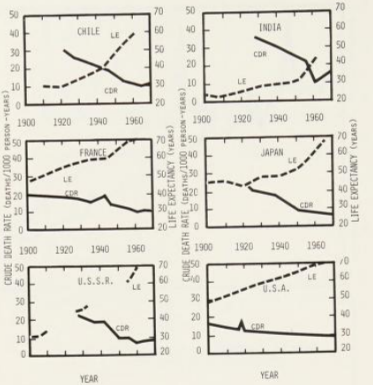

Figure 2-6 National crude death rates and life expectancies, 1900–1970
Sources: Bogue 1969; Keyfitz and Flieger 1971; Arriaga and Davis 1969, p. 223; U.N. *DY*.

suddenly than in the Western nations. The process is not yet complete; the world average life expectancy in 1968 was still only about 53 years (Population Reference Bureau 1968).

Intermediate Fertility Figure 2-7 shows the trends in crude birth rates for several countries. Although the birth rates in these countries vary considerably, several generalizations about aggregate fertilities can be postulated.

First, no country in the world exhibits a birth rate as high as the biological maximum. It has been estimated that the average maximum total fertility possible in a population is about 12 children per woman (see the discussion of maximum total fertility in section 2.5), which corresponds to a crude birth rate of approximately 88 births per 1,000 people per year.* All the birth rates shown in Figure 2-7 are

*Based on the assumption of an average 30 reproductive years per woman and an average fraction of reproductive women in the population of 0.22:

$$\frac{12 \text{ children}}{\text{woman}} \times \frac{1}{30 \text{ years}} \times \frac{0.22 \text{ woman}}{\text{person}} = \frac{0.088 \text{ children}}{\text{person-year}}$$

A more accurate table for converting total fertility to crude birth rates is given in Bogue (1969, p. 662). The highest total fertility shown there is 9.07 births per woman, corresponding to a crude birth rate of 65 per 1,000.

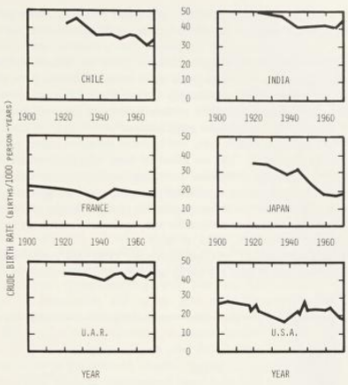

Figure 2-7 National crude birth rates, 1900–1970
Sources: Bogue 1969; Keyfitz and Flieger 1971; U.N. *DY*; Sen 1967, p. 410.

considerably below that number. In fact, it is rare for any population of significant size to sustain a crude birth rate as high as 60 per 1,000 per year. Some set of factors must be operating in every modern human population to keep the reproduction rate well below the biological maximum.

On the other hand, no large national population within recorded demographic history has sustained a fertility level low enough to stop positive population growth. In a population reproducing consistently and exactly at replacement level (an average family size of about two children under modern low-mortality conditions), the crude birth rate would be approximately 13 per 1,000. Although some European nations briefly approached replacement fertilities during the 1930s, and may be approaching them again in the 1970s, their fertility levels have not remained low enough long enough to produce a zero or negative population growth rate.

Thus historical trends indicate that biological or social factors in the present global population system operate to maintain birth rates at an intermediate level, with a minimum somewhat above the replacement level and a maximum well below the maximum level biologically possible. During this century the world's average crude