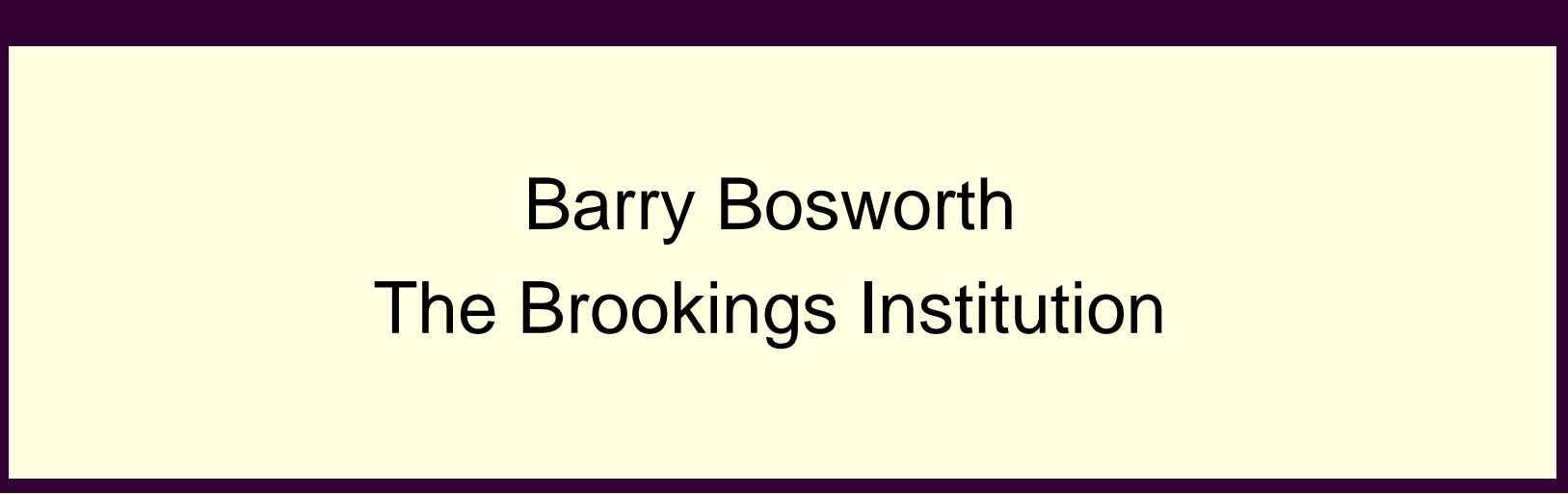





# Macroeconomic Consequences of Population Aging



Barry Bosworth  
The Brookings Institution

# Main Themes

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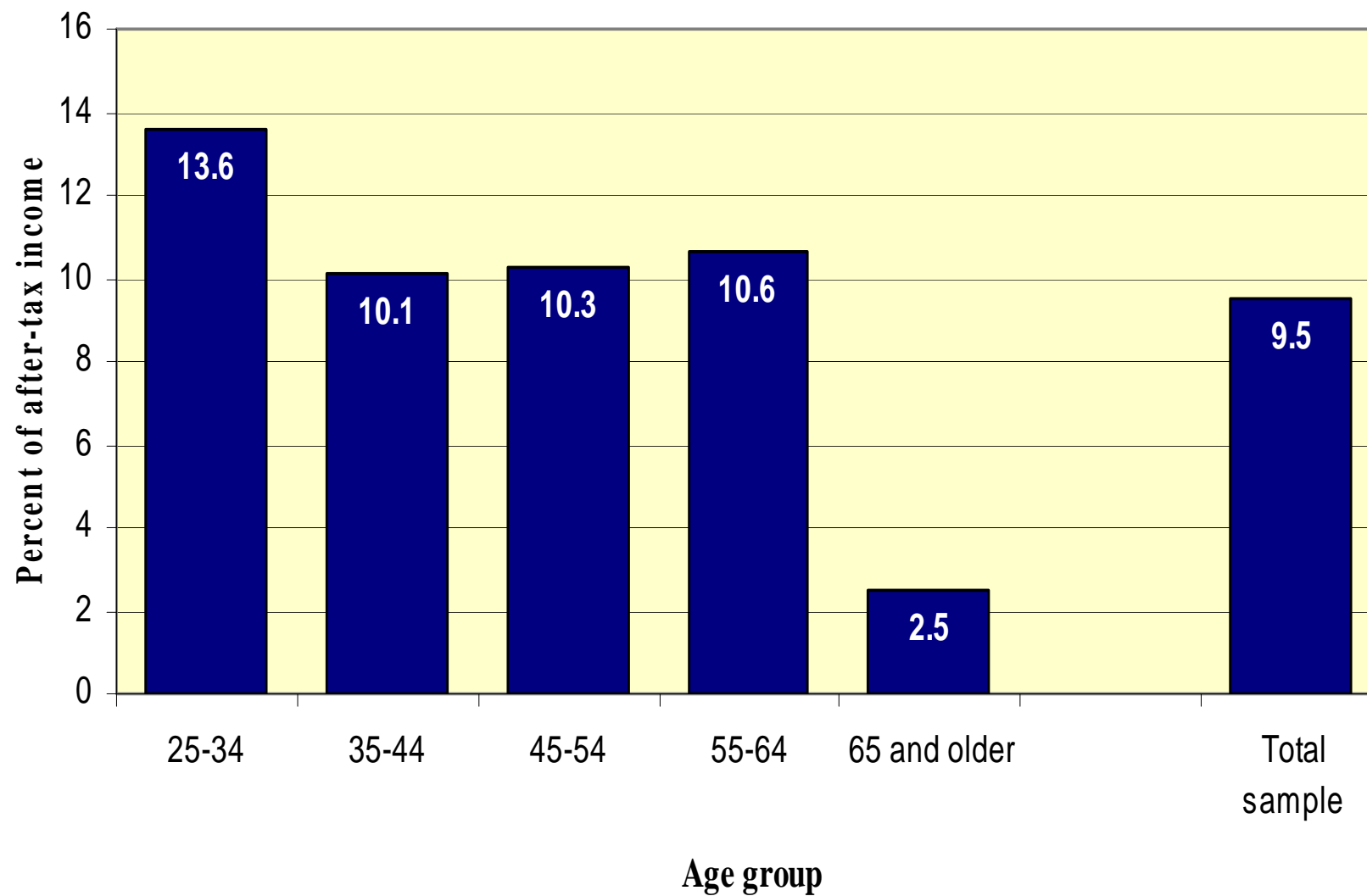
- Impact of Aging on Aggregate Saving
- Impact of Aging on Investment
- Importance of Global Capital Market
- Relationship to Current Economic Situation

# **A. Demographic Effects on Saving**

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- Microeconomic analysis
  - Weak life-cycle influences
  - Many people have no significant retirement saving
  - Lack of panel surveys and information on pensions
  - Highly disparate patterns of wealth accumulation complicates aggregation.
  - Average dollar much different than average person.

### **Saving measured as change in wealth minus estimated capital gains (SCF)**



# Macroeconomic Evidence

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- Stronger evidence of life-cycle pattern of saving (Higgins, 1998, and Masson, Bayoumi and Samiei, 1998)
  - Most pronounced for Asia
  - Weak evidence for industrial economies
- Multi-country panel data sets
  - Cross-national differences are correlated with other determinants.
  - Within-country demographic changes are small compared to changes in saving

# Dataset

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- 85 Countries (95% of World GDP) Covering 1960-2004
- 40 Countries (91% of World GDP) with Public and Private Saving
- Sources: OECD, World Bank, IMF, and country statistical offices
- United Nations, *World Population Prospects*
- All data converted to 5 year averages

# The Fixed Effects Model

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$$S_{it} = F_1(X_{it}, C_i, P_{it}) + u_{it}$$

Where  $S_{it}$  is saving in country  $i$  at time  $t$ ;

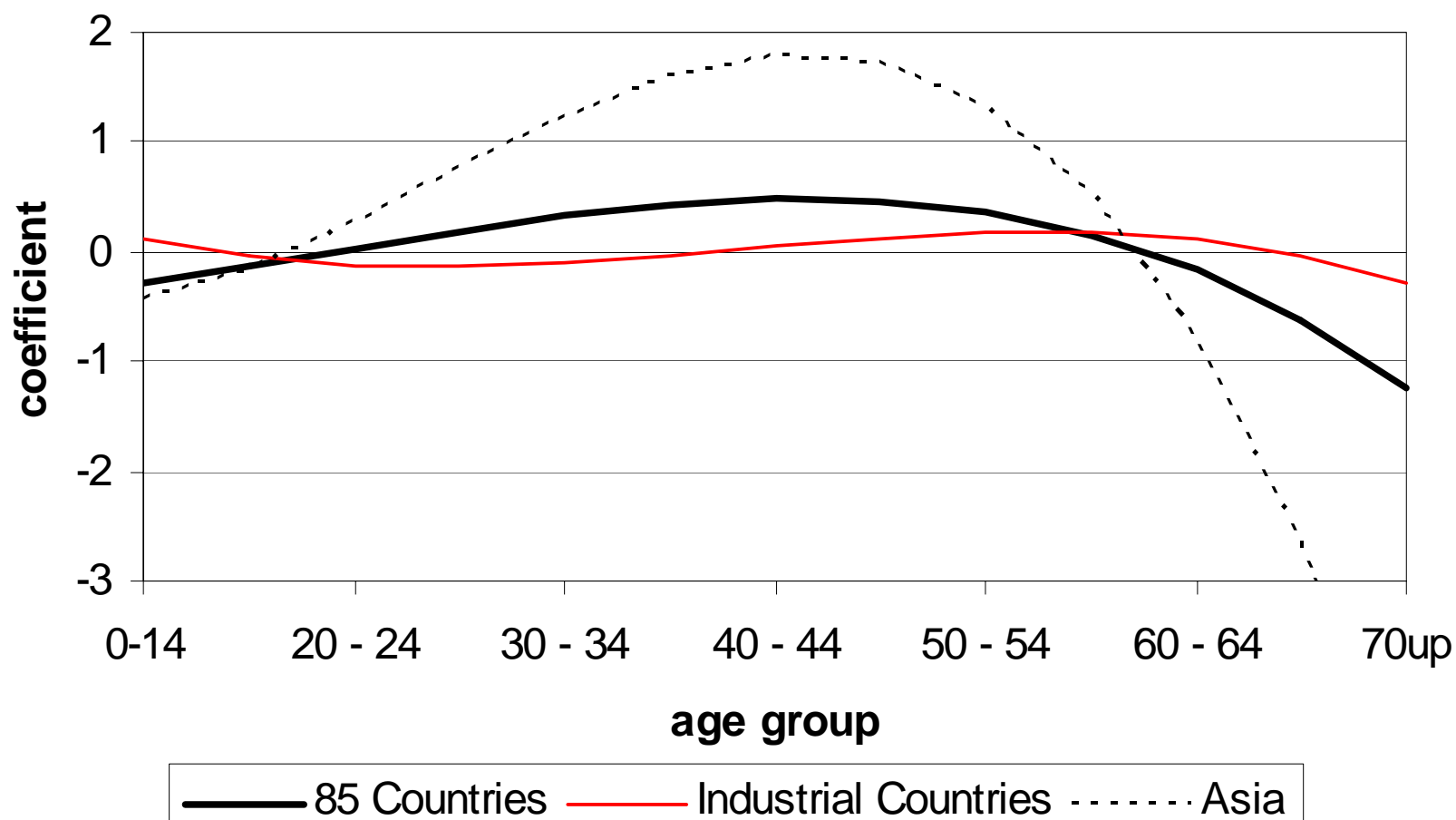
$X_{it}$  are a set of country-specific economic factors that change over time;

$C_i$  are factors that are largely time-invariant but vary across countries;

$P_{it}$  capture the age structure of the population;

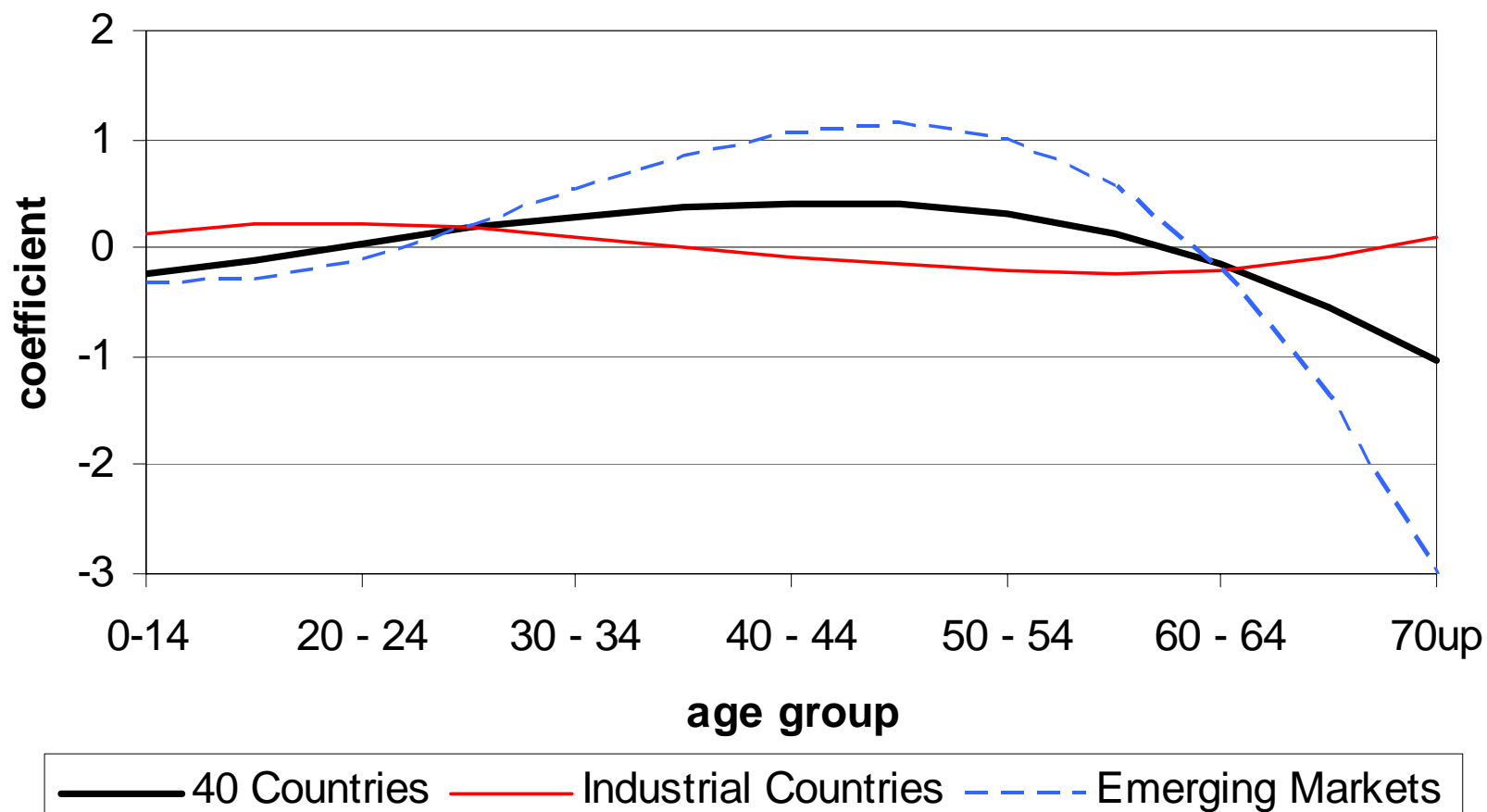
And  $u_{it}$  is an uncorrelated error term.

# Coefficients on National Saving

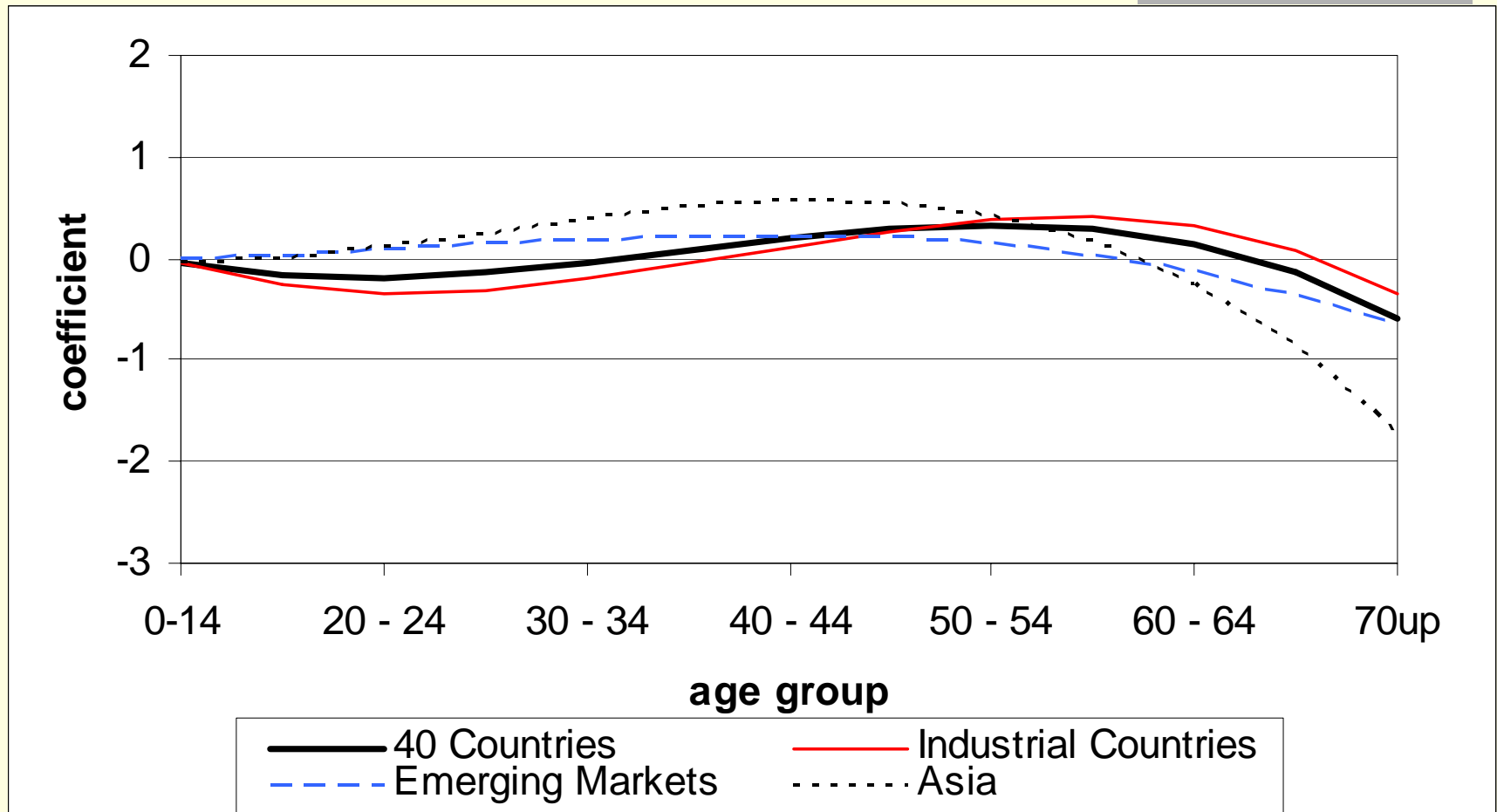




# Coefficients on Private Saving

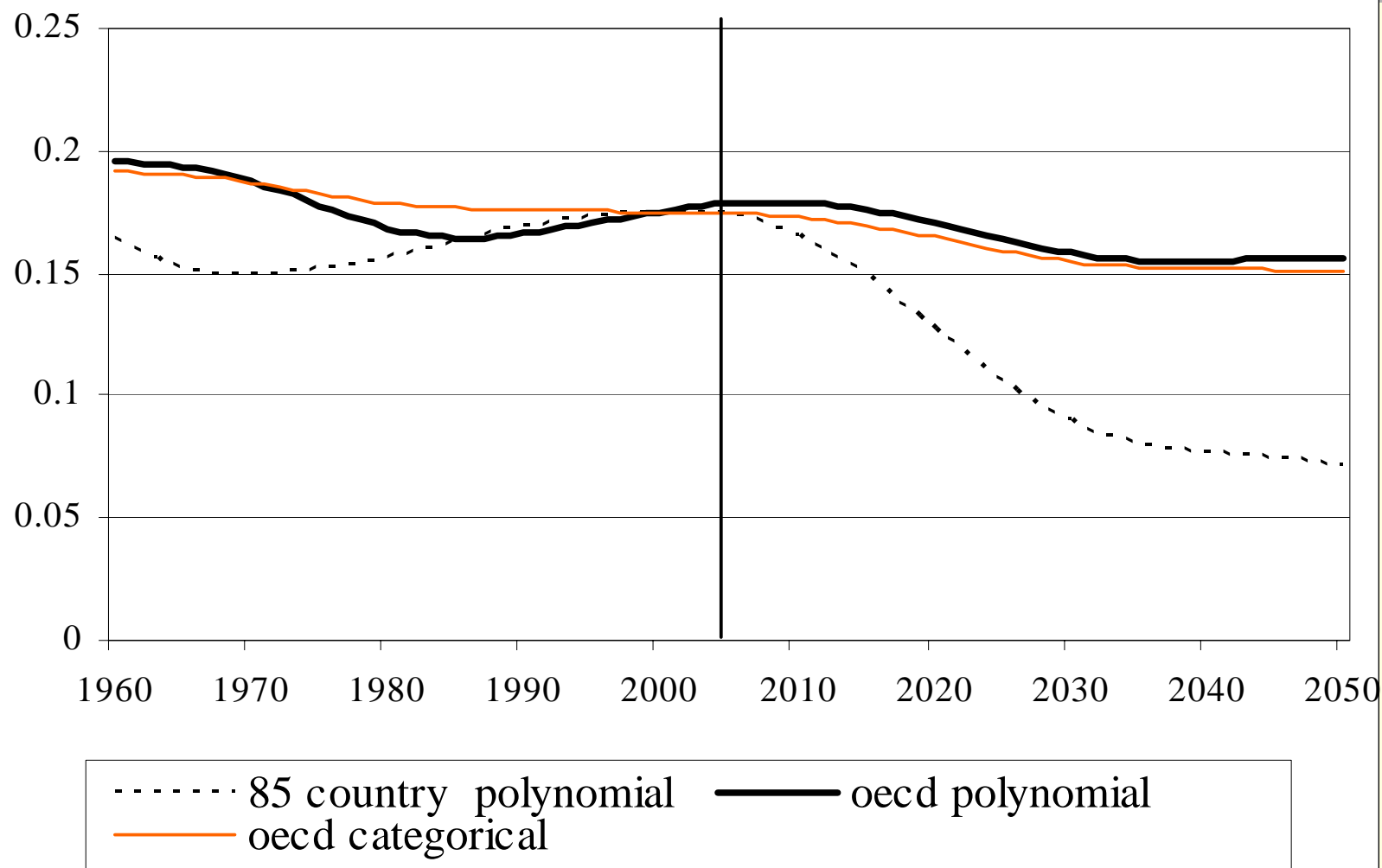


# Coefficients on Government Saving



## Expected Saving, United States, Various Specifications, 1960-2050

Share of GNI



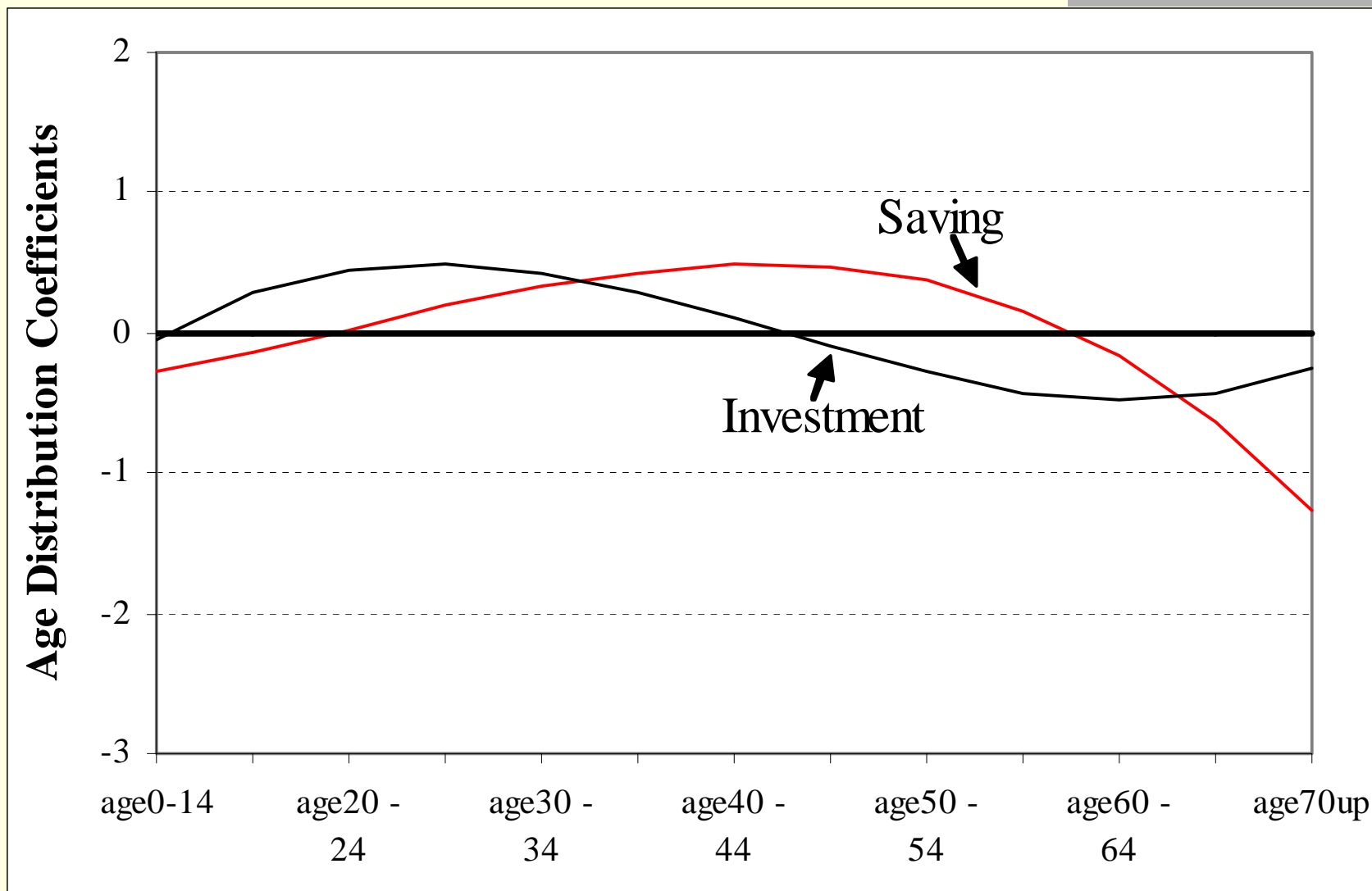
## **B. Demographic Effect on Investment**

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- Slower labor force growth should reduce growth of capital stock.
- Limited research on link between labor force growth and technical change.
- There are only a few studies of impact of aging on investment demand.
- Use formulation that parallels that of saving.

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- Higgins (1998) concludes that the decline in investment will exceed that of saving for high-income economies out to 2025.
  - Bosworth and Keys (2004) also obtained strong demographic effects, but
    - decline in saving projected to exceed that of investment by 2050
    - high-income countries would have CA deficits.

# Coefficients on Saving and Investment, 85 Countries

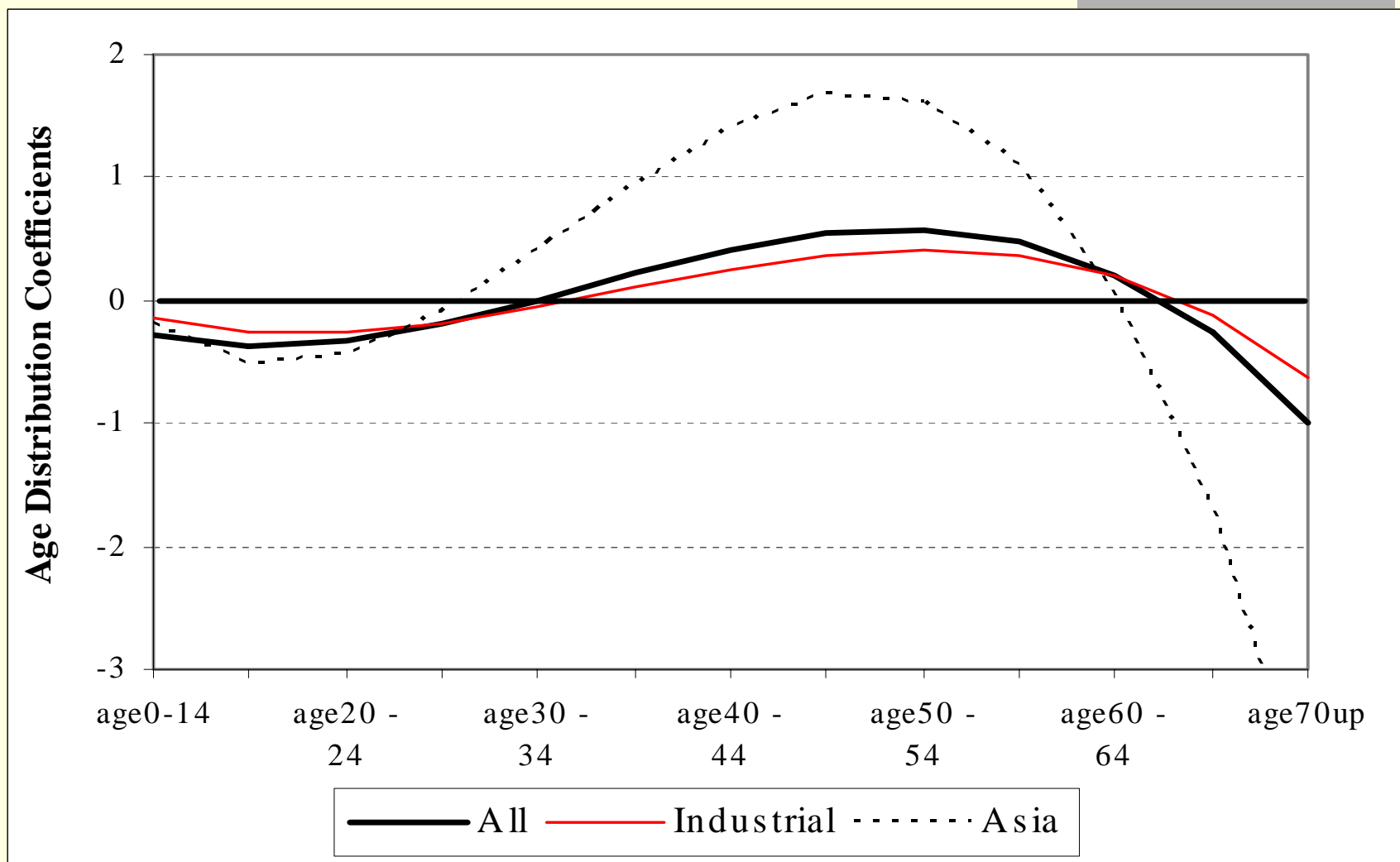


## C. Global Perspective

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- Aging traditionally modeled in a closed-economy context (Cutler et. al., 1990)
  - Lack of investment opportunities reinforces the life-cycle decline in saving.
  - Optimal response to aging is to reduce saving.
- Open-economy perspective
  - Large global capital market with disparate demographic trends among nations.
  - Shifts in S-I balances spill over to current account.

# Coefficients on Current Account





# Projections

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- Demographic effects are already negative for saving within industrial countries
- Estimates of demographic impact from all country sample implies large current account deficits for industrial countries by 2025 and later.
- Industrial country sub-sample implies smaller changes that could easily be overwhelmed by other factors.
  - Japanese current account change of 6% of GNI by 2025
  - United States only about 2%.

## D. Current Relevance

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- Bernanke - “global saving glut”
- U.S saving shortfall offset by excess saving in other countries
  - Linked to demographic change in major industrial countries.
  - Falling real interest rates.

# Current Account by Region

(Percent of World GDP)

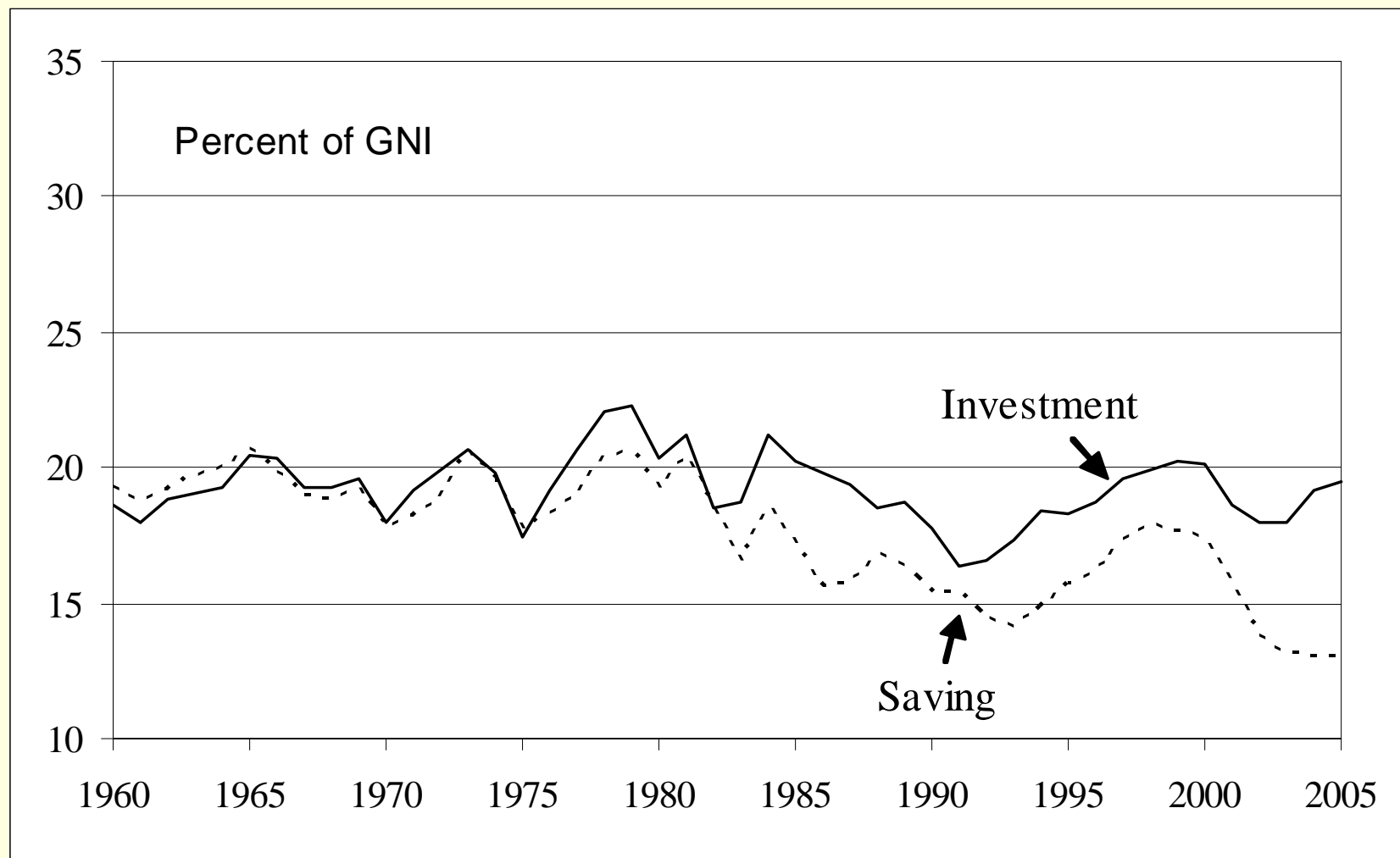
Region	1980-89	1990-94	1995-99	2000-04	2005p
U.S.	-0.45	-0.22	-0.51	-1.37	-1.81
Japan	0.26	0.40	0.34	0.35	0.39
Europe	-0.04	-0.13	0.28	0.17	0.16
Emerging Asia	0.02	0.01	0.14	0.38	0.55
Emerging Latin America	-0.11	-0.11	-0.17	-0.04	0.08
Middle East	0.08	-0.09	0.01	0.17	0.44

# Recent Trends

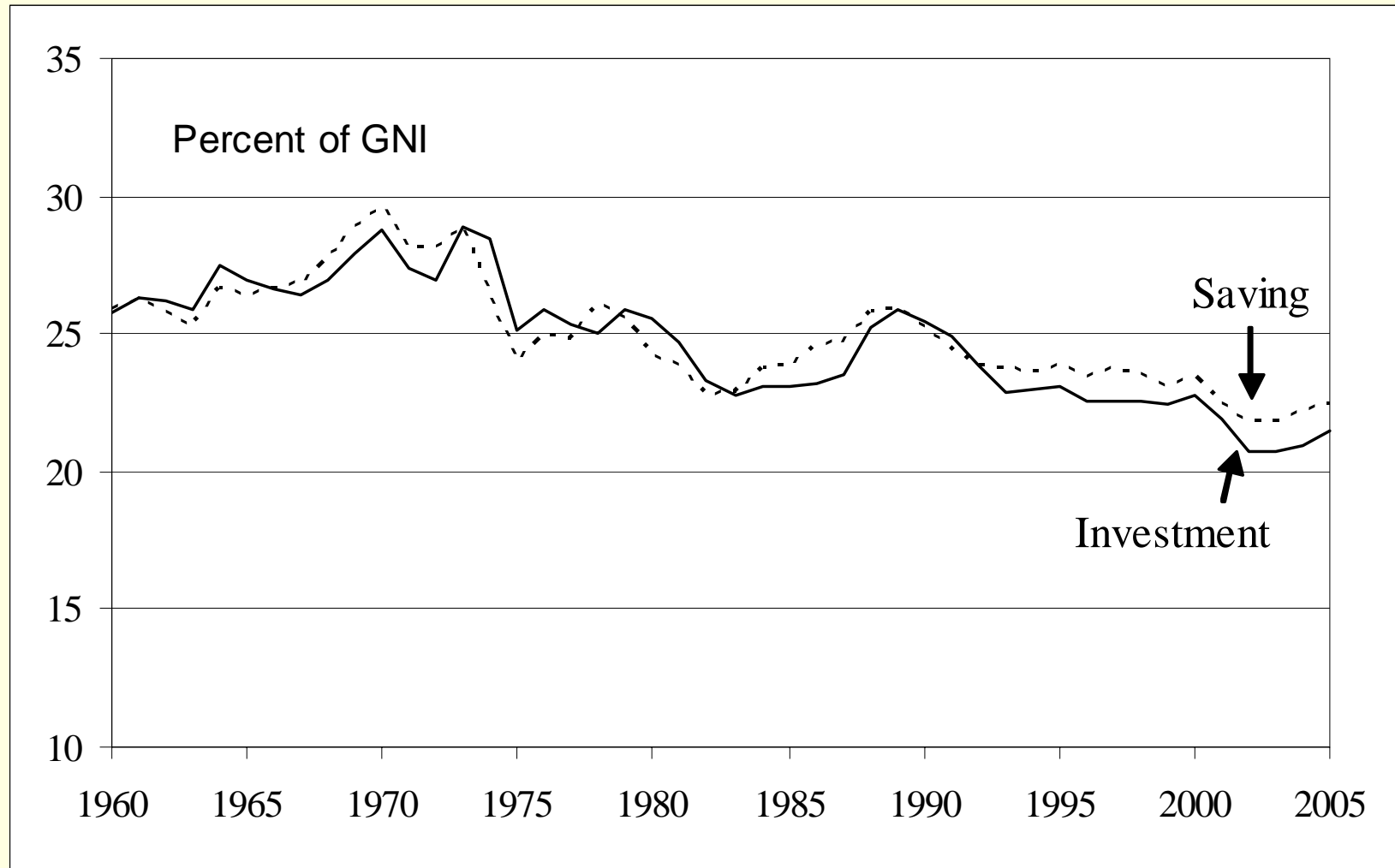
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- Offset to US deficit is in Asia and OPEC
- Global change is concentrated on investment side
  - Declining saving *and* investment in other industrial countries
  - No investment decline in US
  - Sharp drop in investment in Asia

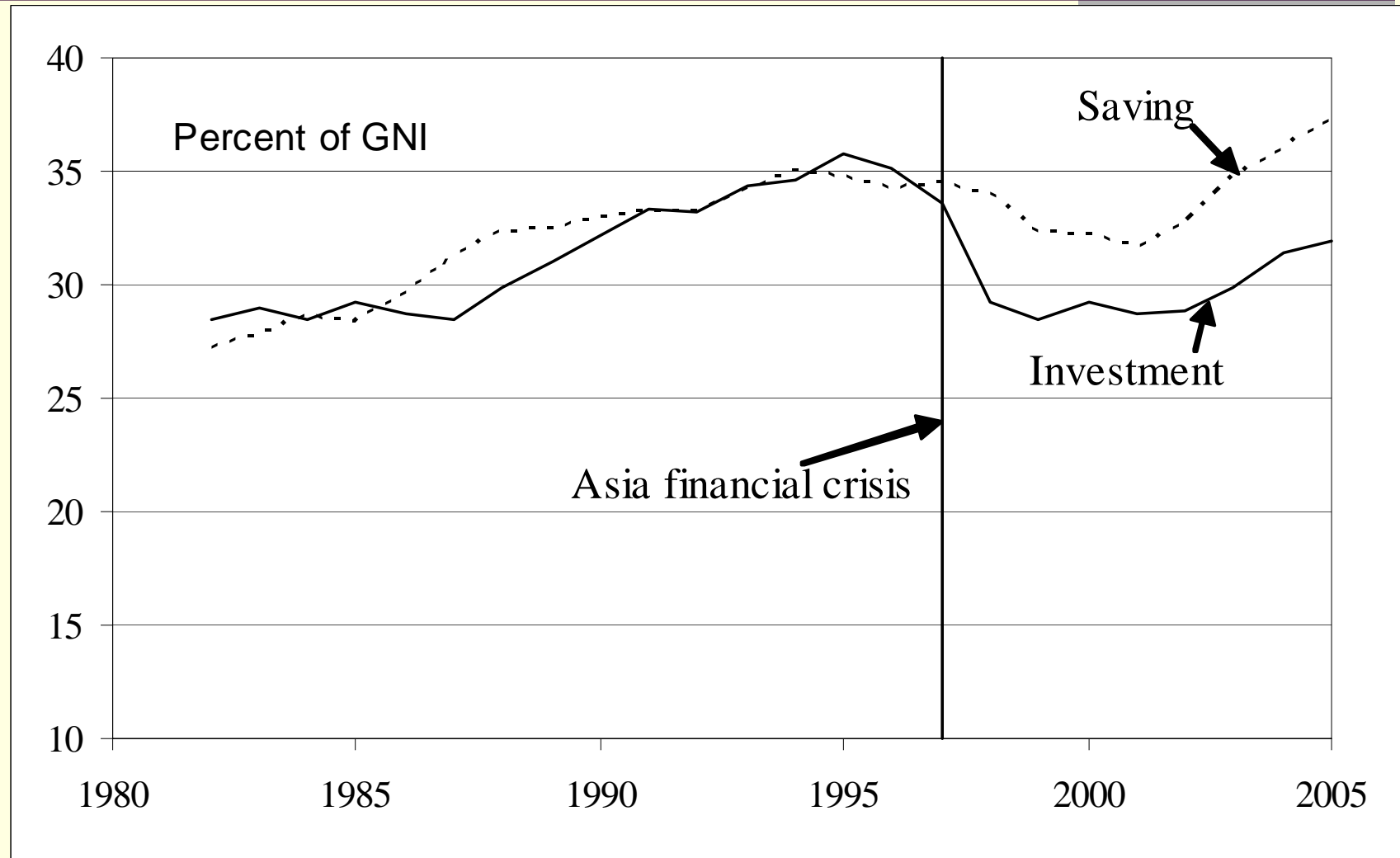
# United States



# Industrial Countries Excluding U.S.



# Emerging Asia



# Summary

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- Substantial uncertainty about effect of demographics on aggregate saving
  - Effects appear small in industrial countries
  - Very substantial correlation in Asia
  - Concentrated in private saving
- Significant offsetting effect on investment requirements.
- Need to evaluate in context of global capital flows.



# Summary (2)

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- Demographic changes are not a significant source of current excess global saving
  - Decline in investment outside United States
  - High saving of oil-producing states
  - Demographic factors are already exerting a negative influence on saving in industrial countries.