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What is NTA and Its Implication in China

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- II. Framework of NTA methodology
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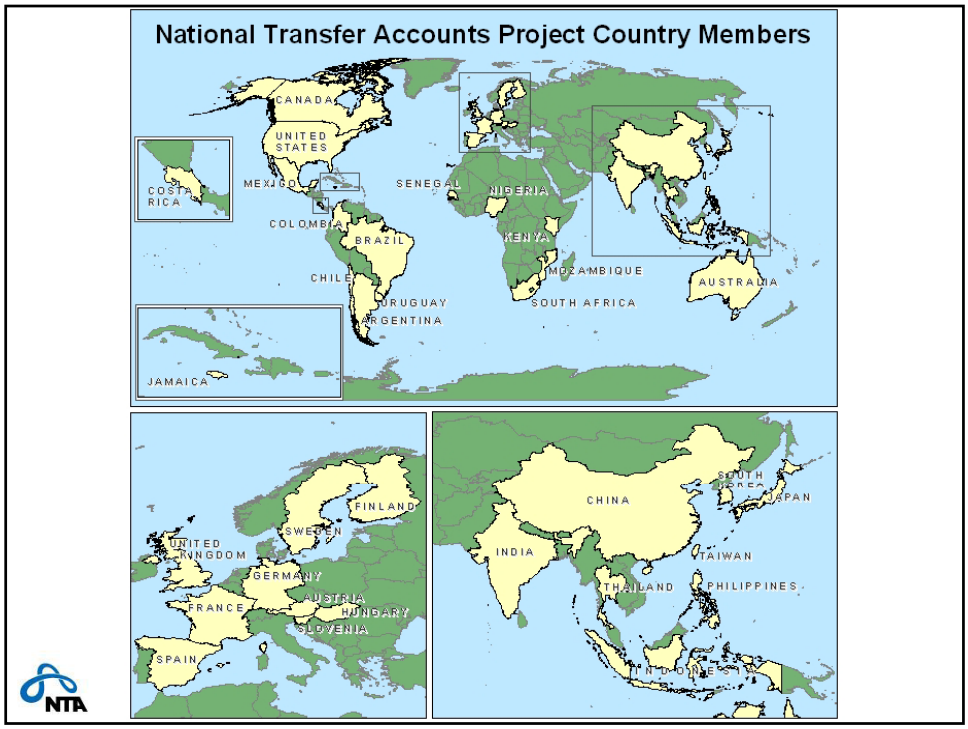
National Transfer Accounts Project Country Members
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Understanding the generational economy
National Transfer Accounts
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The National Transfer Accounts (NTA) project is developing a system to measure economic flows across age groups in a manner consistent with National Income and Product Accounts. The accounts measure how each age group produces, consumes, shares, and saves resources. Two forms of economic flow are distinguished, transfers between age groups and the use of assets accumulated earlier in life. These flows arise primarily because of a fundamental feature of the economic lifecycle: children and the elderly consume more than they produce through their labor. NTA provides estimates of the components of the economic lifecycle and the interage flows that inevitably arise. These flows occur through government programs and through families and other private institutions.
When complete National Transfer Accounts will provide estimates with sufficient historical depth to study the evolution of intergenerational transfer systems; the consequences of alternative approaches to age reallocations embodied in public policy with respect to pensions, health care, education and social institutions, e.g., the extended family; and the social, political, and economic implications of population aging.
What's New
New Book: Population aging and the generational economy: A global perspective
Ronald Lee and Andrew Mason, lead authors and editors
www.ntaccounts.org
Over coming decades changes in population age structure will have profound implications for the macroeconomy, influencing economic growth, generational equity, human capital, saving and investment, and the sustainability of public and private transfer systems. How the future unfolds will depend on key actors in the generational economy: governments, families, financial institutions, and others. This ground-breaking book draws on a new and comprehensive conceptual framework—National Transfer Accounts–for quantifying the economic lifecycle and economic flows across generations. The book is the result of a substantial seven year research project involving over 50 economists and demographers from Africa, Asia, Europe, Latin America and the Unites States. See more at Population aging and the generational economy: A global perspective
NTA Bulletin
BULLETIN

Motivation

- Three features of the economy
  - Economic lifecycle
  - Population age structure
  - Systems for shifting resources across age
    - Saving
    - Public transfer programs
    - Familial Support systems
- have potentially important implications for
  - the accumulation of wealth,
  - rates of economic growth,
  - interest rates, and
  - generational equity.
- Implications for economic and population policy

Source: Andrew Mason

Table 1. A Classification of NTA Reallocations.			
	Asset Reallocations		
	Capital	**Property and Credit**	**Transfers**
Public	Public infrastructure	Public debt Student loans Money	Public education Public health care Unfunded pension plans
Private	Housing Consumer durables Factories Farms Inventories	Consumer credit Insurance Land	Familial support of children and parents Bequests Charitable contributions
Source: Adapted from Lee 1994.			

National Transfer Accounts

- Objective:
  - Develop and apply a comprehensive system of accounts that measures economic flows across age groups in a manner consistent with the System of National Accounts.
- Conceptual foundation:
  - Lee (1994) but also Samuelson (1958), Diamond (1965), and Willis (1988).
- Organization:
  - Collaboration between EWC/UH and UC-Berkeley. Core funding from NIA. Sub-projects supported by UNFPA, IDRC, MacArthur Foundation and others.
- Website: www.ntaccounts.org

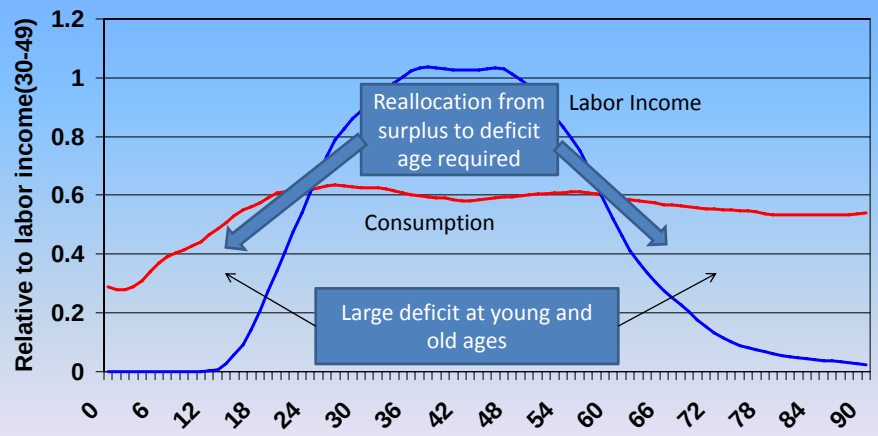
National Transfer Accounts

Source: Andrew Mason

Issues

- Why do support systems vary over time and space?
- What are the macroeconomic consequences of population aging?
- How do the effects of aging vary with the support systems in place?
- What are the implications of public reform? Changes in familial support systems?

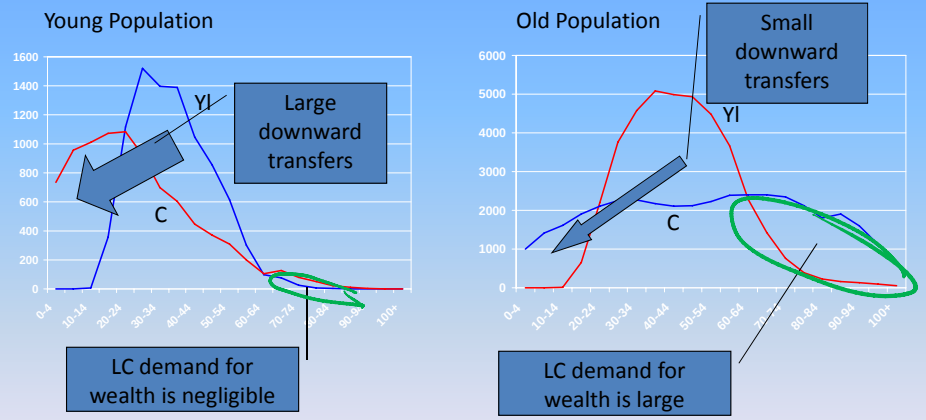
The Economic Lifecycle (Per Capita)
Four Developing Economics



Note: Based on estimates for Costa Rica, Indonesia, Taiwan, and Thailand.

Source: Andrew Mason

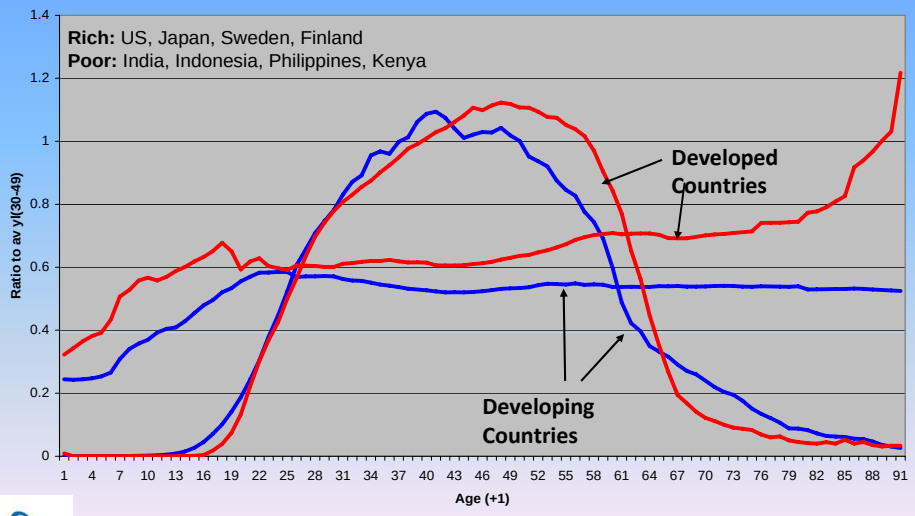
Aggregate Economist Lifecycle:
Old versus Young Population



Note: Uses per capita consumption profiles shown above.

Source: Andrew Mason

The Economic Lifecycle (Per Capita) Rich versus Poor Countries



Source: Andrew Mason （2008）

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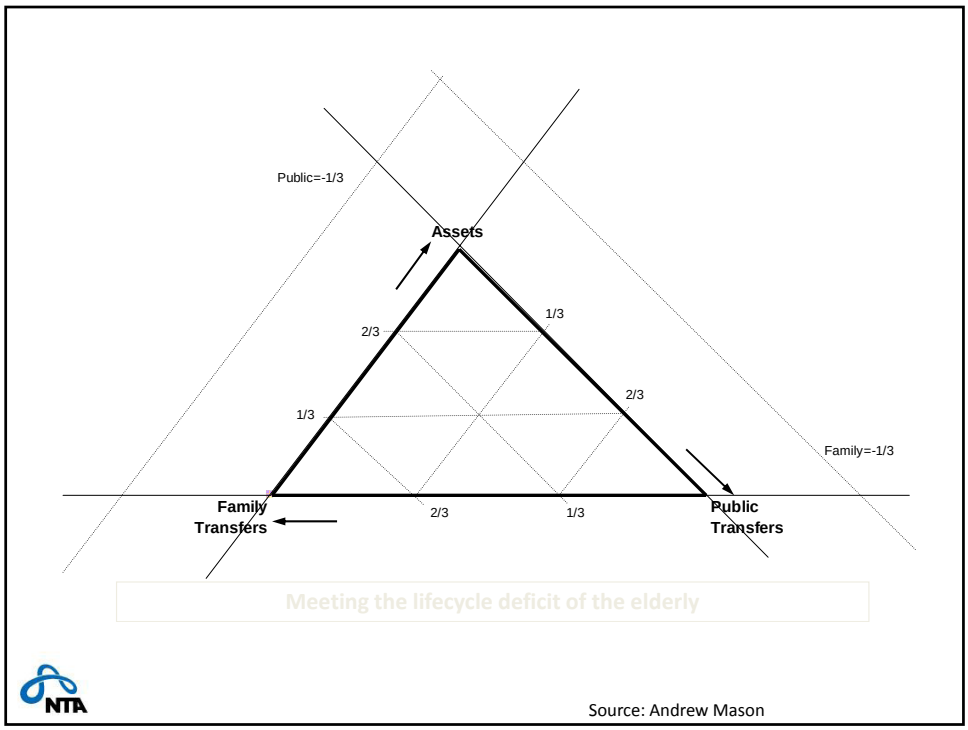
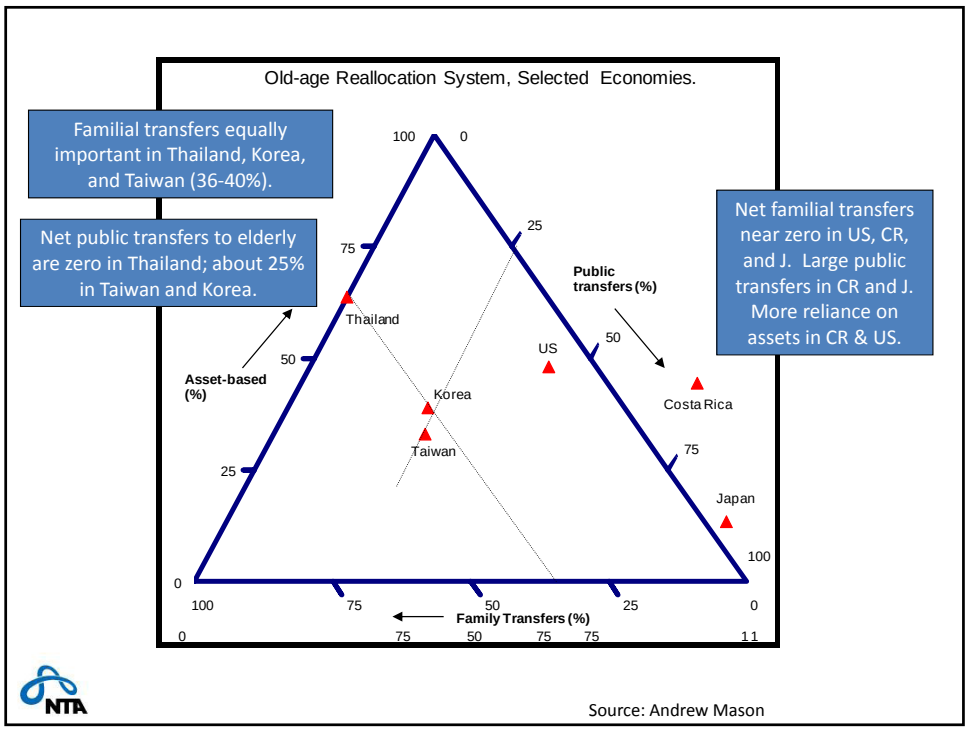
What determines the lifecycle demand for capital (continued)?

- Support system for the elderly
  - Public transfers
  - Familial transfers
  - Lifecycle saving
- Public and familial transfers may crowd out lifecycle saving

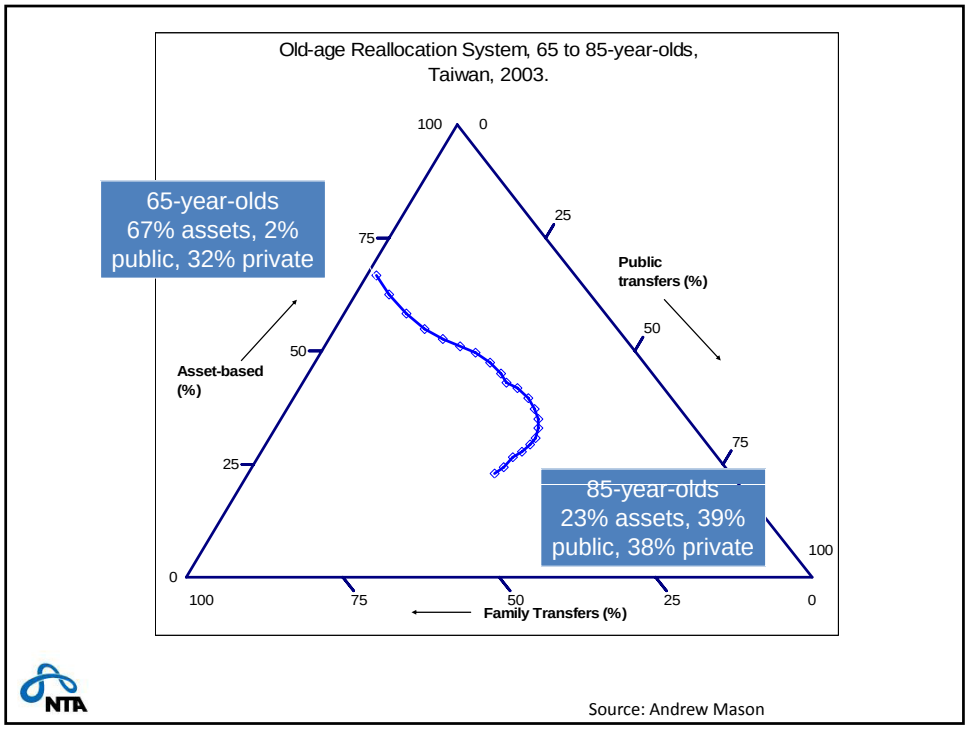
Source: Andrew Mason



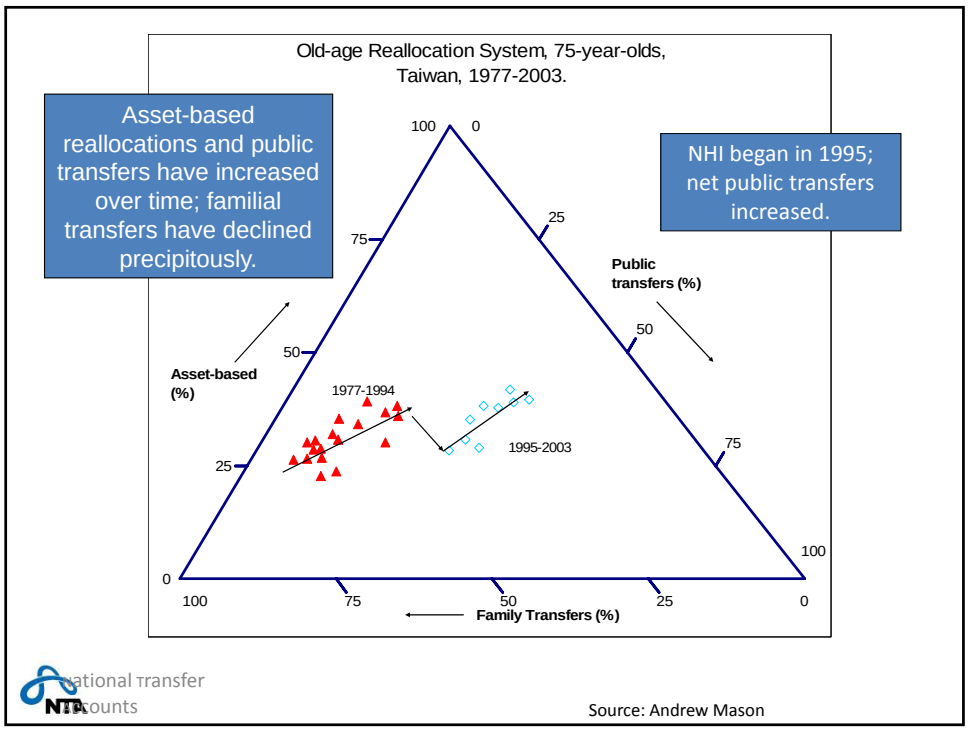
Source: Andrew Mason



Source: Andrew Mason



Source: Andrew Mason



National transfer accounts

Source: Andrew Mason

NTA Methodology

- From NIPA to NTA
  - National Income and Product Accounts
  - National transfer Accounts
- From macro statistics to micro data
  - National Account
  - Survey data
- From aggregate statistics to age distribution

The NTA Flow Account Identity

- Inflows
  - Labor Income
  - Asset Income
  - Transfer Inflows
- Outflows
  - Consumption
  - Saving
  - Transfer Outflows

$$\underbrace{Y^l(a)+Y^a(a)+\tau^+(a)}_{\text{Inflows}}=\underbrace{C(a)+S(a)+\tau^-(a)}_{\text{Outflows}}$$

$$\underbrace{C(a)-Y^l(a)}_{\text{Lifecycle Deficit}}=\underbrace{Y^a(a)-S(a)}_{\text{Asset-based Reallocations}}+\underbrace{\tau^+(a)-\tau^-(a)}_{\text{Net Transfers}}$$

Age Reallocations

Three components of Lifecycle deficit

Family Transfers | Public Transfers

Source: Mason, Lee, et al., 2009; Lee, Lee, and Mason, 2008.

General Rule: Equation Version

1. Estimate per capita age profile

2. Multiply by the population

$$X^p(a) = \beta \bar{X}^p(a) N(a)$$

$$\beta = X^p_{NIPA} / \sum_a \bar{X}^p(a) N(a)$$

3. Adjust to National Income and Product Account (NIPA) total.

Source: Mason, Lee, et al., 2009; Lee, Lee, and Mason, 2008.

Aggregate NTA, 2002

SNA

Expenditure on the Gross Domestic Product			Dometic Production and Cost Components by Sector		
Final Consumption Expenditure		**62798.5**			
General Government Final Consumption Expenditure		**13916.9**	**Compensation of Employees**		**62524.3**
Household Final Consumption Expenditure		**48881.6**	**Operating Surplus (incl. mixed income)**		**24813.6**
Gross Capital Formation		**42304.9**	**Indirect Taxes on products and imports**		**17834.2**
Gross Fixed Capital Formation	41918.3		**Subsidies[1]**		**0.0**
Changes in Inventories	386.6		**Consumption of Capital (Depreciation)**		**2725.6**
Net Export		**2794.2**			
Exports of Goods and Services	30243.8				
Less: Imports of Goods and Services	27449.6				
Statistical Discrepancy		-2725.6			
		107897.6			**107897.6**

NTA

Lifecycle Surplus!

Lifecycle Deficit		-16160.8	Lifecycle Reallocation		-16160.8
Consumption		**52294.4**	**Asset-based Reallocation**		**-17235.9**
Private Consumption	38377.5		**Net Private asset Income**	24611.1	
Public Conumption	13916.9		Private Savings	-34608.9	
Labor Income		**68455.2**	**Net Public asset Income**	365.6	
			Public Savings	-7603.7	
			Net Transfers		**1075.1**
			Net Private Transfers	1072.2	
			Net Public Transfers	2.9	

Micro data Issues

- Consumption age profile
  - Available estimation methods problematic
    (Engel)
  - Education and health can be reliably estimated
- Productivity age profile
  - Earnings may not reflect age variation in productivity
  - Seniority wage system in Japan, for example.

Micro data Issues

- Inter-household transfer
  - Assign to household head
- Intra-household transfer
  - No direct information in survey
- Public Transfer
  - How to recognize the payer and receiver

NTA family has worked for at least 6 years.
There is still much room for development.

III. China NTA

- Methodology
  - NTA Project led by Ronald Lee, Andy Mason et. al.
  - See website: http://www.ntaccounts.org
- Data
  - Estimating age files: CHIP survey data

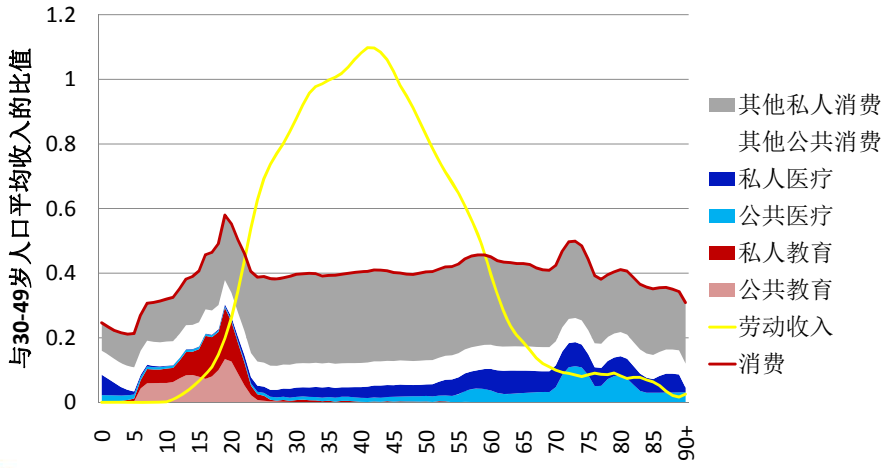
Chinese Household Income Project

Year	Rural		Urban	
	Individuals	Households	Individuals	Households
1995	34,728	6,931	21,689	7,996
2002	37,969	9,200	20,548	6,835

  - Aggregate control: Public reported statistics

Components of China Consumption

Labor income and Consumption, China 2002



来源：Qiulin Chen, Karen Eggleston, Ling Li（2011）;

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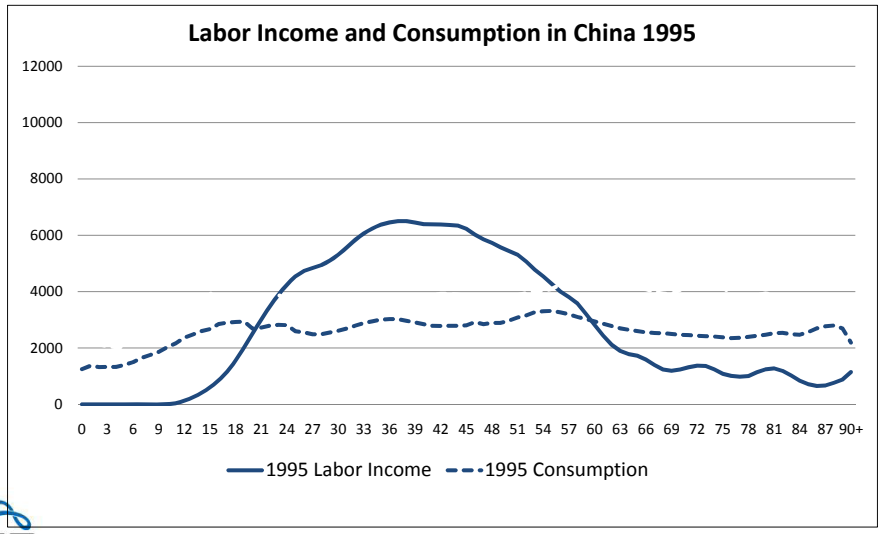
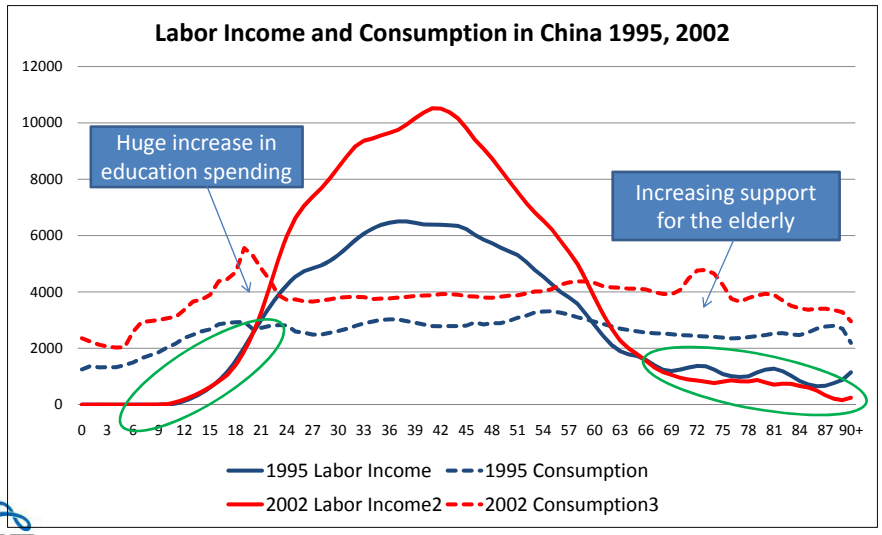
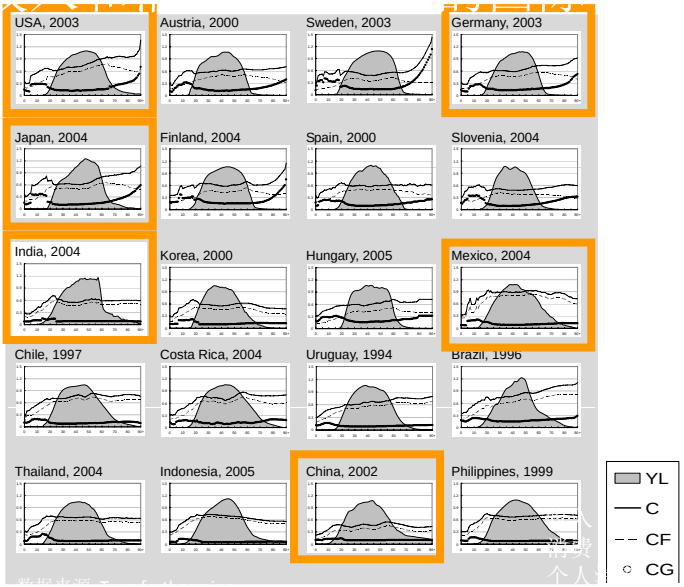
Labor income and Consumption

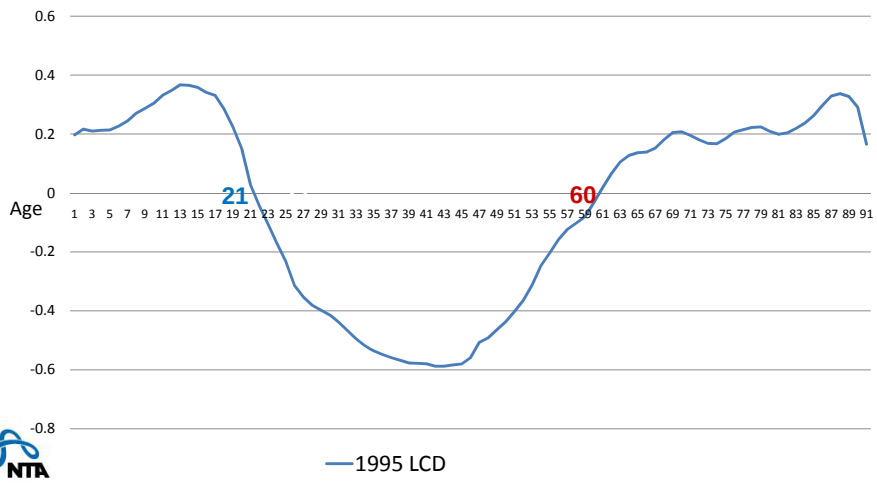


Labor income and Consumption





China's Lifecycle Deficit (LCD)



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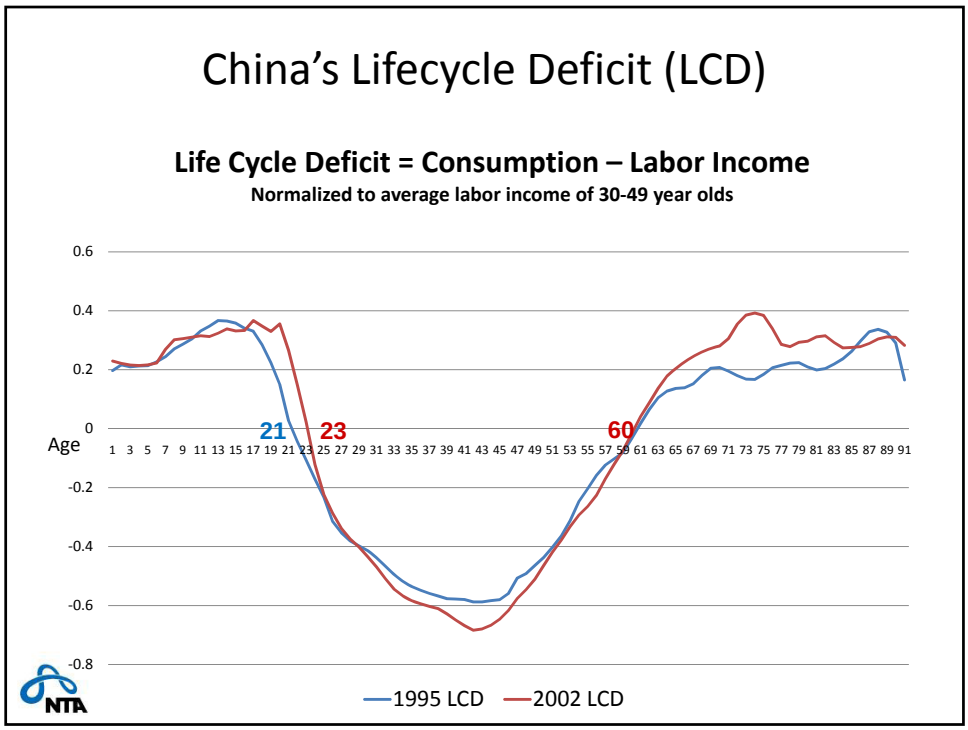

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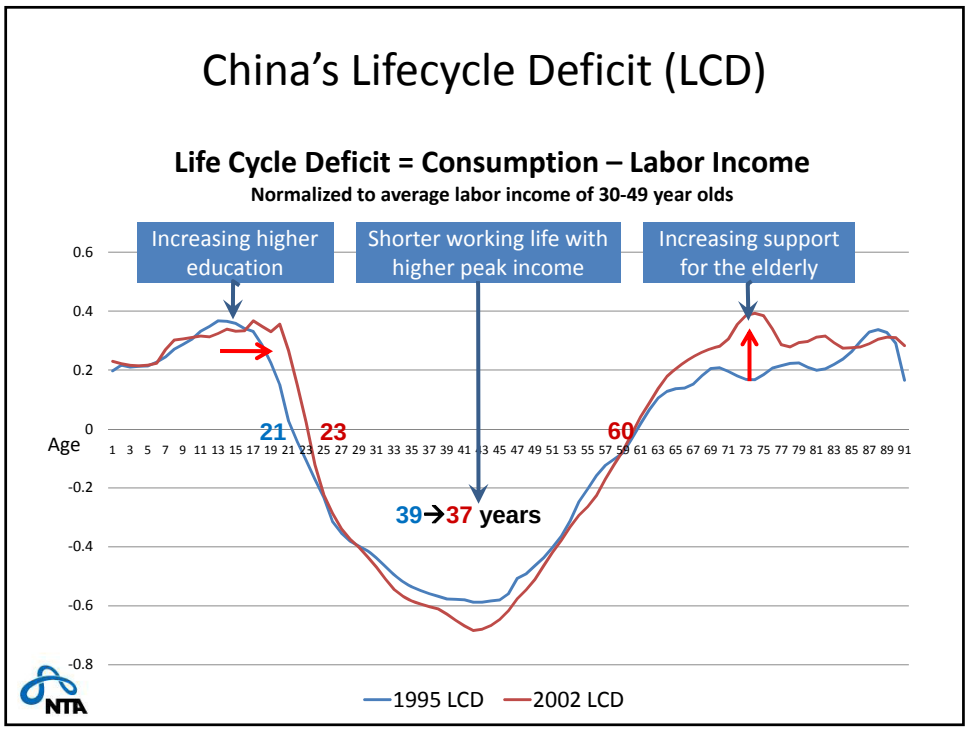


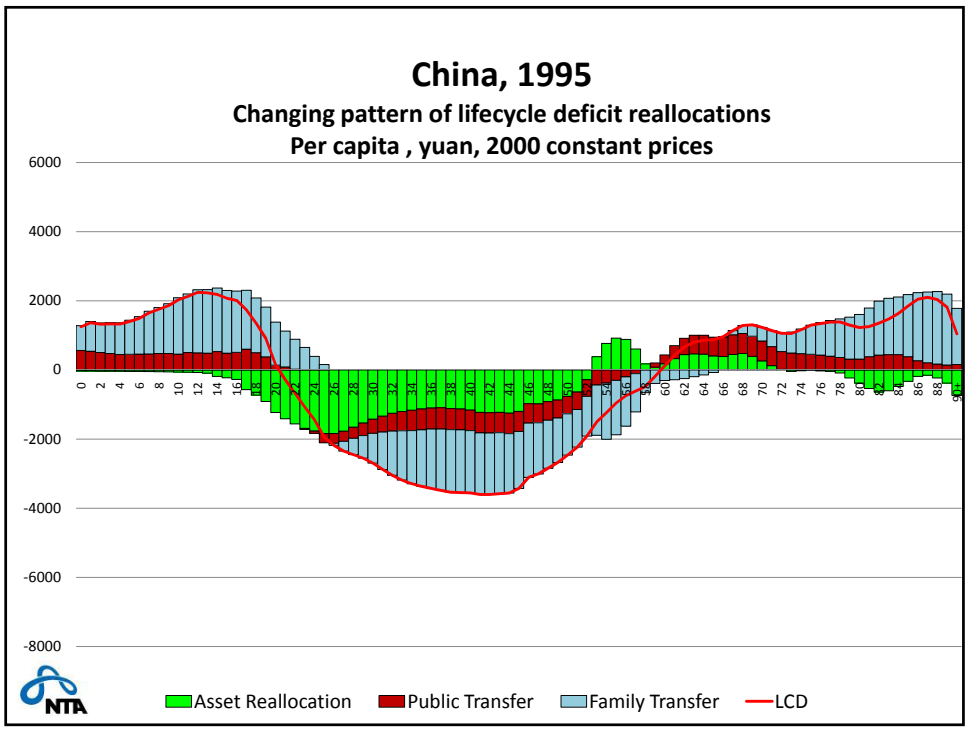
Lifecycle Deficit Changing in China and Some Asian Countries

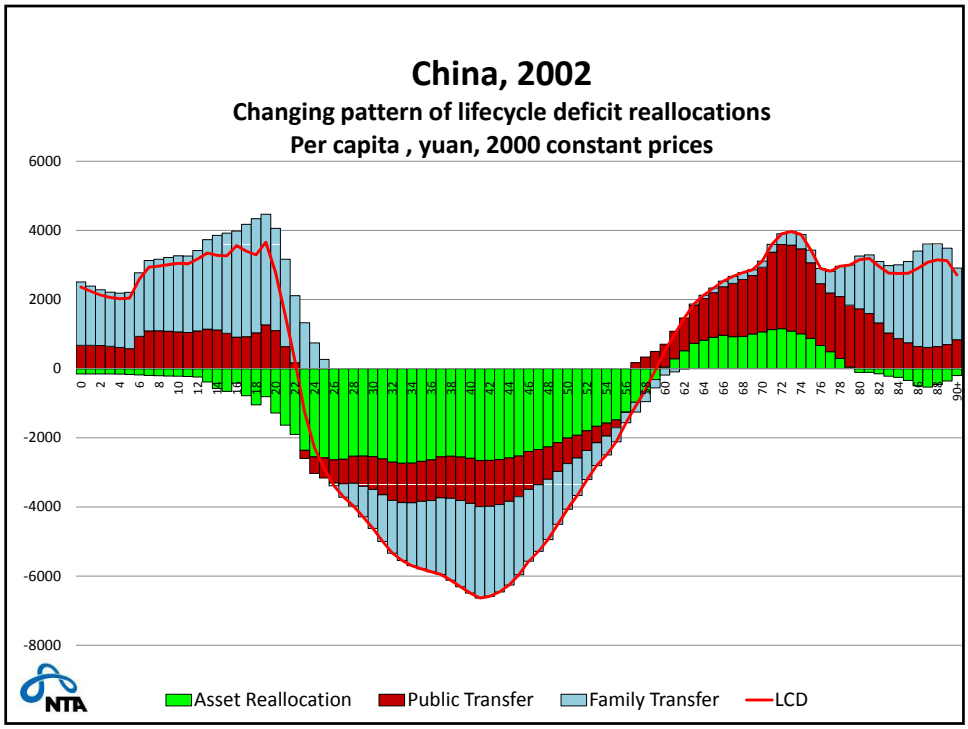
	1995			2002			
	Cutting Ages		Working Life	Cutting Ages		Working Life	
Lifecycle Deficit	21	60	39	23	60	37	2 ↓
Public Transfer	23	59	36	23	56	33	3 ↓
Family Transfer	26	67	41	26	63	37	4 ↓
- Intra Household	26	70	44	26	67	41	3 ↓

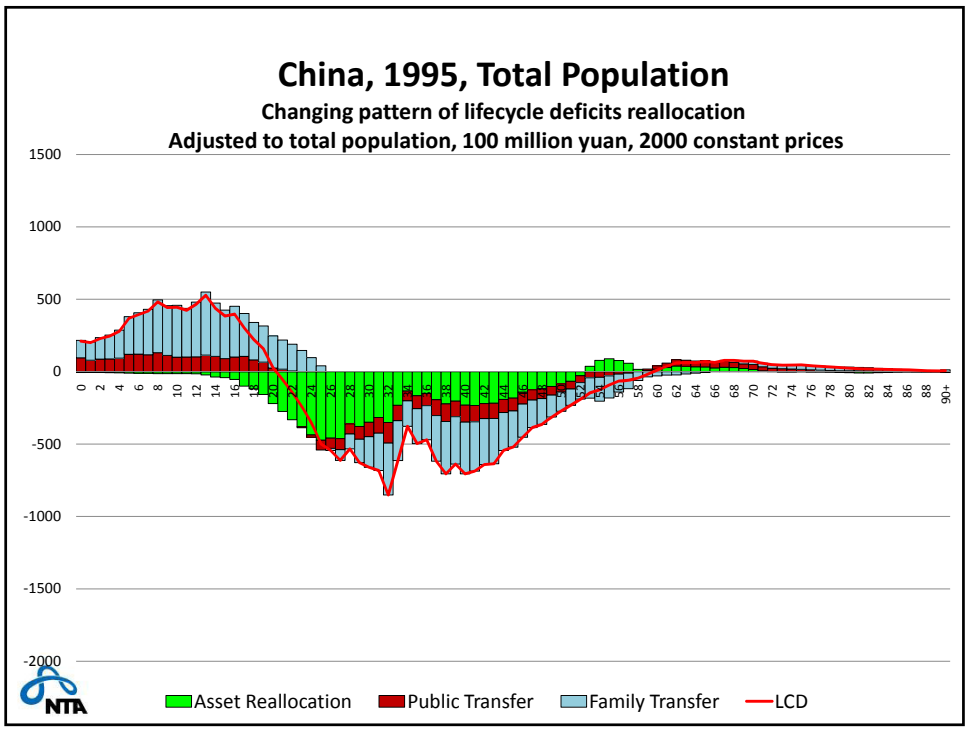
The working life was getting shorter as in some other Asian NTA countries, but it was still longer than in these other countries.

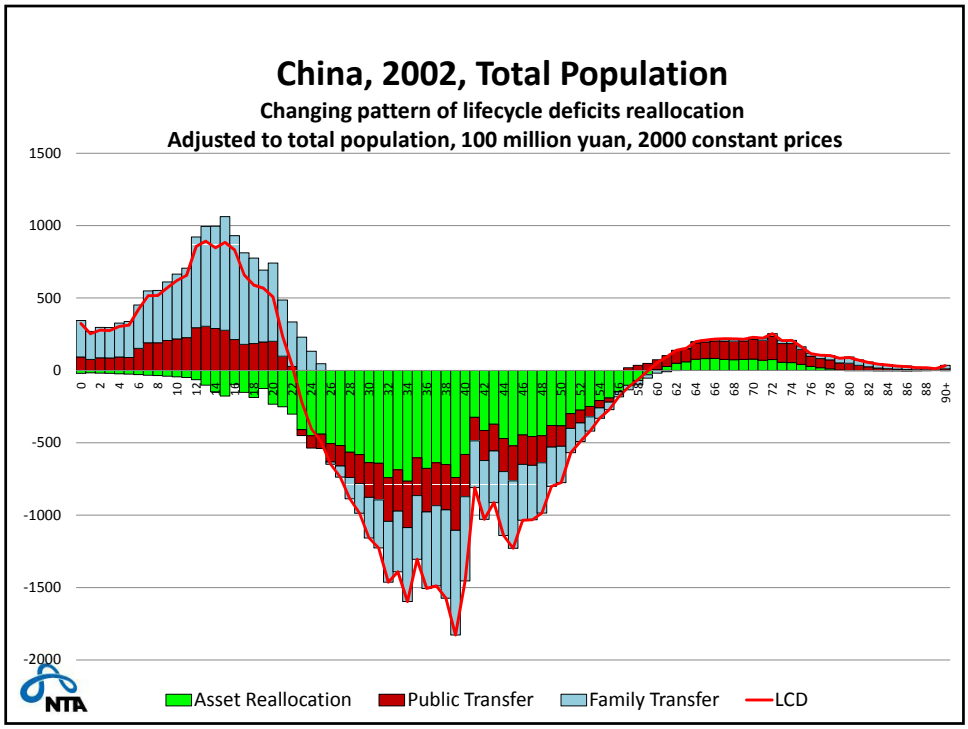
Lifecycle Deficit	Cutting ages		Working Life	Lifecycle Deficit	Cutting ages		Working Life	
Japan 2004	26	60	34	Thailand 1996	25	59	34	
S. Korea 2000	24	56	32	Thailand 2004	26	58	32	↓
U.S. 2003	26	59	33	Philippines 99	27	60	33	
India 1999	27	63	36	Indonesia 99	28	59	31	↓
India 2004	27	59	32 ↓	Indonesia 05	29	58	29	

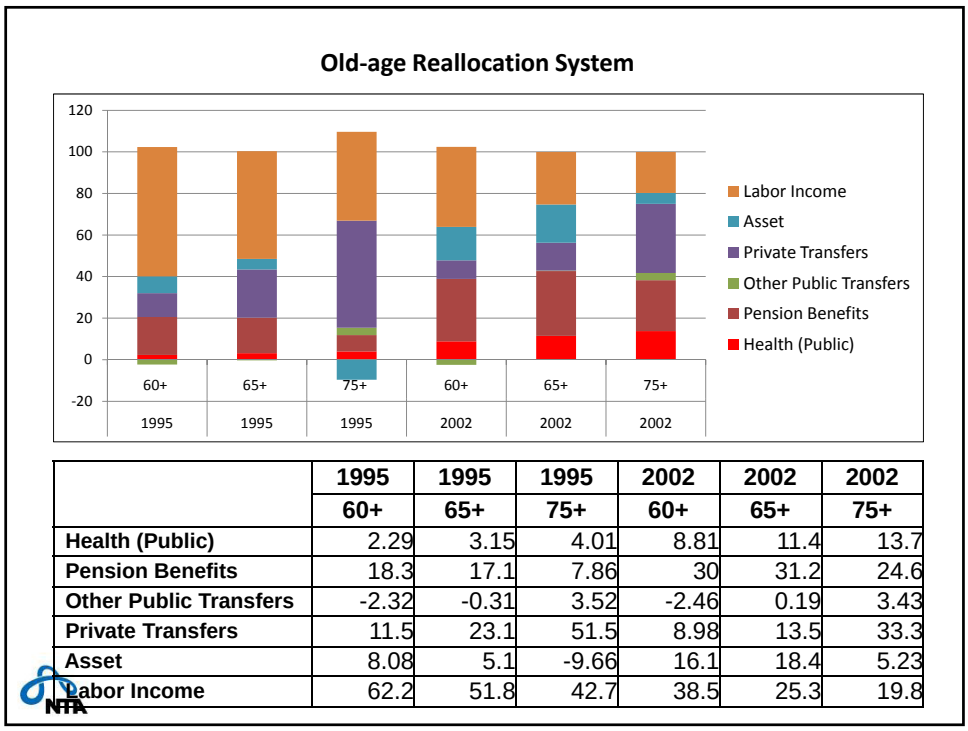
Source: Data from NTA website




China, 2002
Changing pattern of lifecycle deficit reallocations
Per capita , yuan, 2000 constant prices
6000
4000
2000
0
-2000
-4000
-6000
-8000
Asset Reallocation
Public Transfer
Family Transfer
LCD

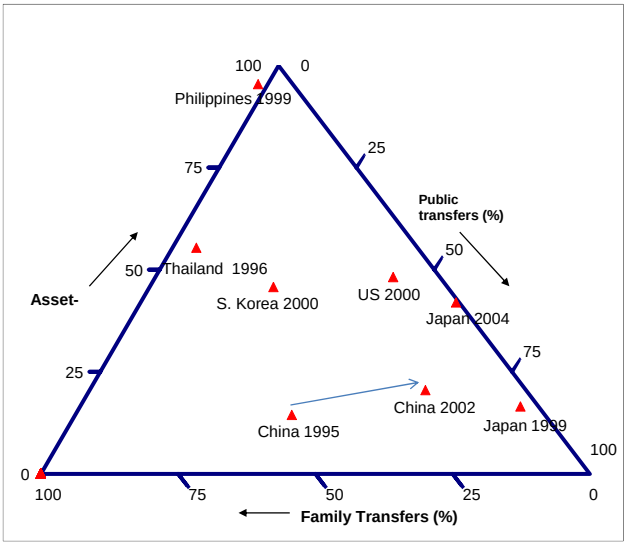

China, 1995, Total Population
Changing pattern of lifecycle deficits reallocation
Adjusted to total population, 100 million yuan, 2000 constant prices
1500
1000
500
0
-500
-1000
-1500
-2000
Asset Reallocation
Public Transfer
Family Transfer
LCD





	1995 60+	1995 65+	1995 75+	2002 60+	2002 65+	2002 75+
Health (Public)	2.29	3.15	4.01	8.81	11.4	13.7
Pension Benefits	18.3	17.1	7.86	30	31.2	24.6
Other Public Transfers	-2.32	-0.31	3.52	-2.46	0.19	3.43
Private Transfers	11.5	23.1	51.5	8.98	13.5	33.3
Asset	8.08	5.1	-9.66	16.1	18.4	5.23
Labor Income	62.2	51.8	42.7	38.5	25.3	19.8

Old-Age Support Systems in China and Some Asian Countries



Source: Data from NTA website

China's Lifecycle Deficit (LCD)

Due to lower consumption, China is unique for its "Lifecycle Surplus" compared to other NTA economies.

Life Cycle Deficit (LCD) = Consumption - Labor Income				
	Year			LCD
Japan	2004	Millions	Nominal	68677426
South Korea	2000	Billions	Nominal	13783.8
Philippines	1999	Millions	Nominal	695284.8
NIGERIA	2004	Millions	Nominal	3504902
Kenya	1994	Billions	Nominal	31720.5
Indonesia	2005	Millions	Nominal	441984.5
India	2004	Ten Millions	Nominal	429516
China	1995	Billions	Nominal	-7377.6
China	2002	Billions	Nominal	-17233.6

Source: Data from NTA website

IV. Further Applications

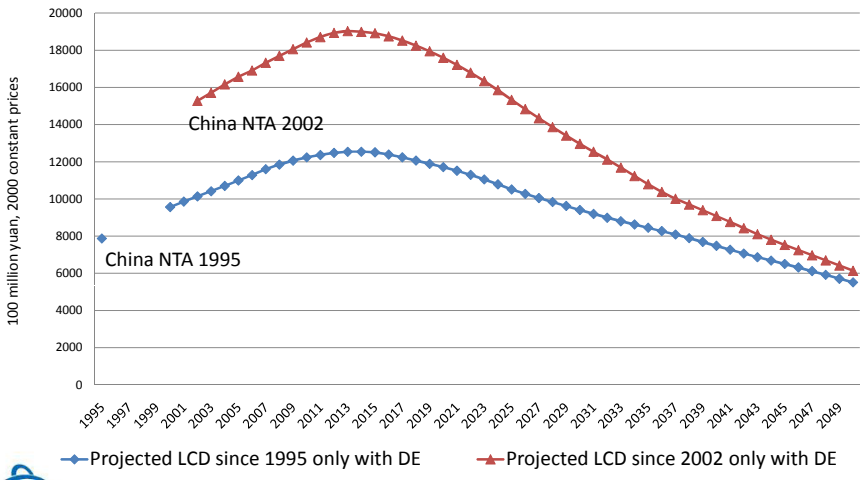
- Projection: Demographic Change and System Transition
- Regional NTA: East, Middle, West
- NTA by rural and urban
- NTA by gender
- Time use research
- Socioeconomic mechanism
- Macroeconomic research: 1st and 2nd Dividend
- Cross topics

(1) Projection

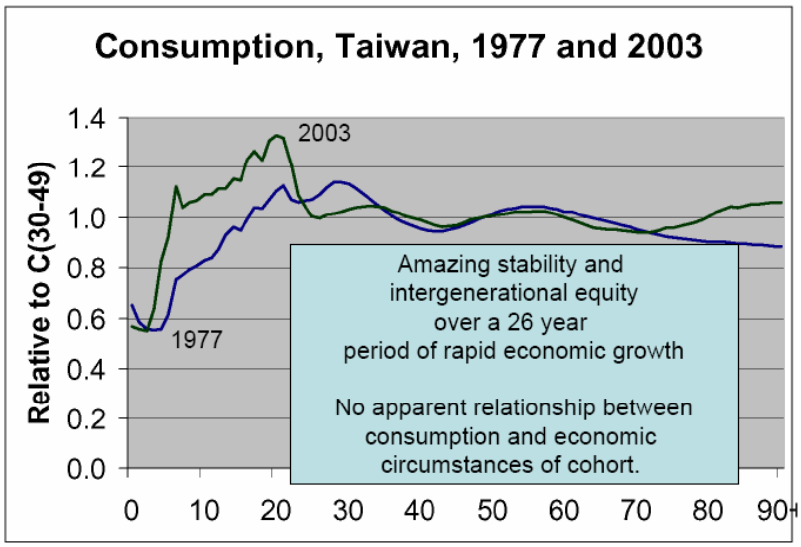
- Demographic change (Demographic effect)
  - From young population to old population
  - How much will demographic change affect the burdens on families and public support systems, such as pensions and health care financing, *assuming the current level of transfers for each age group?*
- Lifecycle behavior change (Transition effect)
  - From developing society to welfare society
  - How will reform of pensions and health care *change the level of transfers for each age group?*

Projected Demographic Effect on Lifecycle Deficit

Projected "Life Cycle Surplus" with Demographic Change, 1995-2050

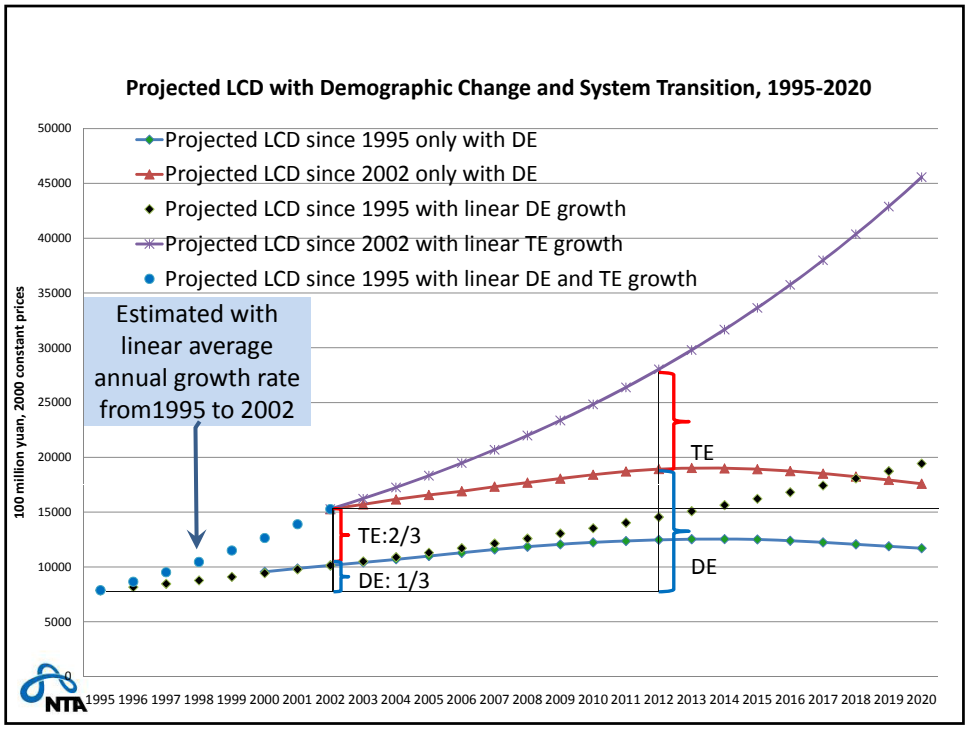


Note: Population projected by Chinese NBS based on census data, assume TFR=1.65



Source: Mason et al.

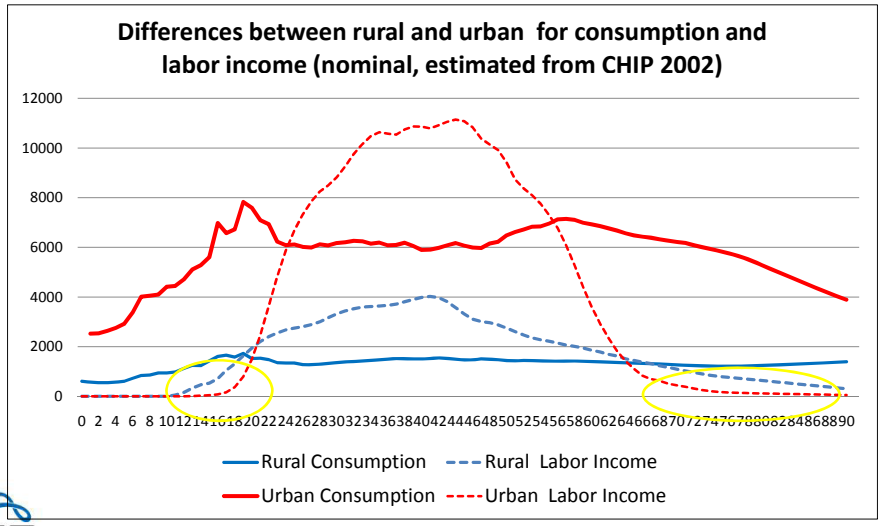
9/29/2006 Andrew Mason



(2) NTA by Rural and Urban

- Motivations
  - Rural urban equality
- Issues
  - How to separate aggregate statistics into rural and urban
  - Comparability of survey data by rural and urban

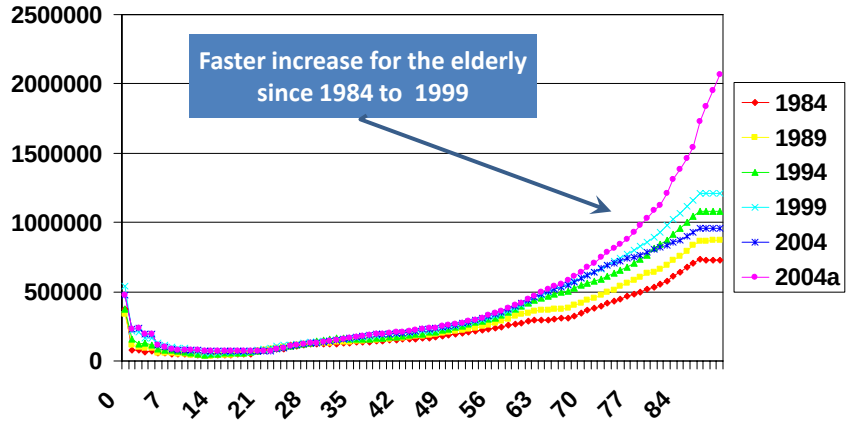
Rural and Urban Combination



(3) Socioeconomic Mechanism

- Motivation
  - The effect of transition and the causal of changes
- Issues
  - International comparison
  - Theoretical assumption
  - Health: health system and health cost
  - Education: education system and education return
  - Pension: PAYG or Funded system

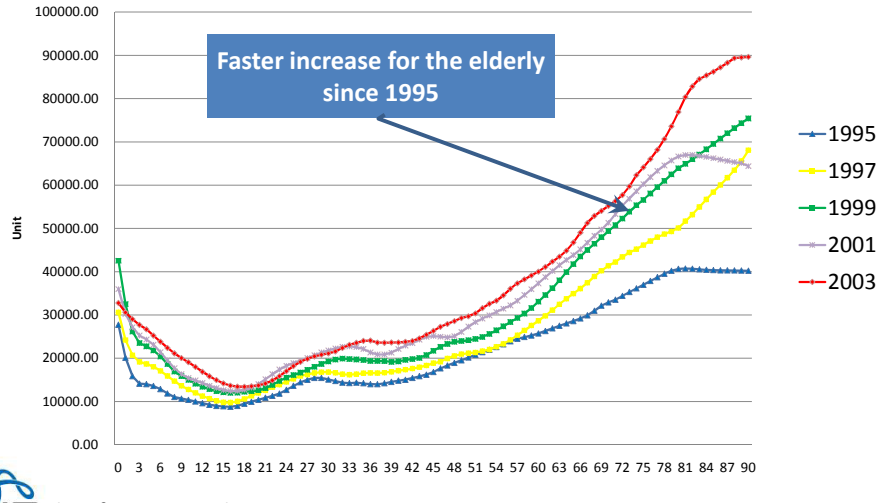
Per Capita Health Expenditure in NHI system, Japan 1984-2004



Note: Long-term care introduced in early 2000s included in 2004a.

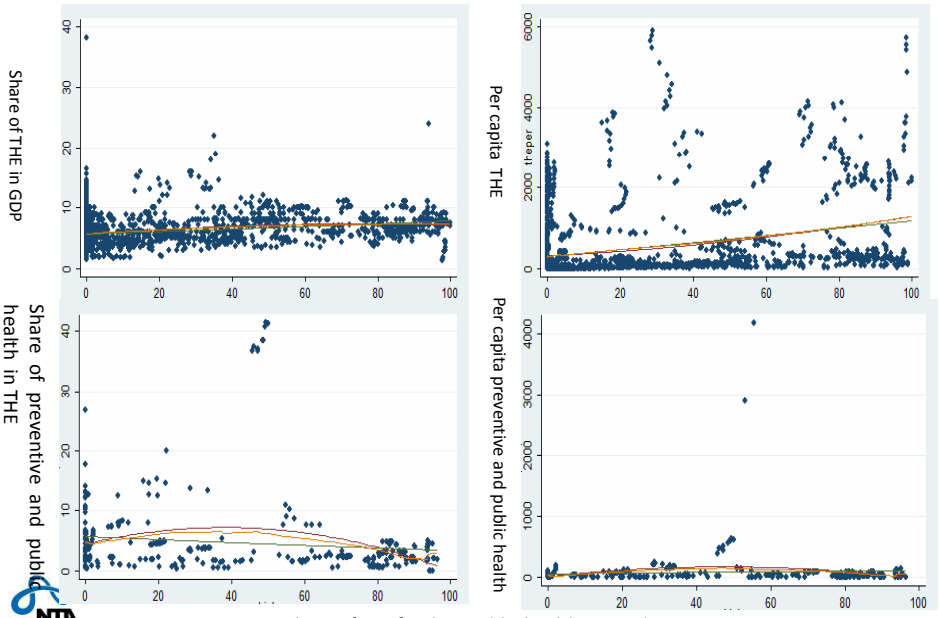
Source: Cited from Andrew Mason's presentation

Per Capita Health Expenditure in NHI system, Taiwan Province 1995-2003

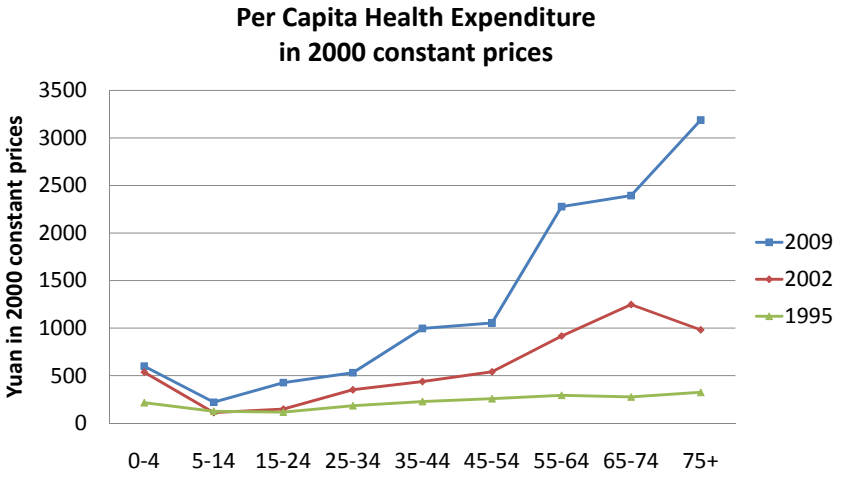


Source: data from NTA website

Health Care System, Preventive care and HE



Increasing Health Expenditure for the Elderly (China, 1995-2002-2009)



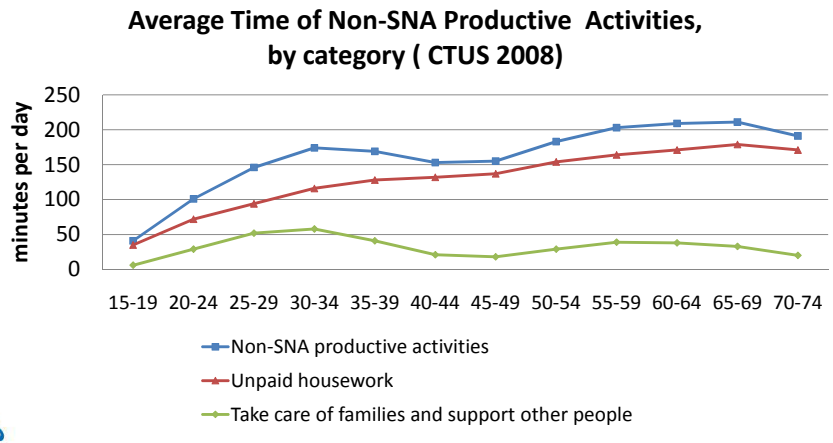
Note: 1995 and 2002 data was estimated from China Household Income Project Survey CHIPs 1995 and 2002. 2009 data was estimated from Chinese Family Panel Studies, CFPS 2010.

(4)Time Use Research

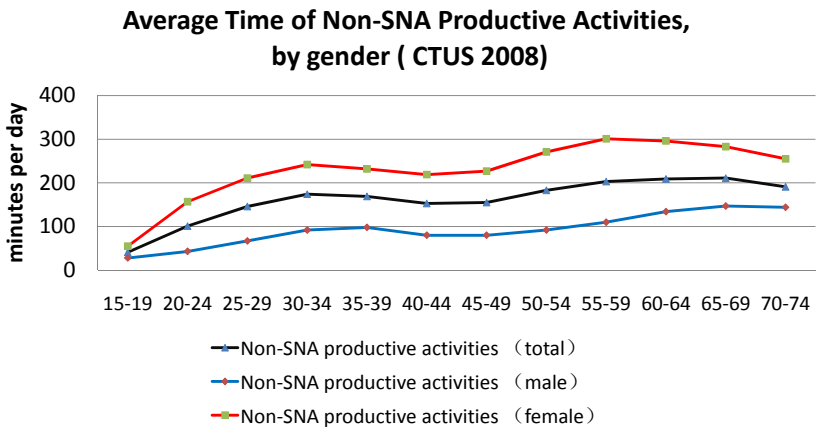
- Motivation
  - Unpaid labor (Non-SNA Productive Activities) and uncalculated GDP
  - Gender equality and marriage behaviors
- Issues
  - Time use survey data: CTUS 2008, CFPS 2010
  - Market value of unpaid labor

Non SNA Productive Activities

- 5 year cohort; official report



Non SNA Productive Activities by Gender



(5) NTA by Gender

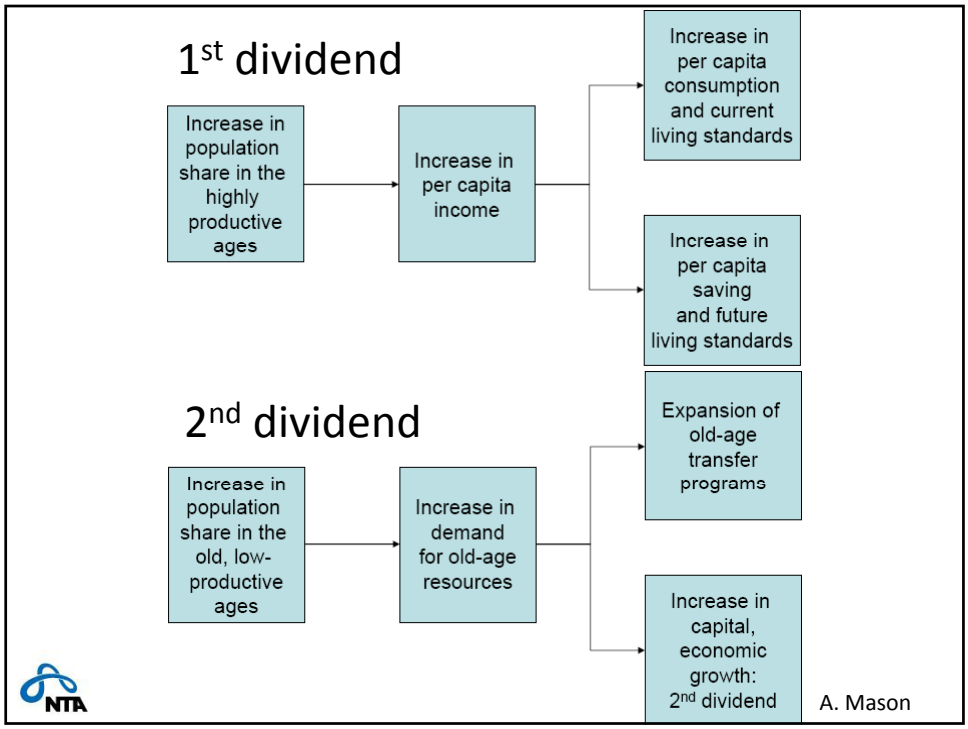
- Motivations
  - gender equality
- Issues
  - How to separate aggregate statistics by gender
    - According to the survey data

(6) Regional NTA

- Motivations
  - Regional equality
- Issues
  - Local aggregate statistics (Local NA?)
  - Regional representative survey data

(7) Macroeconomic research

- Motivation
  - Economic sustainability under aging
  - 1st dividend
  - 2nd dividend



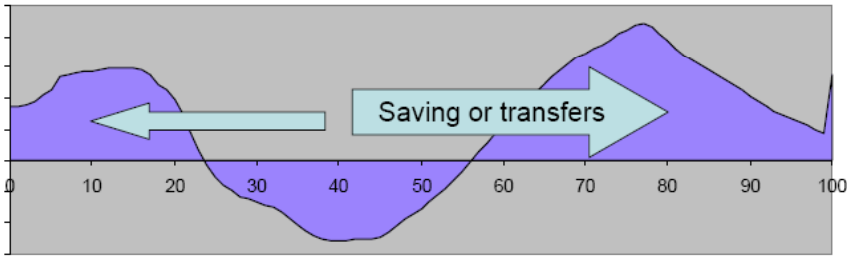
Economic Performance

Additional Growth in Per Capita Income, 1970-2000 (percent)

	1st dividend	2nd dividend
East Asia & Southeast Asia	0.59	1.31
South Asia	0.10	0.69
Latin America	0.62	1.08
Sub-Saharan Africa	-0.09	0.17
Middle East and North Africa	0.51	0.70
Transitional Economies	0.24	0.57
Pacific Islands	0.58	1.15

Policy Implication

- If reallocations to old age are accomplished via expansion of transfer programs, no second dividend.
- If reallocations to old-age are accomplished via increased saving and investment, economy grows more rapidly yielding a second dividend.



Policy Implication

- Trade-off between first dividend and second
- dividend.
  - Population aging leads to decline in productive share of population but may also lead to a rise in capital.
  - The net effect of aging depends on features of:
    - the economic lifecycle
    - –the old-age support system.

Ending

- Cross topics
- Any others?