The Demographic Transition Model (DTM)

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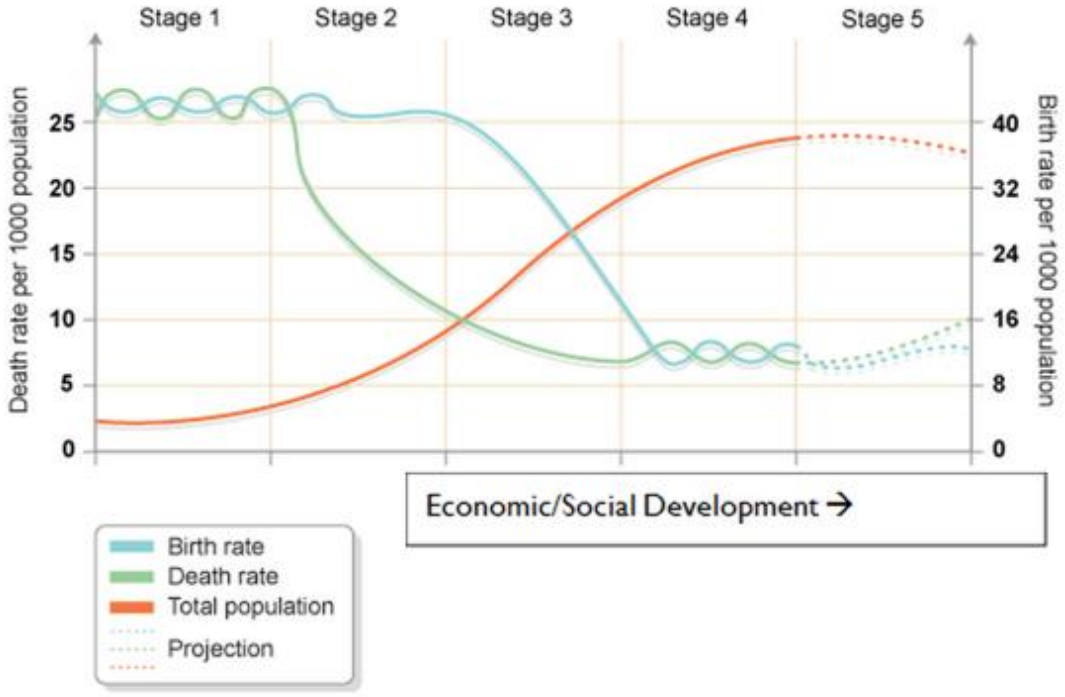
The DTM is a model of population change from a low stable population to a high stable population as a result of a preliminary fall in the death rate from a high level (45/1000 p.a. to around 9/1000 p.a.) to be followed later by a fall in the birth rate. The time-lag between the decline in the two measures of natural population change results in a period when there are far fewer people dying than being born, resulting in a phase of rapid population growth. The model was developed in the mid 20th century based on repeated observation of similar population growth patterns in countries as their economies developed. Originally identifying 4 stages, a 5th stage was added towards the end of the century, and some demographers suggest there may be a 6th stage. As such it is an evolving model of demographic structure



Stage 1 - High Fluctuating

Birth Rate and Death rate are both high. Population growth is slow and fluctuating.

Reasons

Birth Rate is high as a result of:

- Lack of family planning
- High Infant Mortality Rate: putting babies in the 'bank'
- Need for workers in agriculture
- Religious beliefs
- Children as economic assets

Death Rate is high because of:

- High levels of disease
- Famine
- Lack of clean water and sanitation
- Lack of health care
- War
- Competition for food from predators such as rats
- Lack of education

Typical of Britain in the 18th century and the Least Economically Developed Countries (LEDC's) today.

Stage 2 - Early Expanding

Birth Rate remains high. Death Rate is falling. Population begins to rise steadily.

Reasons

Death Rate is falling as a result of:

- Improved health care (e.g. Smallpox Vaccine)
- Improved Hygiene (Water for drinking boiled)
- Improved sanitation
- Improved food production and storage
- Improved transport for food
- Decreased Infant Mortality Rates

Typical of Britain in 19th century; Bangladesh; Nigeria

Stage 3 - Late Expanding

Birth Rate starts to fall. Death Rate continues to fall. Population rising.

Reasons

- Family planning available
- Lower Infant Mortality Rate
- Increased mechanization reduces need for workers
- Increased standard of living
- Changing status of women

Typical of Britain in late 19th and early 20th century; China; Brazil

Stage 4 - Low Fluctuatin

Birth Rate and Death Rate both low. Population steady.

Typical of USA; Sweden; Japan; Britain

STAGE 5 (Defined when the BR slips below the DR)

Death rate:

Death rate increases due to: An ageing population has a higher death rate than a youthful one due to the larger proportion of elderly people reaching the end of their natural lives. There are more elderly people per thousand reaching their extended life expectancy.

Birth rate:

Continues to fall with more women choosing a child-free or child-limited lifestyle..

Total Population

Total population declines as the death rate of an ageing population rises higher than the still-reducing birth rate.

Table Explaining Demographic Transition Model

Area	Birth Rate	Reason	Death Rate	Reason
LEDCs	High	No contraception Couples have many babies to compensate for the high death rate caused by poor health care Large families need to work on the land to contribute to family income Children look after old Religious reasons	High	Poor medical facilities Disease Poor nutrition High Infant mortality
NICs	High/ Decreasing	People are used to having many children. Takes time for culture to change Changing status of women	Decreasing	As an economy develops money becomes available for better health care Housing improves Better childcare
MEDCs	Low	Children are expensive People know their children are going to survive so they can keep their families small Widely available contraceptives Changing status of women	Low	Better health care Better standard of living

Is the model universally applicable?

Like all models, the demographic transition model has its limitations. It failed to consider, or to predict, several factors and events:

1 Birth rates in several MEDCs have fallen below death rates (Germany, Sweden). This has caused, for the first time, a population decline which suggests that perhaps the model should have a fifth stage added to it.

2 The model assumes that in time all countries pass through the same four stages. It now seems unlikely, however, that many LEDCs, especially in Africa, will ever become industrialised.

3 The model assumes that the fall in the death rate in Stage 2 was the consequence of industrialisation. Initially, the death rate in many British cities rose, due to the insanitary conditions which resulted from rapid urban growth, and it only began to fall after advances were made in medicine. The delayed fall in the death rate in many developing countries has been due mainly to their inability to afford medical facilities. In many countries, the fall in the birth rate in Stage 3 has been *less* rapid than the model suggests due to religious and/or political opposition to birth control (Brazil), whereas the fall was much *more* rapid, and came earlier, in China following the government-introduced 'one child' policy.

The timescale of the model, especially in several South-east Asian countries such as Hong Kong and Malaysia, is being squashed as they develop at a much faster rate than did the early industrialised countries.

4 Countries that grew as a consequence of emigration from Europe (USA, Canada, Australia) did not pass through the early stages of the model.