Dr Sangeetha Chandrashekeran

Population, entitlements, technology and climate change – a wrap up 5.2

Outline

- Recap
- Population (abundance theory): Malthusian and neo-Malthusians
- Population (demographic transition)
- Entitlements (distribution theory)
- Technology and Innovation
- Climate change

Abundance theory

(Neo-)Malthusians

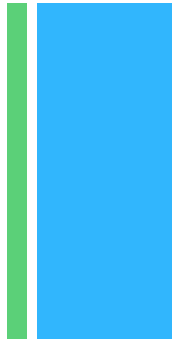
Neo-Malthusianism and Malthus

Both are concerned with the abundance of food relative to population

together = the relative abundance argument

- 0001AD: quarter of a billion people (about same as USA population in 1990)

16 centuries



- 1650AD: doubled to half a billion

2 centuries (trade, old/new world)

- 1830: doubles again to 1 billion

1 century

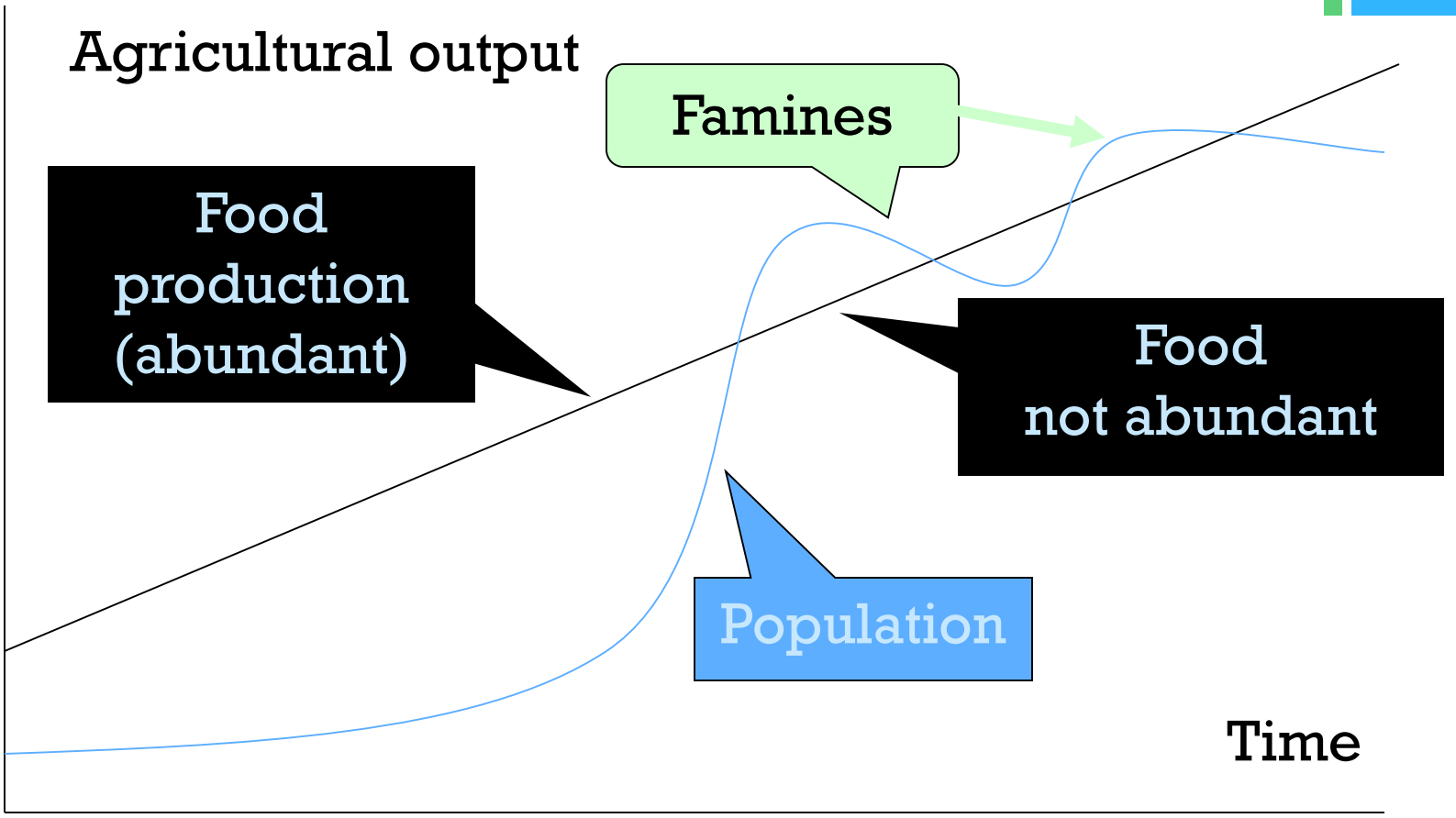
- 1930: doubles: 2 billion

1.2 centuries

More than quadruples?

2050: 9 billion?

The problem according to Malthus



Abundance argument: Conclusions

- Malthus
  - Population grows geometrically; agricultural production only arithmetically
  - Solution = deal with birth rates
  - OR… point of crisis, food keeps population in check
  - Solution? Moral choices, abstinence, class issues, famine = good thing (?)

(Neo-)Malthusians

Neo-Malthusianism and Malthus

Both are concerned with the abundance of food relative to population

together = the relative abundance argument

But Neo-Malthusians also consider:

- Environmental degradation
- Development (a post WWII concept)
- Diminishing returns from agriculture
- Non-renewable resources

Conclusions

Malthus and Neo-Malthusians

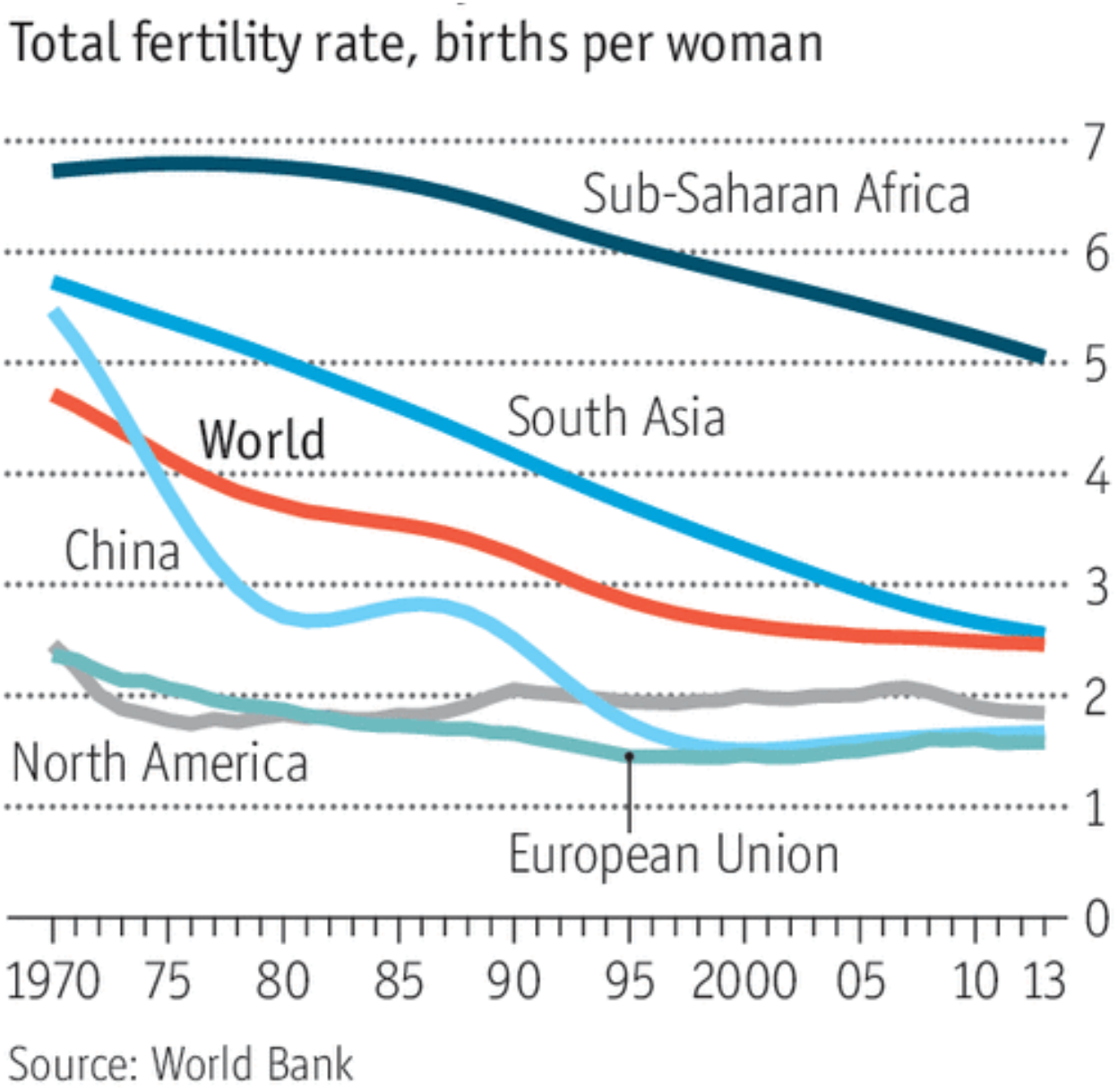
1. Malthusian arguments are simplistic account of why famines occur, but they are still prevalent

2. Neo-malthusians had a revival in the 1970s as a result of increased understanding on global ecological crises

3. These arguments may incorporate consumption and inequity, but many don't (e.g. per capita arguments on fossil fuels)

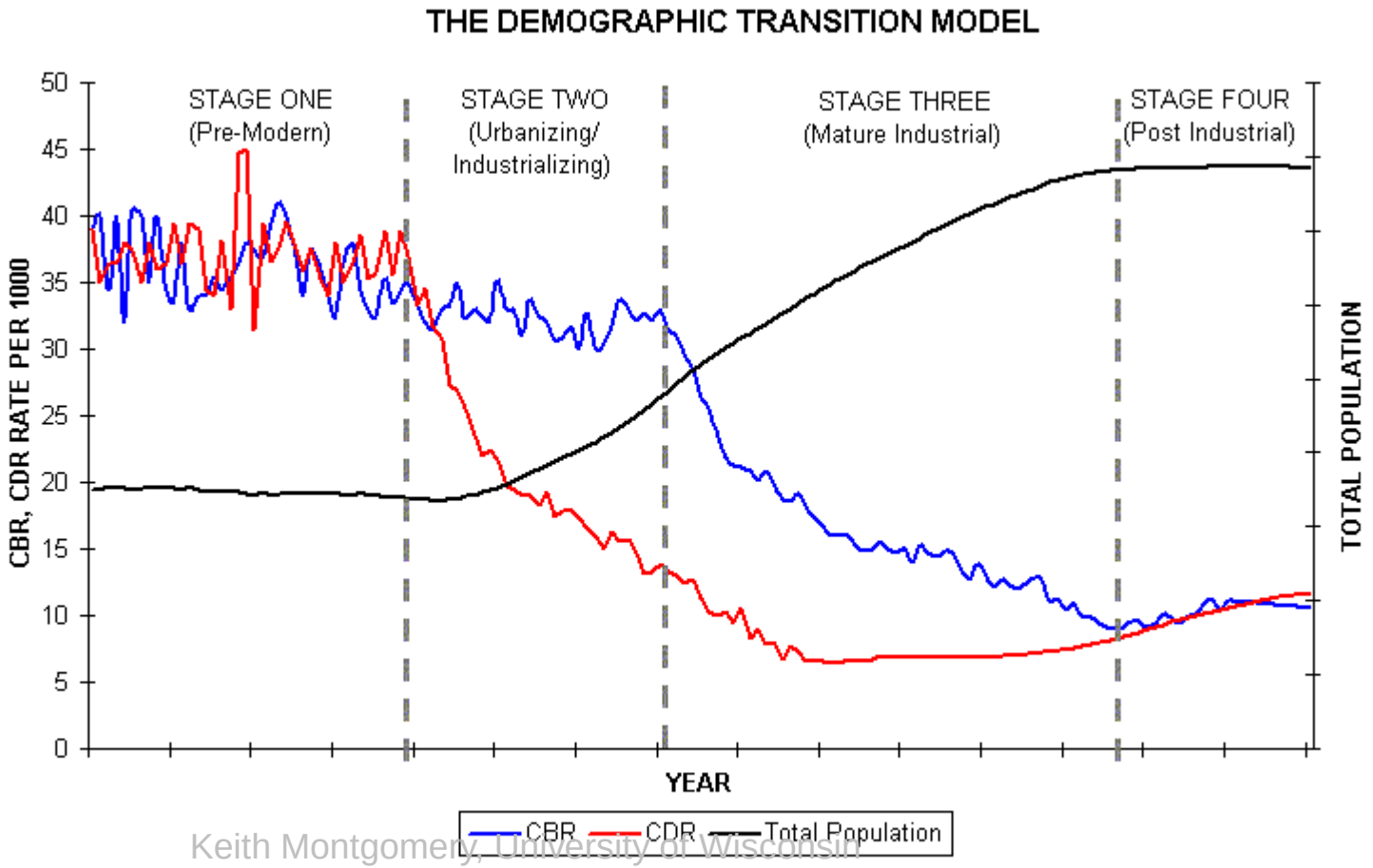
So this is a simplistic POPULATION vs RESOURCES account

Demographic Transitions


Total fertility rate, births per woman
7
6
5
4
3
2
1
0
Sub-Saharan Africa
South Asia
World
China
North America
European Union
1970
75
80
85
90
95
2000
05
10
13
Source: World Bank

Demographic Transition

Demographic transition: the **transition** from high birth and death rates to low birth and death rates as a country develops from a pre-industrial to an industrialised economic system



Interdependence: Poverty, fertility and consumption

The Demographic Transition

BUT can we avert food shortages simply by controlling population?

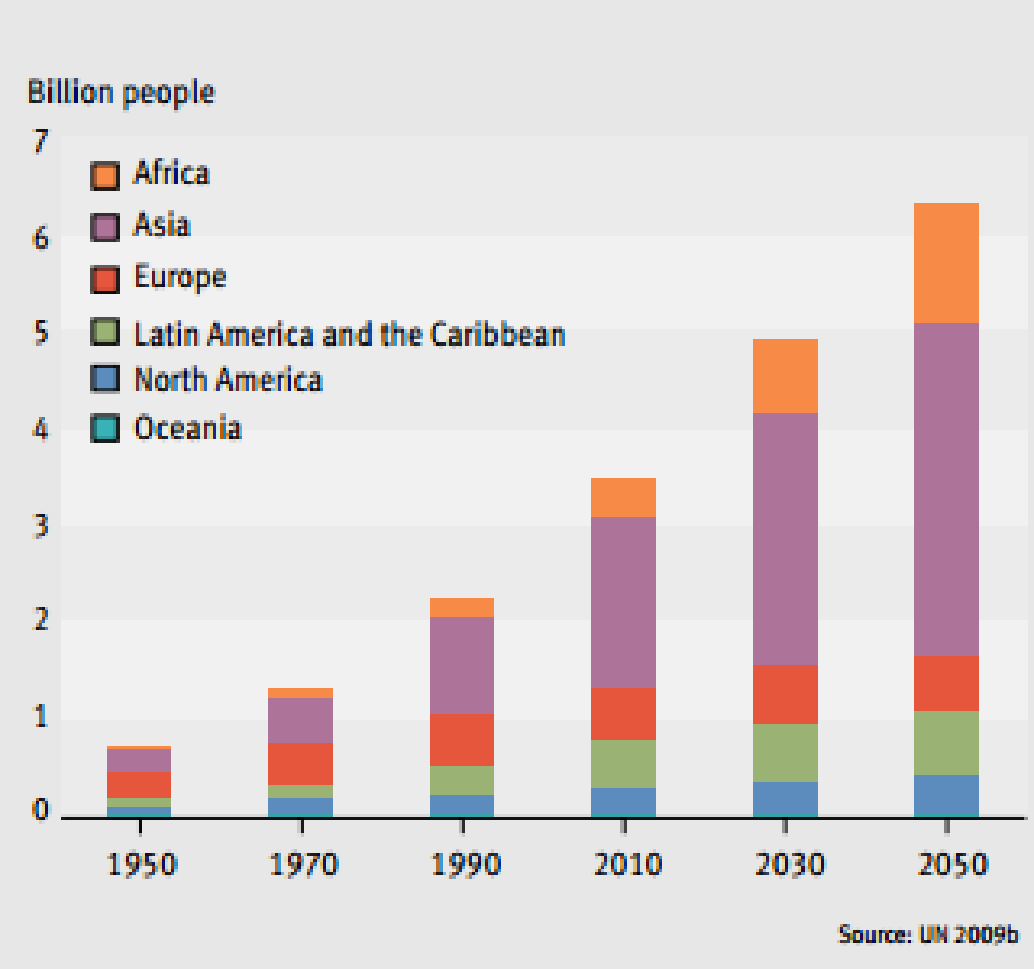
Consumption and Affluence

$I = P. A . T$

- I = environmental impact
- P = population
- A = affluence ($ per person)
- T = technology (impact per $)

Paul Ehrlich

More people living and consuming in cities (1950-2050)



Birth control or reduce consumption?

- **Which one is more effective – increase birth control (A) in developing countries or reduce consumption (B) in developed countries?**

Birth control or reduce consumption?

- **Which one is more effective – increase birth control (A) in developing countries or reduce consumption (B) in developed countries?**
- **Which one is more politically feasible - increase birth control (A) or reduce consumption (B)?**

Distribution theory

Asani Sanket – Satyajit Ray – Bengal Famine

Distribution theory: conclusions

The distribution theory:

- Focuses on the *distribution* of food: *who* produces it, *who* gets it, and *why* distribution is uneven.
- Considers the economic, political, and cultural factors that effect food availability
- Macro-micro scale:
  - global, regional, national, local, household and individual
  - Micro-macro scale data
- Poverty is a key issue

Poverty

If the main cause of food problems is the *distribution* of food, not the amount of food that is produced, then…

The central issue in understanding the distribution of food is ***poverty*:**

- Who are the poor and ultra-poor?
- What are their capabilities to access food?
- How are these shaped by economic, political and social forces

Entitlement sets

- Sen sets entitlements up against 'FAD' – '*food availability decline*'

Before Famine was explained by a:

Food Availability Decline (FAD Approach)

Amartya K. Sen explained the Great Bengal Famine (1943) and African Famines by the Decline of Food Entitlements:

Food Entitlement Decline, FED Approach

Entitlement sets

- Full range of goods and services that can be acquired by converting endowments (assets, labour power) through exchange

- Four 'entitlements' categories:

1. Production-based (growing food)
2. Trade-based (buying food)
3. Own-labour (working for food)
4. Inheritance and transfer (being given food by others)

Starvation: entitlements set doesn't provide basic subsistence

Famine = geographically, occupationally, socially defined group of people experiences catastrophic decline in entitlements

So this is about whether people can **access** food or not.

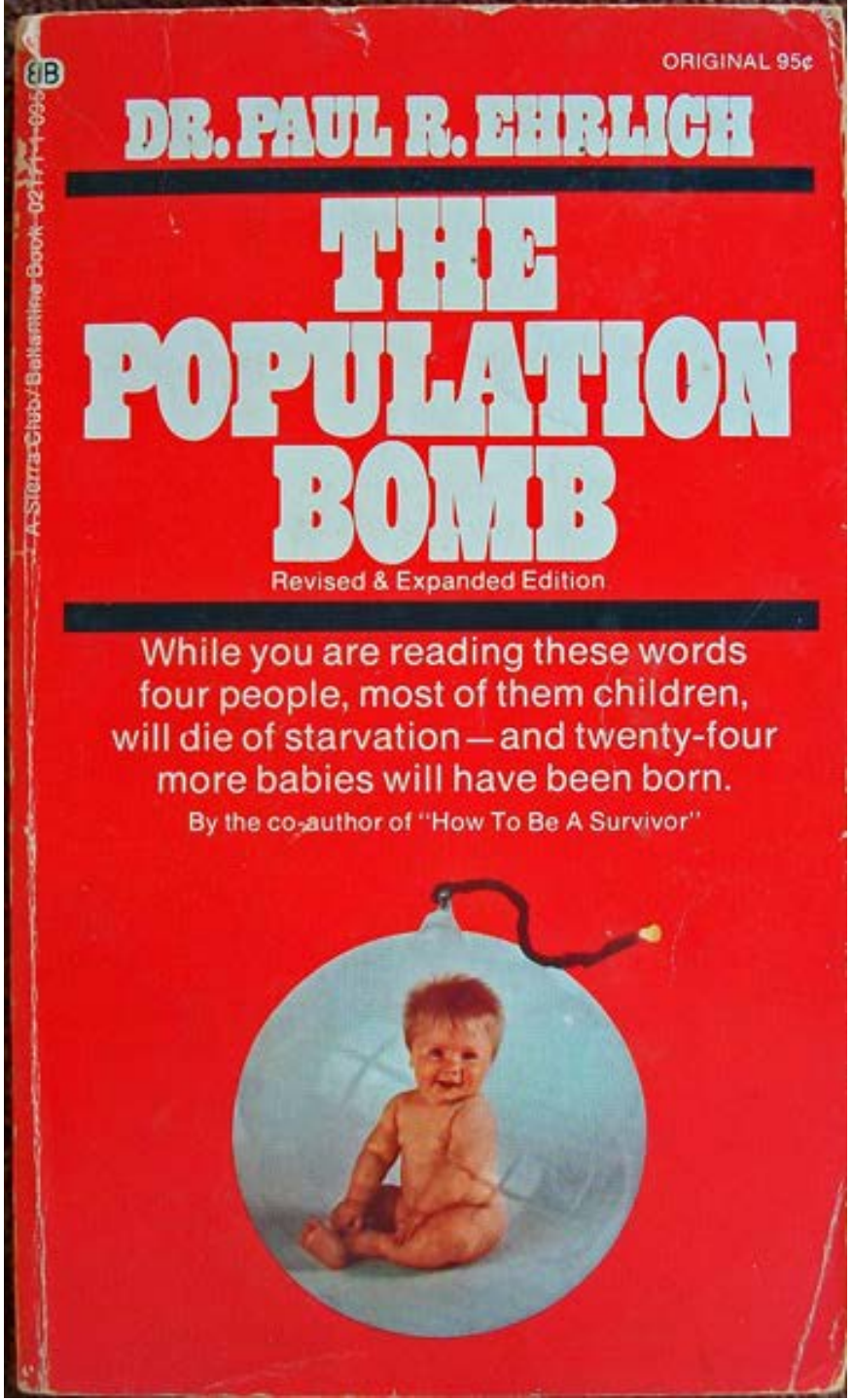
Its **not** really about whether food is **produced** or not, although this is part of Sen's production entitlements.

Limitations to Sen's Approach

- Fuzzy entitlements
- Illegal and extra legal means
- Political dimensions
- Health
- Intra-household power under theorised
- Macro factors
  - The issue of Scale
  - Poverty traps
  - Market failures
  - Policy failure and politics
  - War and violent conflict

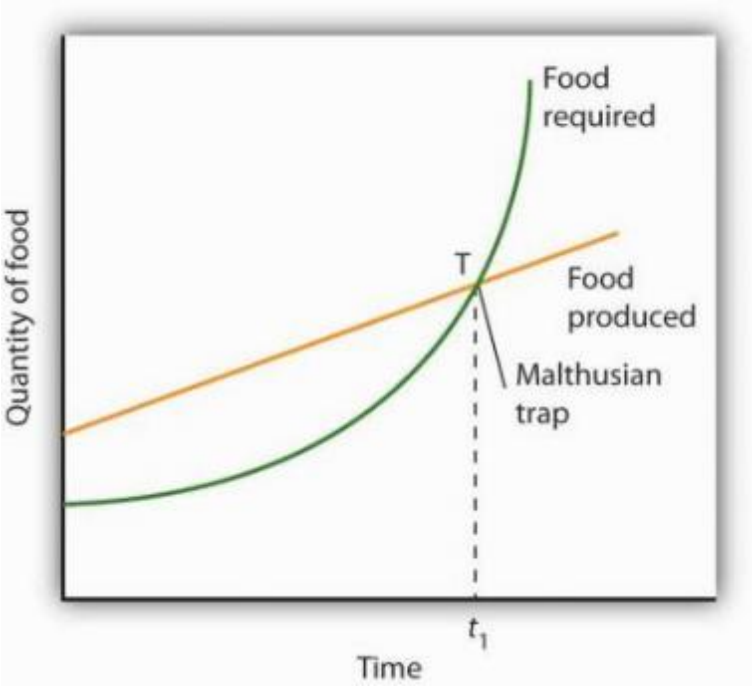
Technology and Innovation

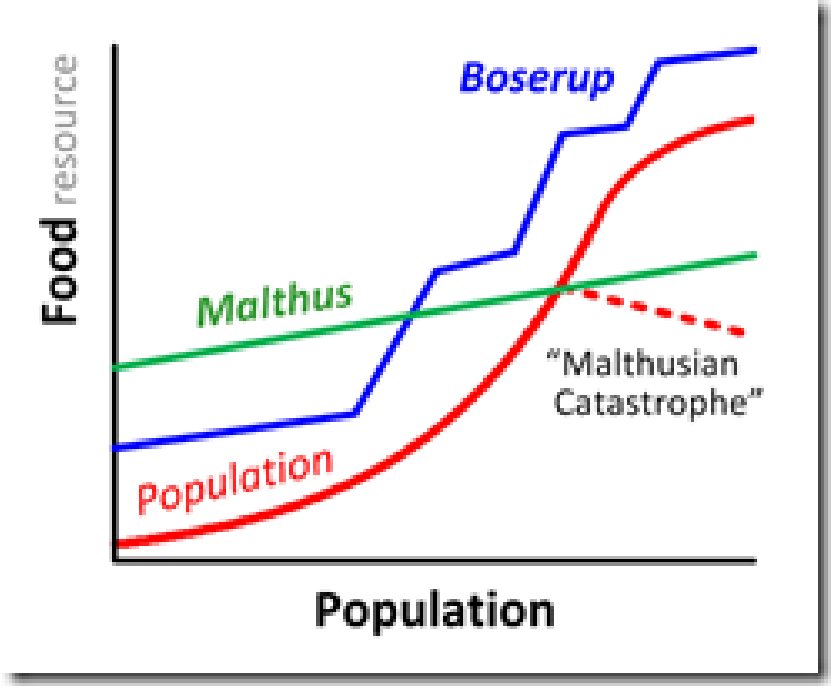

POPULATION
WELL, IT APPEARS TO HAVE LANDED...
BUT IT DIDN'T EXPLODE!


ORIGINAL 95¢
DR. PAUL R. EHRLICH
THE POPULATION BOMB
Revised & Expanded Edition
While you are reading these words four people, most of them children, will die of starvation—and twenty-four more babies will have been born.
By the co-author of "How To Be A Survivor"

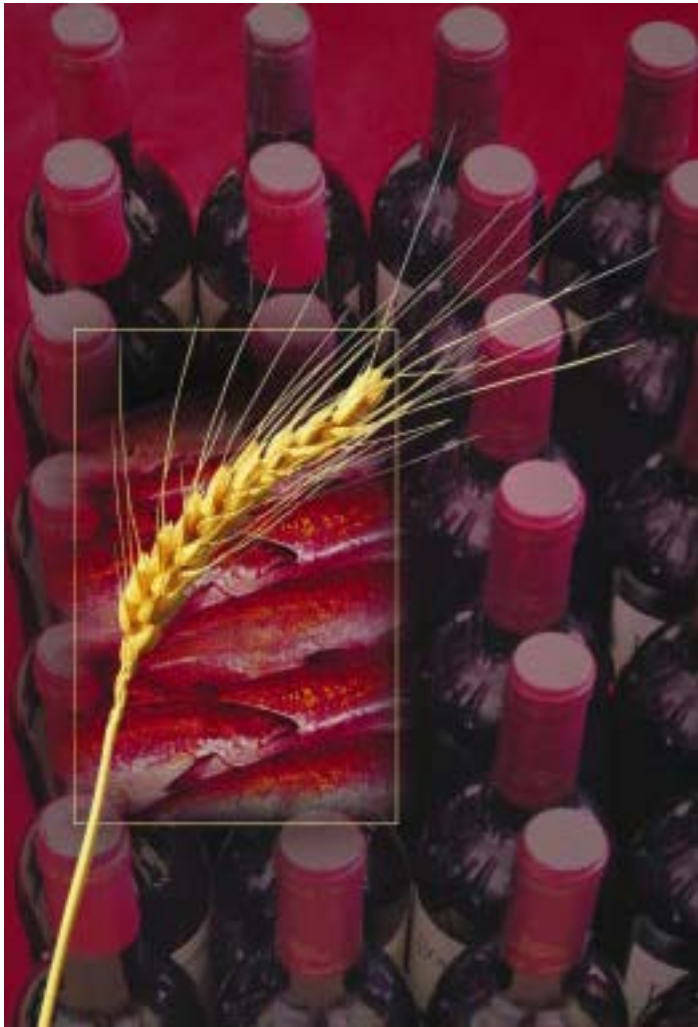
Two contrasting views

- Malthus (1798): food production cannot keep up
  - Boserup (1965): people will innovate when needed.





Technological innovation and the Green Revolution



Not simply a technological innovation

- Government investment in research
- State-enabled market creation
- "Modernisation" of the countryside
- The rise of international agribusiness

Limitations of the Revolution

- Impact on poor less than expected
- Regional benefits highly uneven
- Encouraged, natural resource degradation and environmental problems
- Now talk of a second green revolution

Climate change

Climate Change and Food Security

- Warming of more than two degrees would increase the risks of "severe, pervasive and irreversible" consequences.

Climate Change and Food Security

- IPCC Fifth Assessment Report (AR5)
  - "All aspects of food security are potentially affected by climate change"
  - 2° C or more = decline in production (updated from 3° C)
  - The rate of increase in crop yields is slowing
  - wheat yields could drop 2% a decade.

Climate Change and Food Security

- IPCC Fifth Assessment Report (AR5)
  - Changes in temperature and rainfall patterns - lead to food price rises of between 3% and 84% by 2050.
  - Fish catches in some areas of the tropics are projected to fall by between 40% and 60%, according to the report.
  - More extreme scenarios, heat and water stress could reduce yields by 25% between 2030 and 2049.

Climate Change and Food Security

- People who *depend* on natural resources and ecosystem services,
- The rural and urban poor, and others who may be socially excluded
- "Climate change can indirectly increase risks of violent conflicts,"

Climate Change and Food Security

In the absence of good policies, climate change is likely to cause:

a) decreasing production in some places

+

b) short term scarcity problems due to disasters (production as well as transport and storage system)

+

c) rising prices and risks to income

+

d) water, energy, and health problems (secondary malnutrition)

= multiple drivers of food insecurity

Climate Change and Food Security

- Climate change will affect many of the determinants of food security

1. Food Production
2. Access to food
3. Food utilisation
4. Stability

Solutions?

- Increasing resilience
- Find opportunities for more market integration
- ‘Improve’ globalisation
- More Trade
- Carbon trading

Population problem

- **Is population growth a major concern for the world?**

A. Strongly agree

B. Agree

C. Neutral

D. Disagree

E. Strongly disagree

Quickpoll: Climate change

- Climate change:

A. Will be the major driver of food insecurity

B. Will not be an issue, (bio)technology can overcome it

C. Is not an issue; population is the key issue here

D. Will improve food security because Canada and Russia will grow more and provide more food

E. None of the above

Q&A

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Stop wasting food

- Tristam Stuart
  http://www.youtube.com/watch?v=cWC_zDdF74s