# The Implications of Consumption Sharing vs. Individualism in the Family

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NTA6: Sixth Annual National Transfer Accounts
Workshop, January 9-10, Berkeley, California

# Family Income Sharing

"In non-rich countries except for Uruguay consumption is approximately constant (flat) from age 25 or so until the end of life. **We believe this reflects familial income sharing with co-resident elderly**. The richest countries with complete accounts  (US, Sweden, Japan) all have strongly upward sloping consumption age profiles, mainly reflecting in-kind public transfers of health care and long term care."
*R37-Progress Report*

# Flat Age-Consumption Profiles Characterize Asian Countries, Upward Sloping for US and other Western Countries

Figure 2: Lifecycle of Production and Consumption, Per Capita, U.S. 2000 and Taiwan 1998
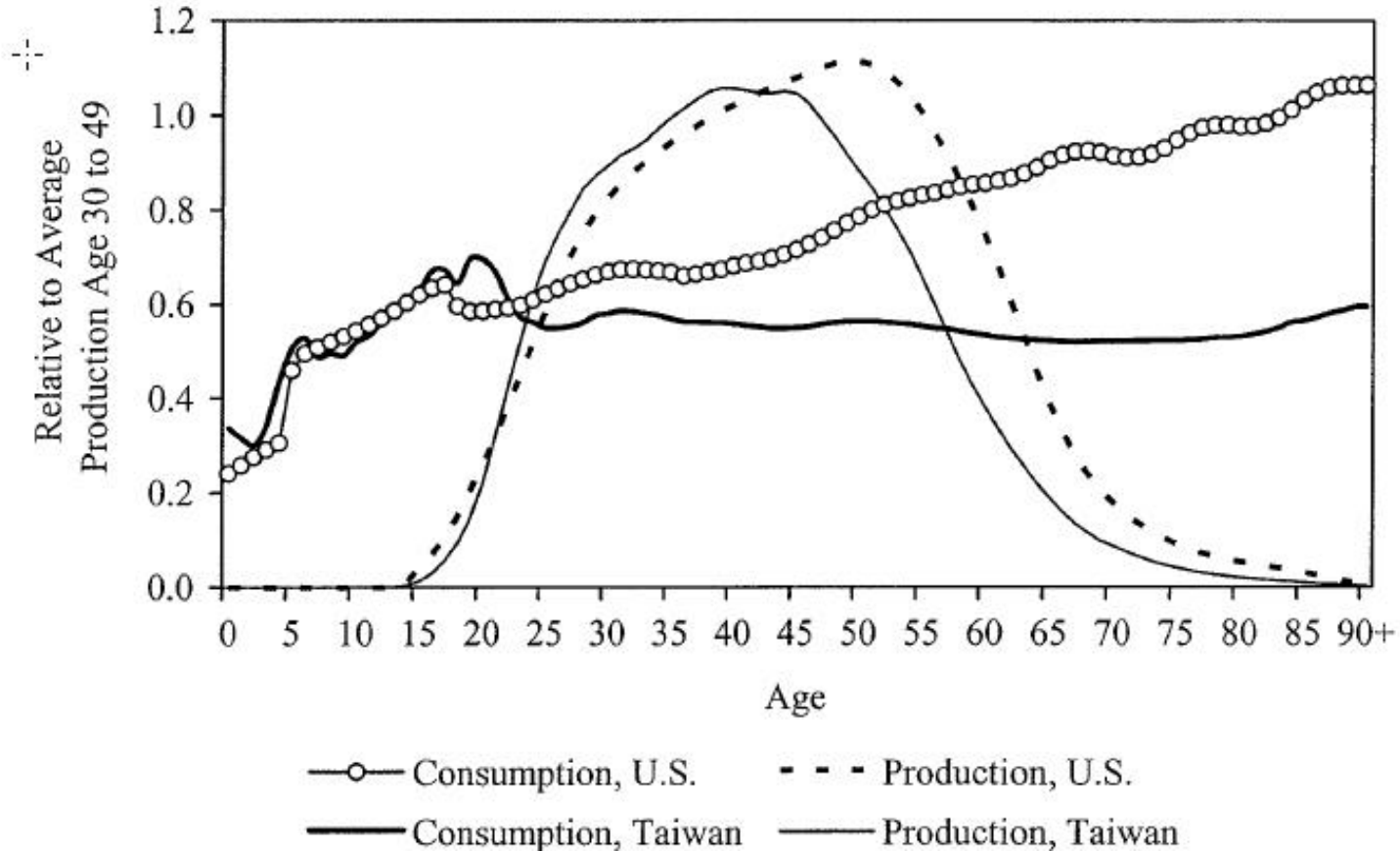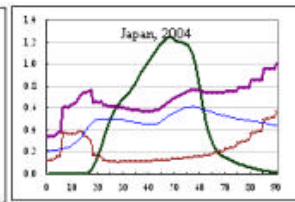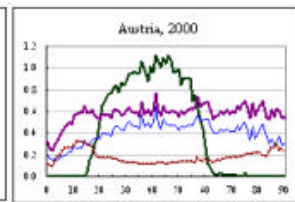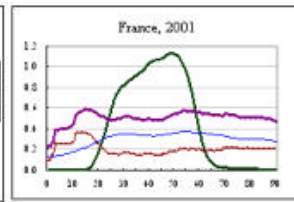
# From R37 Progress Report
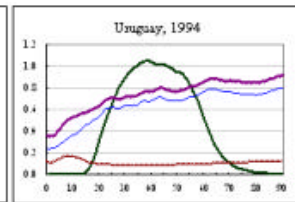
By real GDP pc

| US | France | Sweden | Austria | Japan |
|---|---|---|---|---|



| Slovenia | Taiwan | S. Korea | Chile | Uruguay |
|---|---|---|---|---|



| Costa Rica | Thailand | Philippines | Indonesia | India |
|---|---|---|---|---|
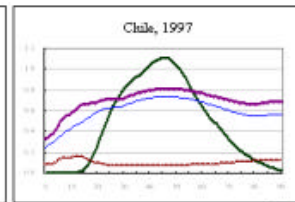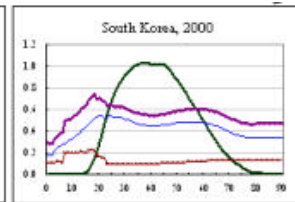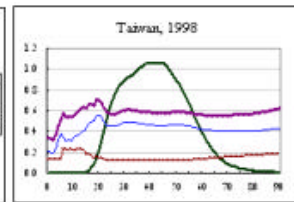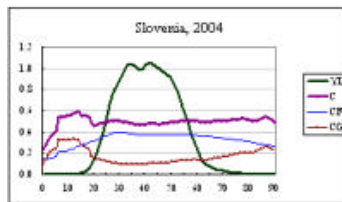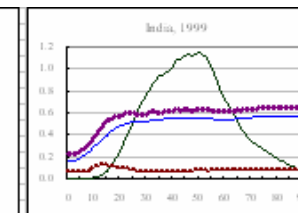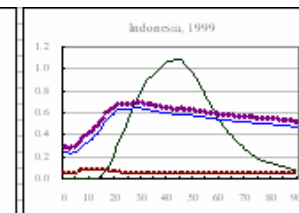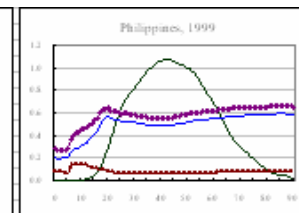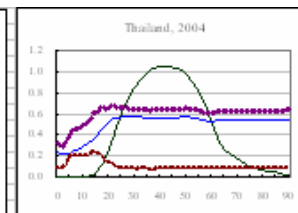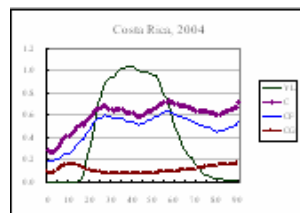
# Intra-family sharing vs. individual utility maximization

Consider two period Samuleson Model with zero population growth:

$C_1 = consumption\ of\ worker\ or\ son$

$C_2 = consumption\ of\ retiree\ or\ parent$

$(Y_1(t), Y_2(t)) = (1,0) = cross\ section\ age\ income\ profile$

$Y_1(t+1) = Y_2(t)(1+g)\ productivity\ growth\ of\ g\ percent\ per\ generation$

$U_t = U(C_1(t), C_2(t+1)) = lifetime\ utility\ of\ person\ in\ cohort\ t$

# Cross-Section Age-Consumption Profiles:
# High Growth Asia vs. Low Growth West

**West**: Upward Sloping Age-Consumption Profile
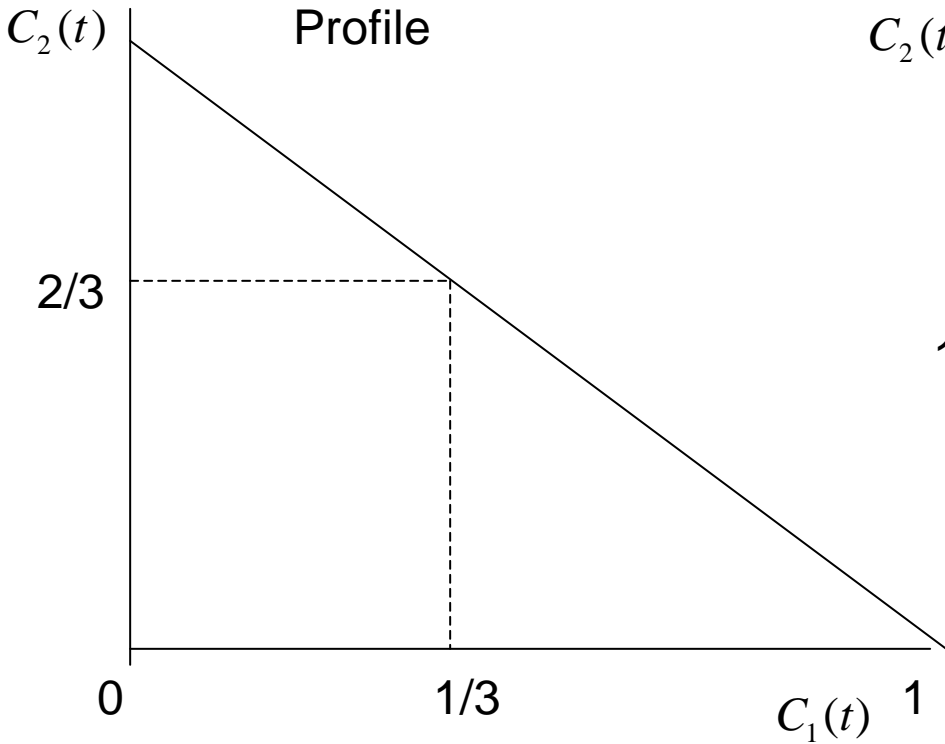
**Asia:** Flat Age-Consumption Profile
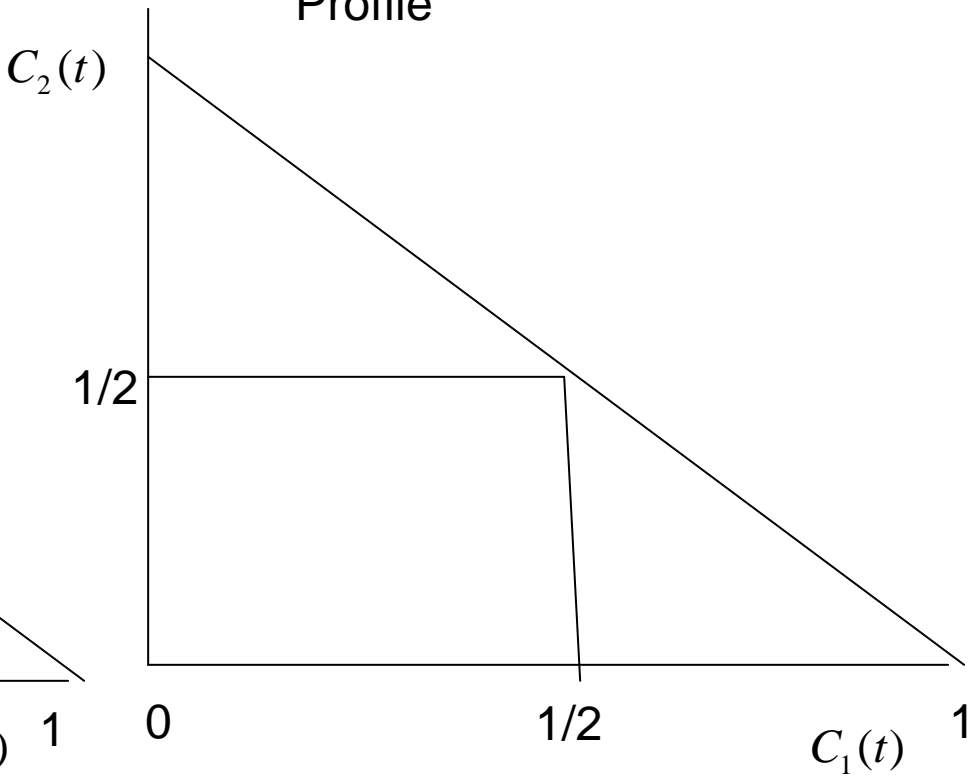
# Longitudinal Profiles

- In two-period model, assume that West has zero productivity growth and Asia productivity doubles each generation

# Longitudinal Age-Consumption Profiles:
# High Growth Asia vs. Low Growth West
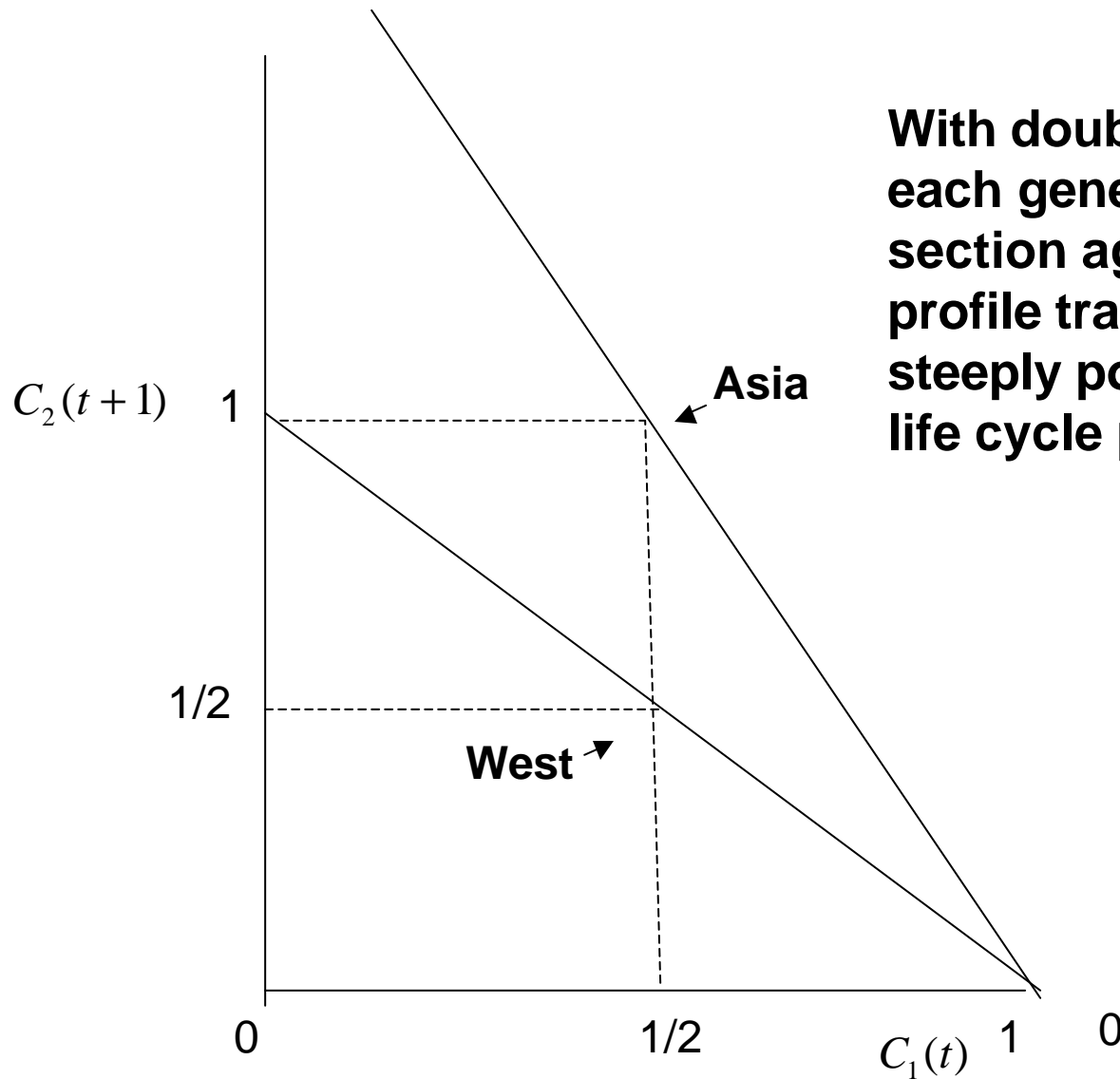
**With doubling of productivity each generation, a flat cross-section age-consumption profile translates into a steeply positive longitudinal life cycle profile**

$C_2(t+1)$

$C_1(t)$

Asia

West

1

1/2

0

0

1/2

1

0

# Longitudinal Age-Consumption Profiles: High Growth Asia vs. Low Growth West
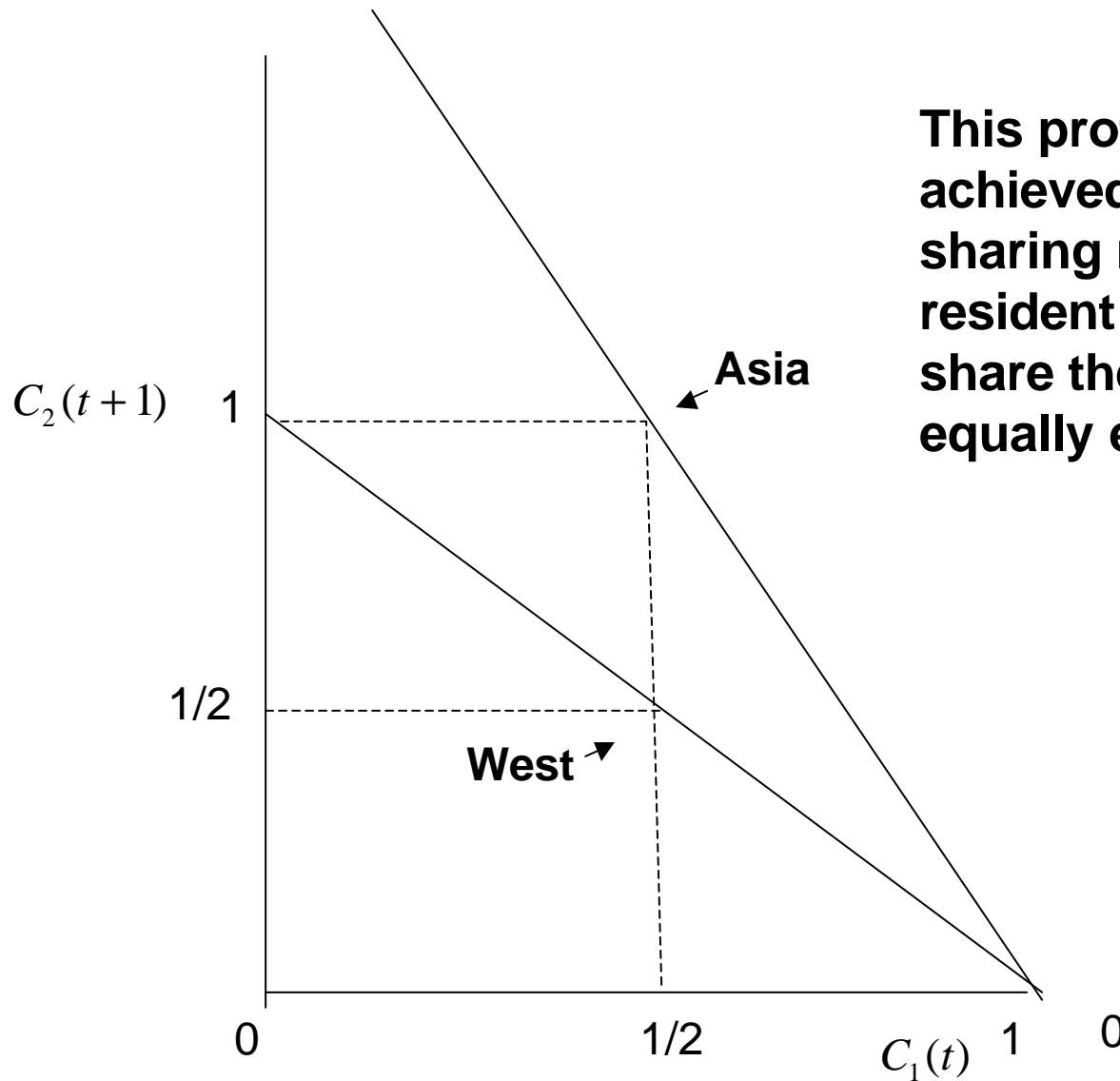


**This profile could be achieved by a family sharing rule in which a co-resident father and son share their current income equally each period**

Asia

West

$C_2(t+1)$

$C_1(t)$

# Cross-Section Age-Consumption Profiles: High Growth Asia vs. Low Growth West

$C_2(t+1)$

**Alternatively, this pattern could reflect Individually optimal, utility maximizing behavior if intertemporal utility function is Cobb-Douglas:**

**Asia**

$$U_t = C_1(t)^{1/2} C_2(t+1)^{1/2}$$

1

1/2

**West**

0          1/2          $C_1(t)$  1          0
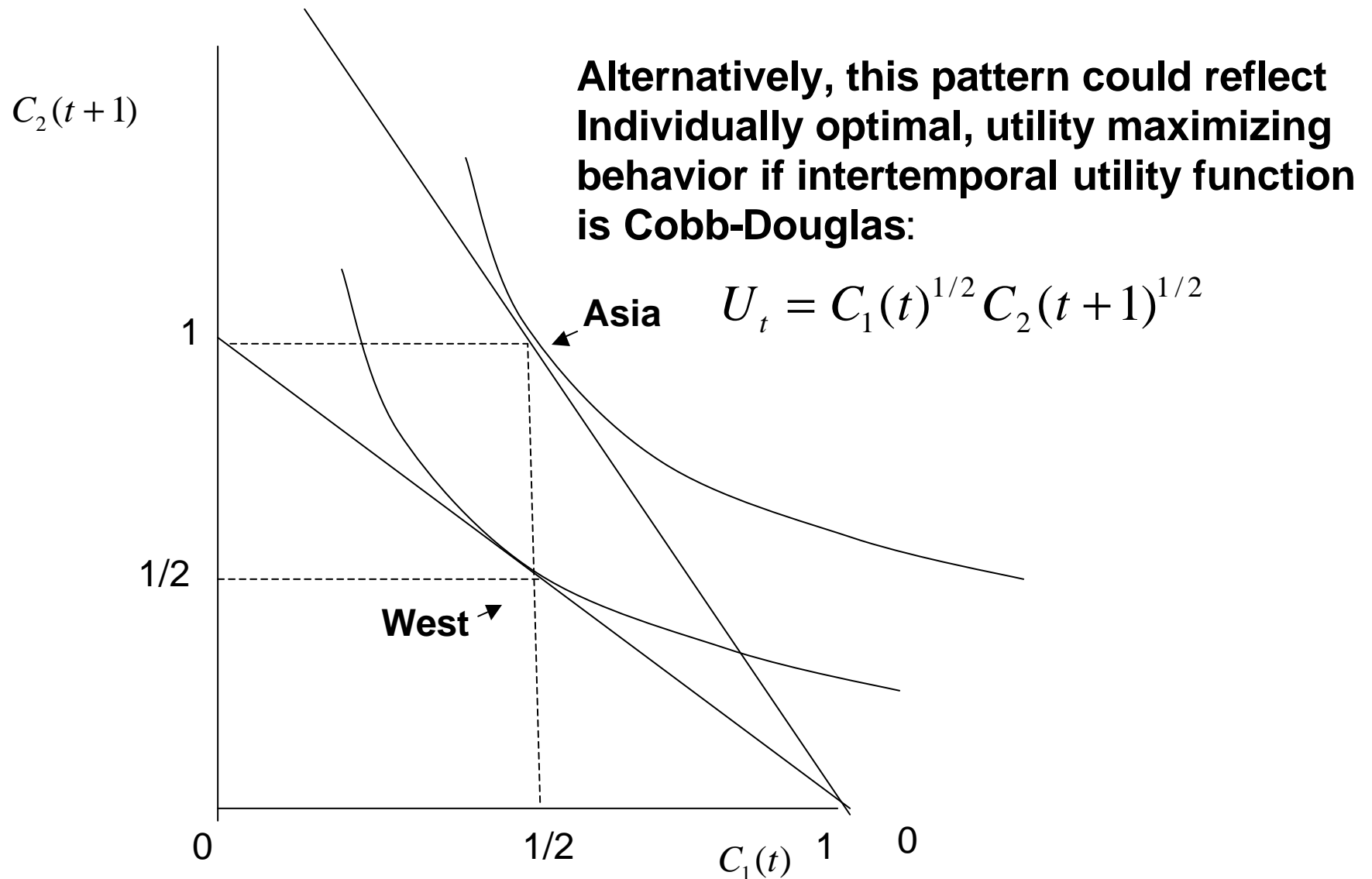
# Individually Optimal Age-Consumption Profiles in High Growth Asia

- More generally, note that a Cobb-Douglas utility function with equal weight on consumption at each age will generate flat cross-section consumption profiles and longitudinal profiles with a slope equal to the1+growth rate
  - In Taiwan, where lifetime incomes have grown 5-fold, such consumption profiles would be very steep, indeed
- However, such a utility function implies a far higher intertemporal elasticity of substitution than is plausible
- With more reasonable values of the IES, we would expect to see negatively sloped cross-section consumption profiles in rapidly growing countries if families were organized to maximize expected lifetime utility of family members

# Intrafamily Sharing

- Lee, Mason, et. al. suggest the alternative hypothesis that inter-generationally co-resident families share income can account for flat consumption profiles
- I will suggest that this sharing pattern may play a functional role in promoting human capital investment in a world in which the returns to investment are high, albeit uncertain

# Economic Growth Leads to Changing Structure of Economy

- Shift from agriculture to manufacturing
- Increase in demand for skilled labor
- Incentive for families to increase investment in human capital of children

# Engels Law: Effect of Productivity Change on Demand for Food and Manufactures and Implications for Returns to Skill



Income-Expansion Path

Manufactured Goods

Agricultural Goods

c

b

a

Engels Law implies that share of food falls as income grows

Agricultural labor is less skill-intensive than manu-facturing.

Thus, demand for skill Increases as growth takes Place and optimal levels Investment in kids' schooling and health increases
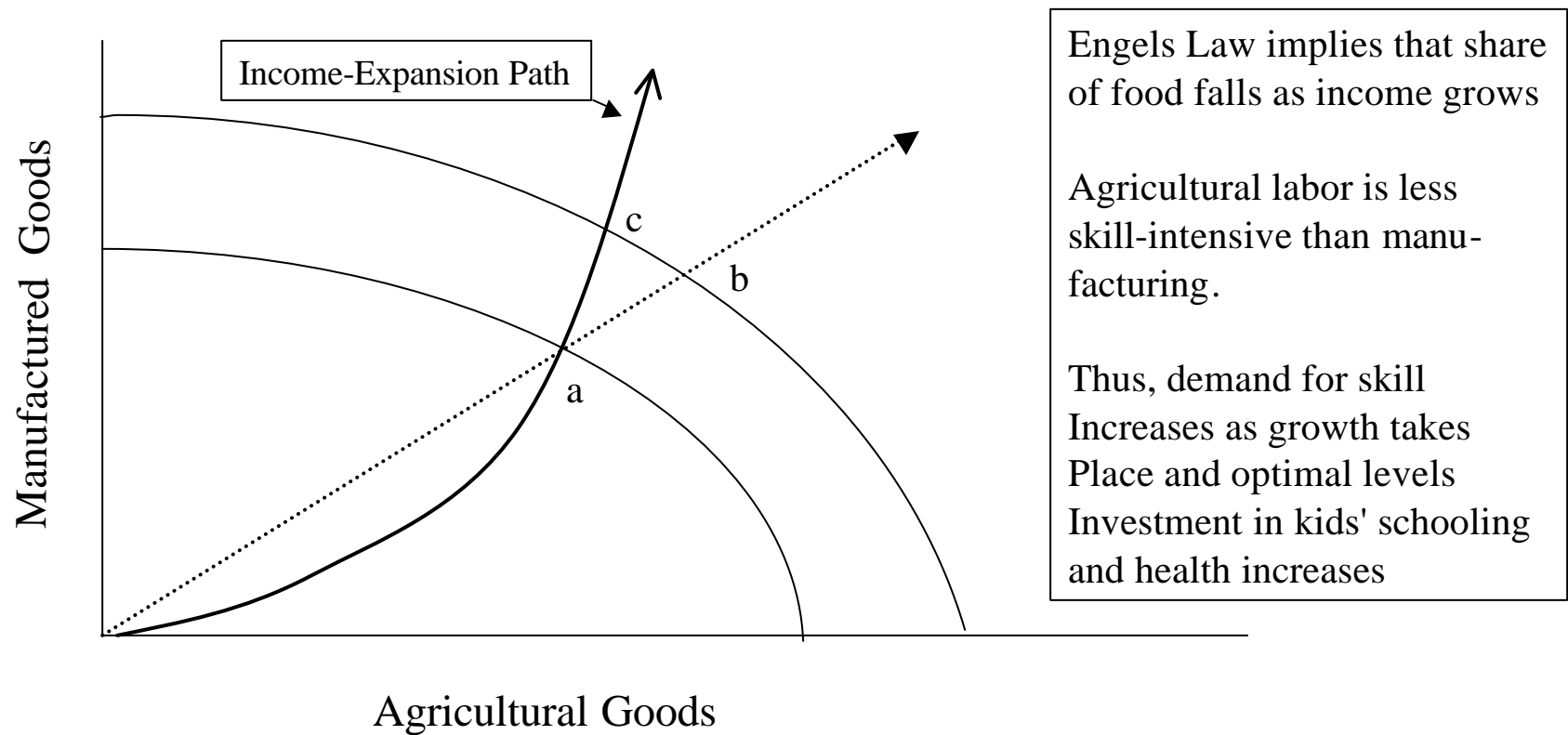
## Cross Section of Countries, 1988
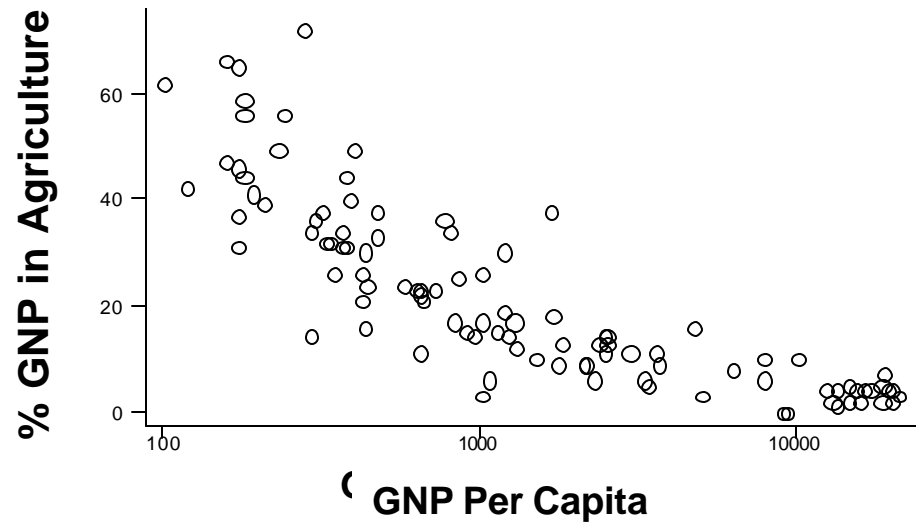
## Change in Agriculture Share vs. Income Growth, 1965-1988
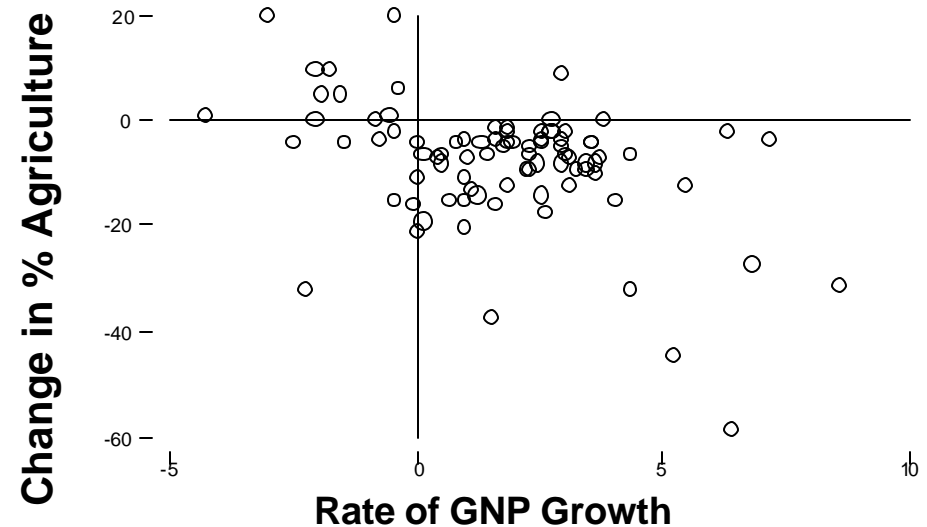


**Illustration of Engels Law**: Income reduces demand for agriculture.
- reduces fraction of labor force in agriculture and increases fraction in manufacturing and, ultimately, in service sector
- raises the relative skill intensity of labor demand and returns to education and other investments in human capital
- induces increase in child quality, reduction in fertility.

Source: R. J. Willis (1994), "Economic Analysis of Fertility: Micro-Foundations and Aggregate Implications,"
In K. Kiessling and H. Landberg, eds. *Population, Economic Development and the Environment.* Oxford.

# Cohort Educational Trends by Race and Sex in Malaysia
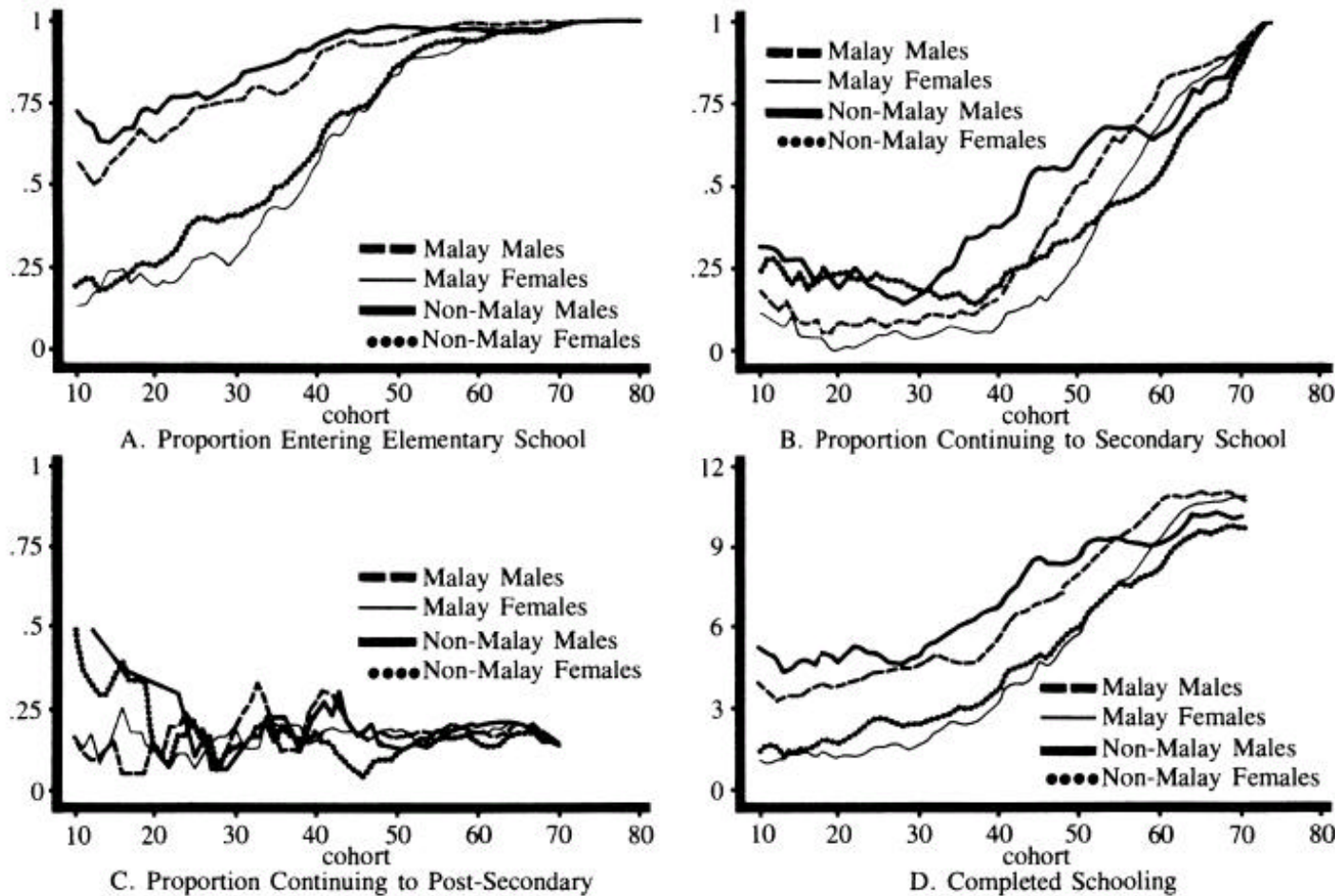


**Figure 1**
*Trends in Education by Race and Sex*

A. Proportion Entering Elementary School

B. Proportion Continuing to Secondary School

C. Proportion Continuing to Post-Secondary

D. Completed Schooling

Legend (panels A, B, C, D):
- Malay Males
- Malay Females
- Non-Malay Males
- Non-Malay Females

Source: Lillard and Willis, (1994) "Intergenerational Family Mobility: Effects of Family and State in Malaysia," *Journal of Human Resources*.

# Motives for Intergenerational Transfers

L.A. Lillard and R.J. Willis, (1997) "Motives for Intergenerational Transfers: Evidence from Malaysia," *Demography*

- **Old Age Security Hypothesis**
- **Parental Repayment Hypothesis**
- Risk and Insurance
- Altruism Hypothesis
- Exchange Motive
- Bargaining Power in Household
- Gender Differences

# Becker-Tomes Model

G.S. Becker and N. Tomes (1976) "Child Endowments and the Quality and Quantity of Children,"
*Journal of Political Economy,* (4, Part 2): S279-S288.

> Two period life cycle, overlapping generation structure
> t = parents marry, bear children, invest in kid's human capital
> t+1 = parents enter "old age", kid's marry and bear their own children

(1) ,

**Parent's budget in period t**

$$y_t^p = c_t^p + s_t + \boldsymbol{p}\, n_t h_t$$

Parent's income

Parent's consumption

monetary saving

Price of children
Number of children
Human capital investment/kid

**Parent's budget in period t+1**

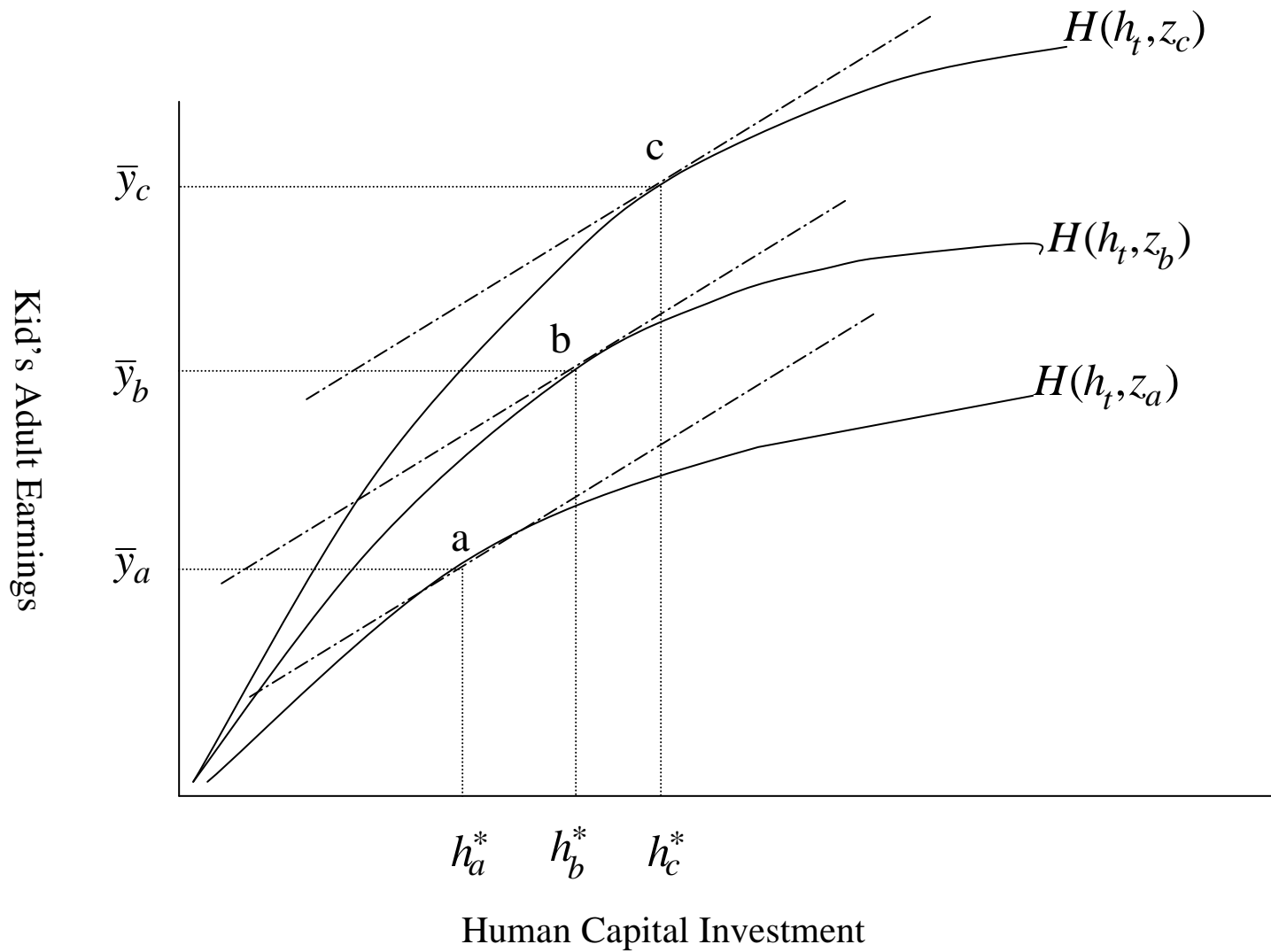$$c_{t+1}^p = y_{t+1}^p + (1+r)s_t - n_t T_t$$

Parent's old age consumption

Parent's income

Return on saving

Transfer to/from Children (bequest or old age support)
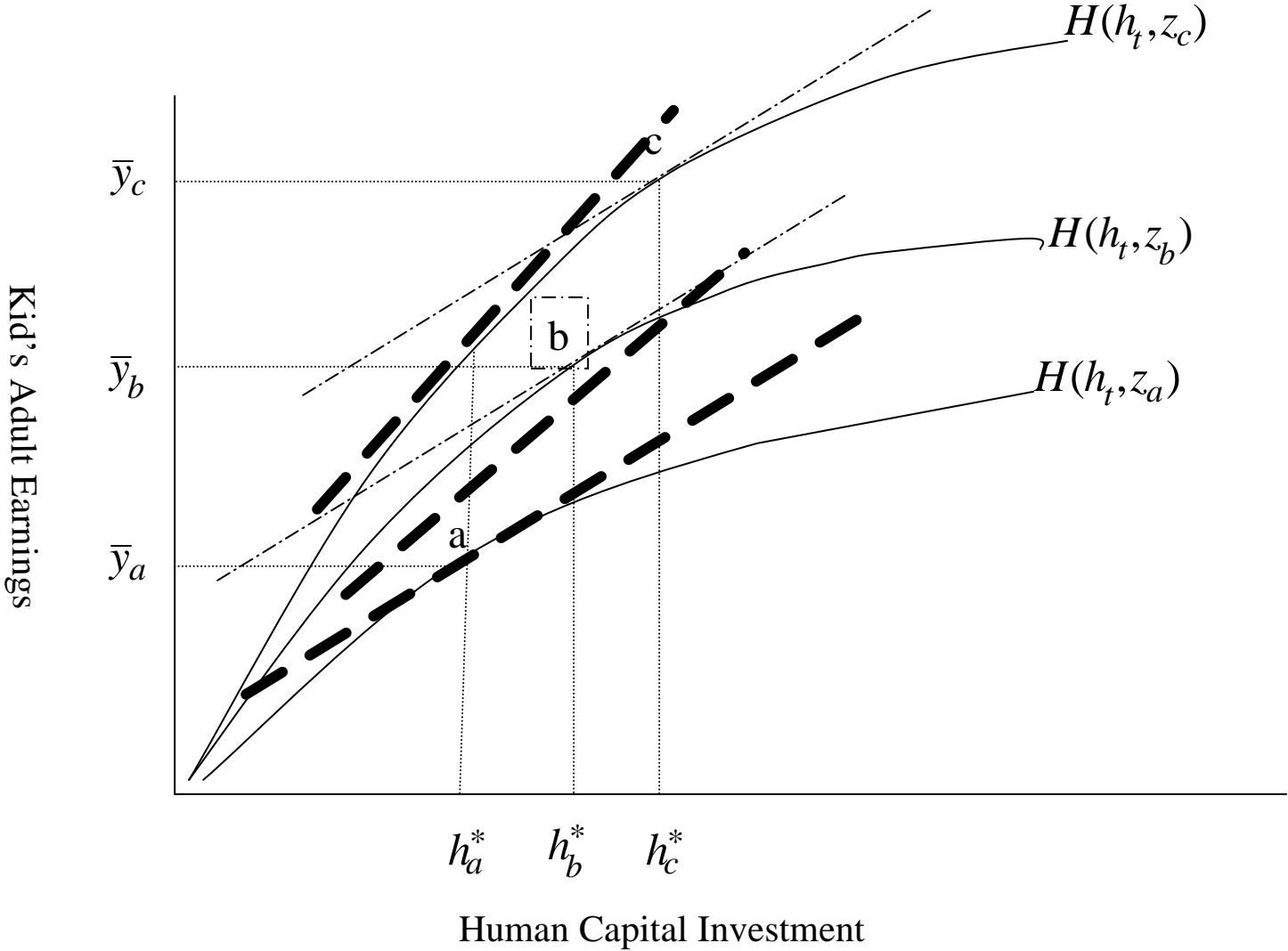
**Kid's human capital production function**

$$y_{t+1}^k = H(h_t, z_t)$$

Kid's adult income

Investment in child

Productivity shifters
e.g., ability, technology, school quality

Figure 1: Optimal Investment in Children's Human Capital

# Credit Rationing: Increasing Marginal Return and Larger Deviation from Optimal Allocation as HC Productivity Increases

# Two Stage Maximization: Separation of Consumption and Investment Decisions

- Stage 1: Choose investment in children so as to maximize present value of lifetime earnings
  - Equate Marginal Rate of Return to Interest Rate
- Stage 2: Choose consumption for all family members subject to (maximized) family wealth constraint

# Figure 2:  Parental Investment in Kid's Human Capital: Family Wealth Maximization with Bequests
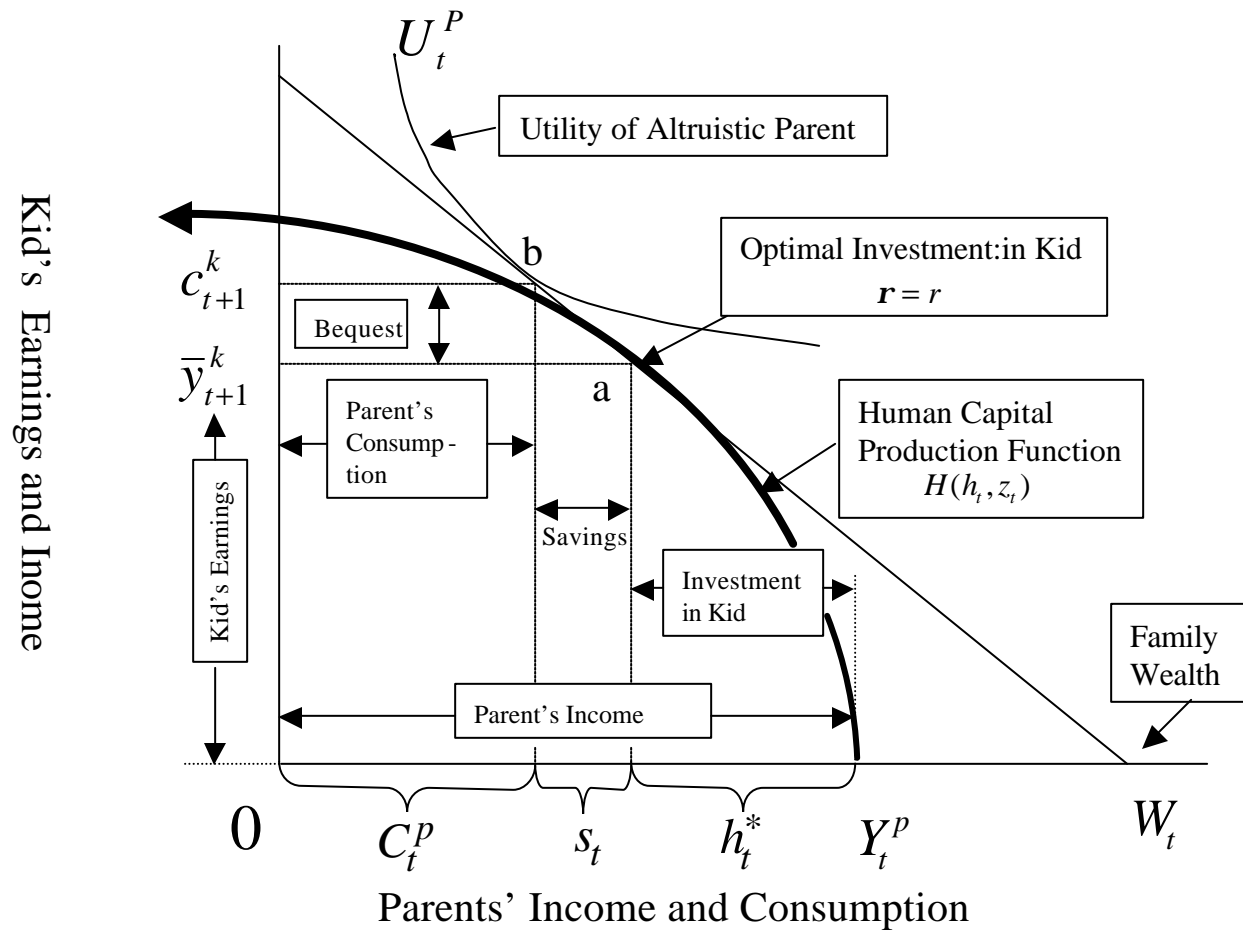
# Parental Sacrifice in
# High Growth/High HC Return Situations

- High human capital investment may require parents to reduce personal consumption below individually optimal level
  - This pressure may be alleviated by public finance of education
  - Failing this, implicit borrowing/lending within family
    - May take the form of intergenerational sharing of family income

# Figure 3: Parental Investment in Human Capital: Credit Constrained Case vs. Parental Repayment



$H(h_t, z_t)$

Kid's Earnings and Inome

$\Delta \bar{y}_{t+1}^k$

Old Age Transfer

Optimal Investment in Kid

Credit-Constrained Consumption

Parent's Income

Credit-Constrained Kid's Earnings

Optimal Investment in Kid:
$r = r$

Parent's Consumption With Transfer from Kid

Credit-Constrained Investment:
$r > r$

U'

U

Credit-Constrained Investment in Kid
$r > r$

a

c

b

0

$\tilde{Y}$

$W_t$

Parent's Consumption in Efficient Case

Parents' Income and Consumption

# Summary:
# Family Sharing of Current Income

- Creates mechanism for repayment of investments—devote investment to highest return activity without concern about who will get income

- Also creates mechanism for sharing of risks

- Facilitates separation of consumption and investment decisions