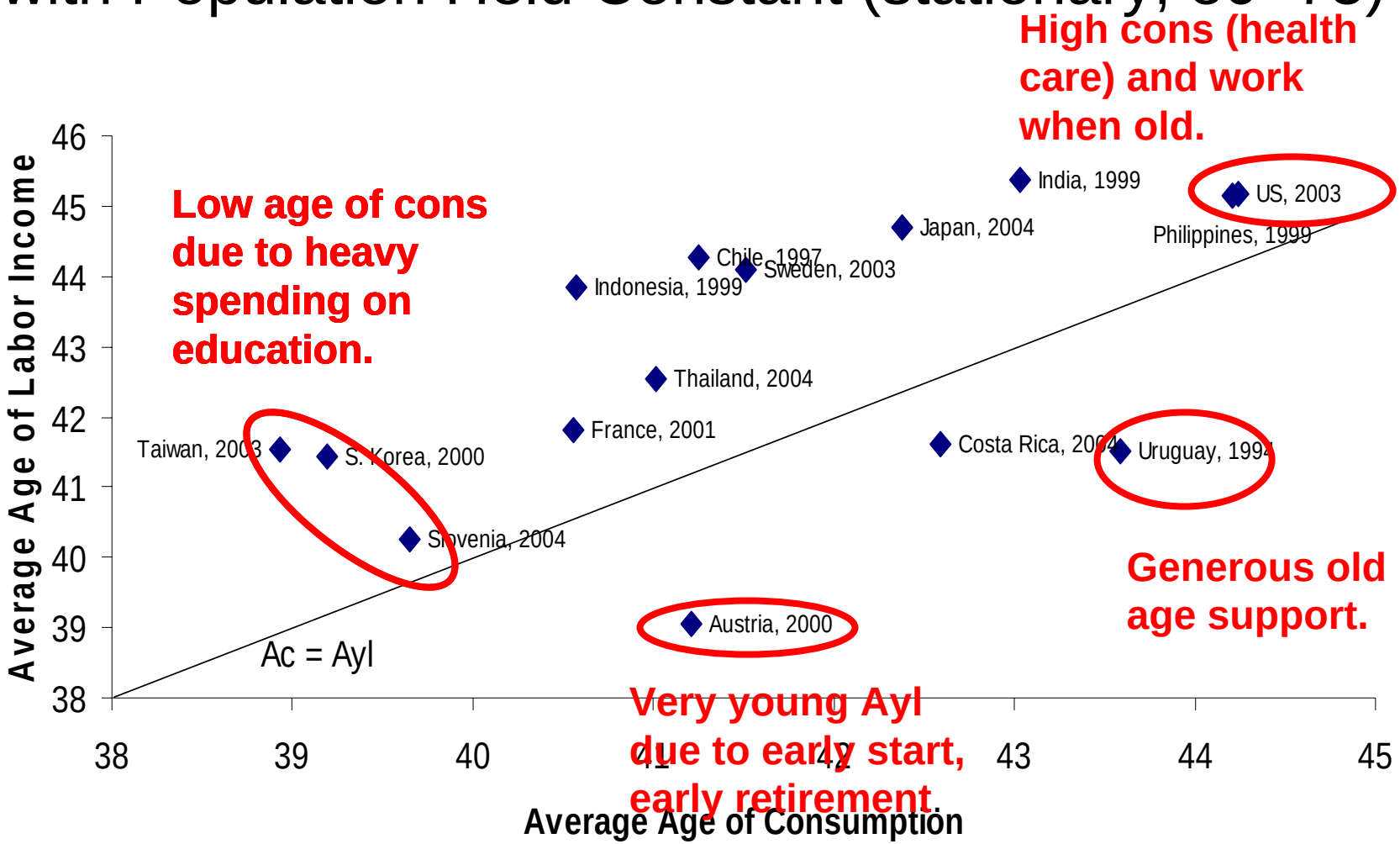

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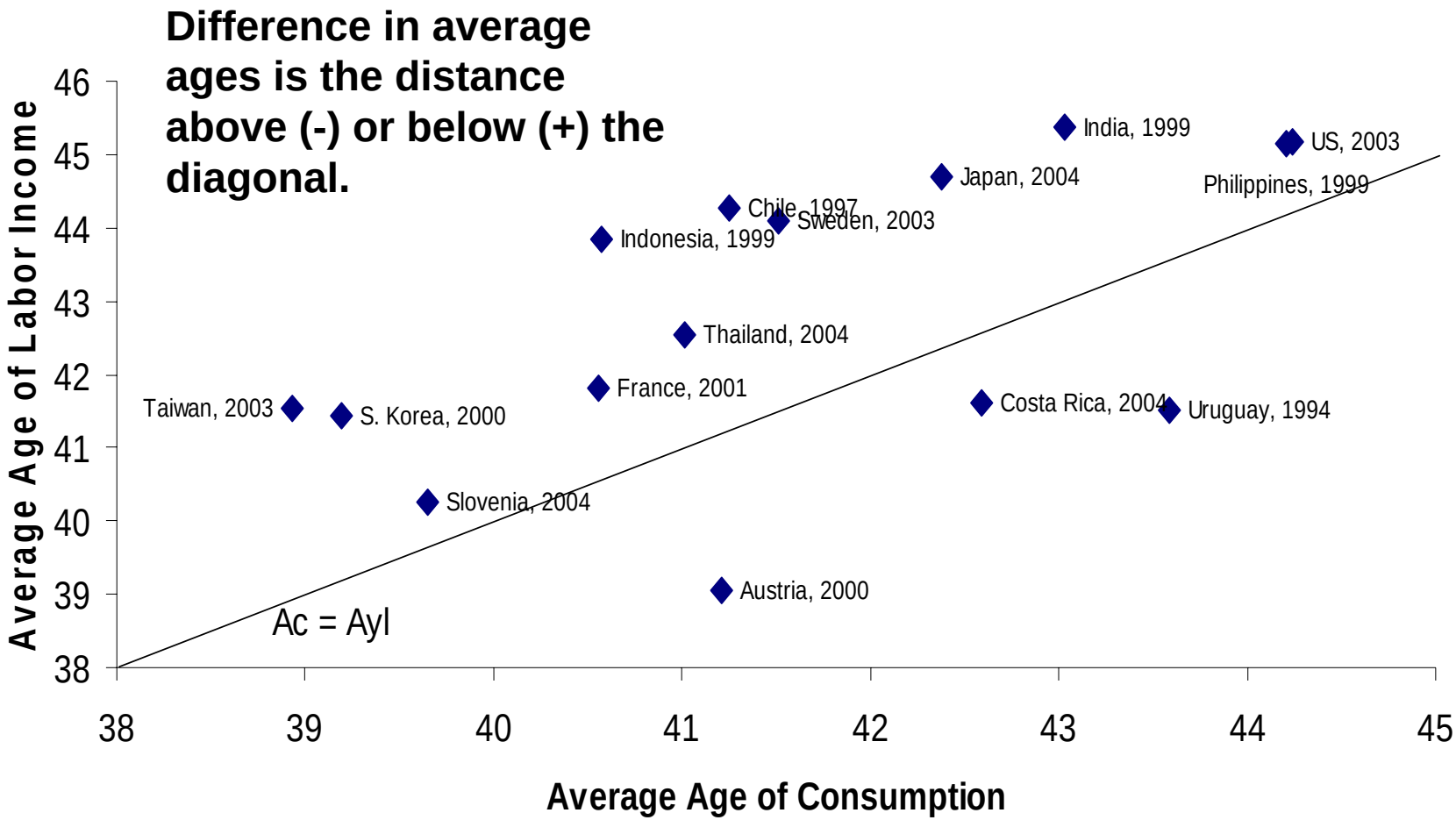

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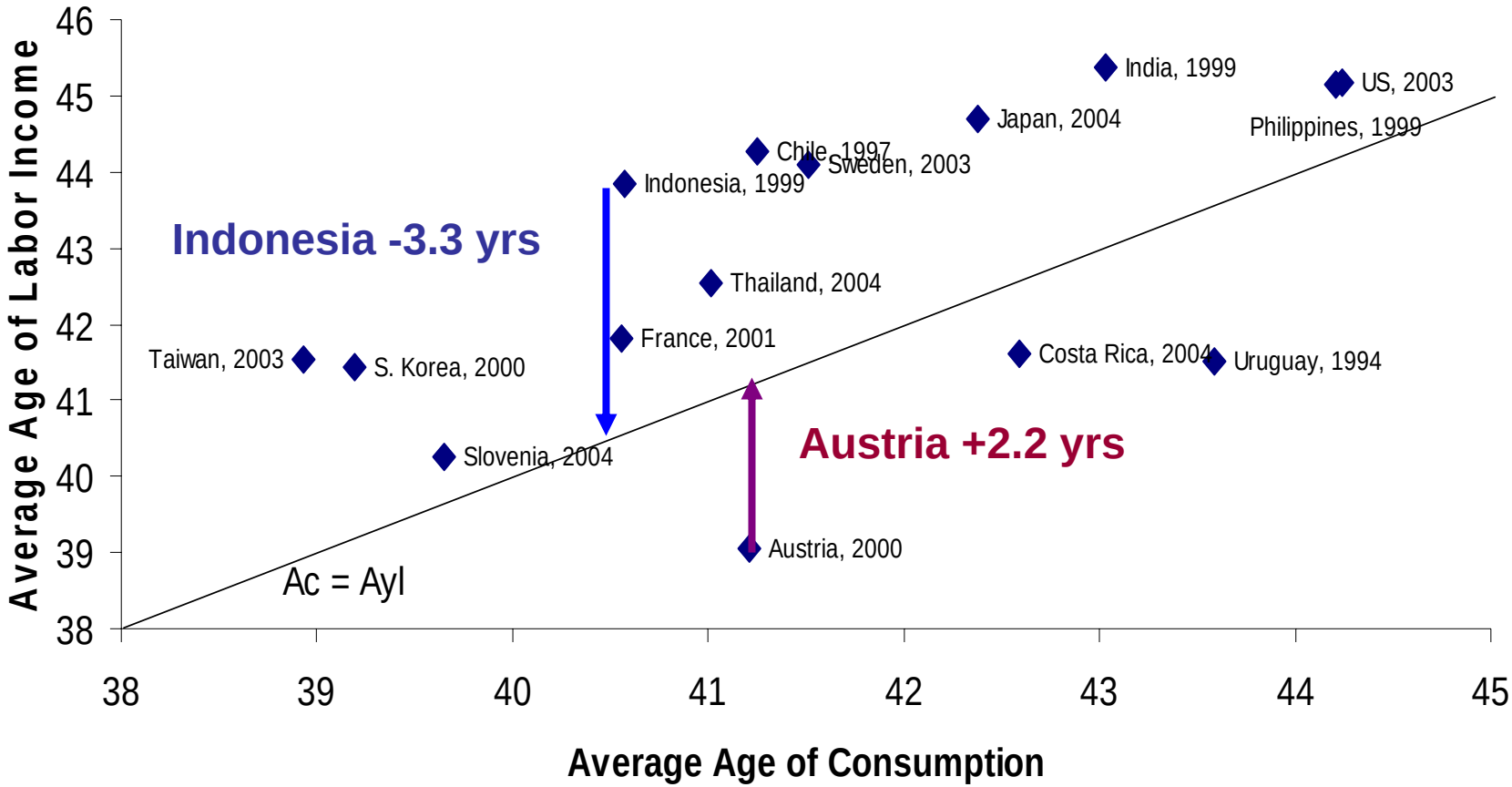
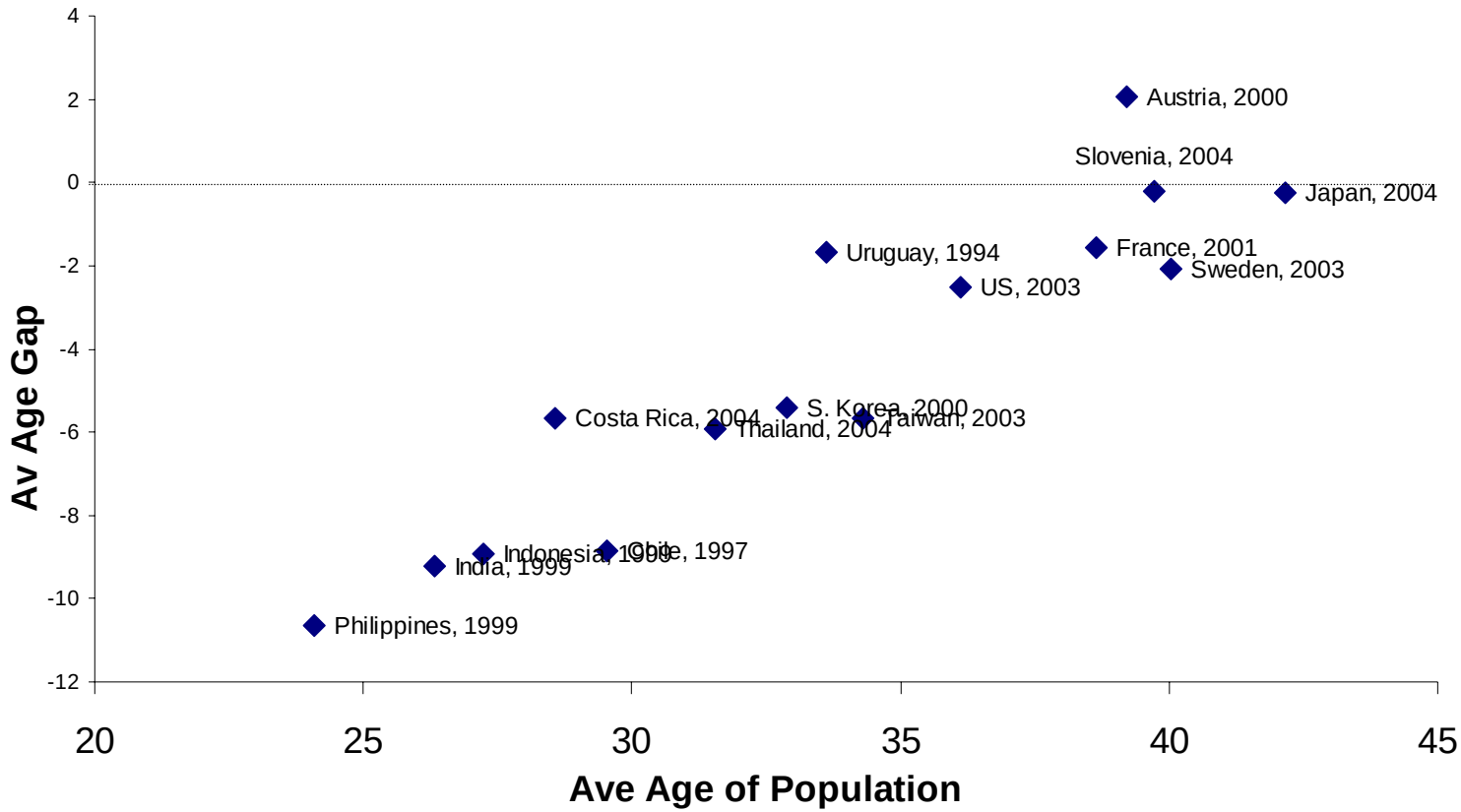


- Looking at these individual countries, the range due to differences in profiles is 5.5 years, much more than the .5 years across income groups.
- This compares to a total range of 13 years in the average differences with actual population weights.
- Evidently the shapes of the age profiles are indeed an important influence on the average age differences.

Population aging is the main driver

- The elderly have a high demand for wealth to fund their consumption.
- Population aging raises the share of the elderly in the population.
- Population aging raises the demand for wealth.
- This shows in our data as a reduction in $A_c - A_{yl}$.

Average Consumption-Earning Gap by Average Age of Population



IV. Some theory—why these age profiles matter

- I will focus on the “golden rule” case which is
  - Steady state
  - Total consumption = total labor income
  - All asset income is saved
  - Interest rate = pop gr rate + prod gr rate
- Unrealistic, but many insights carry over to the general case.

Consider the average age difference between consuming and earning, $A_c - A_{yl}$

- Is income spent by individuals before or after it is earned, on average?
  - If $\mathbf{A_c - A_{yl} > 0}$ income is consumed after it is earned, and it must be held in some form of wealth between earning and consuming, so there is a **demand for positive wealth**.
  - If $\mathbf{A_c - A_{yl} < 0}$ income is consumed before it is earned, so there is a **demand for negative wealth**, or credit.
  - If $\mathbf{A_c - A_{yl} = 0}$ there is no net demand for wealth.

Life cycle wealth W

- This amount of wealth is required to achieve the observed age profiles of consumption and labor income.
- Life cycle wealth is proportional to the gap in average ages (Willis, 1988):
- **$W=(A_c - A_{yl})c$**
  Where c is per capita consumption

Life cycle wealth can be capital, K, or transfer wealth, T.

- T is the population weighted average of T(x).
- Transfer wealth is the sum of public and familial: $\mathbf{T = T^G + T^F}$
- Children receive transfers first, and then make them later in life to their own children.
  - Their transfer wealth is negative.
- Transfers to elderly are made first, received later.
  - Their transfer wealth is positive.

- Overall, T is positive or negative depending on whether transfers to old or young dominate.
- In a closed economy: **W = T + K**
- **This is a fundamental accounting identity.**
- **Alternatively, K = W - T.**
  - **The bigger are transfers to the elderly, the less capital there will be.**
  - **The bigger are transfers to children, the more capital there will be.**

Effects of population growth depend on transfer wealth T

- Consider the present value of consumption over the whole lifetime, C.
- The effect of a change in fertility, or population growth rate, on C is proportional to transfer wealth T (Willis, 1988)
- **d ln(C)/dn = T/c**

Patterns of transfers are very important

- Are net transfers upward to elderly or downward to children?
  - This requires estimating transfer patterns.
  - Governments, media, and the public focus on public transfer programs, particularly pensions.
  - That is just one piece of a much more extensive system of transfers.
  - Appropriate evaluation of policy here requires consideration of entire system, which NTA attempts.

The way old age consumption is financed is critically important

- If funded through assets, then life cycle saving theory is relevant ($T < 0$) then
  - Slower growth and population aging may boost the capital output ratio.
- If funded through transfers, either familial or public, then more likely $T>0$ and
  - Slower growth and population aging imposes dependency burden on the working ages and reduces life time consumption.

.

We need to measure and understand transfer behavior across the life cycle to design appropriate policies to deal with population aging.

This is the goal of NTA.

END