The Demographic Transition: Linking birth, death and growth rates

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PER L' ECONOMIA, IL TERRITORIO E LA FINANZA
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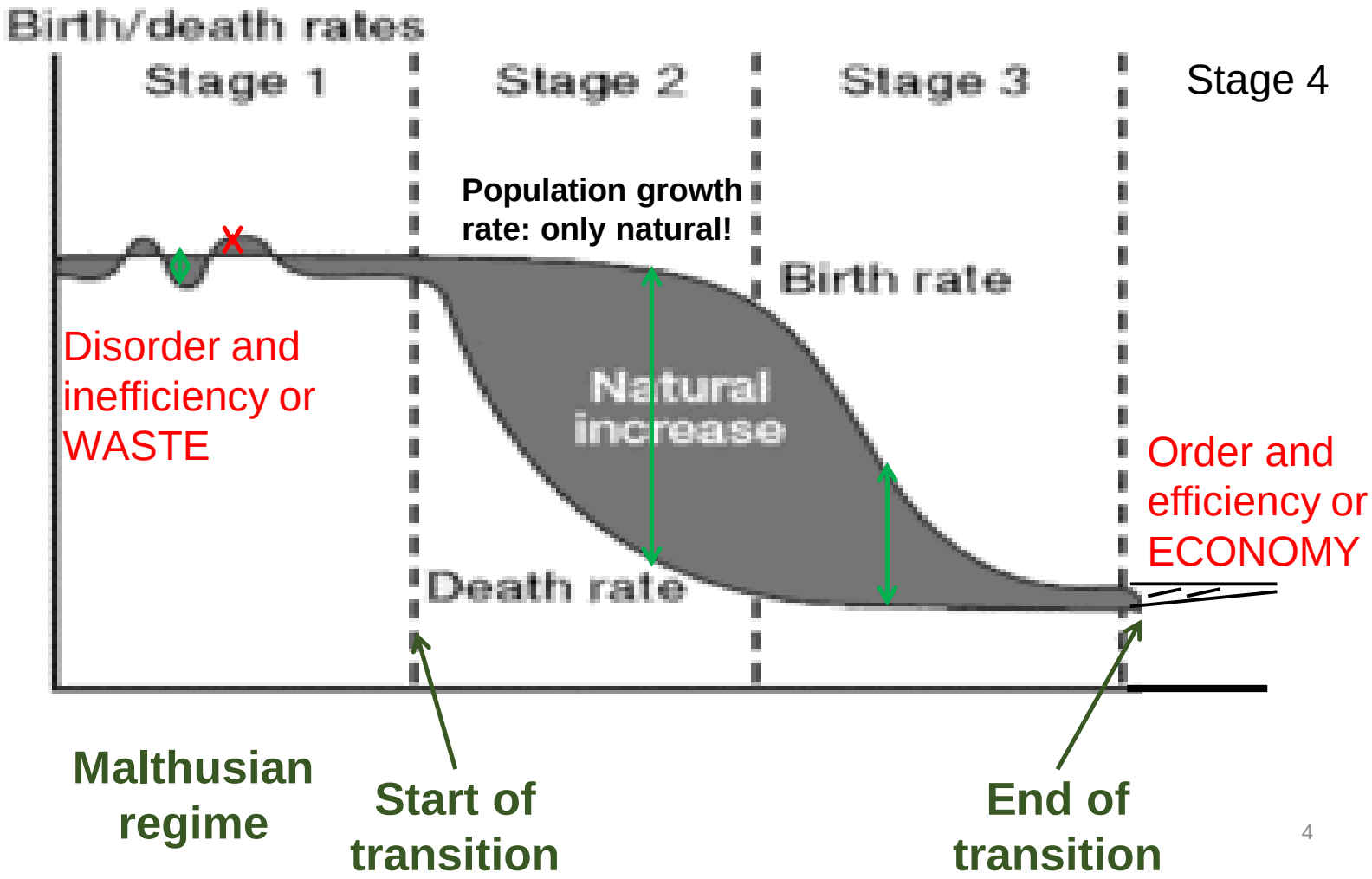
The demographic transition model

- The demographic transition model is a generalised description of the changing pattern of deaths, births and growth rates as societies move from one demographic regime to another.
- The term was first coined by the American demographer Frank W. Notestein in the mid-twentieth century, but it has since then been elaborated and expanded upon by many others.

Summarizing:
What is the DT?

- The "Demographic Transition" is a model that describes population change over time
- Literally, *transition* means passage from one stage o equilibrium to another, with high population growth in between
- The model is a **generalization** that applies to different countries in different place and time: quite all the countries in the world passed or are passing through the DT.

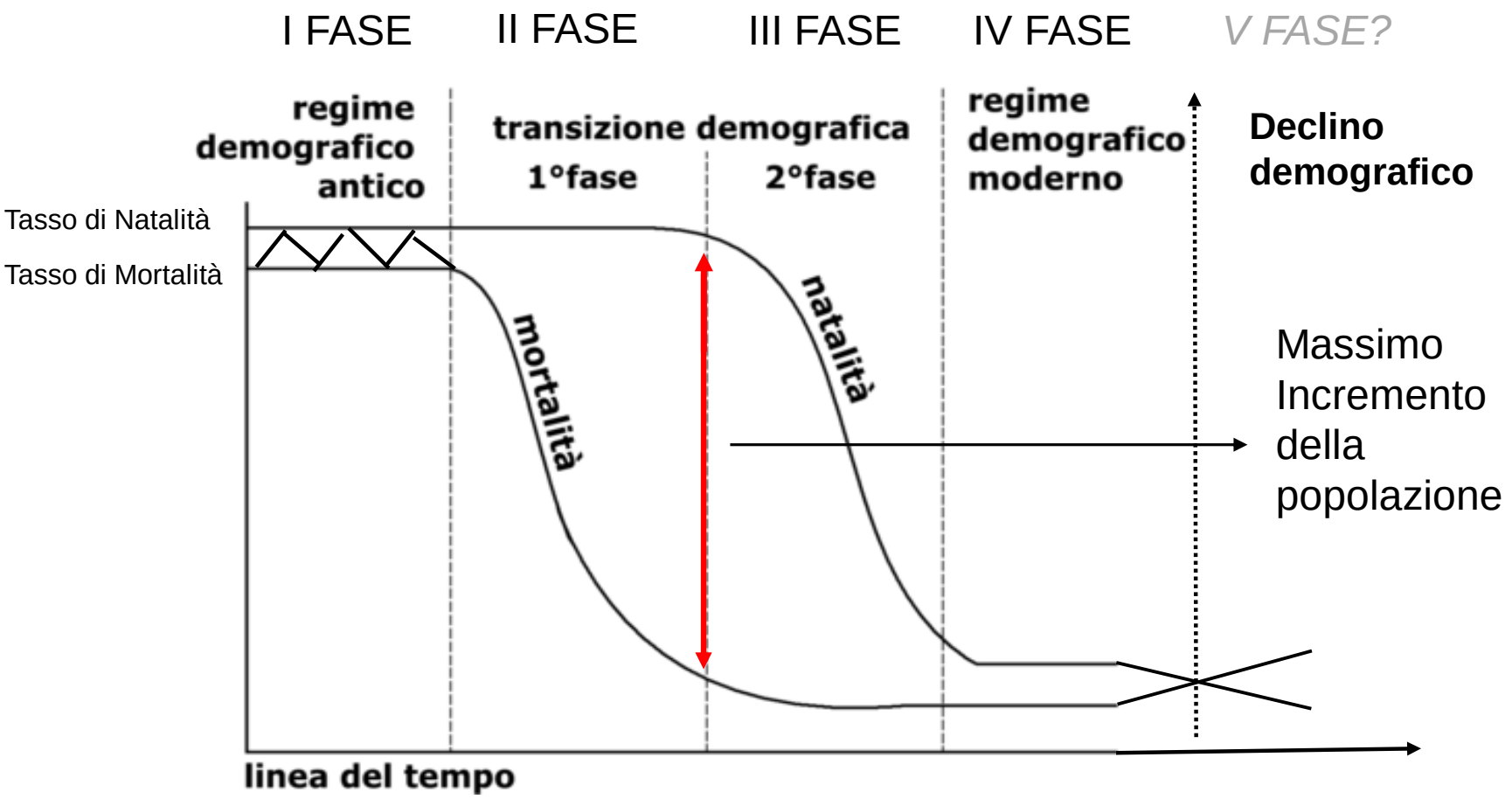
The DTM most common representation



From waste to economy

- The old demographic regime was in balance but was characterized by inefficiency and by disorder: **waste**
- During the XIX and XX century European population experimented a profound transformation toward a new balanced demographic regime characterized by order and efficiency: **economy**
- Demographic transition describes the process of transformation from waste to economy and from disorder to order

La transizione demografica: il modello



The classic tale of Demographic Transition

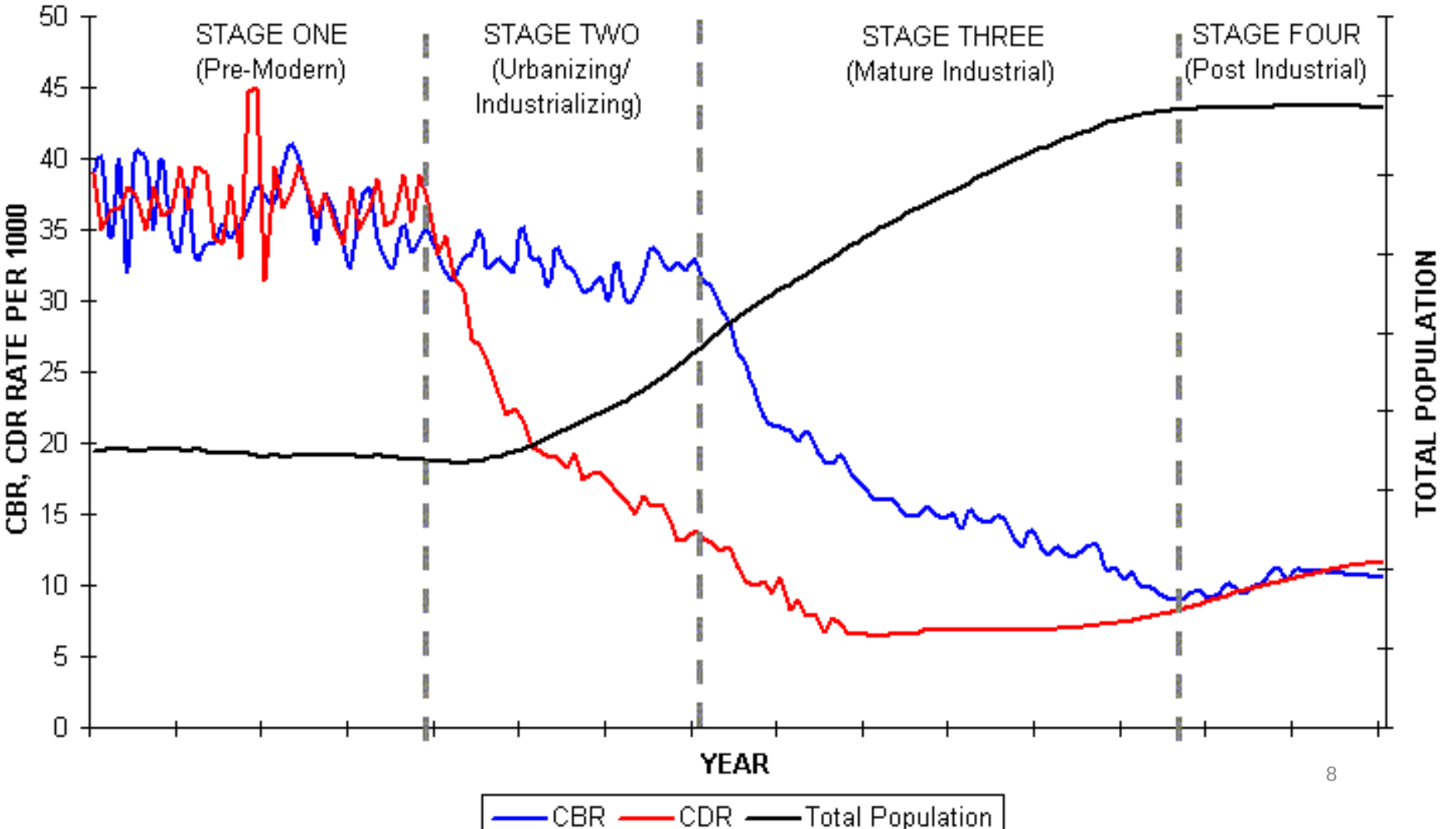
Linking demographic change to structural changes in society

The keyword: MODERNISATION

Driving processes:

- Agrarian to industrial society
- Rural to urban society
- Technological change

Linking DT to MODERNIZATION



The 4 stages of the demographic transition

I. **Pre-transition:** Birth rate and death rate are high and cancel each other. Population fluctuates due to mortality crisis and growth is limited
II. **Early Transition:** Death rate declines and birth rate remains at a high level, resulting in a period of rapid growth
III. **Late Transition:** Birth rate starts to drop and the death rate reaches a low level. Population growth continues, but slows down
IV. **Post-Transition:** Birth rate and death rate are low with small fluctuations: population growth is limited and in some years it may decline

Stage 1
Pre-transition: high mortality level

- Life expectancy ranged between 25 and 40 years, and experienced large fluctuations in relatively short periods of time.
- Population size was often reduced by "mortality crises", caused by outbreaks of plague or other infectious disease. On a local scale, crop failure and famine played a role.
- Very high infant mortality rates

Stage 1
Pre-transition: high fertility level

- The number of births was high since the total fertility rates were moderately high, ranging between 4 and just under 6 children per woman on average.
- Fertility rates were determined largely by age at marriage and proportion of the population remaining celibate: Malthus preventive checks
- No effective conceptions control: natural fertility
- The high economic value of children and the high infant mortality level sustained high fertility intentions

Stage 1
Pre-transition: no population growth

Population growth was slow, due to high mortality and moderate fertility.

Stage 2
Early transition

- During the early stages of the transition, the death rate begins to fall.
- Fertility remain high.
- As birth rates remain high, the population starts to grow rapidly.

Stage 2
Early transition: mortality decline

The decline in the intensity and frequency of **mortality crises** constitutes the first aspect of the mortality transition

1. Advances in public health and sanitation: sewers
2. Improvements in nutrition: agriculture revolution
3. Widespread acceptance of the germ theory of disease and improvements in personal hygiene: the soap, hands washing among gynecologists (1846)
4. Medical advancements

Stage 3
Late transition: fertility decline

The decrease of fertility: Why? (see lecture on Fertility)

- The contraception revolution: From the traditional system of fertility regulation (marriage) to a new one (contraception), that is neo-Malthusian checks
- European fertility transition conventionally dated from 1870 to 1960
- Birth rates start to decline
- The pattern varies by country. For example, while the transition in England and Wales did follow the classical pattern, in France fertility and mortality declined simultaneously from the mid-18th century.
- The rate of population growth decelerates

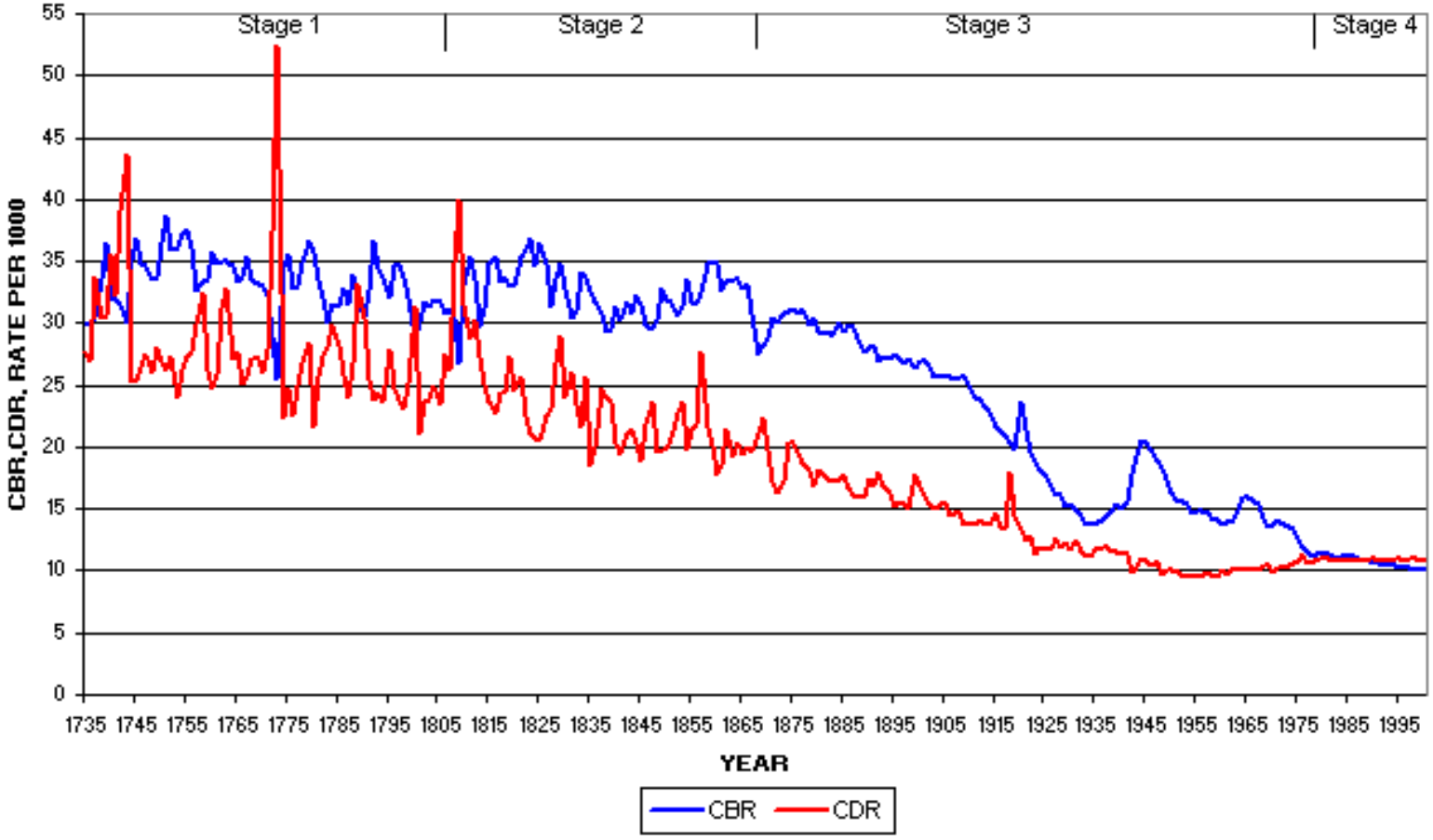
Stage four
Post-transition

All the countries which began their demographic transition during the 18th and 19th centuries have now completed the transition. They are considered to be "post-transitional", with **low mortality concentrated in the oldest ages, low fertility rates, and negligible growth rates**.

The emergency of lowest-low fertility: toward demographic decline?

STAGE 5?

The Demographic Transition: Sweden 1735-2000



The demographic transition: Mauritius, 1890-1986

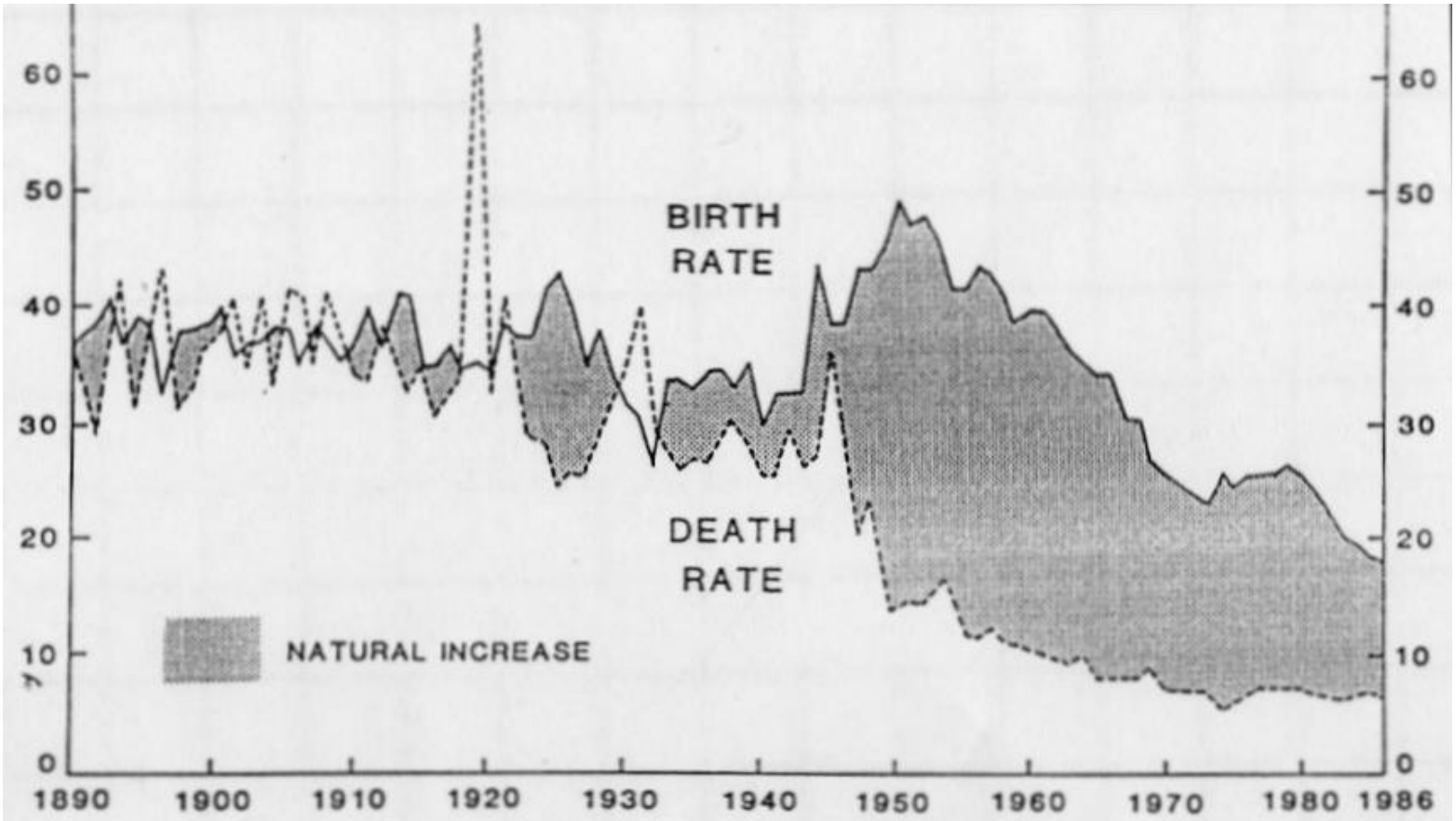


Figure 3.11
Crude birth rates and death rates, per 1,000, Mauritius, 1890–1986

E LA TRANSIZIONE IN ITALIA?

COSTRUITELA VOI!

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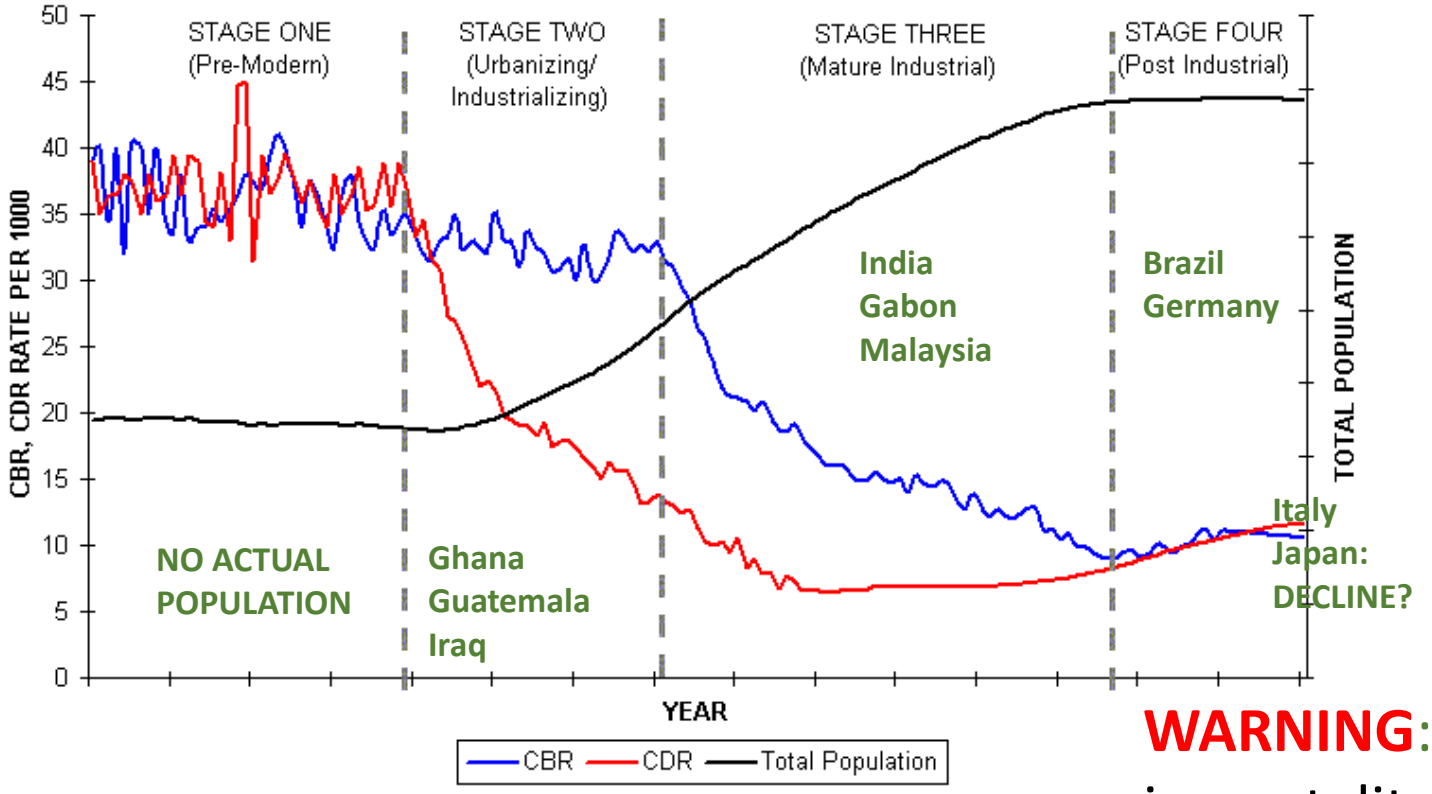
Which stage of Demographic Transition?

Placing contemporary societies into the scheme



WARNING: Why is mortality increasing?

Problems with “Crude” rates

Comparison can be distorted by the age distribution: that’s why “Crude”

Sweden 1992 **CDR = 10.55 per 1000 pop.**

Kazakhstan 1992 **CDR = 7.42 per 1000 pop.**

For this reason, e_0 and TFR are much better indicators of survivorship perspectives and reproductive behaviour respectively than the Crude rates.

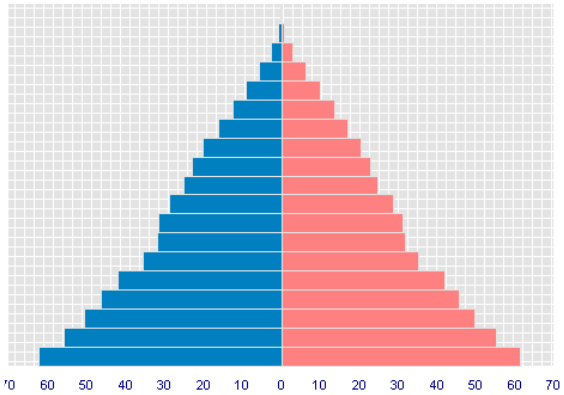
The Crude rates tell us how many births and deaths are observed at time t relatively to a certain population amount

Main consequences of the demographic transition

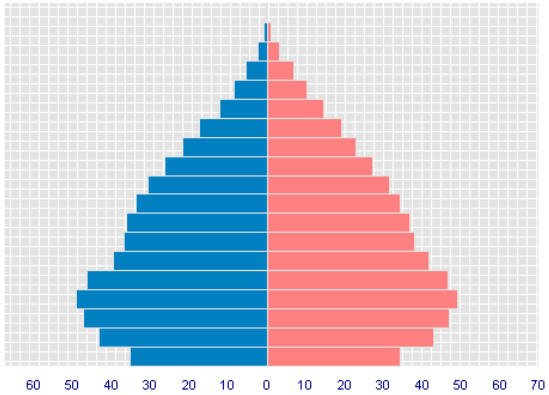
- Changes in age structure: aging
- Migration
- Urbanization
- Household and family structure

A CHANGING SHAPE depending on changing amount of deaths and births

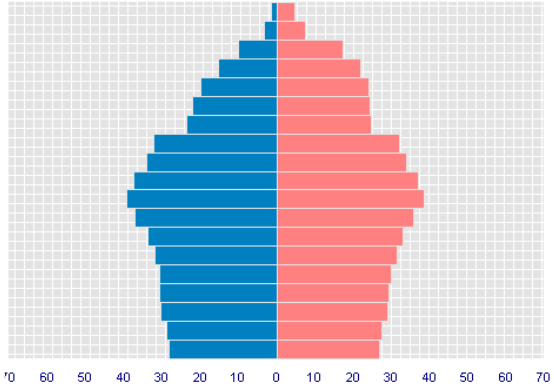
Belgium 1881
High levels of births and deaths



Belgium 1921
Births and deaths start declining



Belgium 2006
Persistent low births and deaths amount



The Demographic Dividend

Number of Children are declining

The elderly are less than a problem

The workforce continues to increase

«At an early stage of the transition, fertility rates fall, leading to fewer young mouths to feed. During this period, the labor force temporarily grows more rapidly than the population dependent on it (Lee&Mason 2006)»

Fewer «mouths to feed» and more opportunities for development

The window is going to shut also in Latin America. What about Africa?

For a nice and concise history of population and of DT see:

https://youtu.be/QsBT5EQt348