Analyzing the Household:
Part 1. Income:Labor Income

NTA Team

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National Transfer Accounts

Inflows =   Outflows

$[Y^l(a) + \tau^+(a) + Y^a(a)] = [C(a) + \tau^-(a) + S(a)]$

labor income   transfer inflows   asset income   consumption   transfer outflows   saving

lifecycle deficit   net transfers   asset-based allocations

$C(a) - Y^l(a) = \tau^+(a) - \tau^-(a) + Y^a(a) - S(a)$

consumption − labor income   Transfer inflows − transfer outflows   Saving − asset income

$- Y^l(a) + C(a) = $ lifecycle deficit

$+$ $+$

$Y^a(a) - S(a) = $ asset-based allocations

$+$ $+$

$\tau^+(a) - \tau^-(a) = $ net transfers

$\|$ $\|$

inflows   outflows

Flow Chart

Public transfers
- Public transfer inflows
- Public transfer outflows

Life-cycle deficit
- Consumption
- Labor income

Public asset reallocation
- Public asset income
- Public saving

Private asset reallocation
- Private asset income
- Private saving

Private transfers
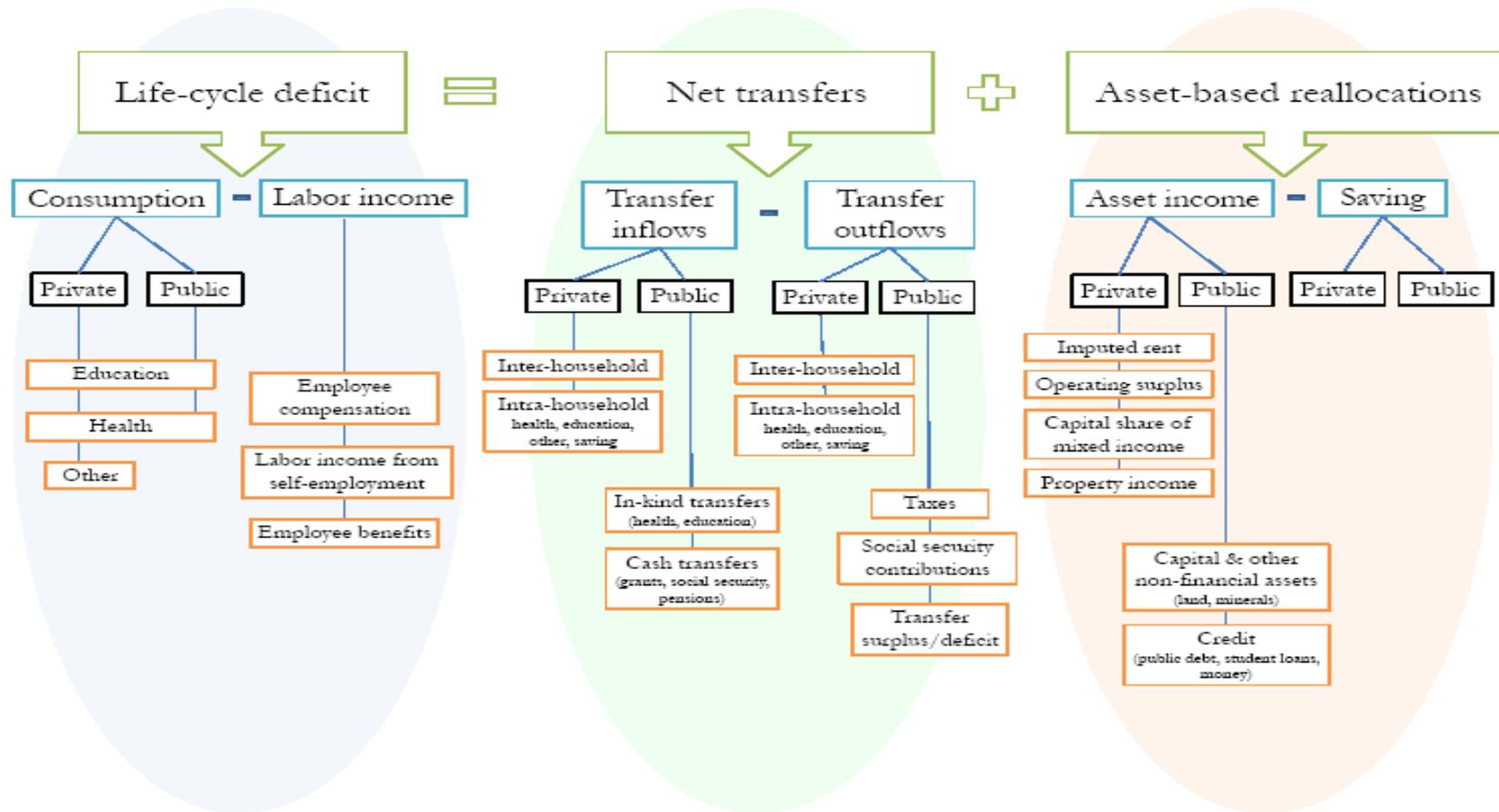| Interhousehold transfers | Inflows |
	Outflows
Intrahousehold transfers	Inflows
	Outflows
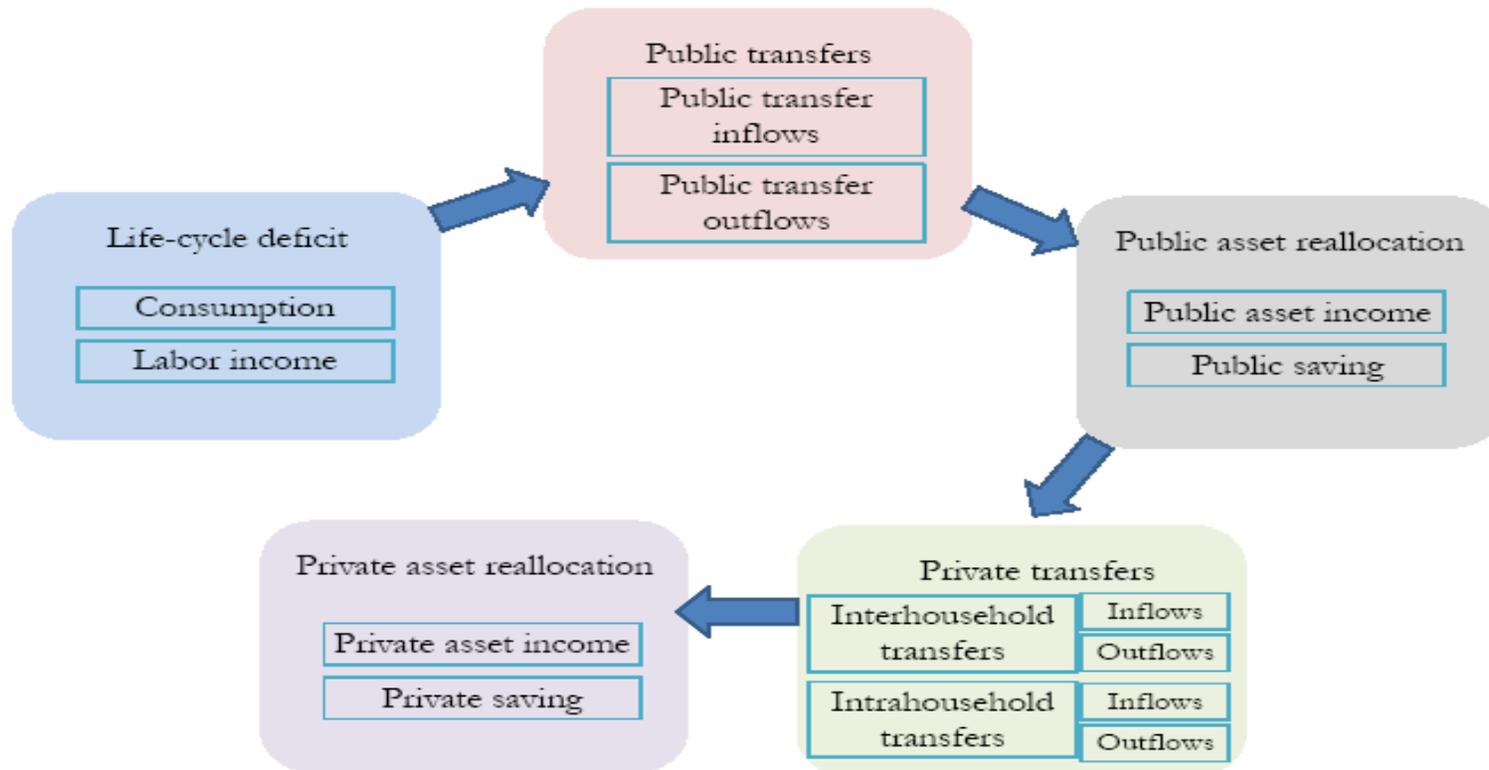
At each step, smoothe age profile (where applicable), and adjust using aggregate controls. Refer to the manual for more detail.

By components

Assumptions

► Per capita age profiles are estimates of per capita values by <u>single year of age (0-90+)</u>.

► All consumption and labor production can be assigned to <u>individuals</u>

► This assumes away economies of scale and other important features of consumption and production.

General Rule

► Estimate the <u>per capita</u> age-profile for the variable using household survey data or administrative records.

► Smooth it (education consumptions are not smoothed).

► Use population data to construct a preliminary <u>aggregate</u> age-profile.

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

► However, detailed estimation method could vary across countries depending on available data.

Variables from the Household Survey

► NTA Variables
- Labor income
- Asset income
- Consumption

► Individual/household characteristics
- Household roster (HHH)
- Household member by age
- School enrollment
- Health expenditure utilization

Labor Income from Household Surveys

► Labor income includes

- The compensation of employees

  . Wages and salaries

  . Deferred payments (be careful)

- Labor's estimated share (2/3) of mixed income (self-employment income) (Gollin 2002 JPE)

- Fringe benefits (employer's social contribution)

► Does not include in-home activities which does not produce market goods or services (e.g. childrearing)
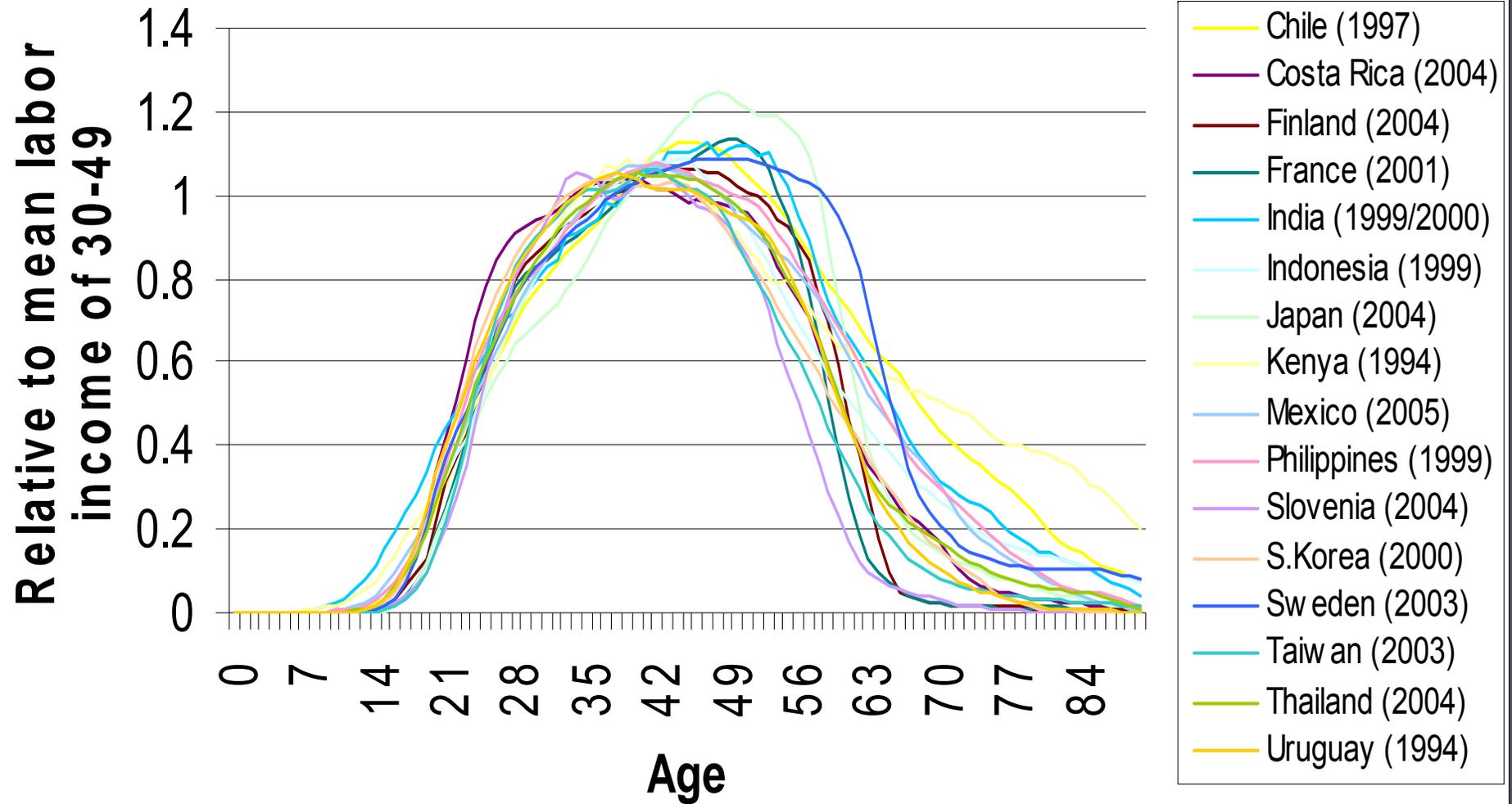
National Transfer Accounts

Asset income from Household Surveys

► Capital income

- Capital share of mixed income (income from business, farm, and self-employment)

- Operating surplus (imputed rent from owner occupied housing)

► Net property income

- Interest

- Other property income (rent, dividends)

Per Capita Labor Income Profile

Legend:
- Chile (1997)
- Costa Rica (2004)
- Finland (2004)
- France (2001)
- India (1999/2000)
- Indonesia (1999)
- Japan (2004)
- Kenya (1994)
- Mexico (2005)
- Philippines (1999)
- Slovenia (2004)
- S.Korea (2000)
- Sweden (2003)
- Taiwan (2003)
- Thailand (2004)
- Uruguay (1994)

Y-axis: Relative to mean labor income of 30-49
X-axis: Age

Imputing Labor Income for Unpaid Family Workers

► Estimate using the age profile of earnings of *employees* as a share to allocate household self-employment income to self-employed workers including unpaid family workers.

- Example: Two-third of this household's self-employment income equals 30. Then,

Age	Earnings per employee	Imputed
18 (unpaid)	200	10
44 (self emp.)	400	20

Exercise: Stata program

```
recode age (90/max = 90)

recode wage (.=0)
recode self_income (.=0)

gen wage_earner=(ocup==1| ocup==2)
gen self_employed=(ocup==3| ocup==4)

egen mean_wage=mean(wage), by(age)
gen YLE=mean_wage

replace mean_wage=0 if self_employed~=1
egen hhwage=sum(mean_wage), by(hhid)

egen hh_YLS=sum(self_income), by(hhid)

gen YLS=(mean_wage/hhwager)*hh_YLS*2/3
recode YLS .=0

table age [aw=weight], c(mean YLE mean YLS)
```
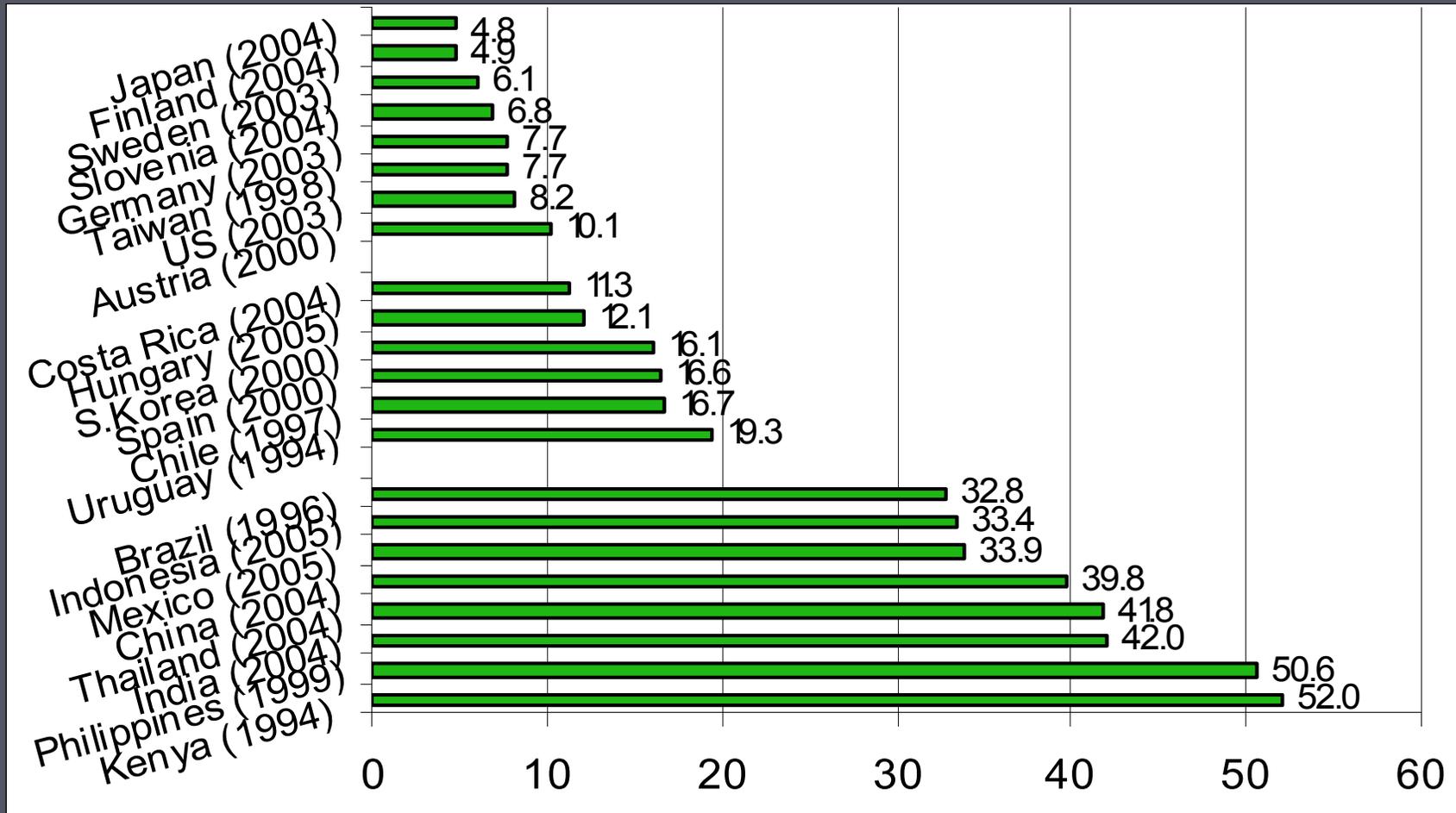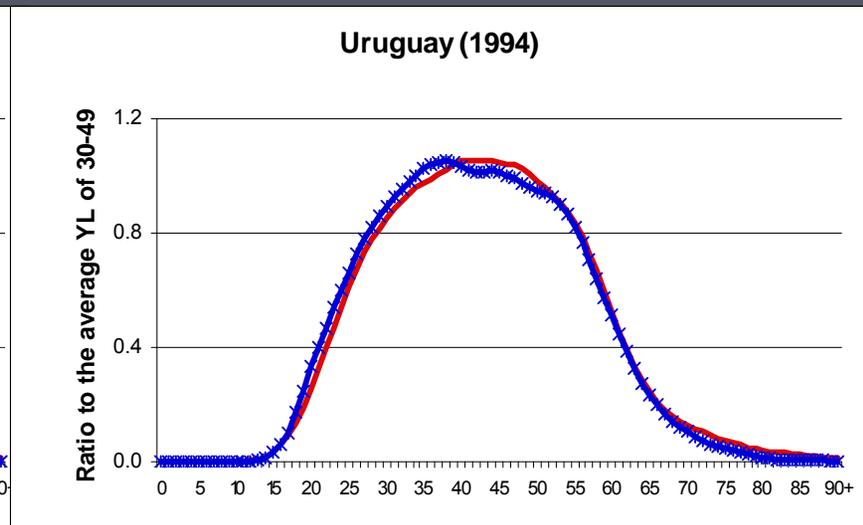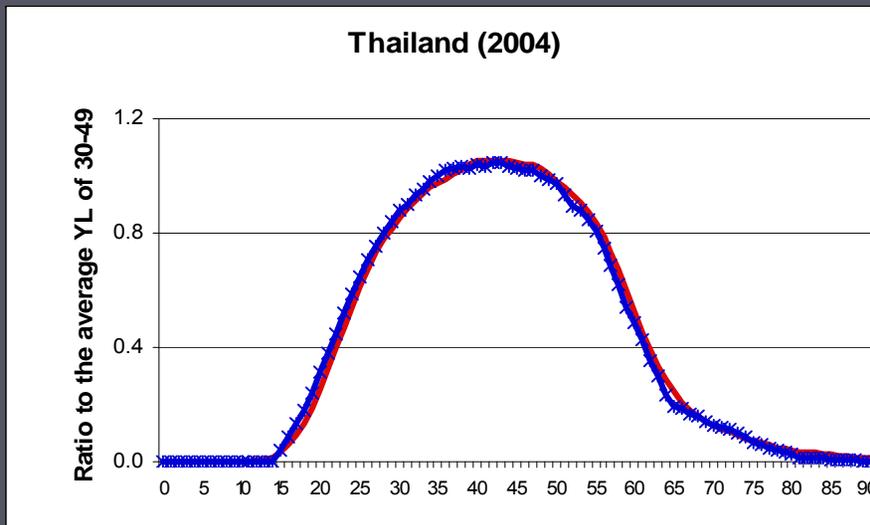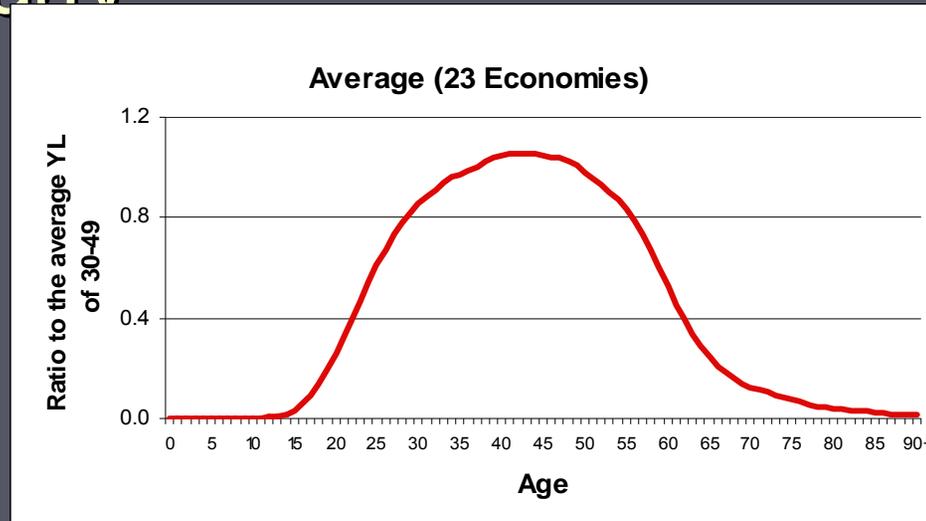
Per Capita Private Income, Mexico, 2004

Legend: YL Old, YL Imputed, unincorp_old, unincorp_imp, earnings, benefits
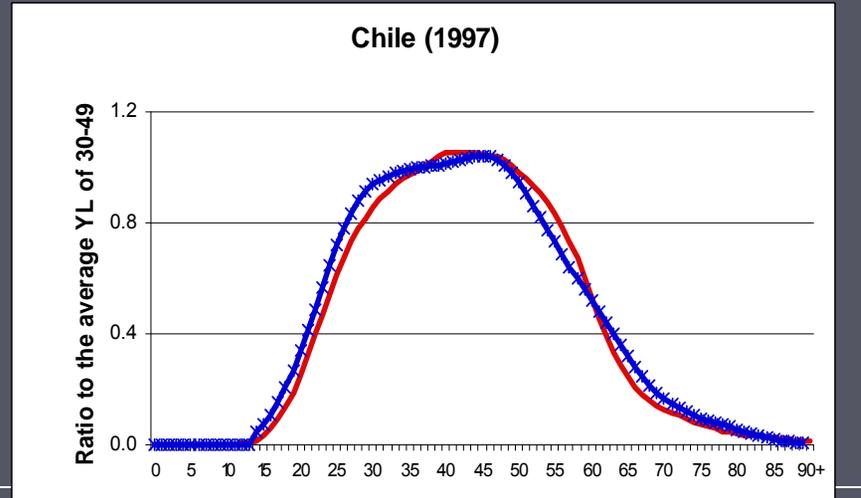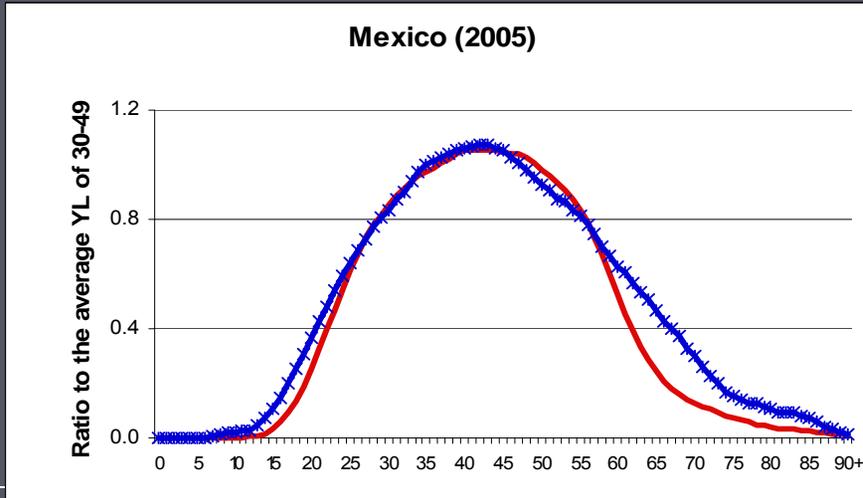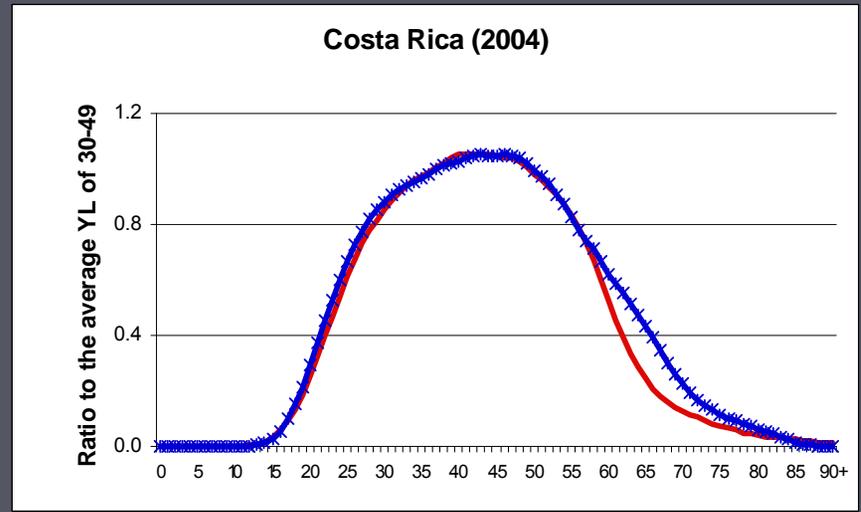
Y-axis: Mexican Pesos (0 to 90,000)
X-axis: Age (0 to 90)

National Transfer Accounts
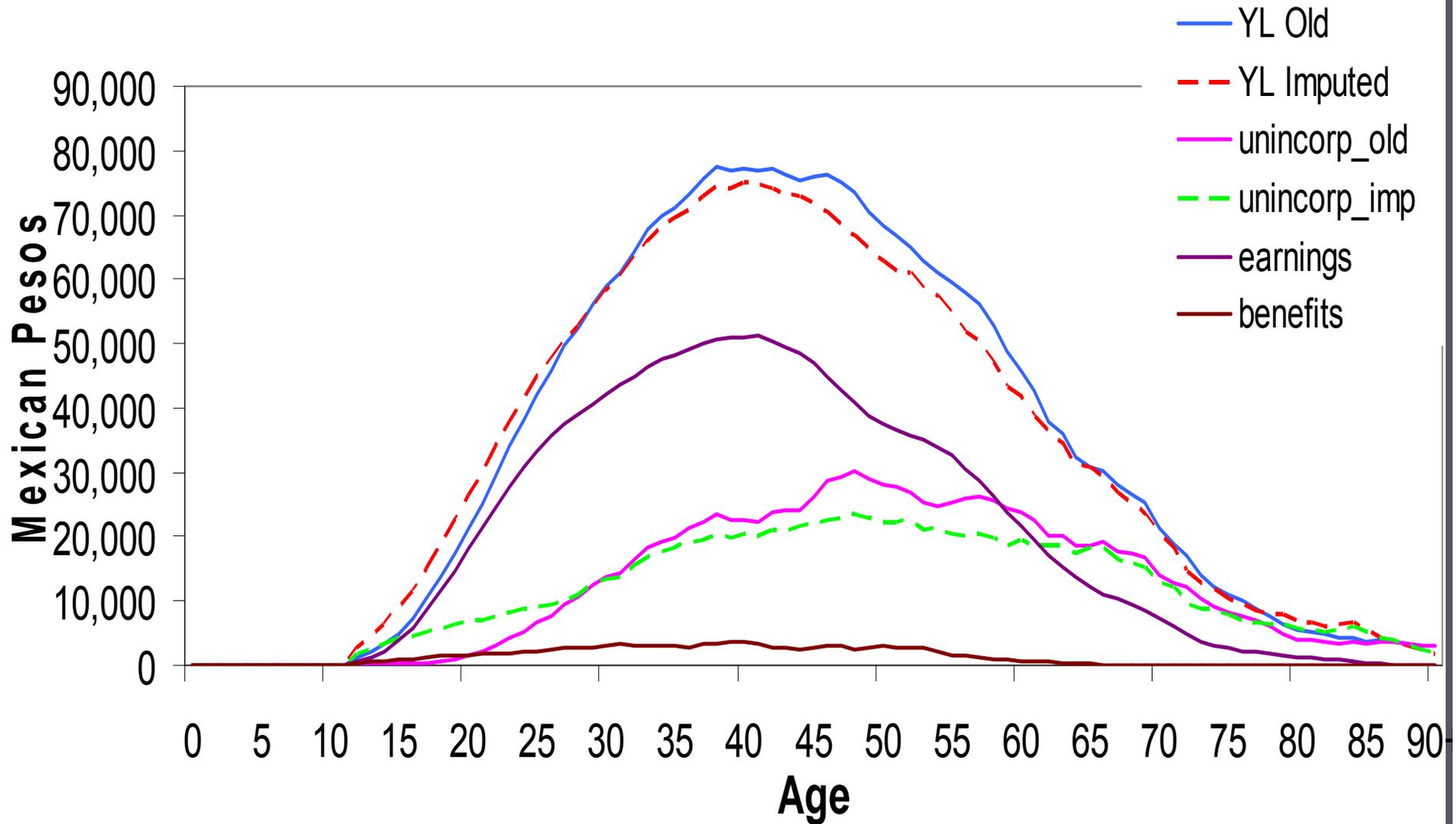
Share of Self-Employment Income

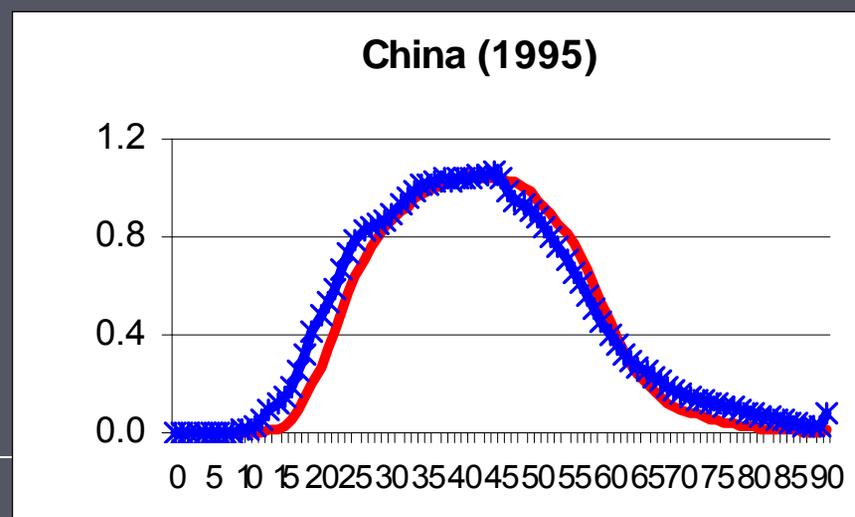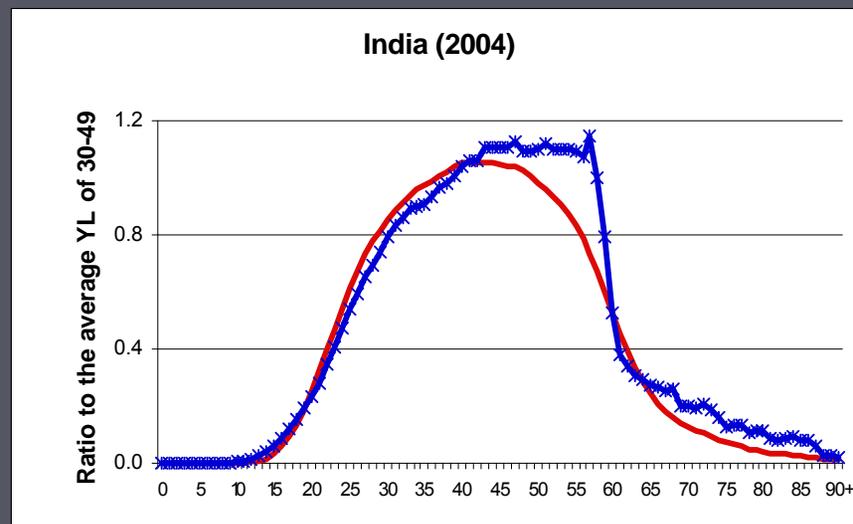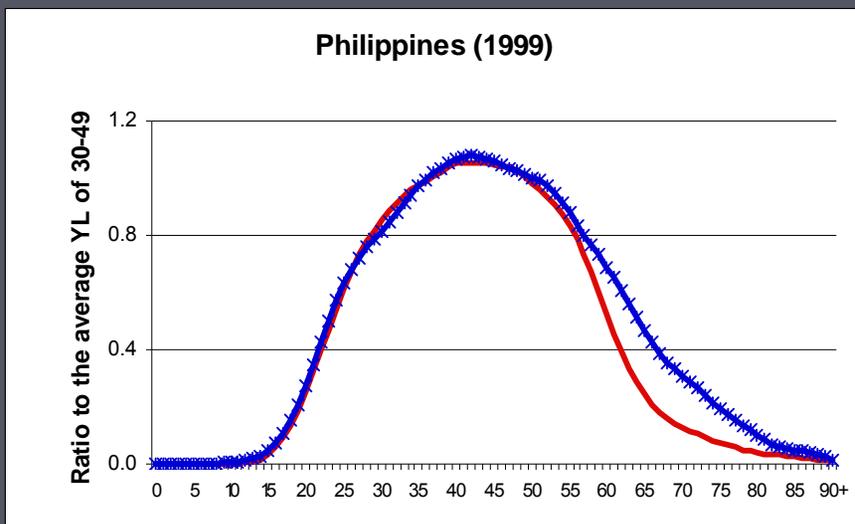| Country	Value
Japan (2004)	4.8
Finland (2003)	4.9
Sweden (2004)	6.1
Slovenia (2003)	6.8
Germany (1998)	7.7
Taiwan (2003)	7.7
US (2000)	8.2
Austria	10.1
Costa Rica (2004)	11.3
Hungary (2005)	12.1
S.Korea (2000)	16.1
Spain (2000)	16.6
Chile (1997)	16.7
Uruguay (1994)	19.3
Brazil (1996)	32.8
Indonesia (2005)	33.4
Mexico (2005)	33.9
China (2004)	39.8
Thailand (2004)	41.8
India (2004)	42.0
Philippines (1999)	50.6
Kenya (1994)	52.0

Closest to Average Profile: Thailand and Uruguay

Average (23 Economies)

Thailand (2004)
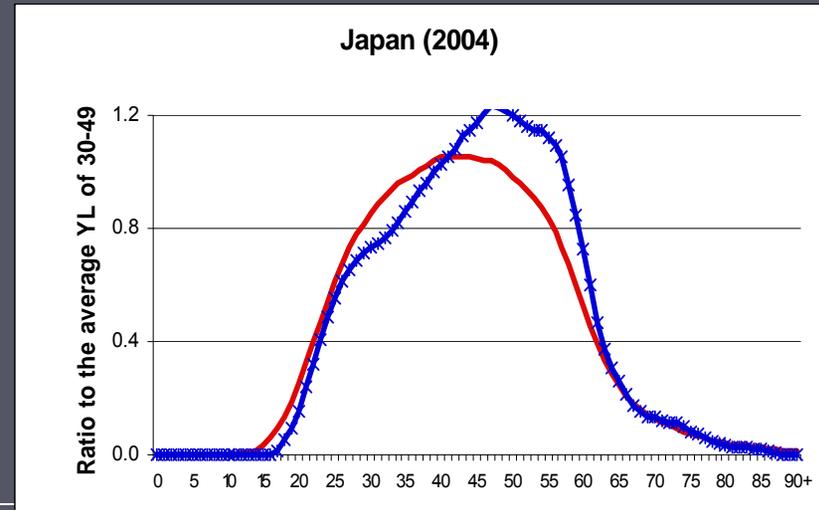

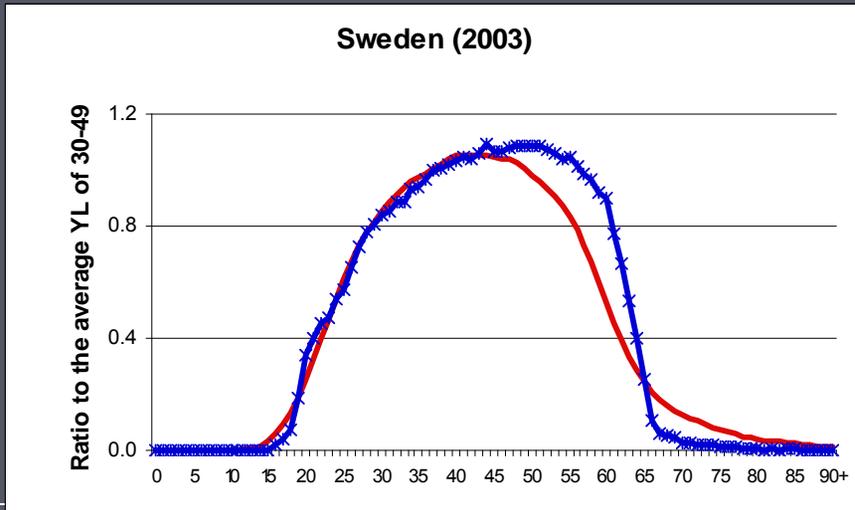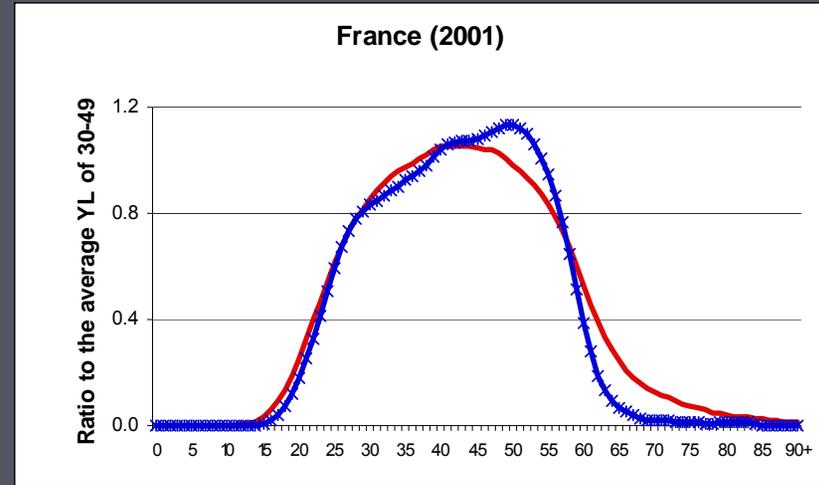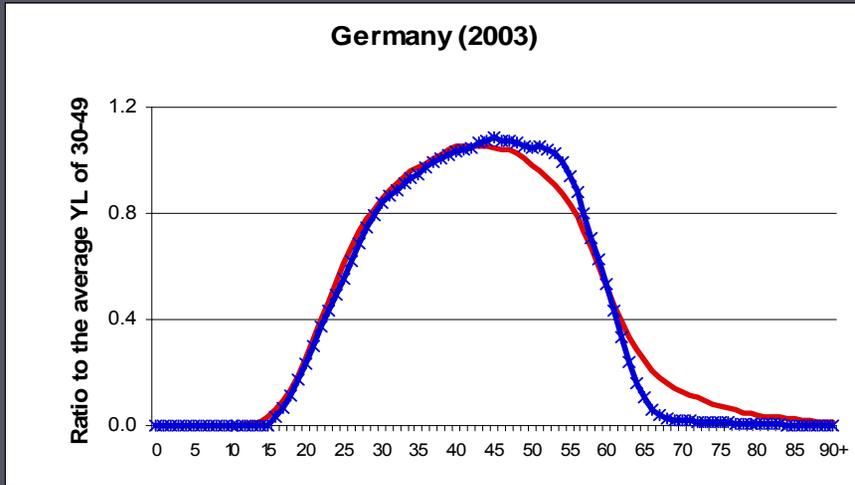**Uruguay (1994)**

National Transfer Accounts

Large Elderly and Children's Share:
Brazil, Costa Rica, Mexico, and Chile
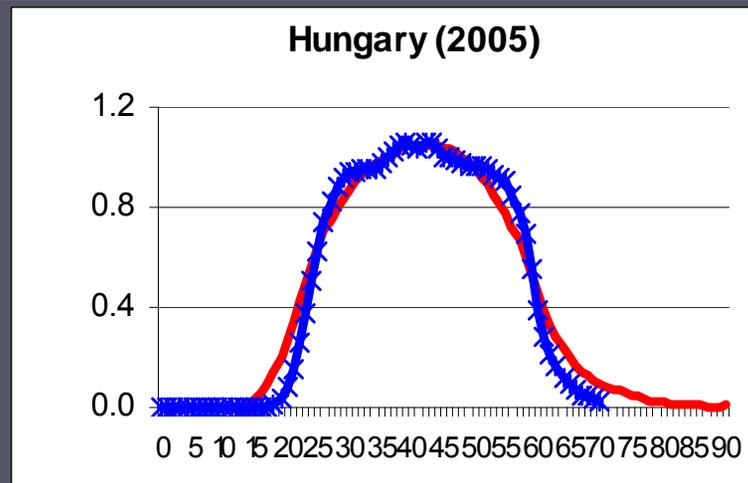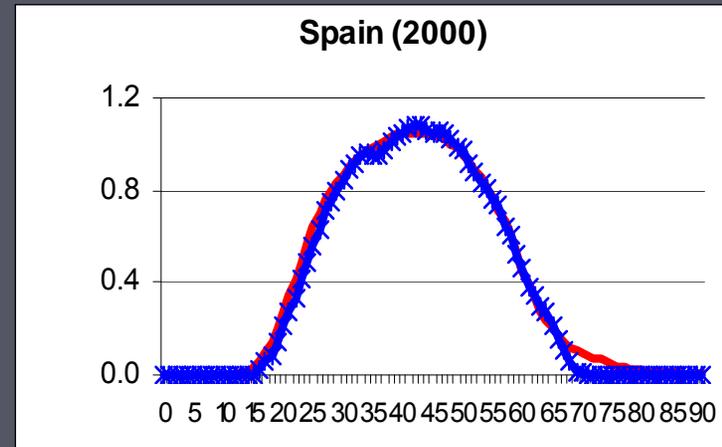

Brazil (1996)

Costa Rica (2004)

Mexico (2005)

Chile (1997)
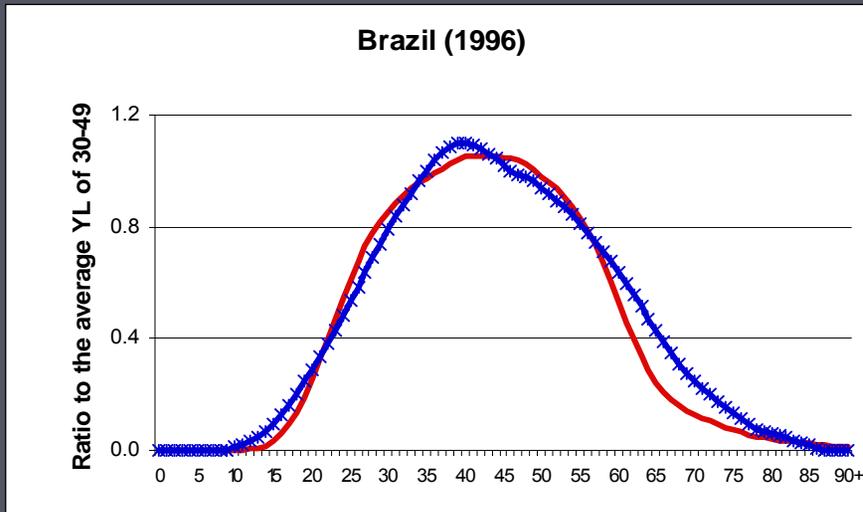
Large Elderly and Children's Share: The Philippines, China, and India

Philippines (1999)

India (2004)

China (1995)

Rapid Decrease at Old-Age:
Germany, France, Sweden, and Japan

National Transfer Accounts

Rapid Decrease at Old-Age: Finland, Spain, and Hungary

Finland (2004)

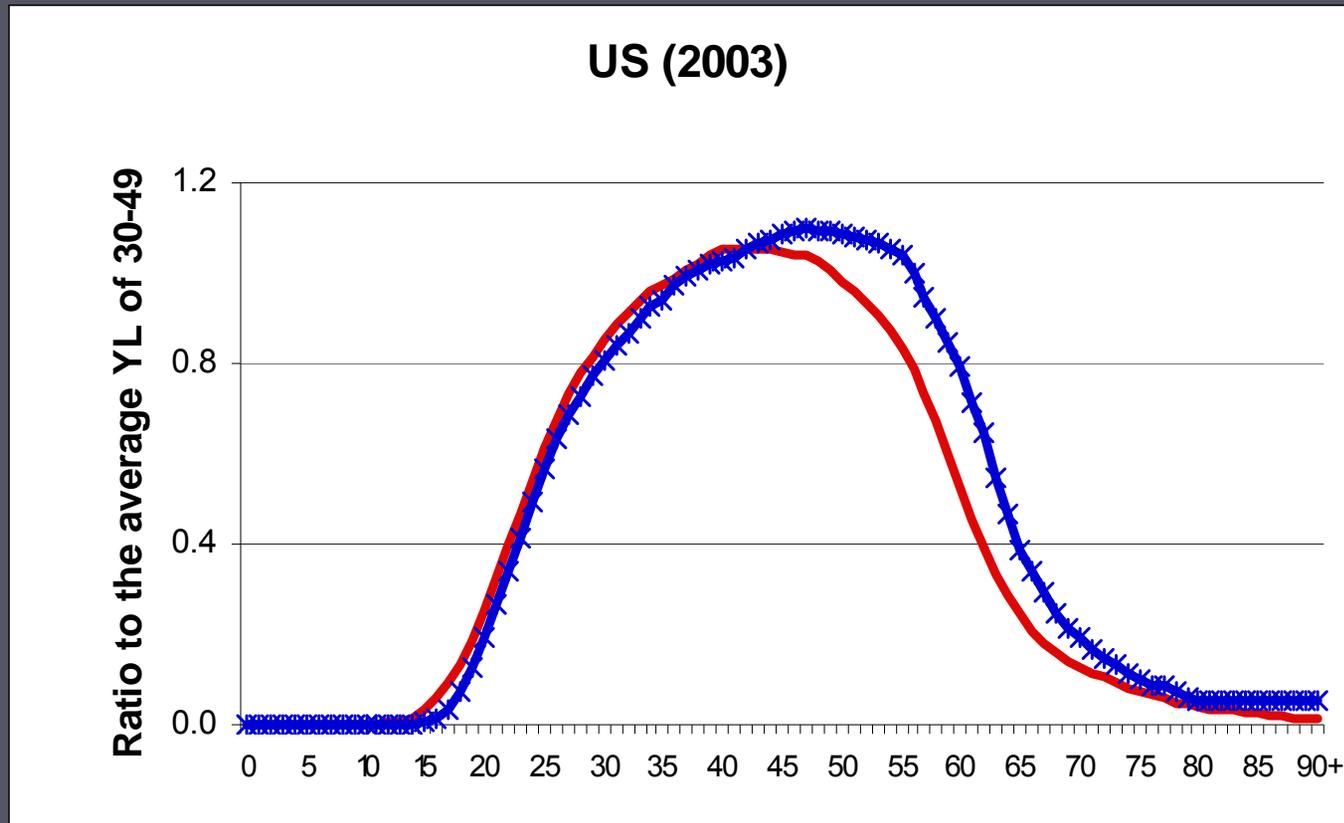**Spain (2000)**

Hungary (2005)
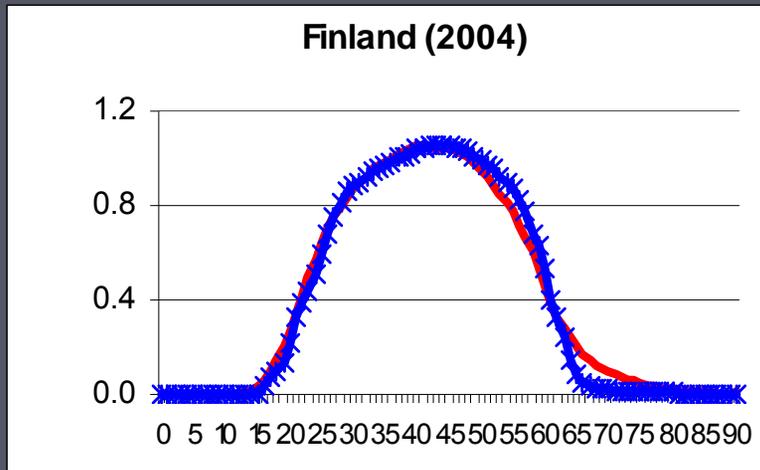
Large Elderly and Children's Share?
NOT for Kenya or Austria
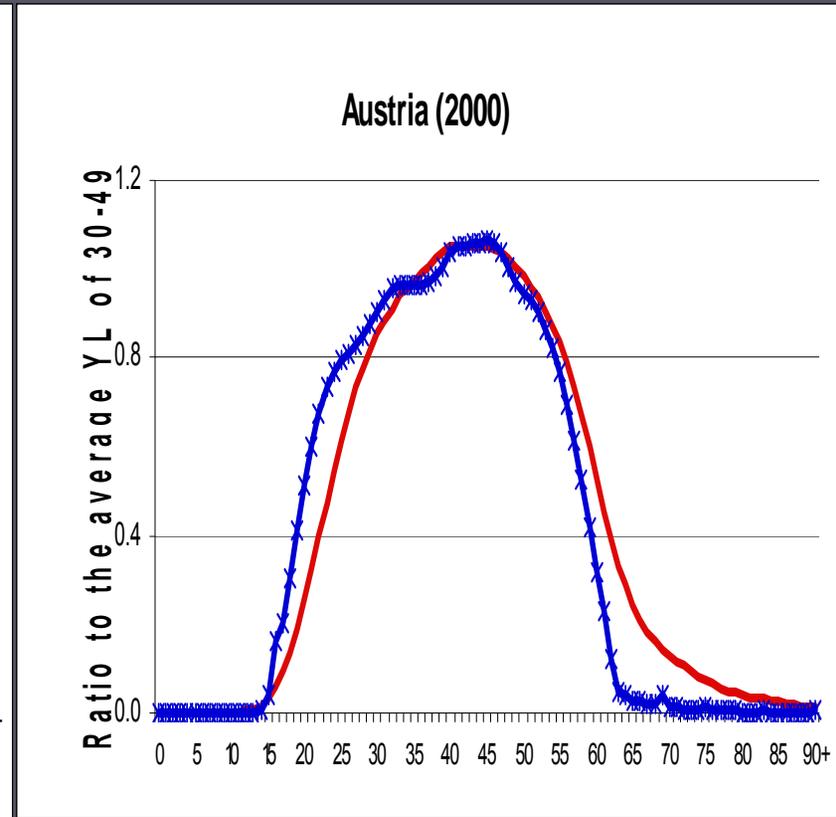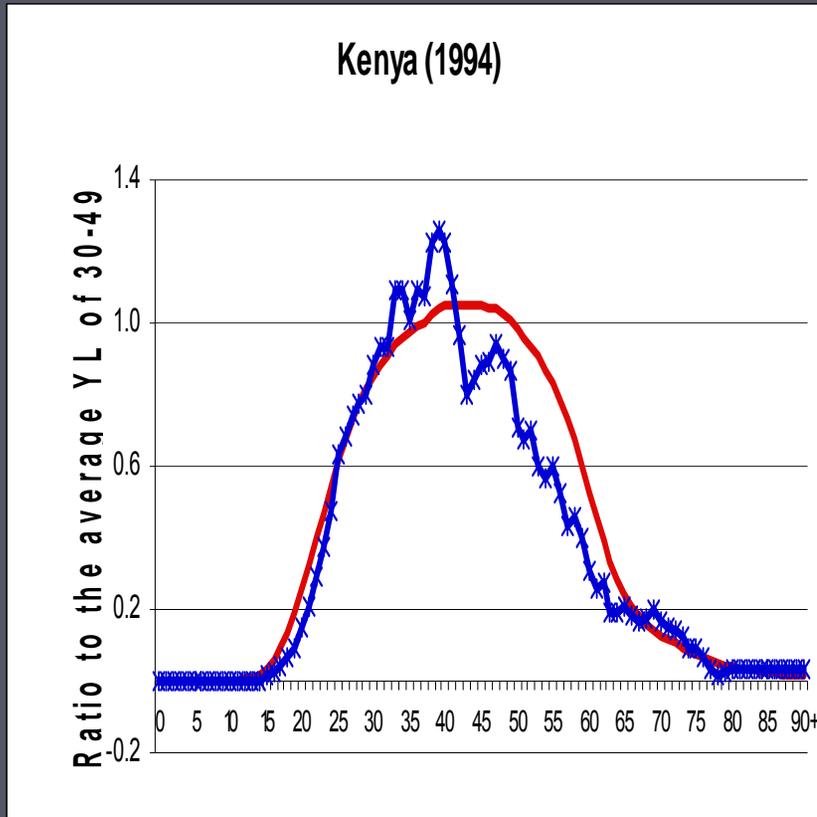
Rapid Increase at Young Age and Drop Early: Korea and Taiwan ?
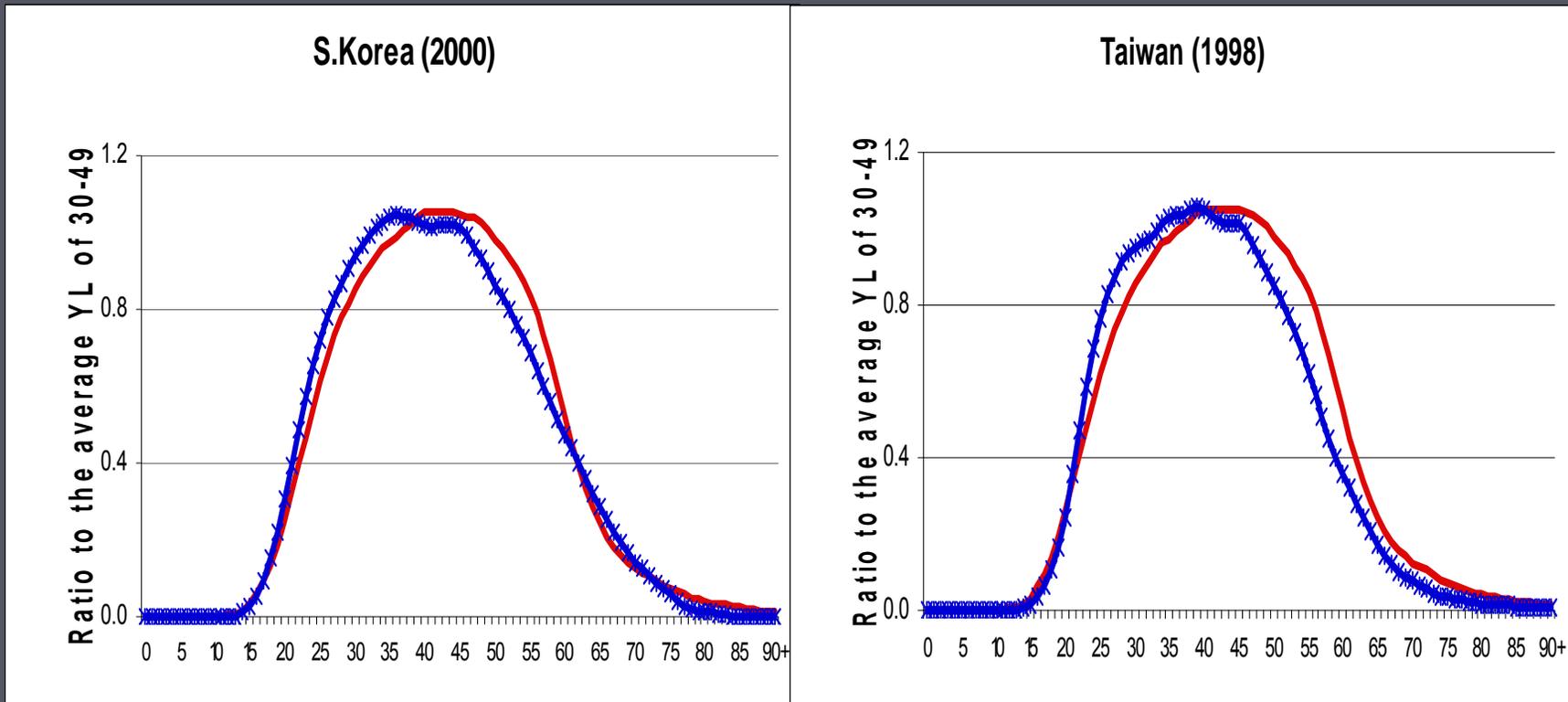
Start Late and Exit Late: The US

US (2003)

	Mean	Peak	Median	Share 0-19	Share 20-64	Share 65+	% funding consumption 0-19	% funding consumption 65+
Austria (2000)	39.6	41	38	3.2	96.4	0.5	12.3	2.5
Finland (2004)	42.6	43	41	0.9	98.3	1.0	3.3	4.8
Germany (2003)	42.5	45	41	0.8	98.6	0.7	3.5	3.2
Hungary (2005)	42.6	39	41	0.1	99.0	1.2	0.5	5.7
Slovenia (2004)	40.5	34	39	0.8	98.6	0.8	2.8	4.2
Spain (2000)	42.6	43	41	0.9	98.1	1.6	4.0	8.9
Sweden (2003)	43.7	46	42	1.0	97.7	1.9	3.6	9.1
Kenya (1994)	41.9	39	39	0.8	95.3	4.4	4.2	36.6
China (1995)	42.2	44	40	4.1	89.4	7.1	21.1	50.4
India (2004)	44.5	47	43	1.9	93.0	5.7	8.5	34.8
Indonesia (2005)	42.2	45	41	2.9	93.2	4.3	10.6	24.2
Japan (2004)	44.8	47	44	0.3	96.7	3.5	1.1	13.6
Philippines (1999)	44.6	41	42	1.7	91.5	7.7	6.2	42.4
S. Korea (2000)	40.7	35	39	1.3	96.9	2.2	5.2	15.4
Taiwan (1998)	40.9	39	39	1.1	97.0	2.3	3.6	12.2
Thailand (2004)	42.2	40	40	1.9	95.2	3.3	7.1	19.1
Brazil (1996)	43.8	47	42	1.7	93.2	5.8	5.4	19.9
Chile (1997)	43.2	45	41	1.6	93.9	5.3	4.9	23.2
Costa Rica (2004)	43.5	43	41	1.5	93.4	6.0	6.5	27.5
Mexico (2004)	43.6	38	41	2.3	91.9	6.7	6.7	28.5
Uruguay (1994)	42.0	38	40	1.8	95.9	2.9	6.7	13.5
US (2003)	45.0	47	43	0.7	94.8	5.4	2.5	17.8
Average	42.8	45	41	2.0	94.6	3.9	..	..

N<small>ATIONAL</small> T<small>RANSFER</small> A<small>CCOUNTS</small>

"Mechanical" Decomposition of Per Capita Labor Income

$$\left(\frac{Y}{N}\right)_a = \left(\frac{L}{N}\right)_a * \left(\frac{Y}{L}\right)_a \text{ or}$$

$$y_a = l_a * \overline{y}_a$$

- Per capita labor income profile
  = Age specific activity rate x
    Average productivity of workers by age
    (weighted by working hours by age)

- Different from conventional measure of labor income.

LFPR by Age

► Labor force participation by age
  ▪ Children is delaying entry into the labor force
    ► Quality-quantity trade-off (Becker and Lewis 1973)
    ► Compulsory education policies (Lancaster and Ray 2004)
    ► Micro and macro evidences on the trade-off between schooling and child labor (Basu 1999)
  ▪ Older men are withdrawing from the labor force at a younger age.
    ► Pay-as-you go retirement pension (Gruber and Wise 1999, 2007)
    ► Micro and macro evidences (e.g. Anderson et al. 1999; Borsch-Supan 2000)
  ▪ Women are increasingly participate in the labor market
    ► Women's value of time at home declines, and hence reservation wage falls.

National Transfer Accounts

Productivity by Age

► Productivity profile of working population
- Investment on human capital decreases by age (Mincer 1962; Becker 1962)
- Depreciation of physical and mental ability (Skirbekk 2003)
- Technological progress (Autor et al. 2003)

► The two factors are related
- Declining productivity due to depreciation leads a person to retire (Quinn et al. 1990; Dwyer and Mitchell 1999)

► Real world has much more factors
- Choice of working hours are possible (Hurd 1993)
- Legal age of work
- Minimum wage
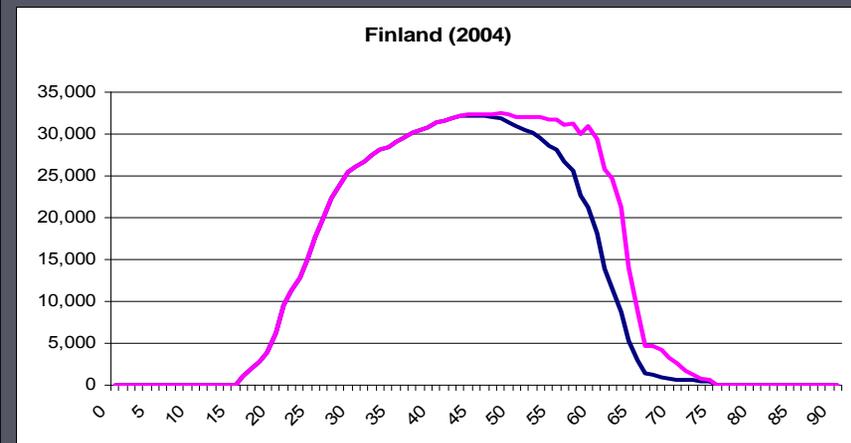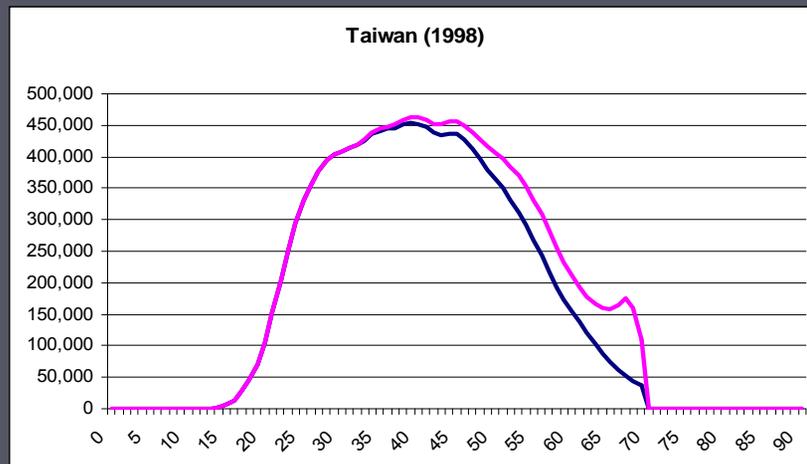- Seniority-based wage system or other wage rigidity
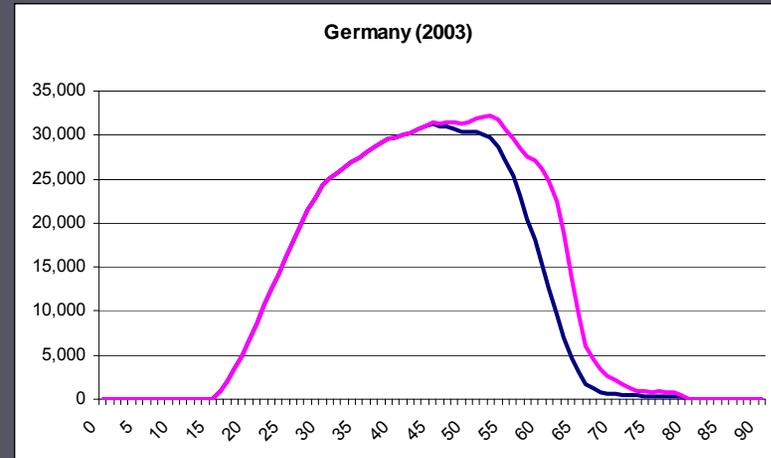
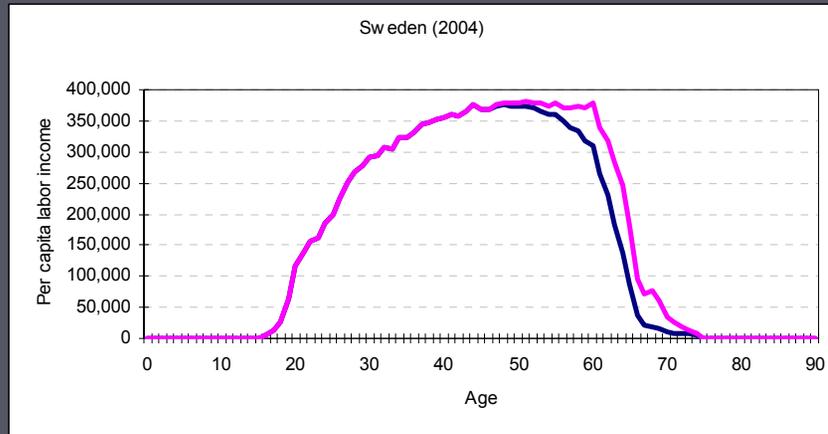National Transfer Accounts

Labor Income to Consumption after Delaying Retirement by 2 Years (for 65-74)
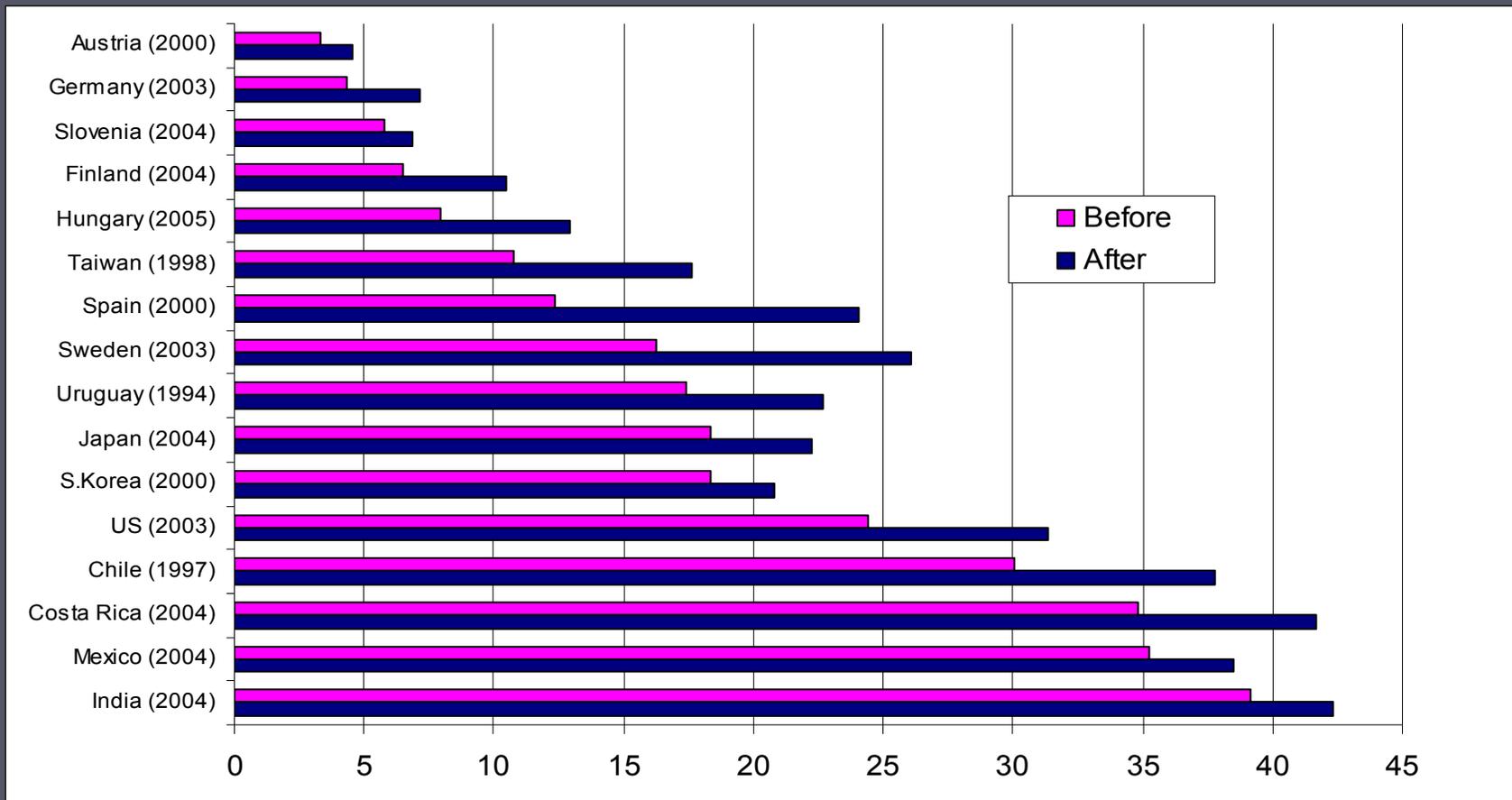
Countries with Low Productivity and High Activity Rate of Older People

Kenya (1994)

India (2004)

Korea (2000)
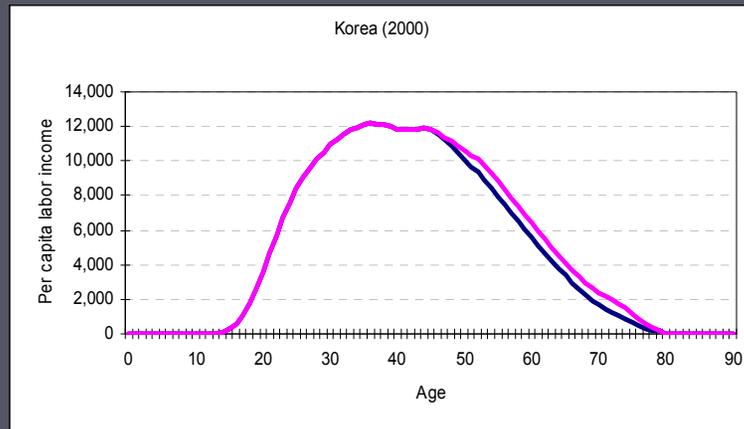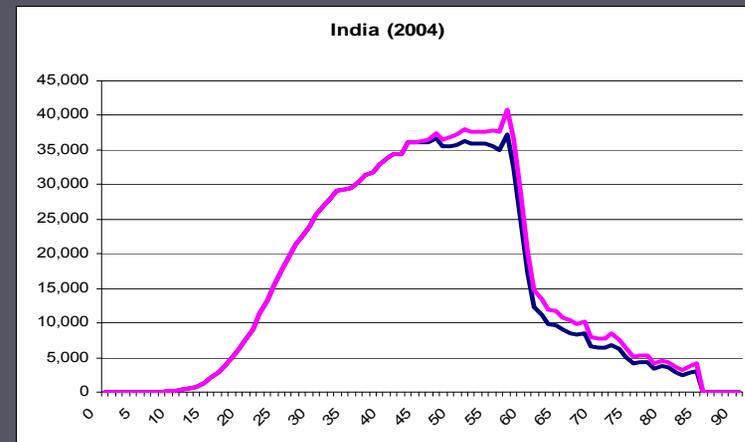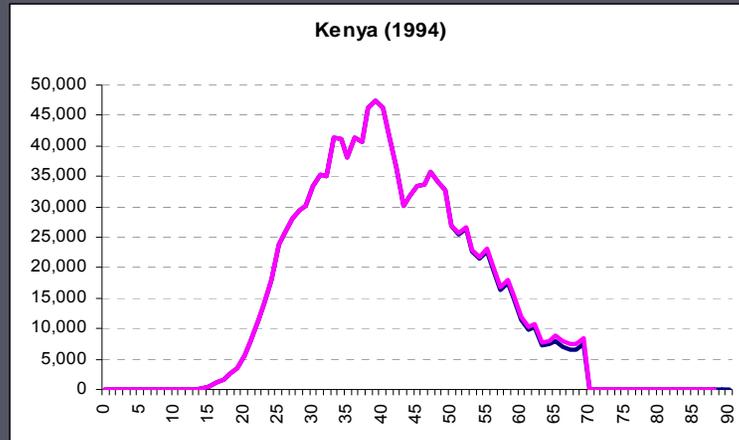
Countries with High Productivity and Low Activity Rates of Older People

Sweden (2004)

Germany (2003)

Taiwan (1998)

Finland (2004)

Labor Income Macro Control

►Using the terminology of the 1993 UN System of National Accounts, labor income consists of three components

- *compensation of employees*
- labor's share of *mixed income*
- labor's share of *taxes on net production and on imports* (known as *indirect taxes*) less *business subsidies*.

Labor Income Macro Control (cont'd)

► The compensation of employees consists of *wages and salaries* and *employers' social contributions*, including labor income of residents who are working abroad.

► Some of the non-resident remittances are in fact compensation. Individual country teams have to decide what would be the most relevant method for their country (e.g. the Philippines' guest workers)

► Two-thirds of the household mixed income is labor income, which is consistent with the best available information.
  ■ In some countries, the aggregate control *mixed income* includes the operating surplus (imputed rent) of households. In this instance the operating surplus of households should be subtracted from mixed income before labor's share is estimated.

Indirect Taxes Adjustment

► Some taxes on production and on imports are borne by workers in the form of reduced compensation, by owners of assets in the form of reduced asset income, and by consumers in the form of higher prices.

► In NTA, total labor income should be increased by net taxes on labor, i.e., an estimate of the share of taxes on production and on imports less subsidies borne by labor.

The End