L12: Population and Economic Development

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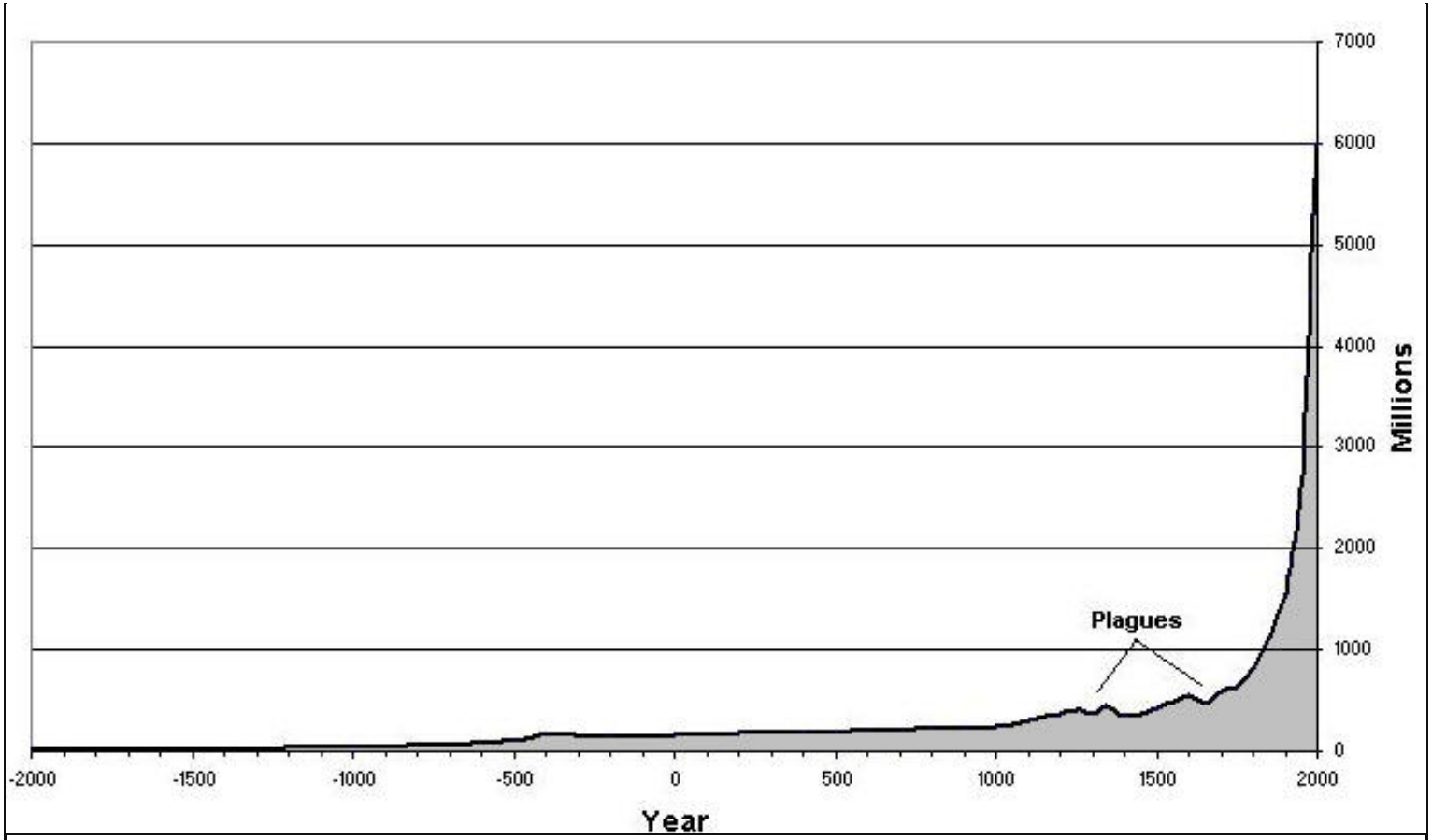
Introduction

- Effects of population growth on development
- Key Facts: Population growth patterns, demographic transition
- Determinants of Fertility: Theory and Evidence
- Effects of Development on Population Growth
- Implications for Population Policies in LDCs
- **Readings:** DR text Ch 9

World Population Trends

- World population:
- In 1 AD: 250 million
- In 1850: 1 billion
- In 1900: 1.6 billion
- In 1950: 2.5 billion
- Today: over 7 billion
- 2050 projection: 9.7 billion

Growth of World Population Through the Ages



HIGHLIGHTS IN WORLD POPULATION GROWTH

1 billion in 1804	3 billion in 1960 (33 years later)	5 billion in 1987 (13 years later)
2 billion in 1927 (123 years later)	4 billion in 1974 (14 years later)	6 billion in 1999 (12 years later)

Likely Effects? Doomsday?

- Lots of people are worried about implications for sustainability of current livelihoods (Paul Ehrlich: 'The Population Bomb')
- Echoing earlier pessimistic view of Robert Malthus (1798)
- Arguments that (geometric) population growth will outstrip (arithmetic) food supply growth
- Besides other resource constraints: energy, water, environment

Malthusian Theory of Population: Broad Details

- Main propositions in Malthus' theory:
  - When wages rise above subsistence, people marry earlier and have more children
  - Resulting increase in population reduces per capita income to subsistence level
  - If wages fall below subsistence, death rates rise, people marry later and have fewer children, causing population to fall and p.c.i. to return to subsistence level
- In the long run, average p.c.i. and population remains constant at subsistence level

Accurate?

- These predictions have not been borne out historically
- Per capita income growth has greatly outstripped population growth over past two centuries
- 'Population Bomb' predictions made in 1960s for 1970s and 80s did not materialize
- But could they be right in predicting the future, after 2050 and beyond?

Where Did Malthus' Logic Break Down?

- He did not predict the technical progress and capital accumulation that occurred over successive Industrial Revolutions
- His assumption that increases in living standards would invariably induce higher fertility turned out to be wrong

Effects of Population Growth on Development: Modern View

- Modern growth theory (Harrod-Domar, Solow): effects of geometric population growth can be overcome by investment in physical and human capital, and technical progress
- While there may not be any doomsday around the corner, higher population growth rates does drag down rate of growth of p.c.i. (+Coale-Hoover argument)
- Hence strategies to reduce population growth rates should be important component of long-run development strategy

Some Contrarian Views: Population Optimists

- Julian Simon: who stresses role of economies of scale (eg in infrastructure) , which confers a large market size advantage to countries with large populations
- Others (Michael Kremer, Ester Boserup) argue larger populations generate more technical innovations
- Recent arguments for positive 'demographic dividends': lower labor scarcity (a la Lewis), larger share of working-age populations

Causation Direction?

- While population pessimists are in the majority, their argument leaves open the question of direction of causation
- Preceding arguments presume population growth cause underdevelopment or low rates of p.c.i. growth
- Could high population growth instead be a consequence of underdevelopment?
- If so, perhaps there is scope for economic policies to lower population growth

Need to Better Understand Determinants of Population Growth

- In order to forecast future growth of population
- Where and why did Malthus go wrong?
- What kinds of policies may be effective in slowing population growth?

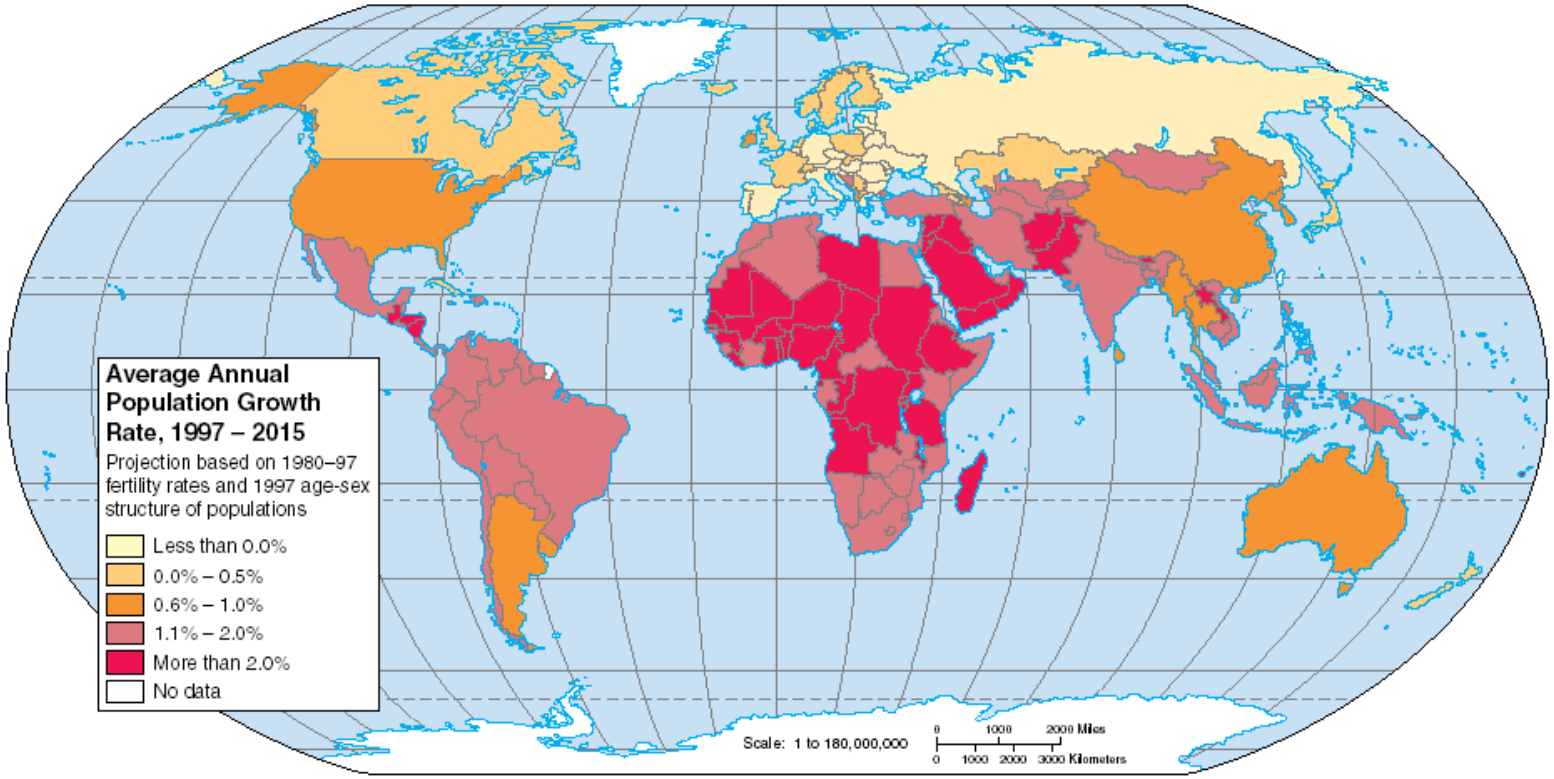
Key Terminology in Demography

- *Crude Birth Rate (CBR):* no. births per 1000 people in any given year
- *Crude Death Rate (CDR):* no. births per 1000 people in any given year
- *Population (annual percent) growth rate:* $= \frac{CBR - CDR}{10}$
- *Age-specific death rates:* percent population in any given age group that die every year

Key Terminology in Demography, contd.

- *Infant mortality rate:* no. deaths per 1000 live births in first year (or below five years)
- *Life expectancy:* number of years an average person in the population is expected to live (computed from age-specific death rates)
- *Age-specific fertility rates:* average number of children born to women in a specific age group
- *Total Fertility Rate (TFR):* average number of children a woman will give birth to in her lifetime (computed from age-specific fertility rates)
- Population will be stationary in the long run if $TFR = 2$ (the *replacement ratio*)

Population Growth Rates Across the World



Birth and Death Rates Across Countries

TABLE 7–2 Demographic and Population Characteristics of Countries by Level of GNP per Capita, 1988[a]

A. Demographic Characteristics

Income group	Crude birth rate (per 1,000)	Crude death rate (per 1,000)	Rate of natural increase (%)	Infant death rate (per 1,000 live births)
Below $250	44	16	2.8	120
$250–500	29 (38)	9 (13)	2.0 (2.5)	65 (84)
$500–2,200	30	8	2.2	55
$2,200–6,000	22	10	1.2	34
Above $6,000	14	9	0.5	10

B. Population Characteristics

Income group	Population below 15 years (% of total)	Growth rate of urban population 1980–88 (%)	Urban population (% of total)
Below $250	45	6.3	18
$250–$500	34 (42)	na (4.9)	36 (25)
$500–$2,200	36	3.6	55
$2,200–$6,000	29	1.9	64
Above $6,000	20	0.8	77

[a]Figures in parentheses exclude India and China.

Sources: World Bank, *World Development Report 1990*, and United Nations, Department of International Economic and Social Affairs, *Demographic Yearbook 1987* (New York).

Cross-country Variation in Fertility Rates

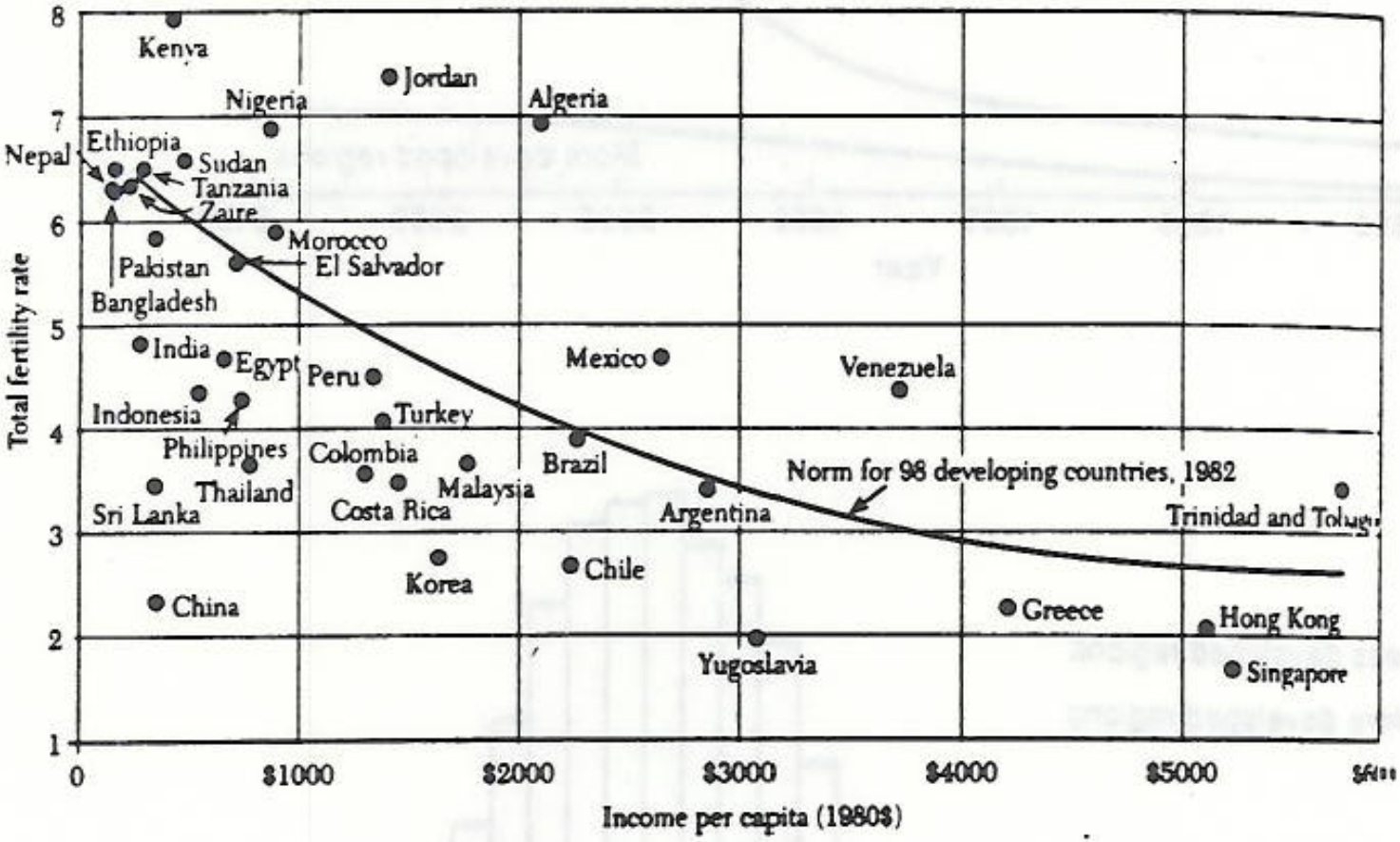
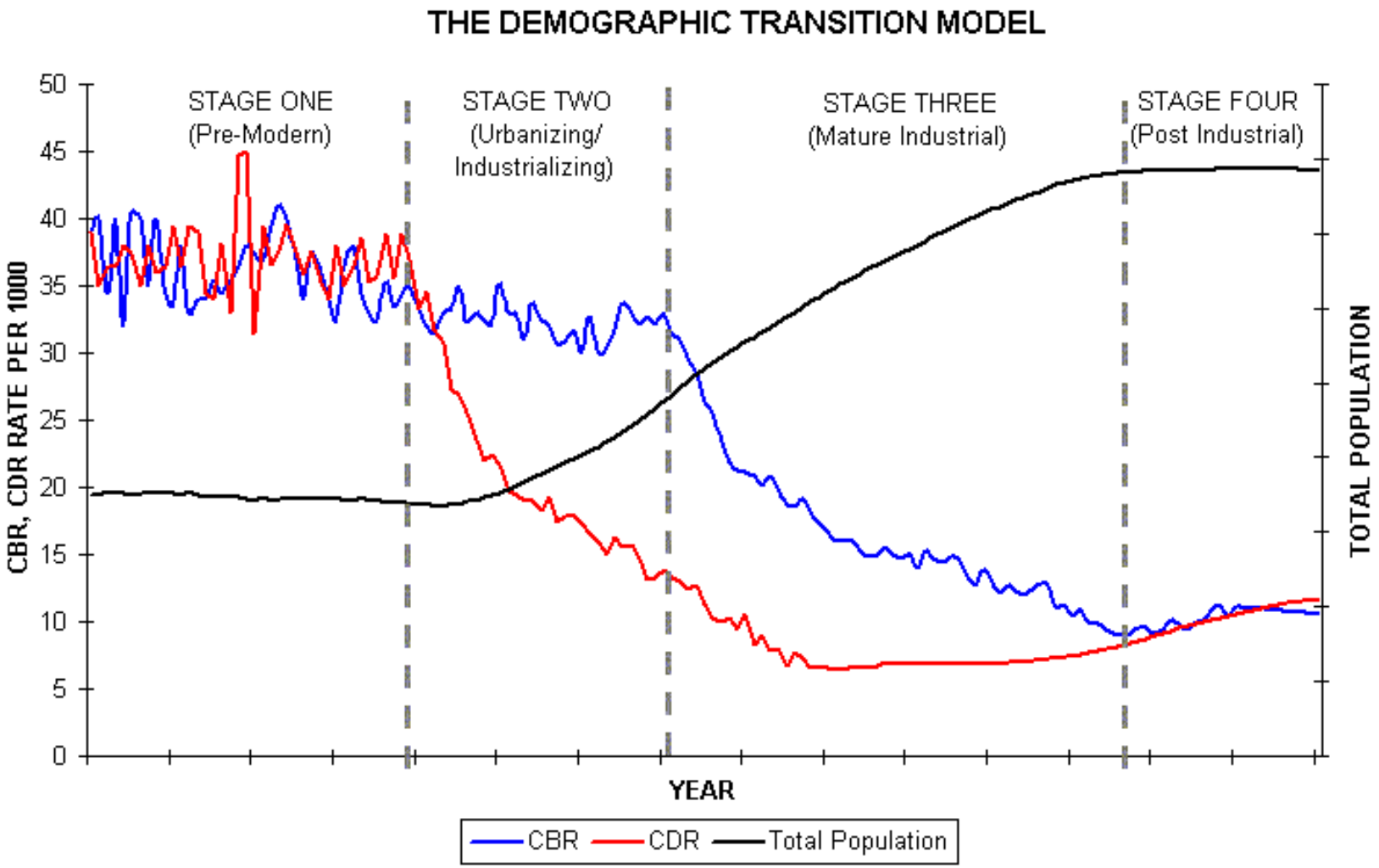


Figure 1. Fertility in relation to income in developing countries, 1982

Source: Birdsall (1988)

The Demographic Transition



Demographic Transition in UK

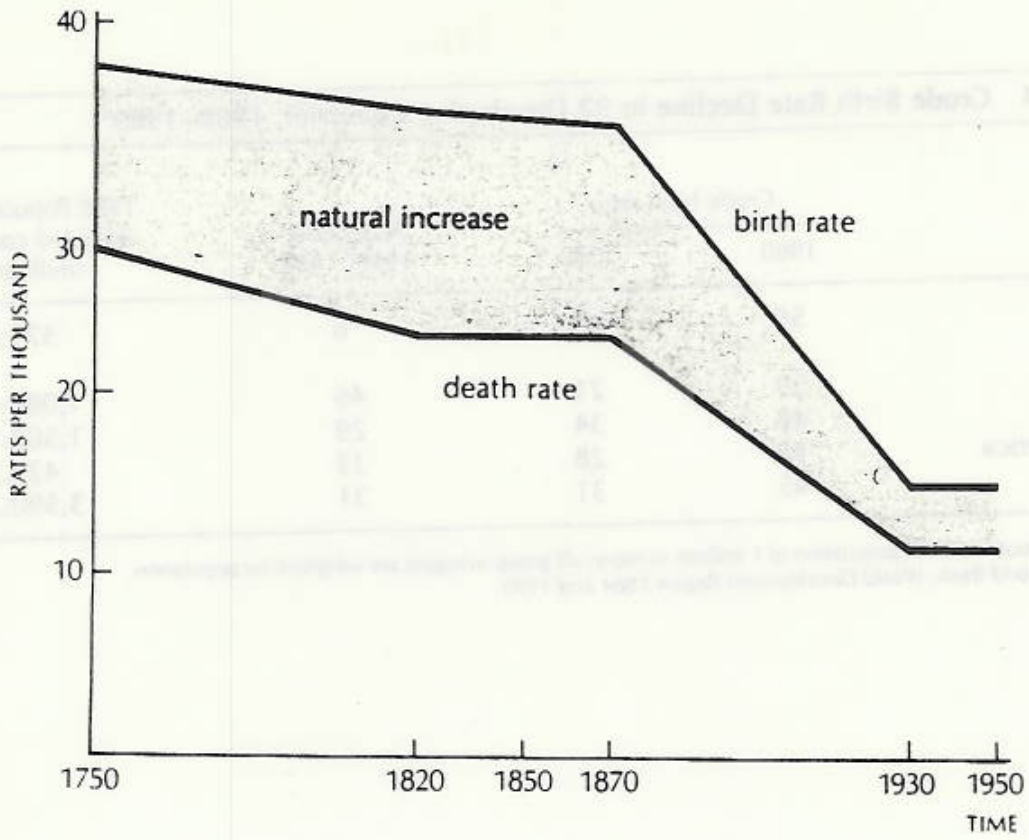


FIGURE 7–1 **The Demographic Transition in England and Wales, 1750–1950.** The decline in the death rate preceded the decline in the birth rate; this created a period of fairly rapid (about 1 percent per annum) natural increase in the late eighteenth and early nineteenth centuries. After 1870 the birth rate fell more rapidly; this sharply reduced the rate of natural increase. *Source:* Carlo Cipolla, *The Economic History of World Population.*

Demographic Transition in Sri Lanka

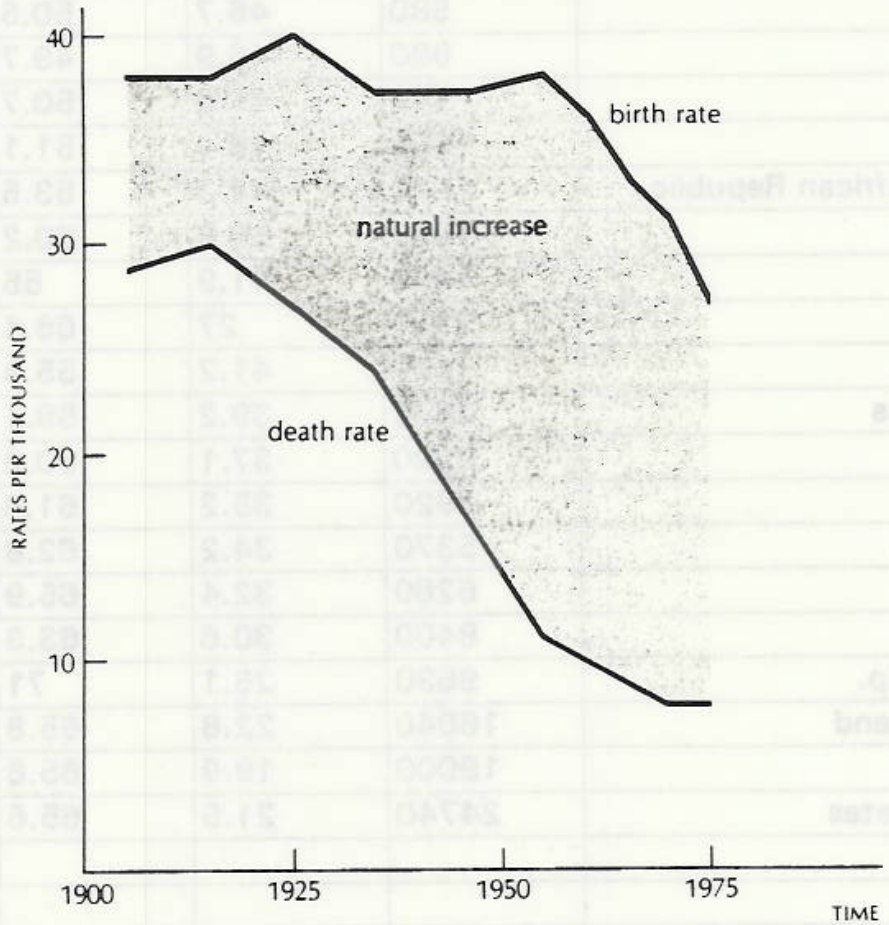
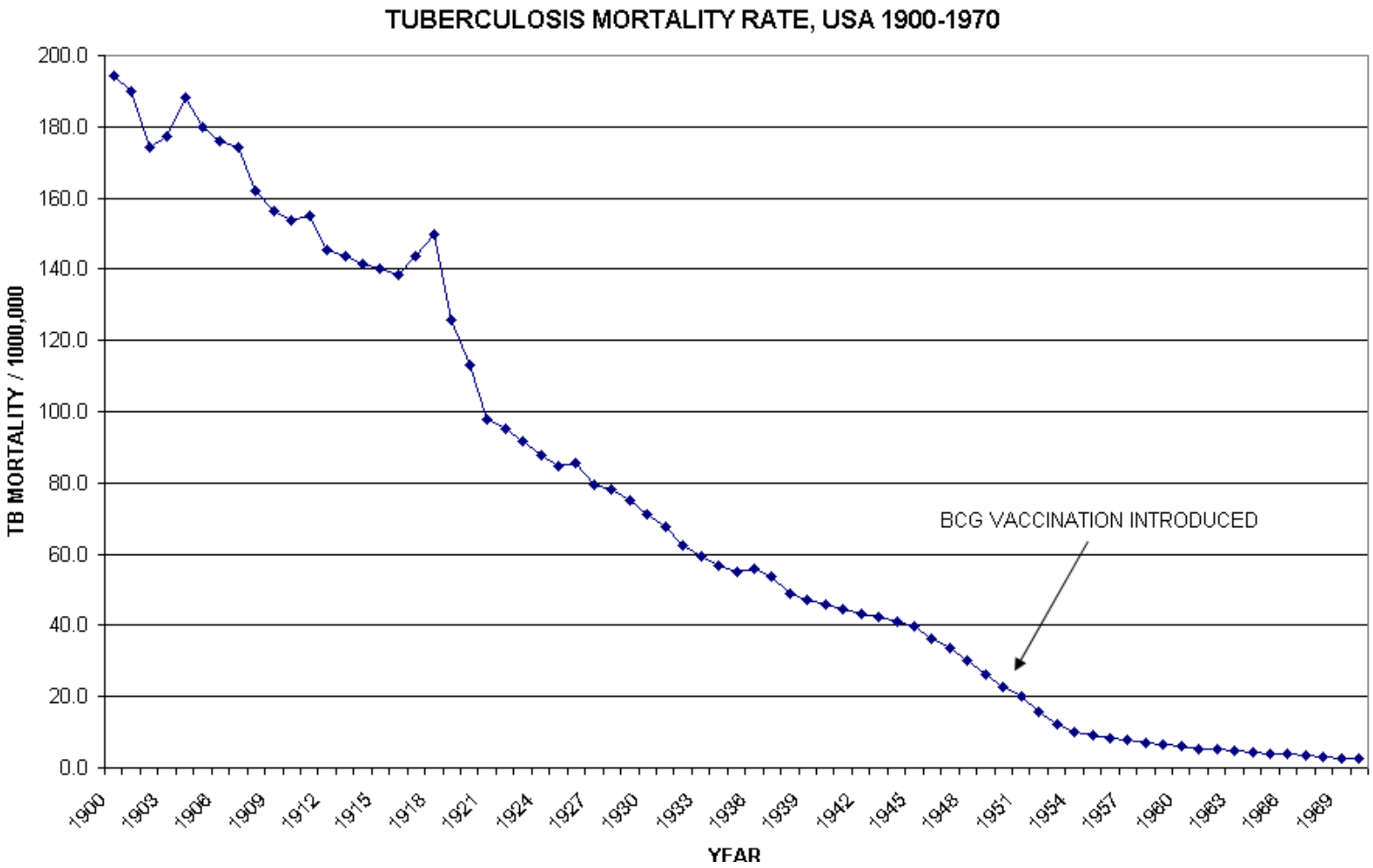
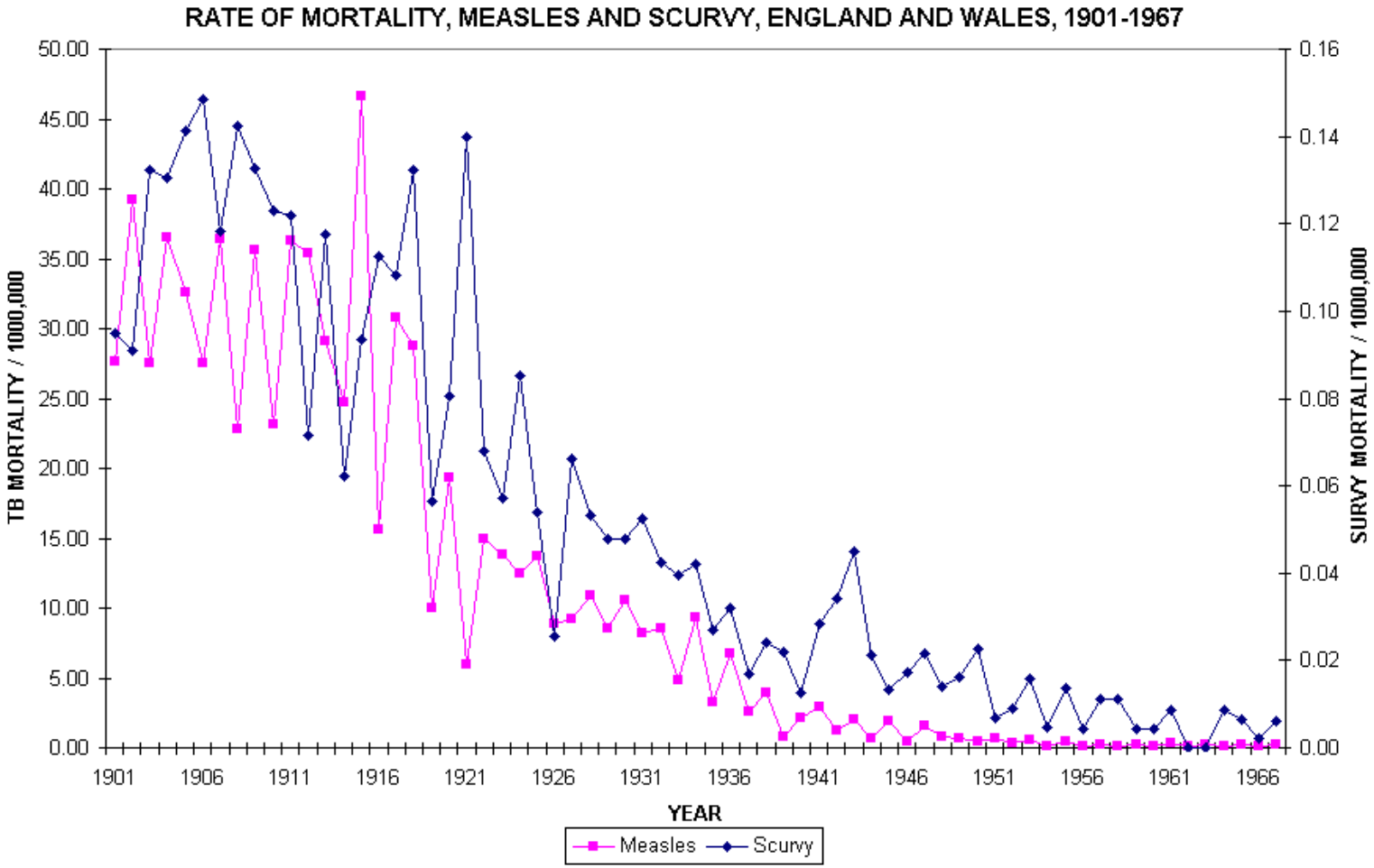


FIGURE 7–2 The Demographic Transition of Ceylon (Sri Lanka), 1900–1975. The death rate fell very sharply after 1920. There was no decline in the birth rate until about 1960. Very high rates of natural increase (over 2 percent per annum) were experienced in the 1950s and 1960s.

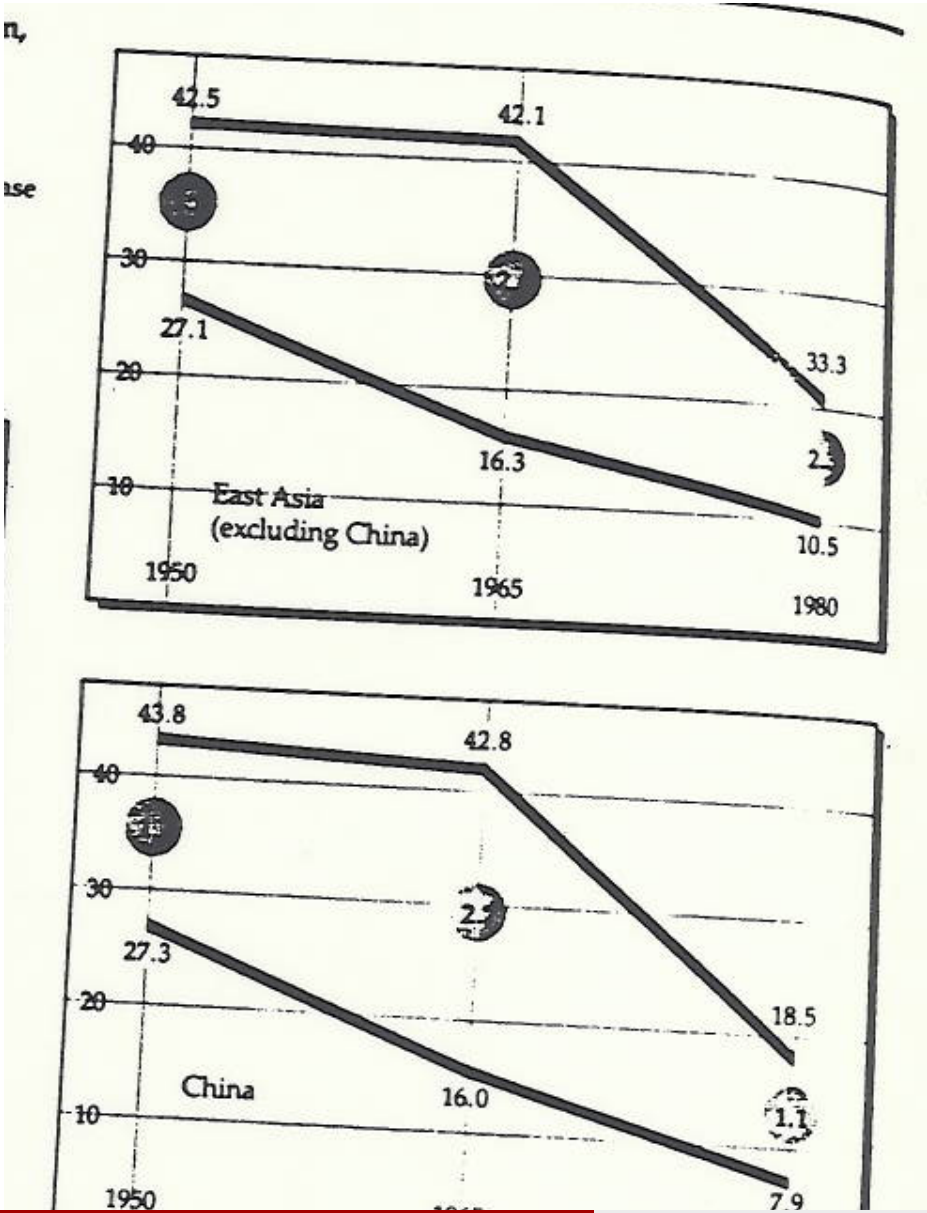
Why Mortality Rates Decline



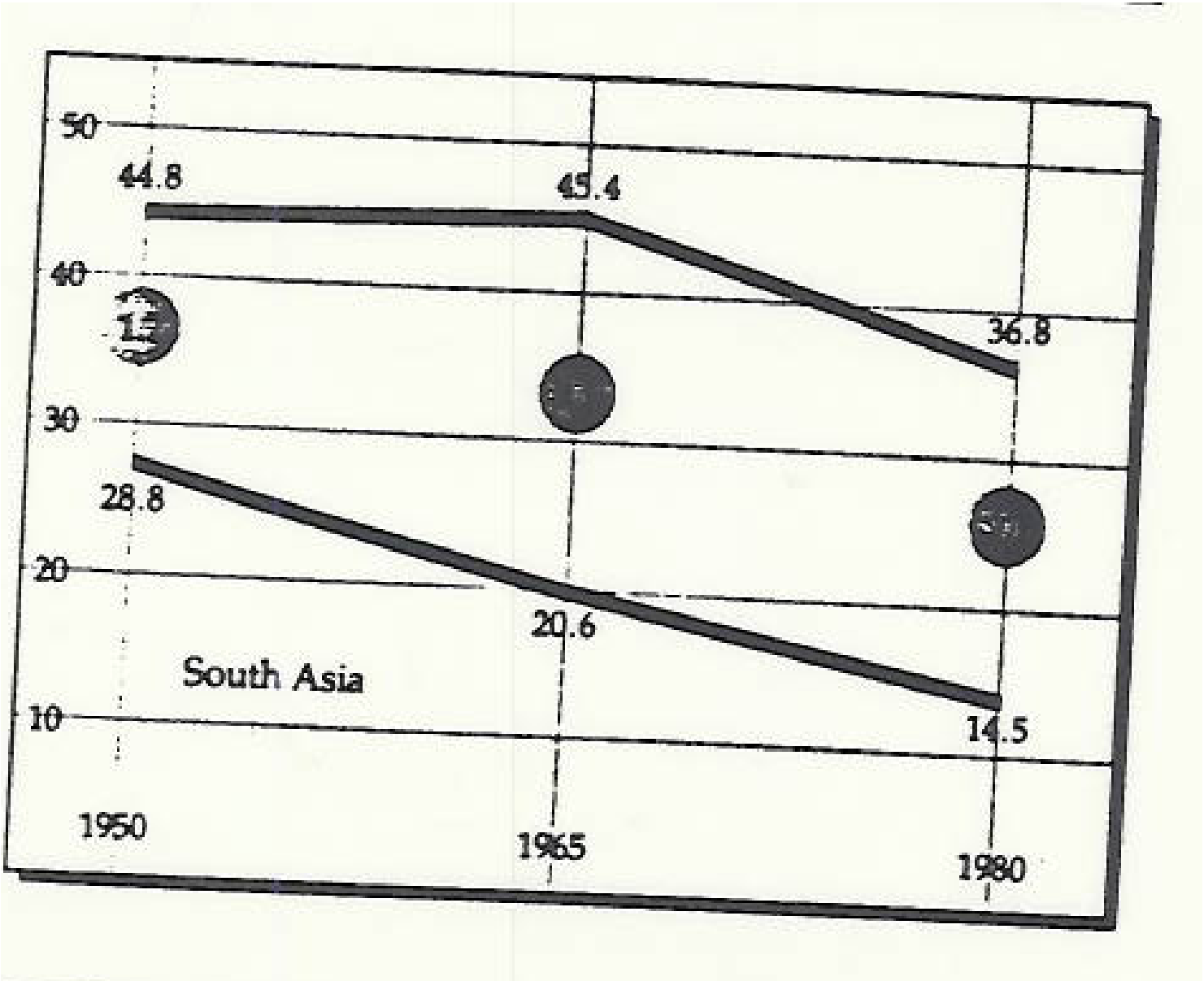
Why Mortality Rates Decline, contd.



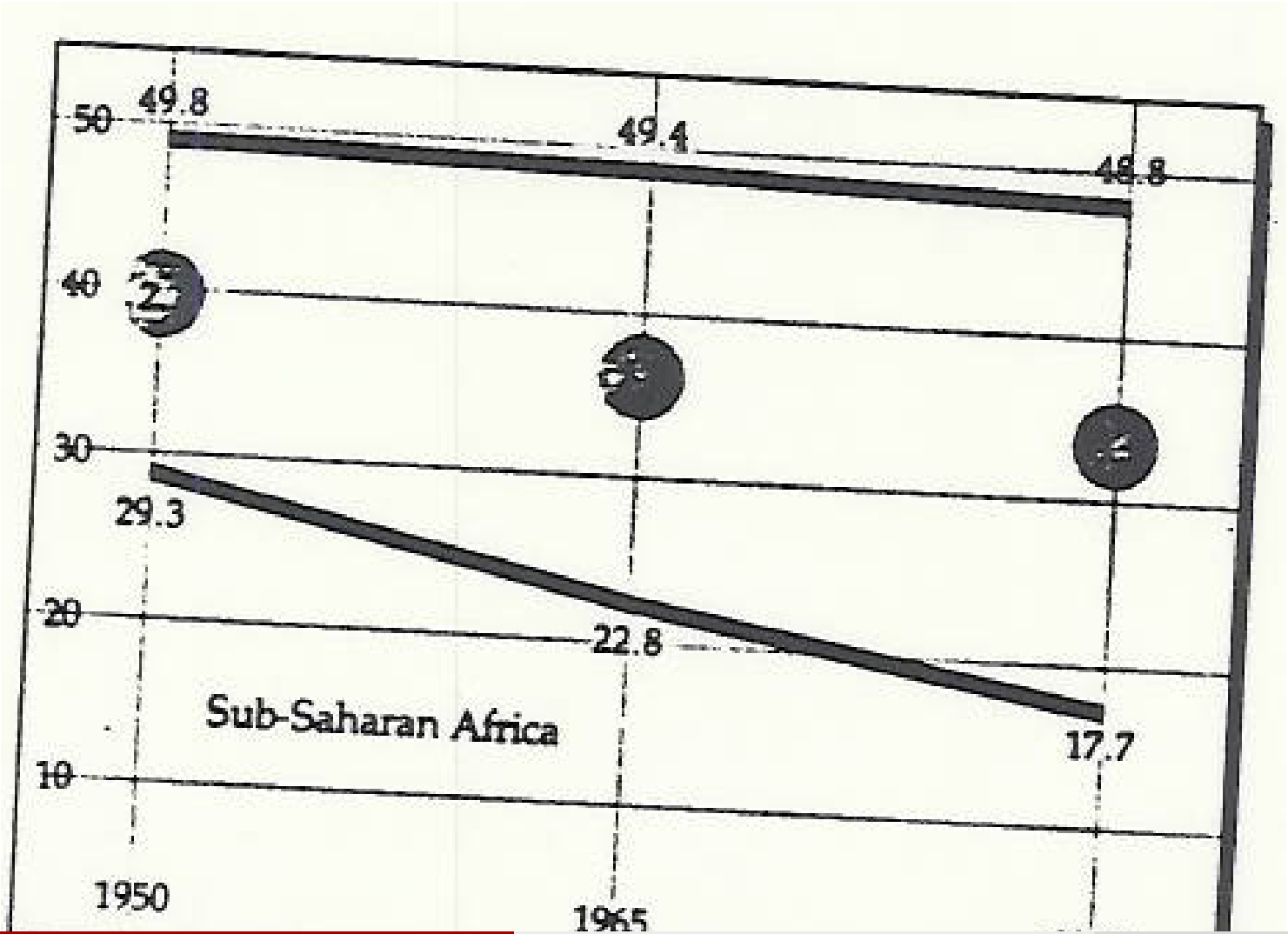
Demographic Transition in East Asia



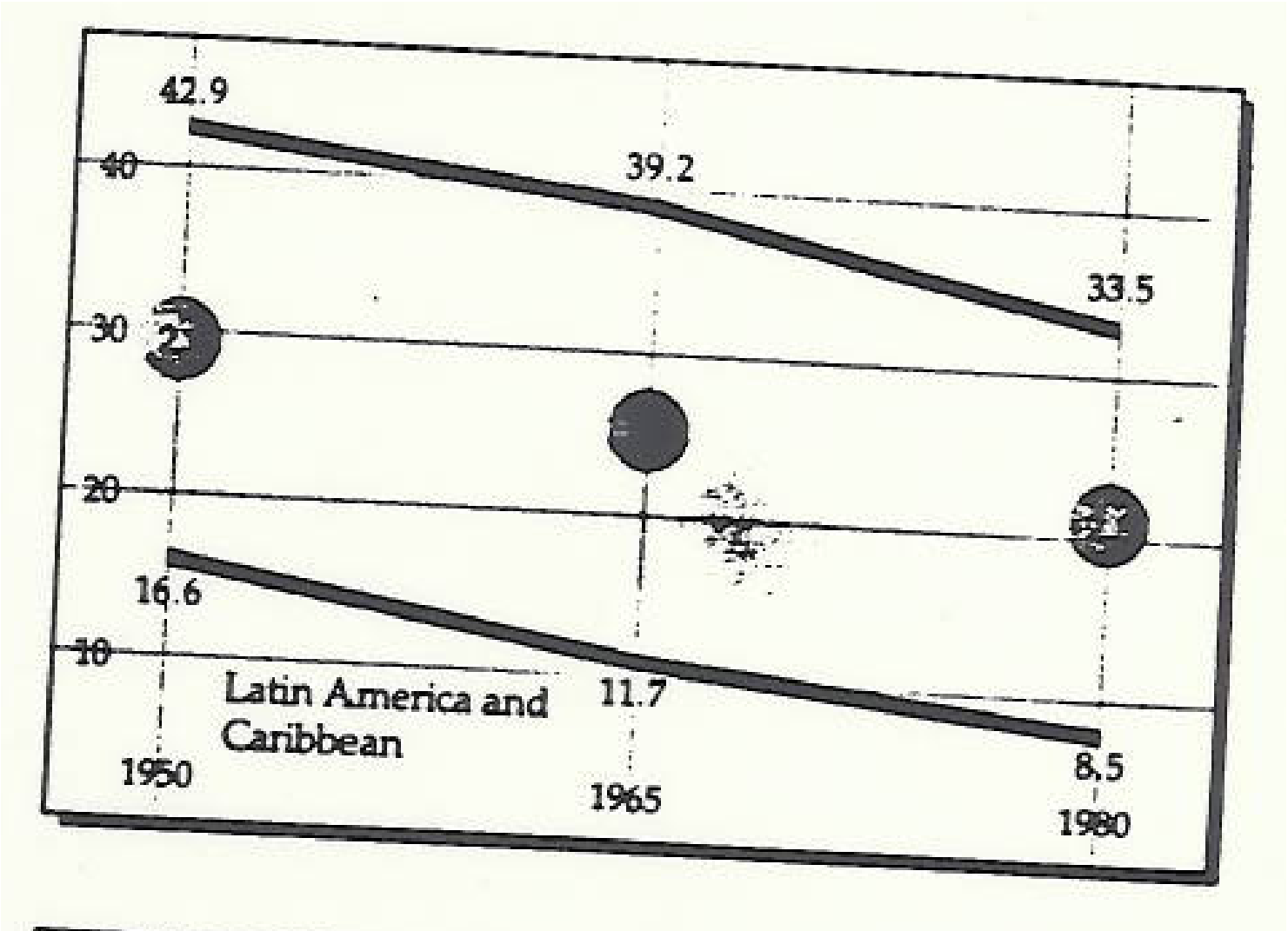
Demographic Transition in South Asia



Demographic Transition in Sub-Saharan Africa



Demographic Transition Elsewhere (LAAC, OECD)



Key to Lowering Population Growth Rates

- ensure that fertility rates decline
- even at any given level of p.c.i., countries vary a lot with respect to fertility rate

Key Question for Next Lecture

- What are the determinants of fertility rates?
- Why do they tend to decline as country develops?
- How can policies affect fertility rate decline?