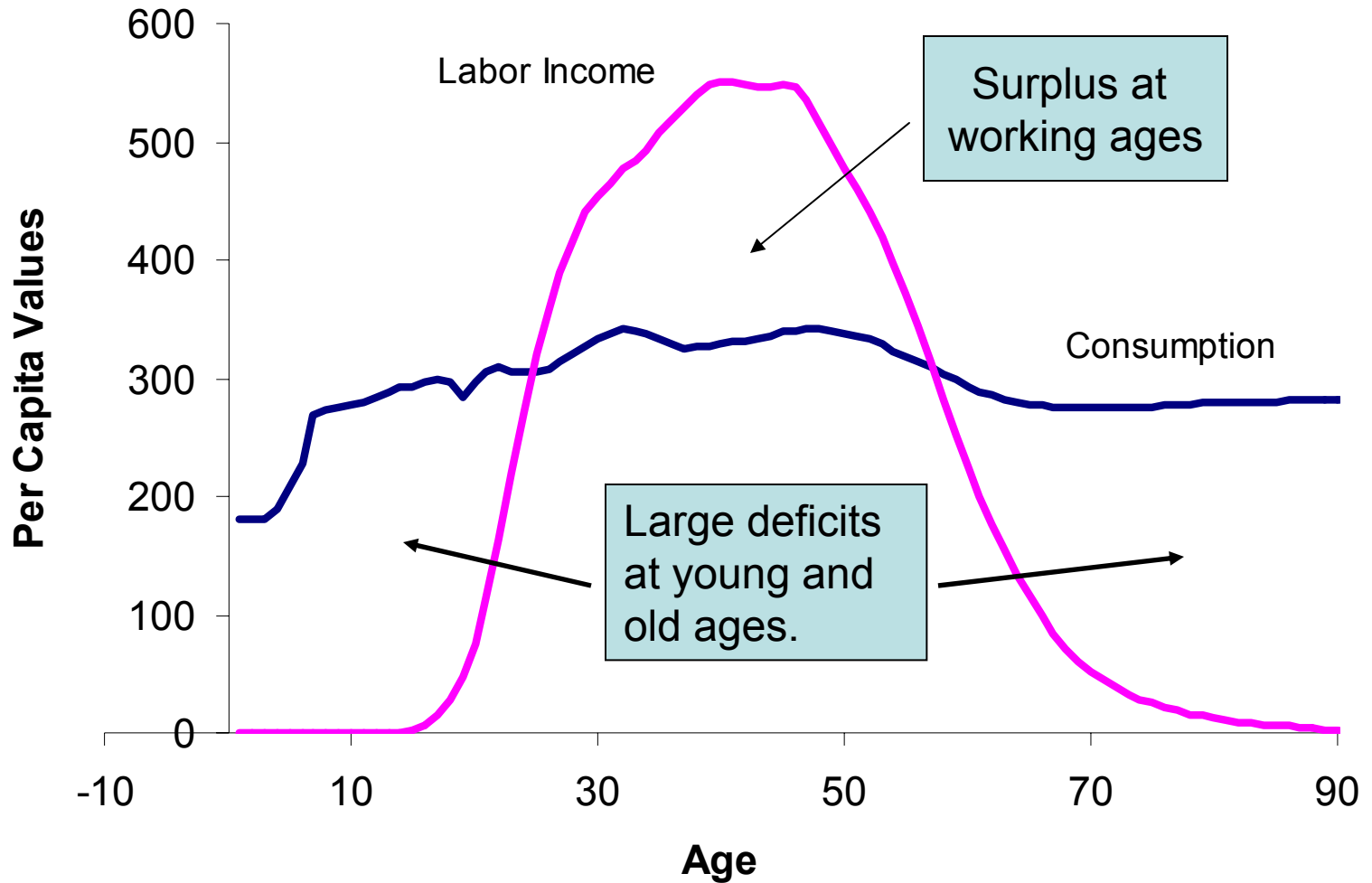


# Changing Age Structures and their Implications for Development

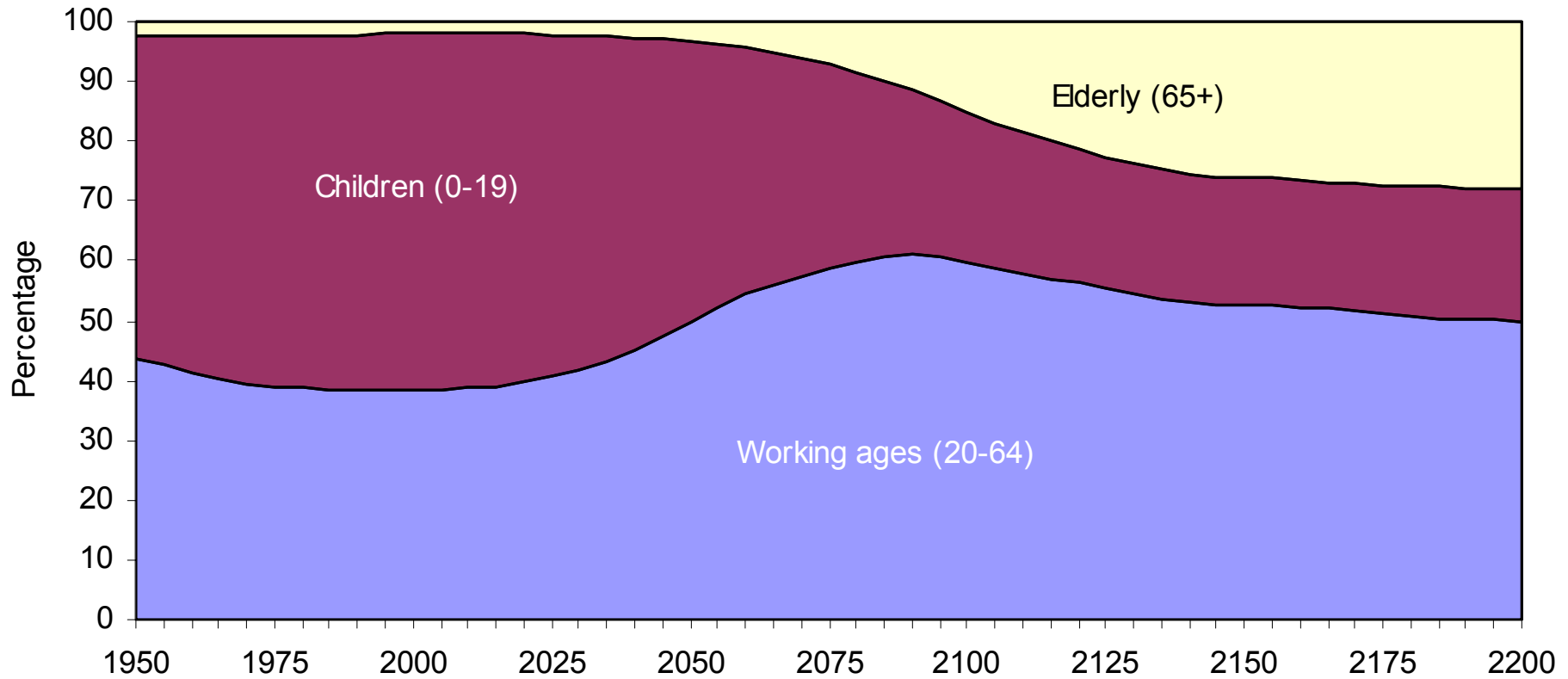
Andrew Mason  
September 2006

# An Asian Economy's Economic Lifecycle



# The Last Demographic Transition

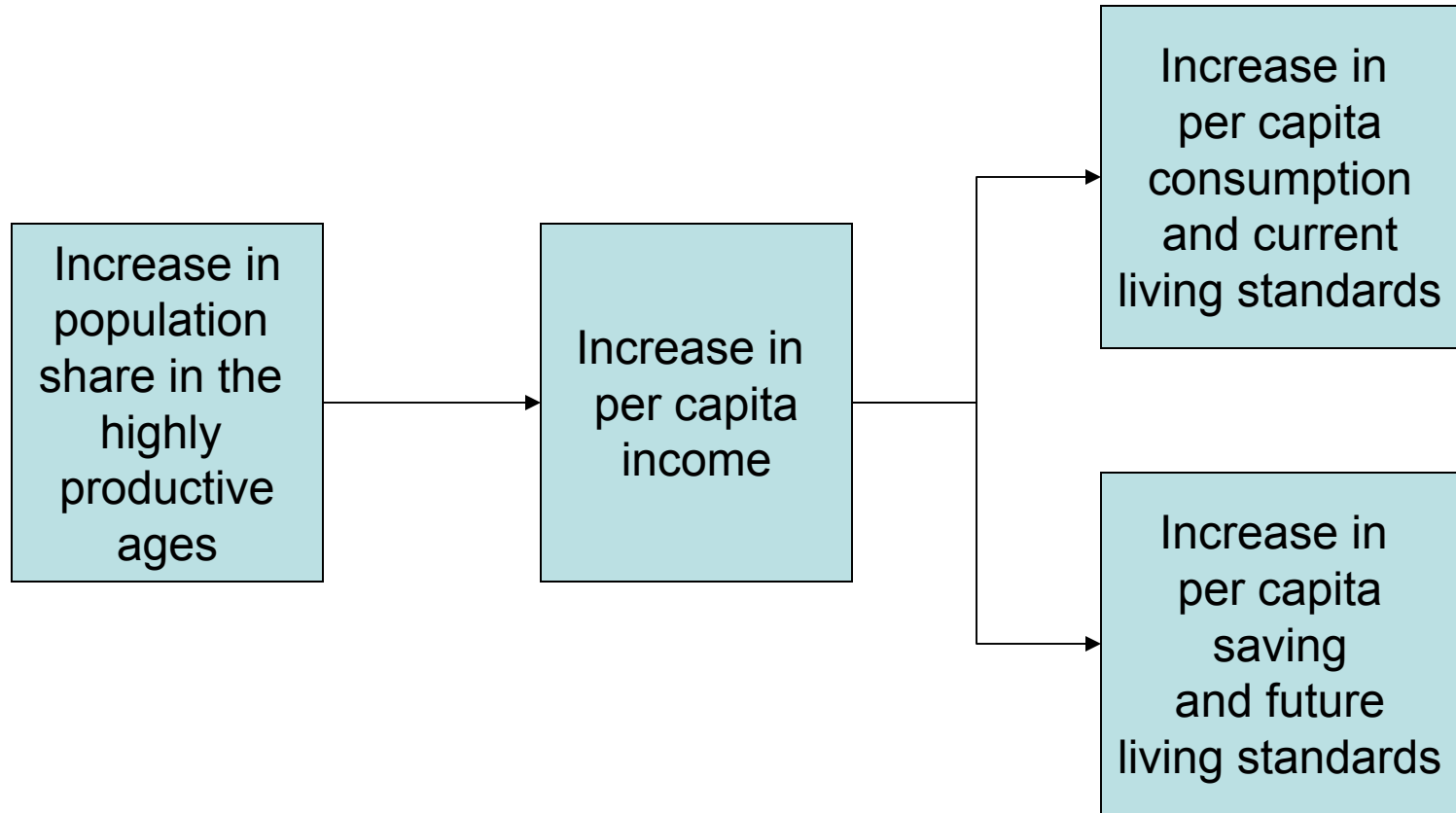
## Age Distribution of Niger's Population, 1950-2200



# Two Demographic Dividends

- The interaction between the economic lifecycle and population age structure produces two dividends.
- The first dividend results from an increase in the share of the population at ages with a production surplus.
- The second dividend results from an increase in the share of the population at the old ages – with a production deficit.

# First Dividend



# First Dividend: Additional Growth in Per Capita Income, 1970-2000 (percent)

---

East Asia & Southeast Asia	0.59
South Asia	0.10
Latin America	0.62
Sub-Saharan Africa	-0.09
Middle East and North Africa	0.51
Transitional Economies	0.24
Pacific Islands	0.58

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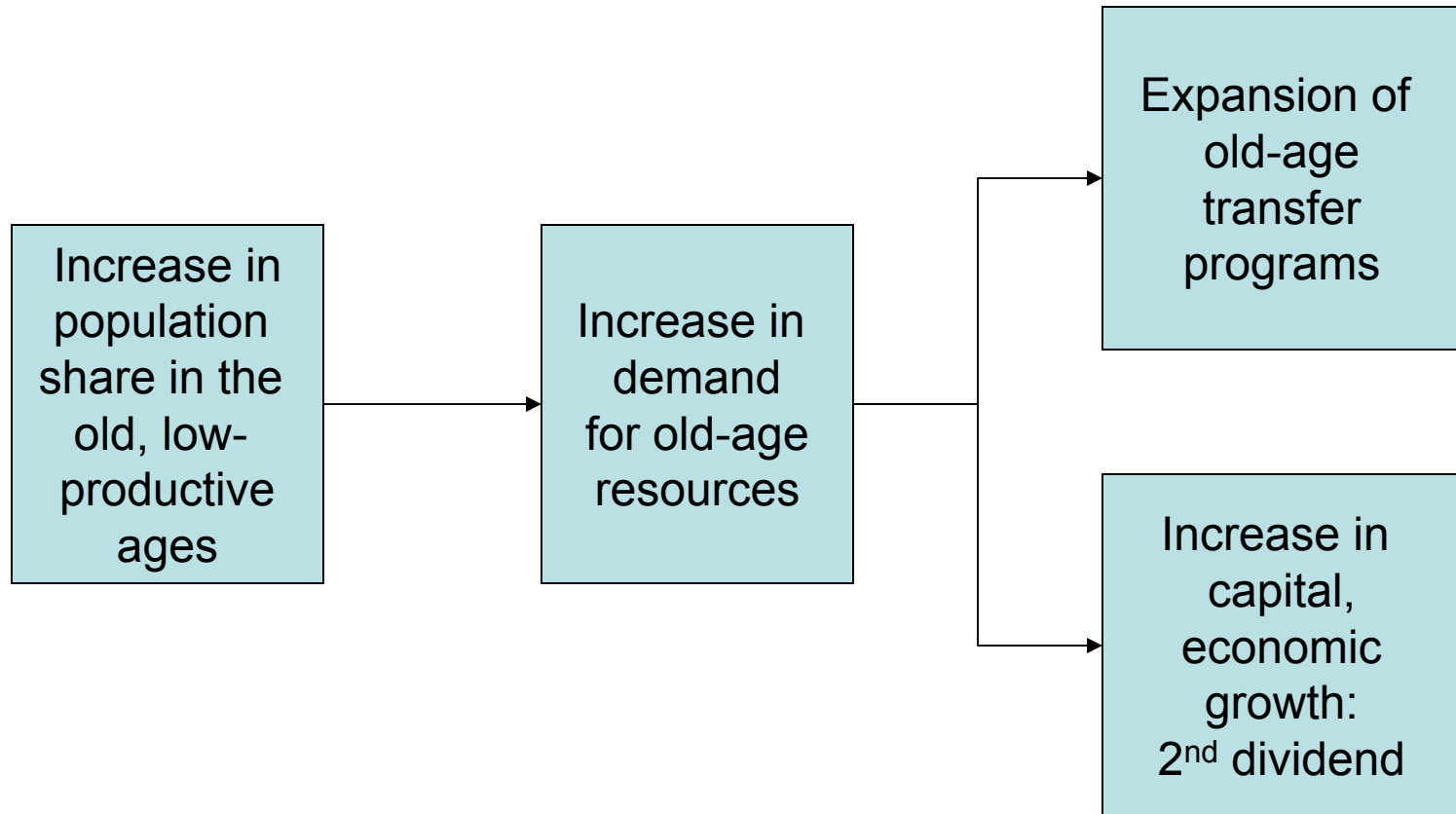
Source: Mason 2005.

# 1<sup>st</sup> Dividend Summary

- The 1<sup>st</sup> Dividend led to a significant increase in per capita income in the developing world and a more moderate increase in industrial countries.
- Per capita income increased by roughly 40% in E/SE Asia, LA, Pacific Islands.
- 1<sup>st</sup> Dividend period delayed in S Asia and SSA.
- The 1<sup>st</sup> Dividend is ultimately transitory.

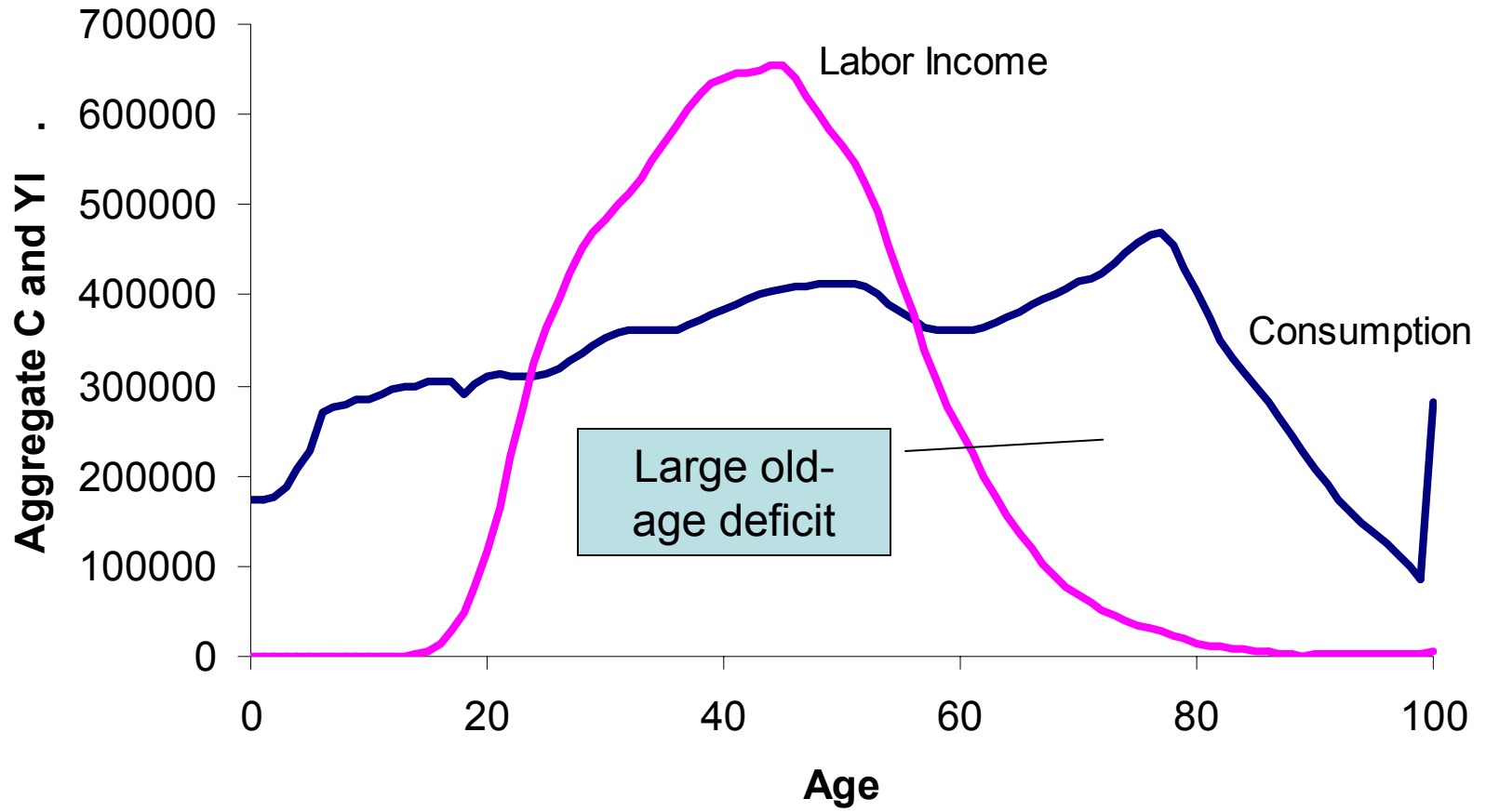
Source: Mason 2005.

# Second Dividend

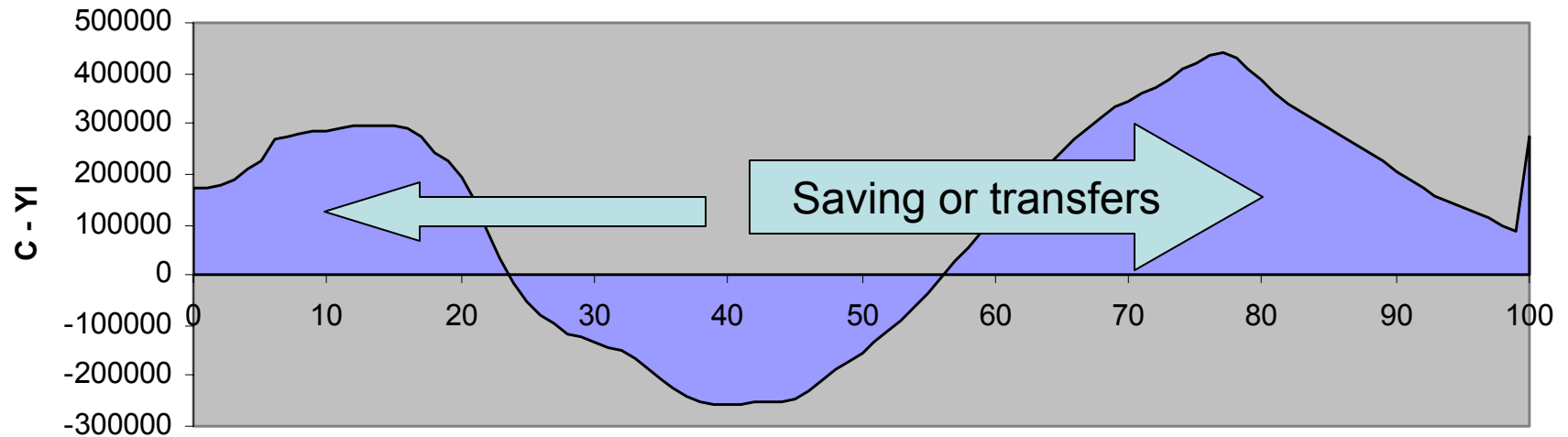




# Aggregate Economic Lifecycle, Japan 2050 Age Structure



### Lifecycle Deficit and Age Reallocations, Japan Age Distribution, 2050



- 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.

## **Second Dividend: Additional Growth in Per Capita Income, 1970-2000 (percent)**

---

East Asia & Southeast Asia	1.31
South Asia	0.69
Latin America	1.08
Sub-Saharan Africa	0.17
Middle East and North Africa	0.70
Transitional Economies	0.57
Pacific Islands	1.15

---

Source: Mason 2005.

# Second Dividend Summary

- Effects are substantial in many developing countries.
- Not yet realized in Sub-Saharan Africa and South Asia.
- Positive growth effect is transitory, but level of income is permanently higher.
- Potential effect that will not be realized if countries rely excessively on transfer systems.

# Implications for Population Aging

- 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.

# National Transfer Account Project

- Objective is to develop and apply a comprehensive system of accounts that measures the economic lifecycle and the associated economic support systems.
- Core project is led by the East-West Center and UC-Berkeley with funding from the National Institute on Aging.
- International effort that involves many outstanding scholars.

# Two Important Questions about the Economic Lifecycle

- Can the age profile of production be modified to extend the productive ages and to raise productivity at older ages?
- Can the age-profile of consumption be affected to reduce the lifecycle deficit at old ages? Is this a policy that should be pursued?

# Lifecycle Deficit and Surplus Ages

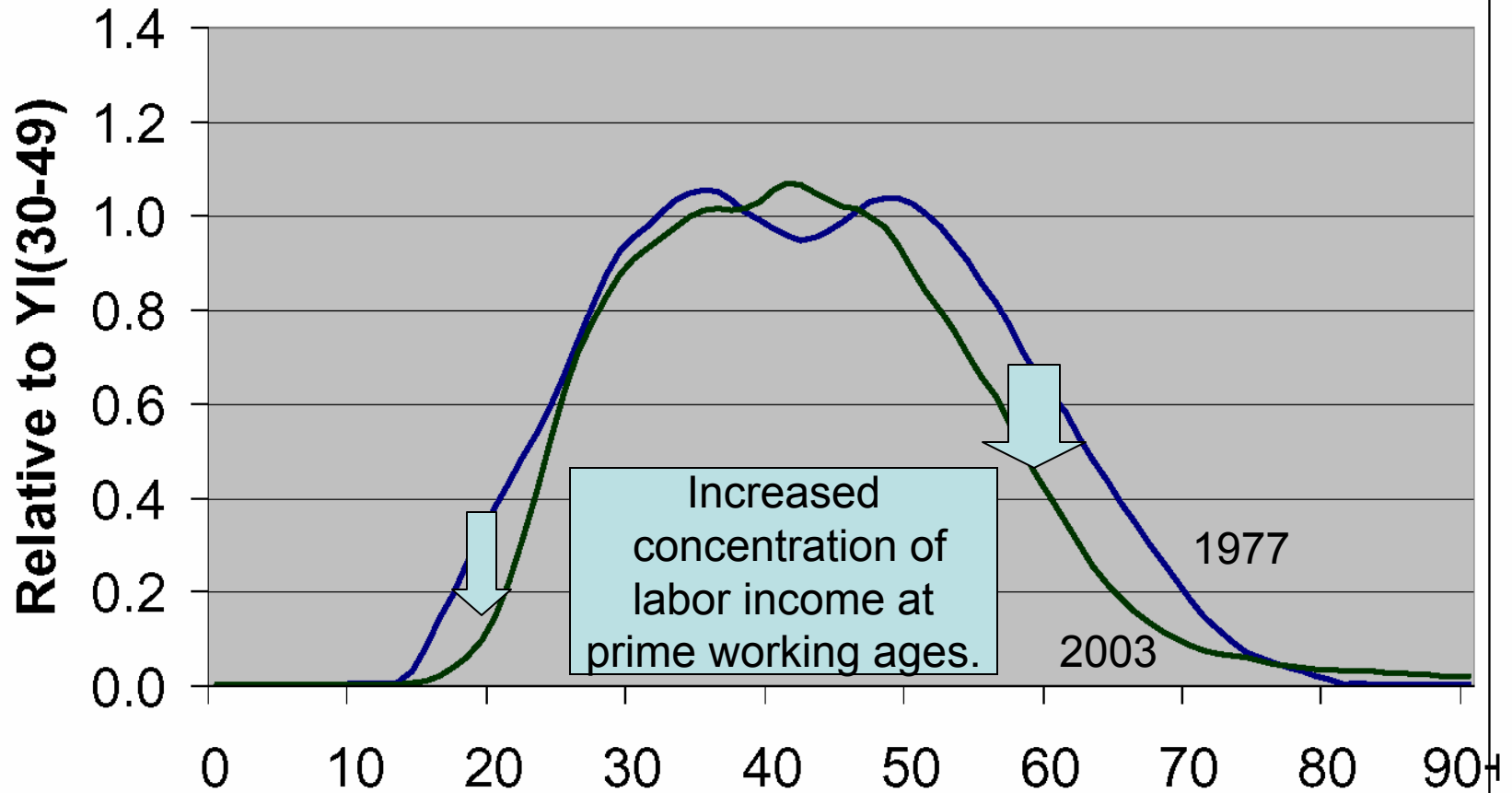
Country	Year	Early Age	Later Age	Duration
Indonesia	1996	29	58	29
Thailand	1996	26	61	35
Taiwan	1998	24	56	32
Japan	1999	29	61	32
United States	2000	27	59	32
Costa Rica	2004	24	57	33

Source: [www.ntaccounts.org](http://www.ntaccounts.org)

- Short duration of productive span.
- Old-age deficit begins at a relatively young age.



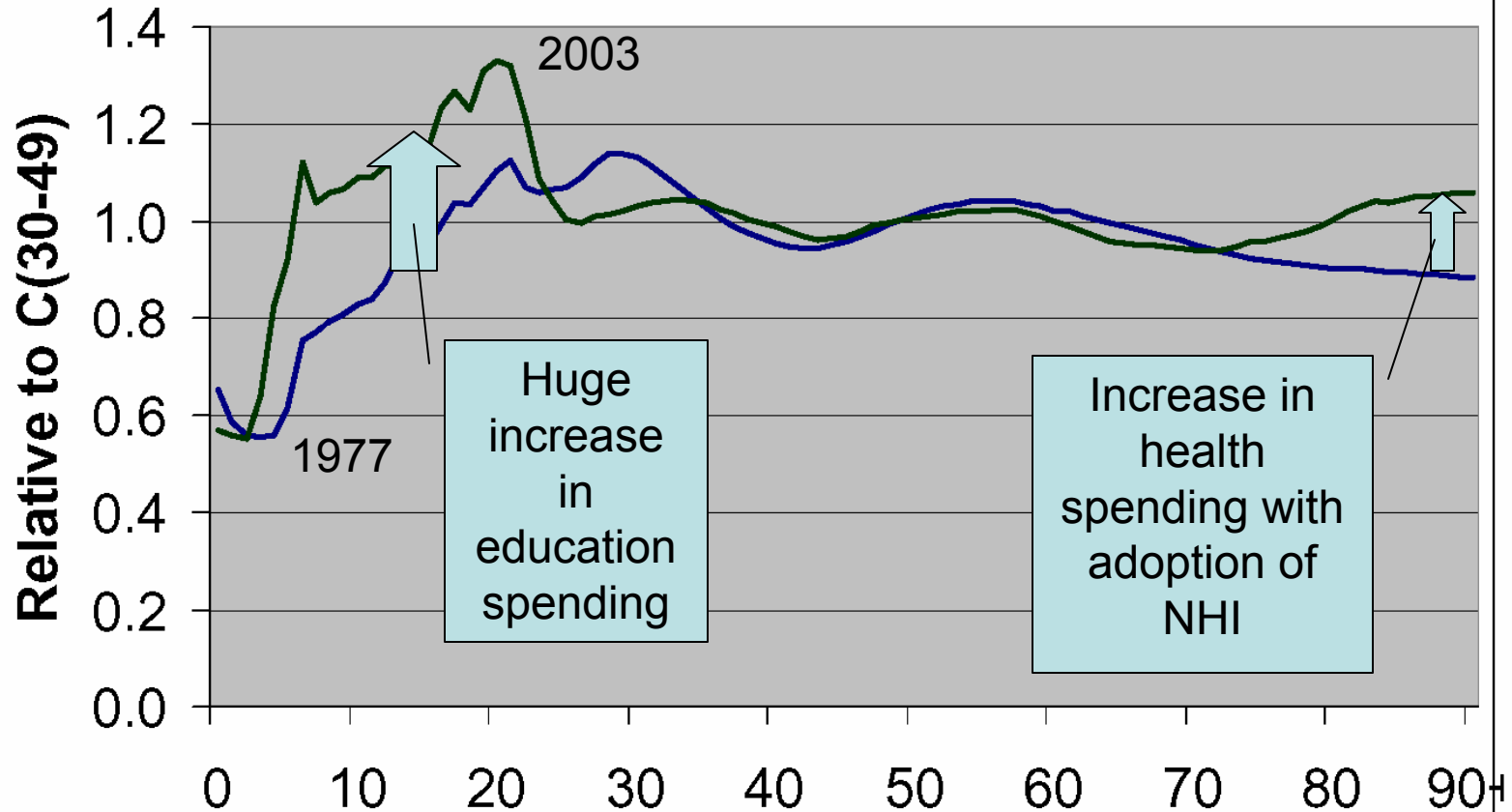
# Per Capita Labor Income, Taiwan, 1977 and 2003



# Labor Income

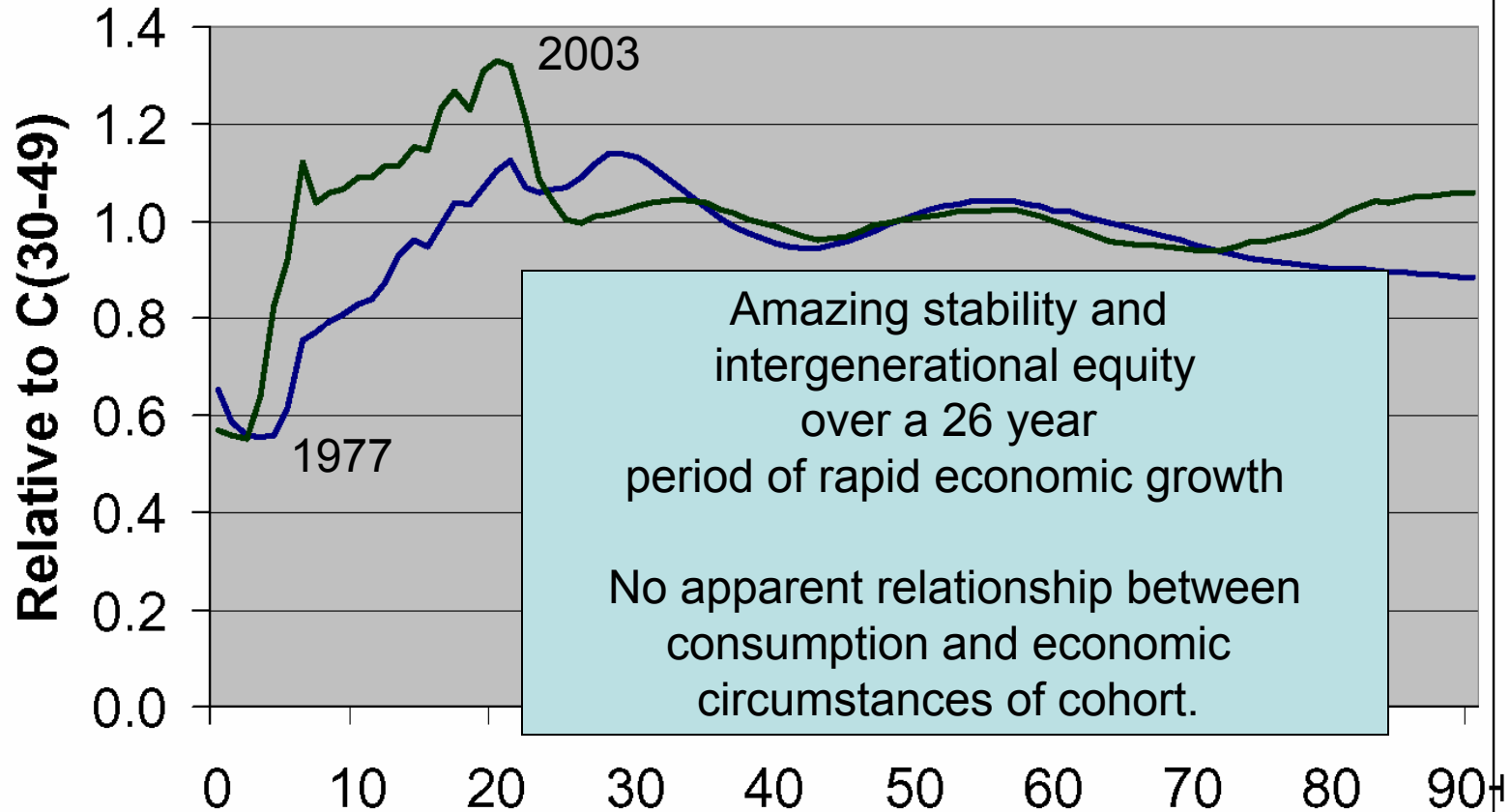
- In Japan, labor income at young and old ages also declined relative to labor income at prime ages between 1989 and 2004 (Ogawa et al.)
- In the US, however, labor income has increased at old ages relative to labor income at other ages since the early 1980s. This is a promising development. (Lee et al.)

# Consumption, Taiwan, 1977 and 2003



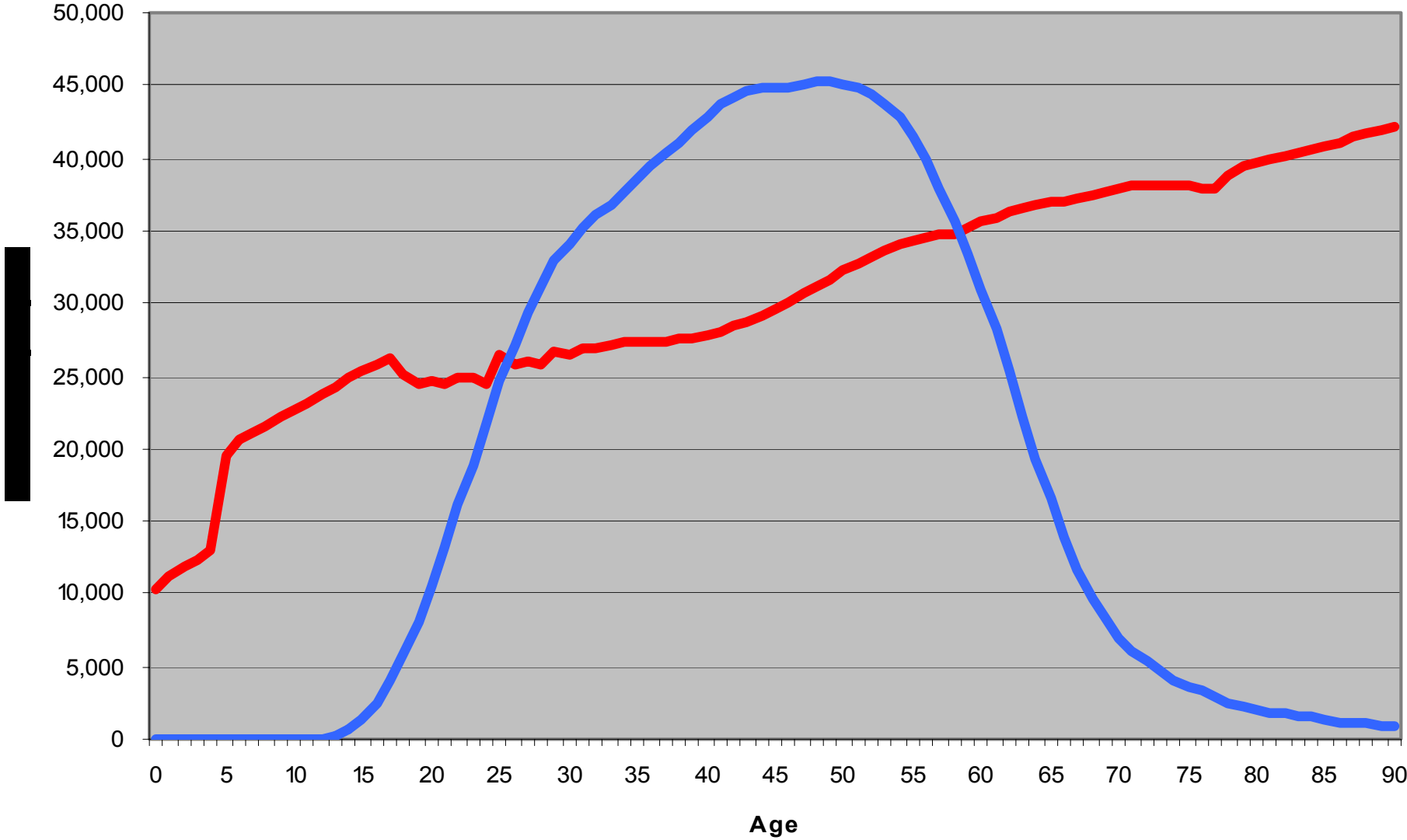
Source: Mason et al.

# Consumption, Taiwan, 1977 and 2003



Source: Mason et al.

**Figure 1A. Per Capita Labor Income and Consumption, US (2000)**



Source: See Lee, Lee and Mason (2005) for methods and data sources for these estimates.

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# Old-Age Reallocation Systems

- Transfers
  - Public transfers
    - PAYGO pension programs
    - Public health care and long-term disability programs
  - Familial transfers
- Asset-based reallocations
  - Funded public programs
  - Funded employment based programs
  - Personal saving

Saving

Capital-based transformation

Social welfare transformation

Traditional society

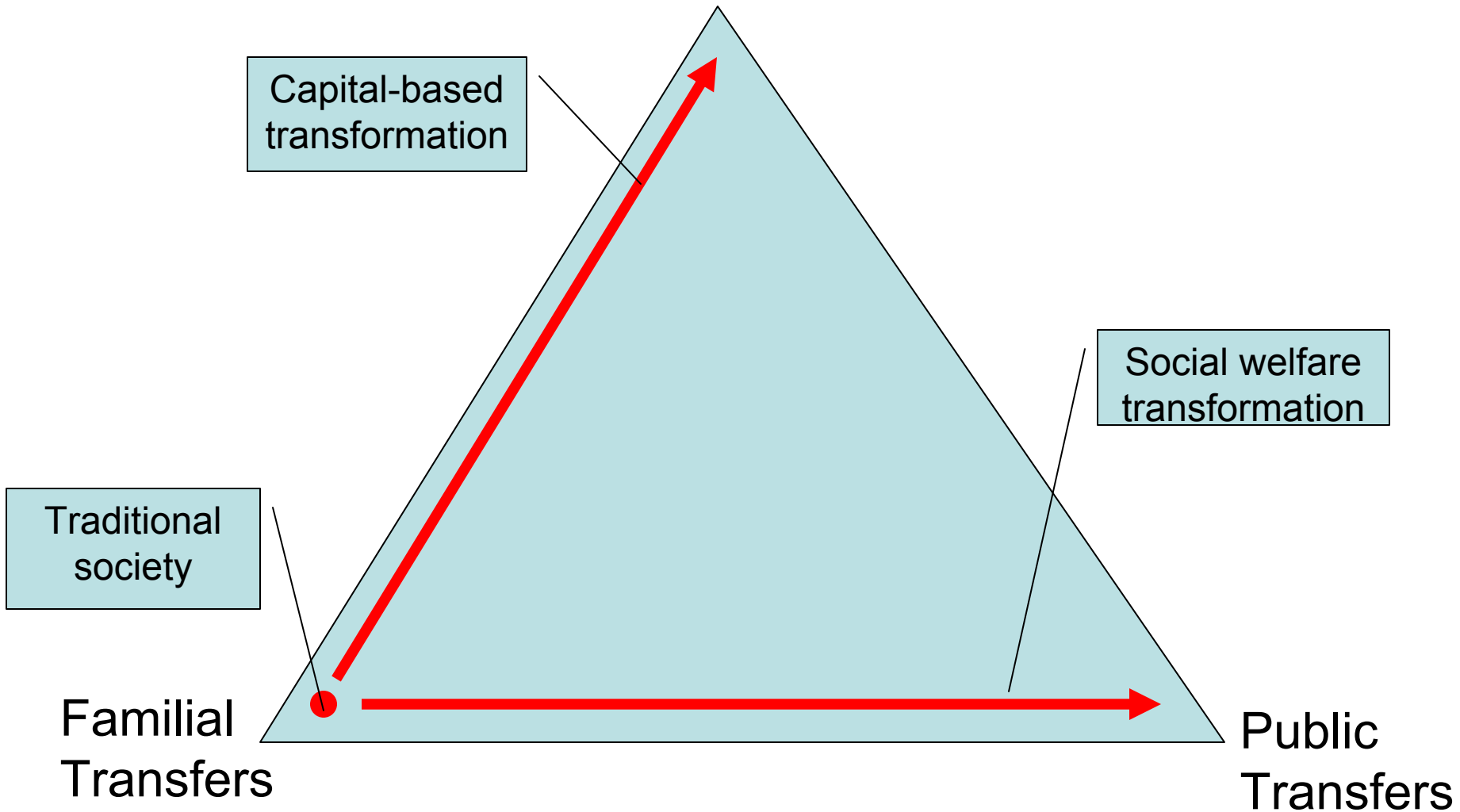
Familial Transfers

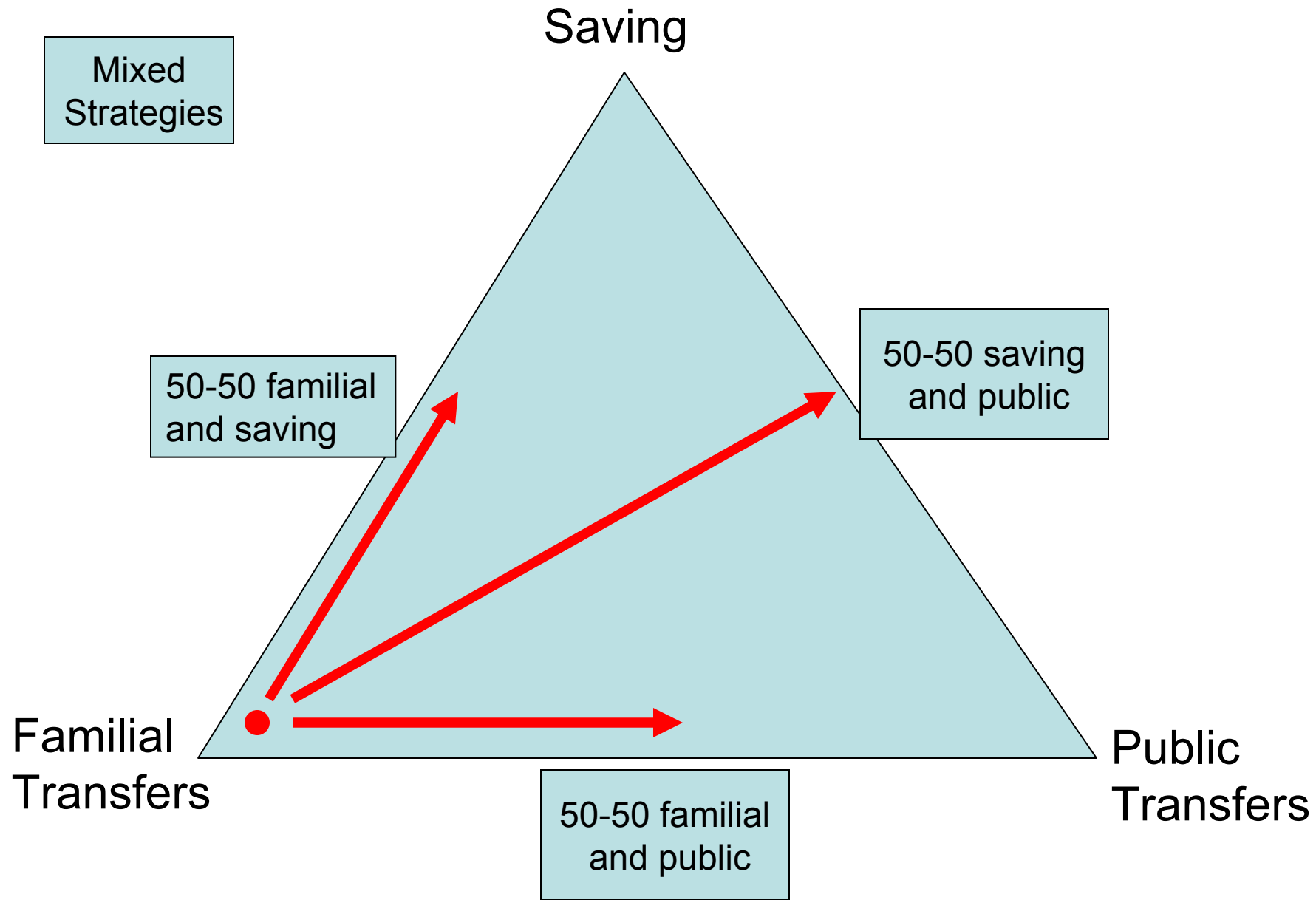
Public Transfers

# Old-Age Reallocation Systems

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Mixed Strategies

50-50 familial and saving

50-50 saving and public

50-50 familial and public

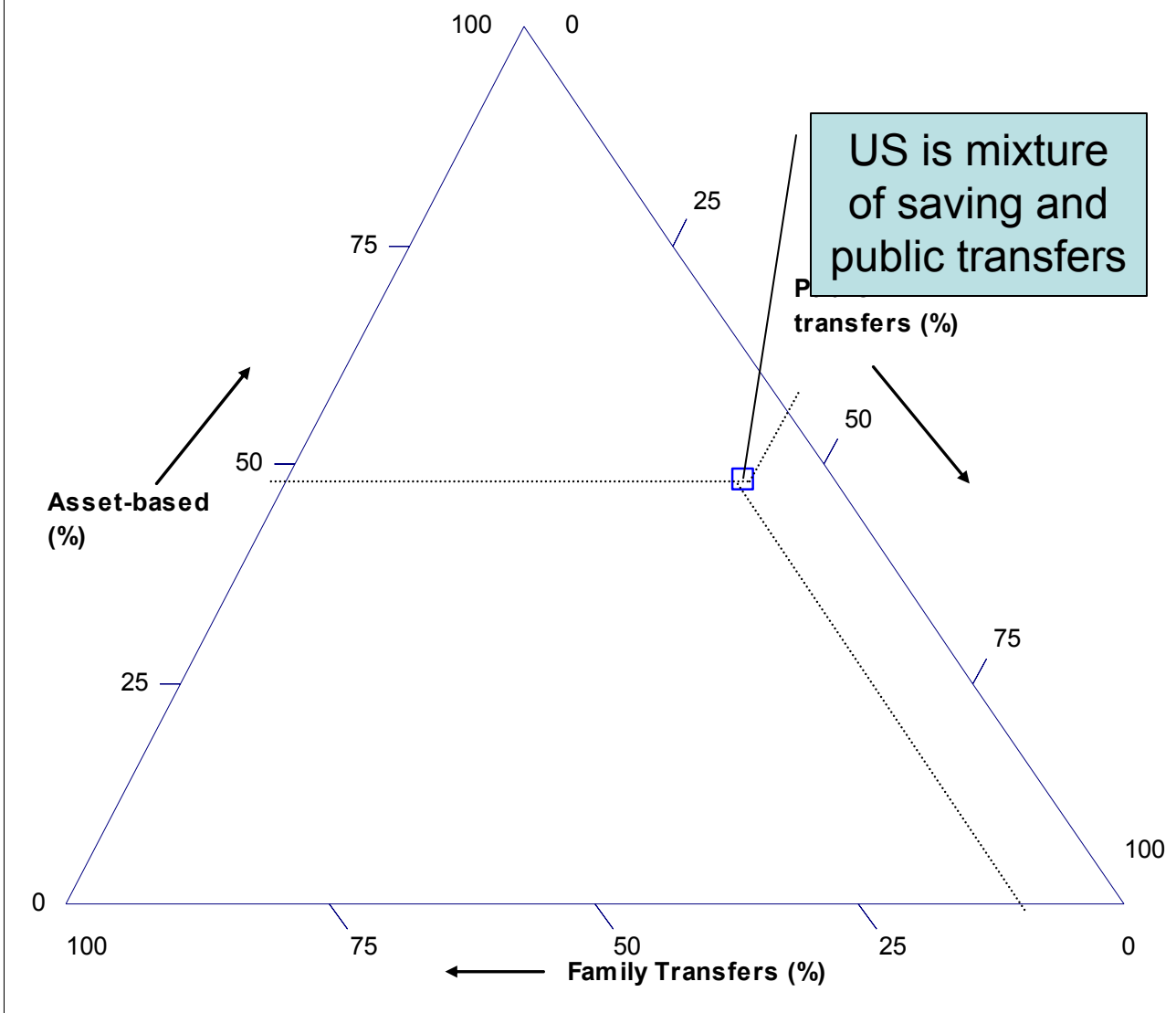
9/29/2006

# Old-Age Reallocation Systems

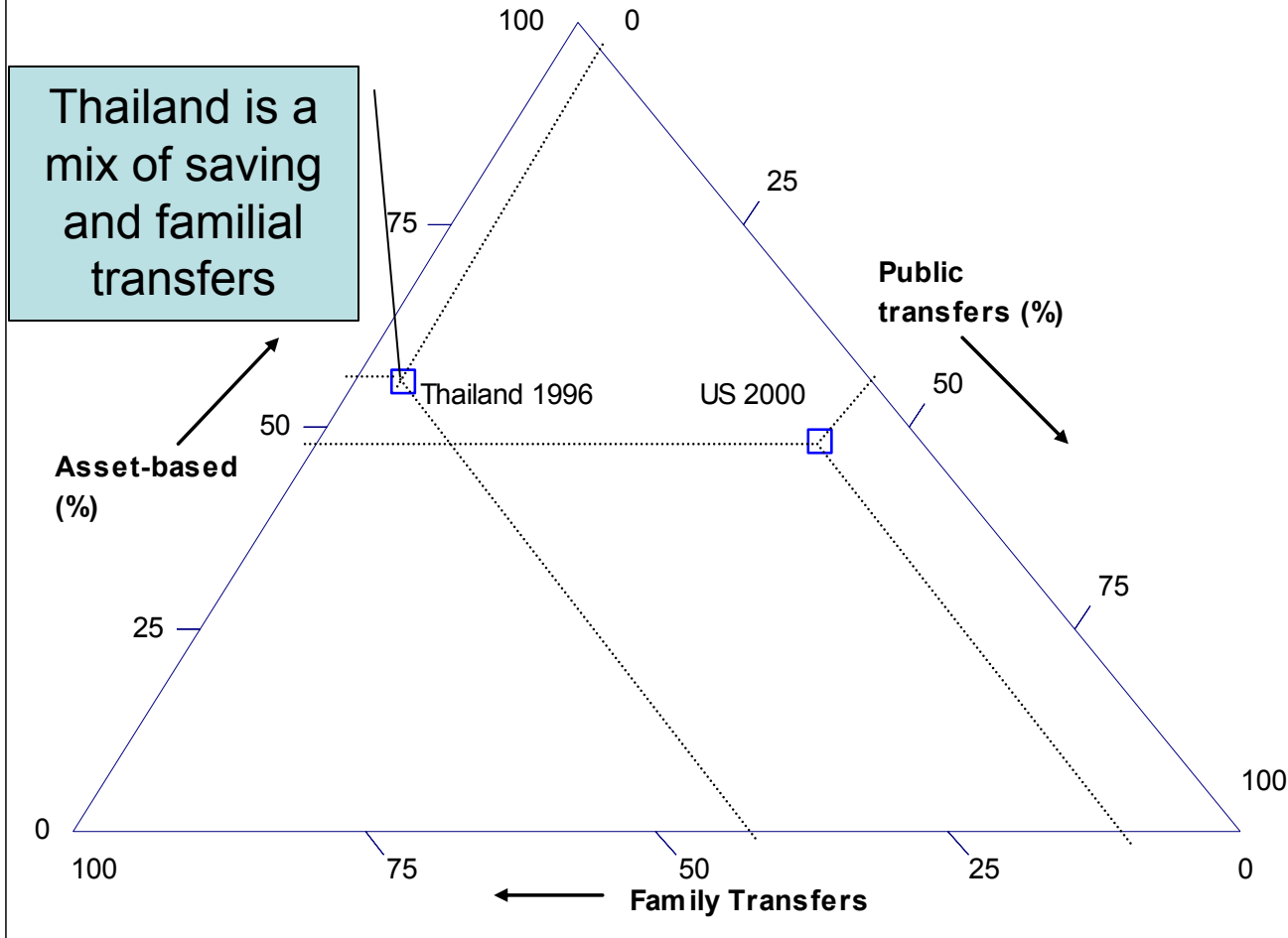
Andrew Mason



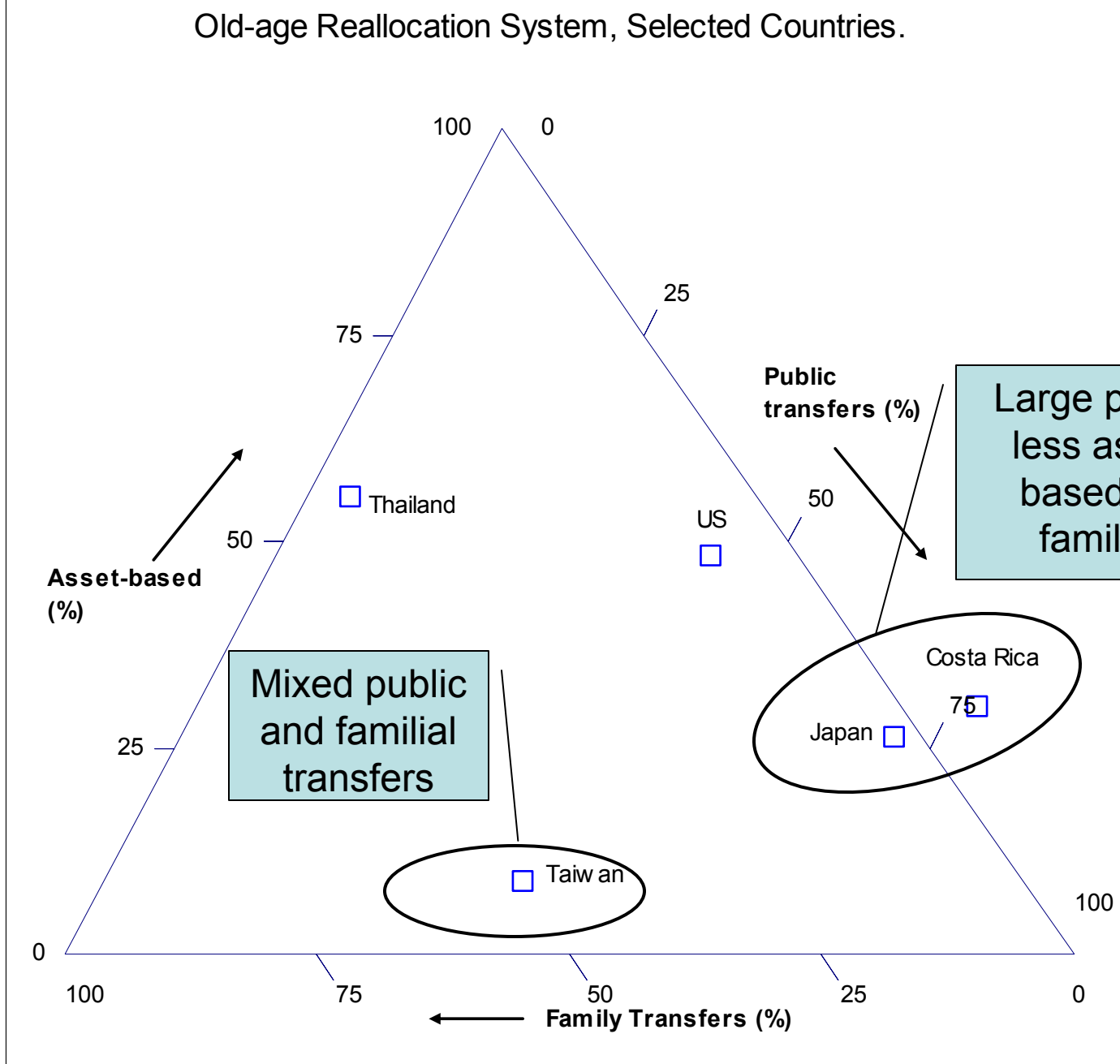
Composition of Old-Age Reallocations, US 2000.



# Old-Age Reallocations, US & Thailand.



# Old-age Reallocation System, Selected Countries.



# Cautions

- Important changes in economic lifecycle but links to policy have not yet been made.
- Large variation in the old-age reallocation system. Understanding this better is clearly a priority.
- Important to test robustness of private reallocation estimates to alternative assumptions.

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To CEDA: NIA, R01-AG025247

Asia Project:

United Nations Population Fund

For more information: [www.ntaccounts.org](http://www.ntaccounts.org)