Consumption

Amonthep Chawla

(Adjusted from Sang-Hyop Lee's
Summer Seminar 2008 Presentation)

National Transfer Accounts

The Economic Lifecycle (per capita)

Note. Values normalized on per capita labor income of persons 30-49.

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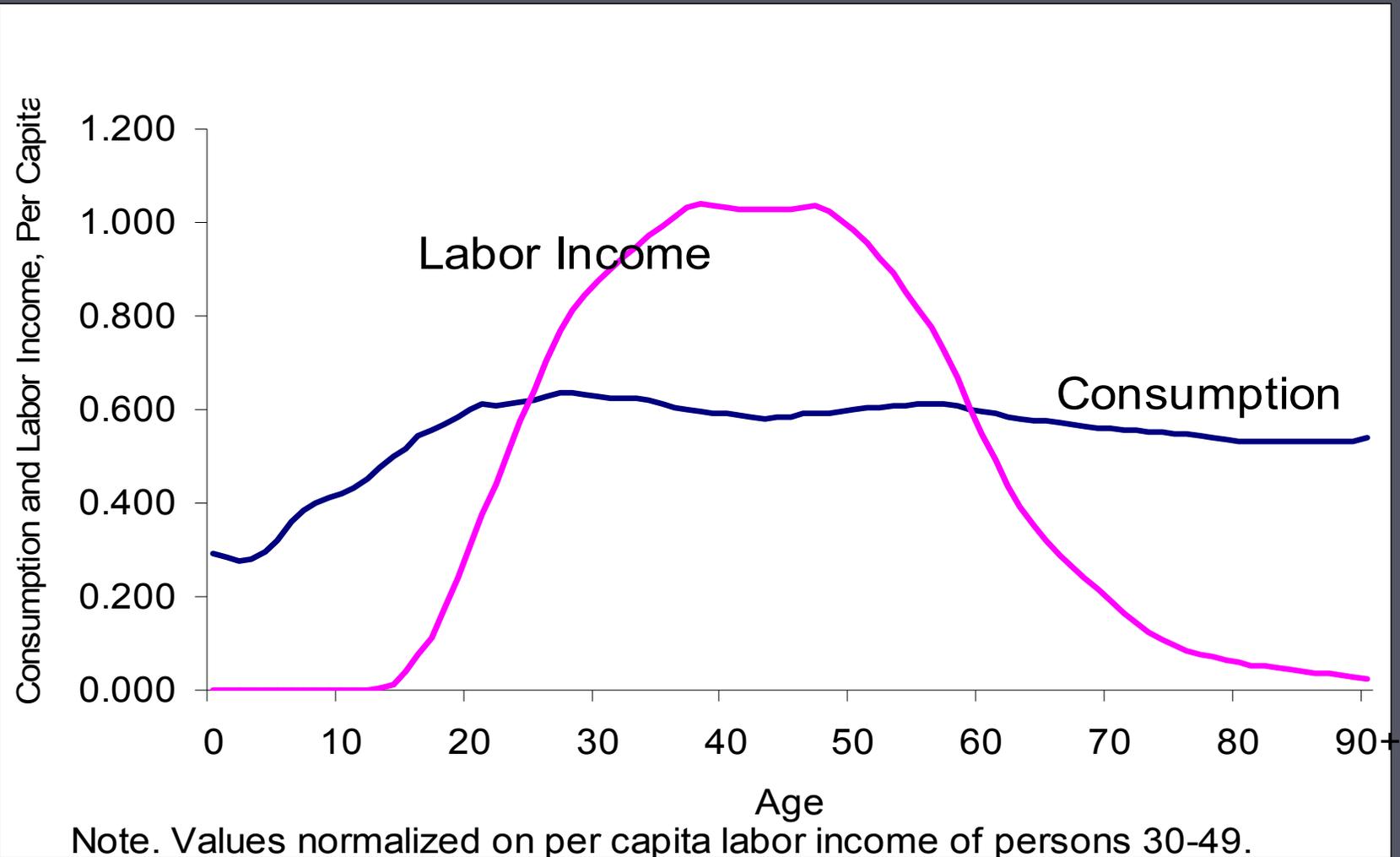
Outline

Private Consumption

▶ Education

▶ Health

▶ Owner occupied housing (imputed rent)

▶ Durables

▶ Other

Public Consumption

▶ Education

▶ Health

▶ Other

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Private Consumption

► Standard approach of allocating household consumption among the members did not provide reasonable results

  ▪ Engel method: food share is used to measure households' well-being
  ▪ Rothbarth method: welfare measured by expenditure on adult goods per adult

► Alternative method (NTA)

  ▪ Estimate education and health consumption directly
  ▪ Estimate private capital consumption (rental value of owner occupied housing + flow of services from durables)
  ▪ Allocate other consumption indirectly (using Equivalence Scale)

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Allocating Private Education Consumption

$$C_j^{edu} = \sum \alpha(a) E_j(a) + \sum \beta(a) NE_j(a)$$

- Household education consumption is regressed on the number of enrolled (E) and non-enrolled (NE) in each age group.

- The age groups included will vary with the country and its enrollment rates.

- Use unsmoothed profile.

Allocating Private Health Care Consumption

► Often very complex in part due to various source of financing, which includes

  - Private out-of-pocket expense
  - Private insurance
  - Public sector

► Available sources of data vary across countries.

► There are differences between NHA and NTA

  - E.g. NHA document expenditures rather than consumption. Thus it includes profits of insurance companies.

► Estimate using one of four approaches.

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Approach 1: Method based on individual utilization measures from expenditure survey data

$$C_j^{health} = \sum \alpha(a) IN_j(a) + \sum \beta(a) OUT_j(a)$$

► Private health consumption is regressed on the number of members using inpatient services (IN) and outpatient services (OUT) in each age group.

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Approach 2: Based on age profile of per capita utilization measures

$$C_j^{health} = \sum \beta(a) U(a) M_j(a)$$

$$C_j^{health} = \sum \beta_0 U(a) M_j(a) + \sum \beta_1 a U(a) M_j(a)$$

$$+ \sum \beta_2 a^2 U(a) M_j(a)$$

► Private health consumption is regressed on the number of members (M) and per capita utilization measure by age (U)

► Could be linear (the former) or non-linear (the latter)

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Approach 3: Based on non-parametric iterative method

► Assign health expenditure equally to each household member and then tabulate the per capita profile.

► The per capita profile is then used as weights to allocate health expenditure to household members producing a new per capita profile.

► Repeat until the weights do not change much.

► Unlike regression approach, it does not produce negative coefficients for some age groups.

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Estimated C after iteration

Age	True C			1	2	3	4	5	6
5	10			14.44	11.90	10.83	10.36	10.16	10.07
35	30			25.00	27.42	28.74	29.40	29.72	29.87
65	20			22.22	21.54	20.85	20.43	20.21	20.10

HH No	Id No	Age	HH C	1	2	3	4	5	6
1	1	5	70	23.33	15.69	12.48	11.09	10.49	10.22
1	2	35	70	23.33	27.16	28.76	29.45	29.76	29.89
1	3	35	70	23.33	27.16	28.76	29.45	29.76	29.89
2	1	35	80	26.67	27.69	28.72	29.35	29.69	29.85
2	2	35	80	26.67	27.69	28.72	29.35	29.69	29.85
2	3	65	80	26.67	24.62	22.56	21.30	20.63	20.30
3	1	65	40	20	20.00	20.00	20.00	20.00	20.00
3	2	65	40	20	20.00	20.00	20.00	20.00	20.00
4	1	5	20	10	10.00	10.00	10.00	10.00	10.00
4	2	5	20	10	10.00	10.00	10.00	10.00	10.00

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Approach 4: Based on simple regression

$$C_j^{health} = \sum \beta(a) M_j(a)$$

► Private health consumption is regressed on the number of household members (M).

► Could have negative coefficients—replace with zero.

► The least recommended approach.

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Estimating Other Household Consumption

$$\beta(a) = 1 - 0.6 \ \text{(for } a \leq 4)$$

$$\beta(a) = 1 - [0.6 * (20 - a)]/16 \ \text{(for } 4 < a < 20)$$

$$\beta(a) = 1 \ \text{(otherwise, i.e., } a \geq 20)$$

► Assumed to be proportional to an equivalence scale that is equal to 1 for adults aged twenty or older, declines linearly from age 20 to 0.4 at age 4, and is constant at 0.4 for those age 4 or younger.

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Public Consumption

► Allocated based on administrative records, and in some cases, survey data.

► Public education consumption

  ▪ Formal education consumption: estimate by calculating unit cost per student per level.

  ▪ Informal education consumption: estimate by dividing total public informal education consumption by total population by age.

► Public health care consumption

  ▪ Health care purchased by individuals and reimbursed through public programs: captured in household surveys.

  ▪ Health care provided directly to individuals by government clinics: allocate using administrative records.

  ▪ Collective health services: allocate on a per capita basis.

► Other public consumption: equally to all members

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Normalized Consumption Ratio

(normalized by simple average of YL pc for age 30-49 of each economy)

Legend:
- Thailand 1996
- Japan 2004
- Indonesia 1996
- Costa Rica 2004
- Taiwan 1981
- Taiwan 1986
- Taiwan 1991
- Taiwan 1998
- Taiwan 2003
- Korea 2000
- Sweden 2003
- China urban 2002
- Uruguay 1994
- US 2003
- China rural 2002
- France 2001
- India 1999

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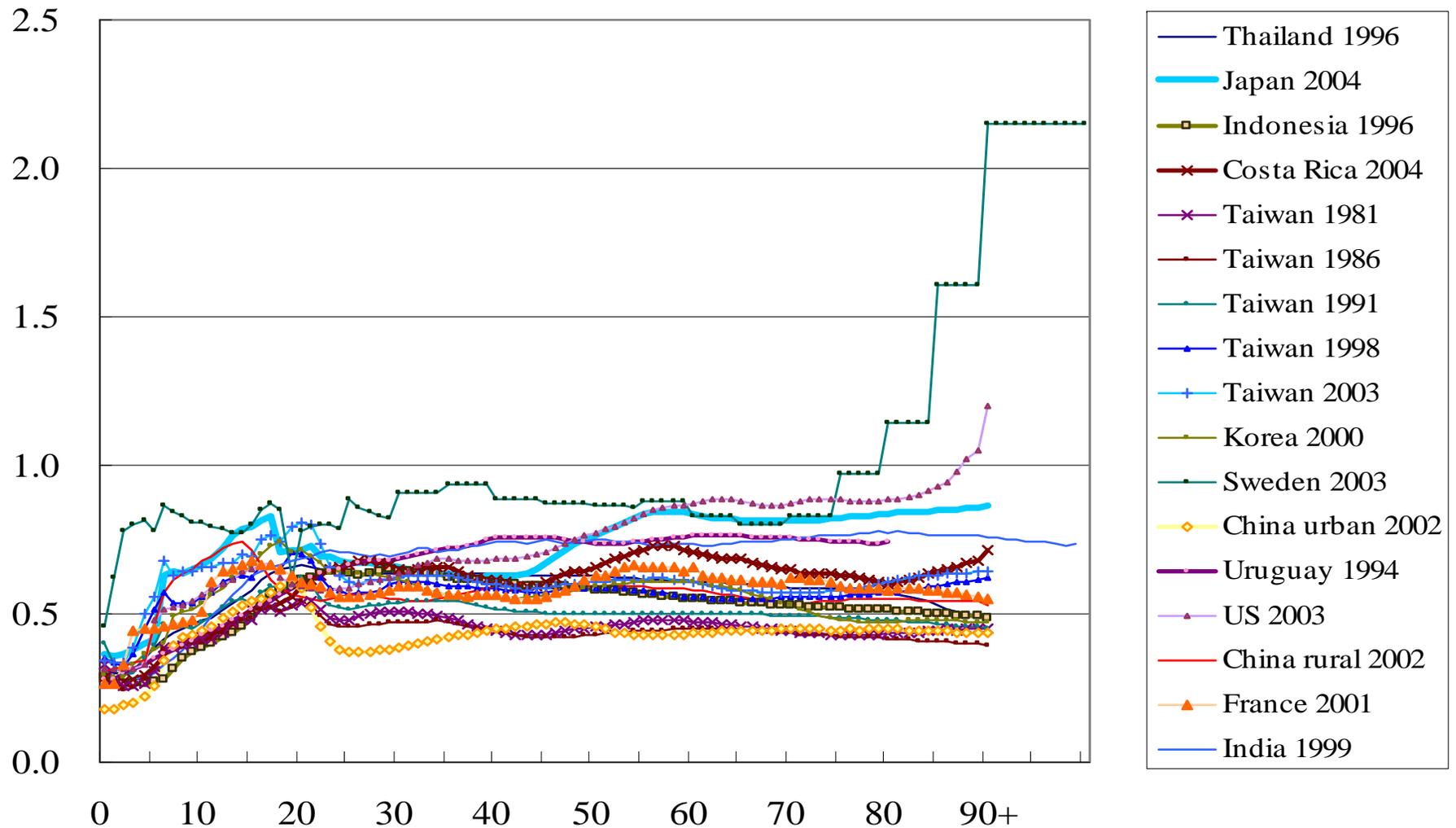
Consumption Profiles: Industrialized vs. Developing Countries.

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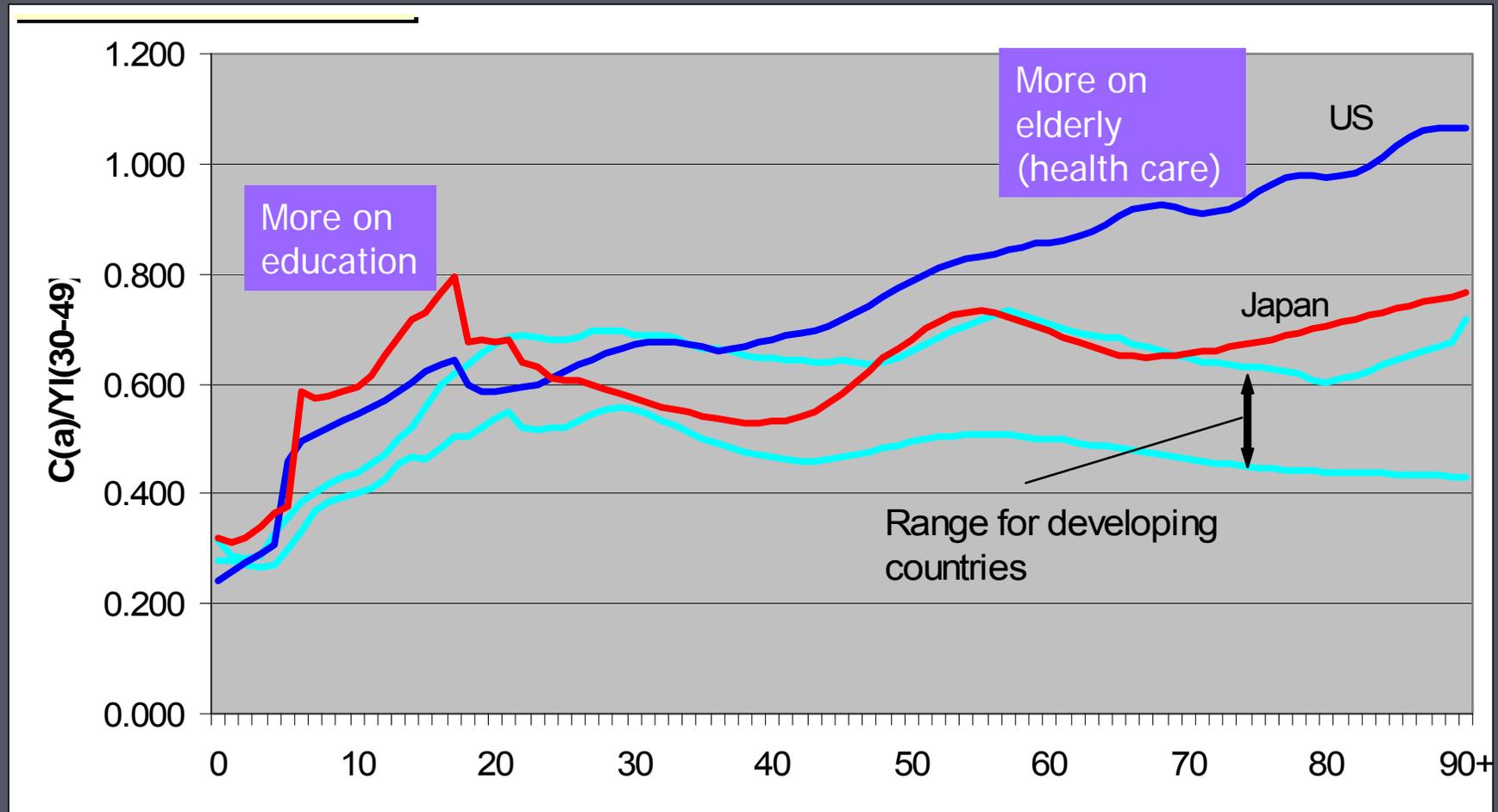
Labor Income: Industrialized vs. Developing Countries.

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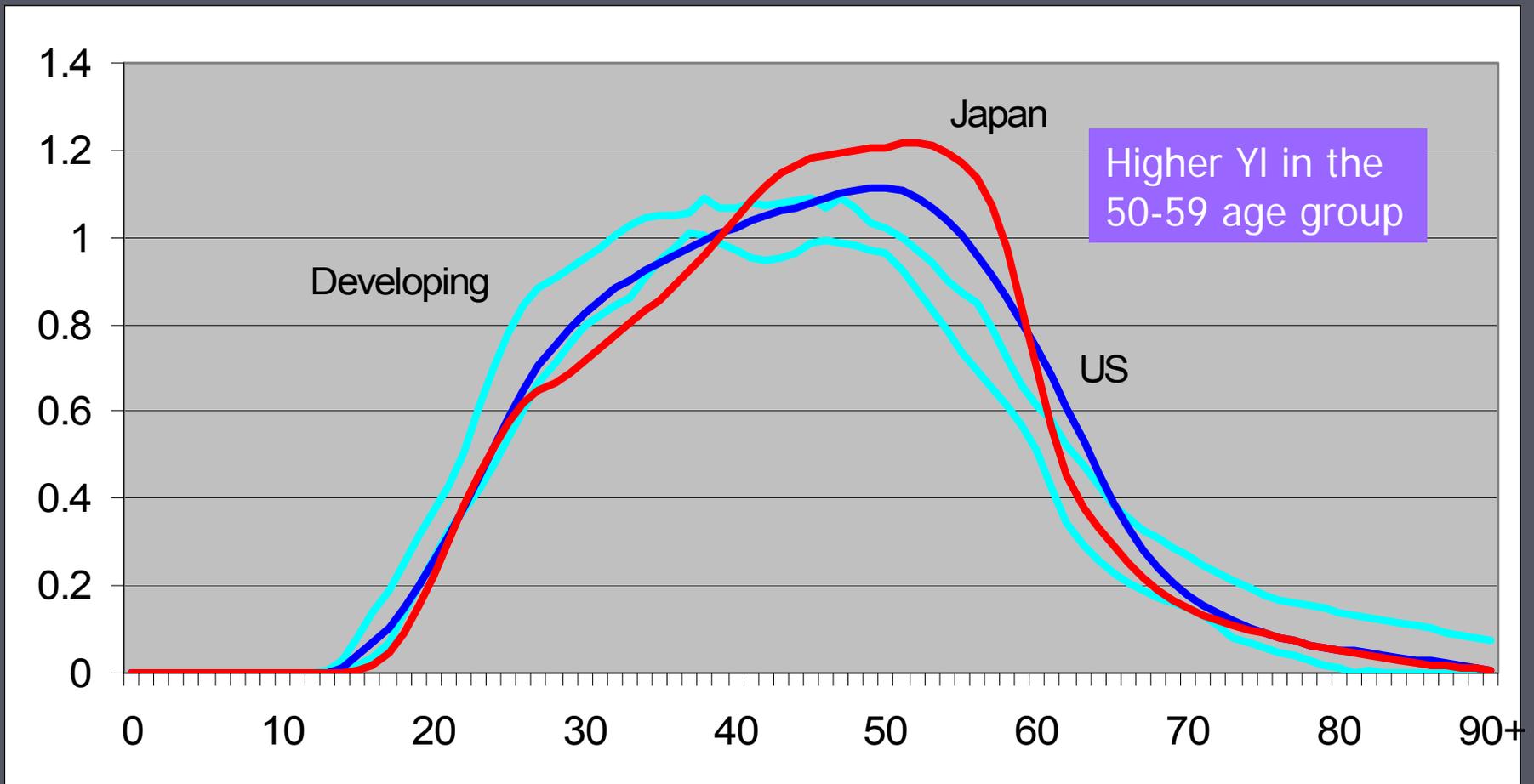
Lifecycle Deficit and Surplus Ages

Country	Year	Early Age	Later Age	Duration
Indonesia	1996	29	58	29
Thailand	1996	26	61	35
Taiwan	1998	24	56	32
Japan	1999	29	61	32
United States	2000	27	59	32
Costa Rica	2004	24	57	33

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Aggregate Age-Profile

►Use population data to construct a preliminary aggregate age-profile.

- Population data are available from the UN Pop Division for the period of 1950-2050 and also to 2300 (long term projection).

- Insure that population data have been adjusted to eliminate age heaping and under-reporting.

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Aggregate Controls

► Adjust the aggregate profile and the per capita profile to match a control total taken from NIPA or some other source.

- Private consumption: household final consumption expenditure + non-profit institutions serving households' (NPISHs) final consumption expenditure

- Public consumption: general government final consumption expenditure

- Earnings + fringe benefits: compensation of employees. NIPA excludes compensation received by non-resident and remittances (on-going discussion)

- Labor portion of self-employment income: mixed income of household sector

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Some Adjustments are Needed

► In NIPA, prices are market prices; in NTA, prices are basic prices net of indirect taxes (see Beet's presentation for details)

► In NIPA, private health consumption reimbursed through public health insurance programs (Medicare, NHI) are private health consumption; in NTA it is reclassified as public consumption.

► In NIPA, non-housing consumer durable consumption is measured by expenditure; in NTA, consumption of it is the flow of services.

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Acknowledgement

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The End

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