

SF2.1: Fertility rates

Definitions and methodology

This indicator presents information on levels and trends in fertility rates and the distribution of births by birth order. Fertility rates are captured through two measures:

- The *Total Fertility Rate* (TFR), or the average number of children born per woman over a lifetime given current age-specific fertility rates and assuming no female mortality during reproductive years. TFRs are computed as the sum of age-specific fertility rates defined over five-year intervals. Assuming no migration and that mortality rates remain unchanged, a TFR of 2.1 children per woman is generally sufficient to generate a stable population within a given country. A TFR above or below this 'population replacement rate' is likely to produce population growth and population decline, respectively.
- *Completed Cohort Fertility* (CCF), or the average number of children born to women belonging to certain cohort over the whole of their reproductive lives.

The distribution of births by birth order is measured through the distribution of births by the rank of the birth from the perspective of the biological mother. Three rank groups are used here – first births, second births, and third or higher births.

Key findings

Fertility rates are mixed in the Asia/Pacific region (Chart SF2.1.A). In some of the covered countries, fertility rates are extremely low. For example, in Japan and Thailand current total fertility rates stand at only 1.5 children per woman, while in Hong Kong, Korea and Singapore they fall as low as 1.2 children per woman. In some of the other covered Asia/Pacific countries, however, rates are slightly higher. In Australia, for instance, the current total fertility rate stands at 1.8 children per woman, while in New Zealand and Vietnam it is 2.0 children per woman. These are rates that are higher than the average for OECD countries, although they still remain below the population replacement rate of 2.1 children per woman.

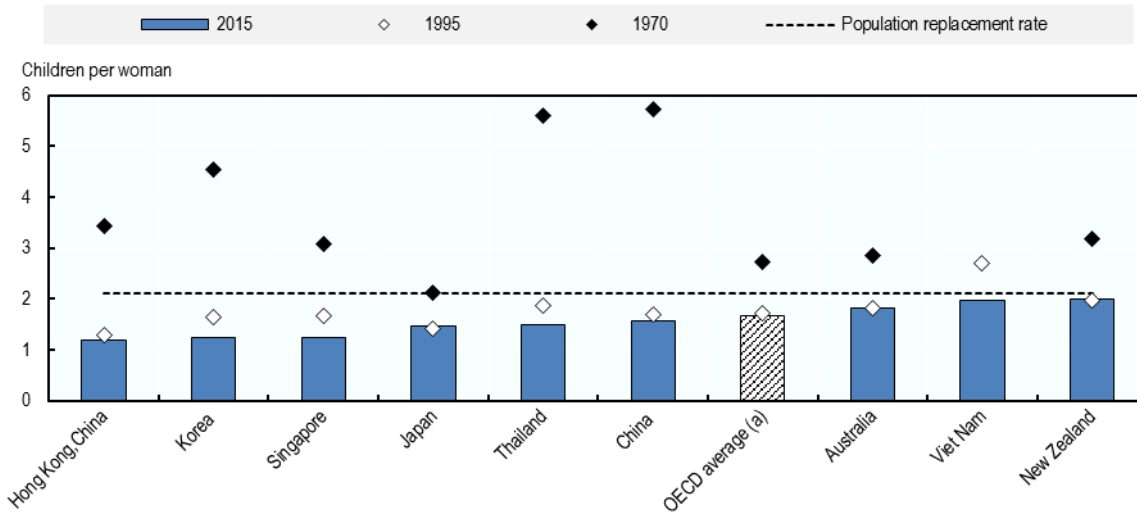
Below-replacement-rate levels of fertility are not new in the Asia/Pacific region, as also in the OECD (Chart SF2.1.A). While most Asia/Pacific countries had total fertility rates well above the population replacement level in 1970, by 1995 all except Viet Nam had rates lower than 2.1. In fact, in two Asia/Pacific countries (Japan and New Zealand) total fertility rates are very slightly higher now than they were in 1995.

Data on completed fertility paint a largely similar picture. Chart SF2.1.B shows CCF for women born in 1950 and in 1965 (or the nearest years available). For the 1950 cohort, completed fertility rates are generally around or above the 2.1 children per woman needed for population replacement, especially in China, where completed fertility for the 1950 cohort is as high as 3.1 children per woman. For the 1965 cohort, however, completed fertility rates across all countries are below 2.1 children per woman. The largest declines in completed fertility between the two cohorts are in Hong Kong (down 1.1 children per woman) and in

Other relevant indicators: SF1.4 Population by age of children and youth dependency ratio; SF2.3 Age of mothers at childbirth and age-specific fertility; SF2.4 Share of births outside of marriage

China (down 1.2 children per woman), while Hong Kong also has the lowest completed fertility rate for the 1965 cohort (1.3 children per woman).

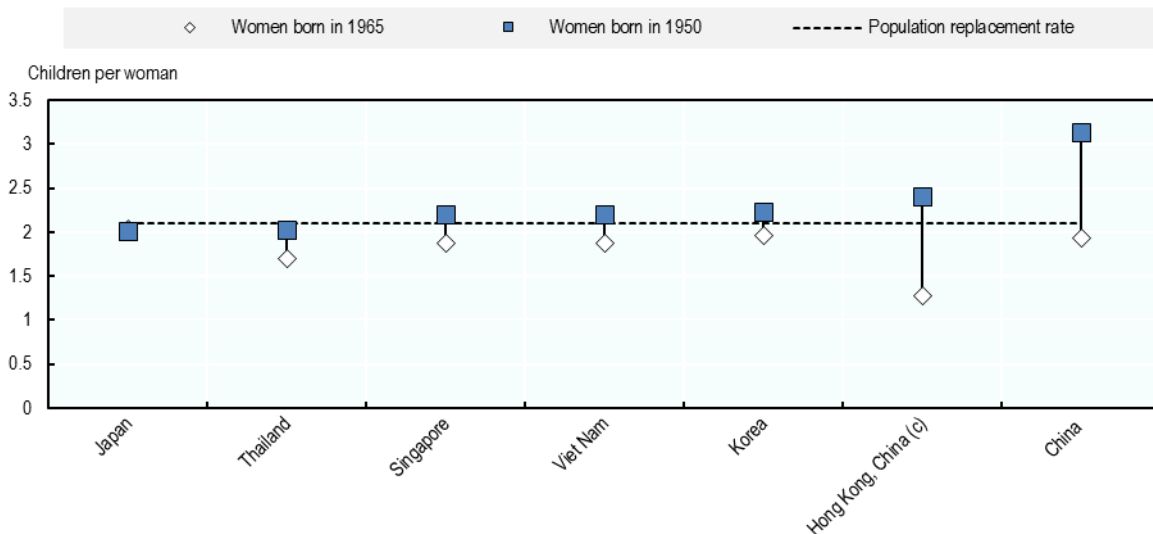
Chart SF2.1.A. Total fertility rate, 1970, 1995 and 2015
 Average number of children born per woman over a lifetime given current age-specific fertility rates and assuming no female mortality during reproductive years



a) The OECD average refers to the unweighted average across the 35 OECD member countries. See OECD Family Database Indicator SF2.1 (<http://www.oecd.org/els/family/database.htm>) for more detail.

Sources: [Australia: Australia Bureau of Statistics](#); [China, Hong Kong, Thailand, Singapore, and Viet Nam: World Bank World Development Indicators](#); [Japan: Ministry of Health, Labour and Welfare, Vital Statistics of Japan](#); [Korea: Statistics Korea, Vital Statistics](#); [New Zealand: Statistics New Zealand](#); [OECD average: OECD Family Database Indicator SF2.1](#)

Chart SF2.1.B. Completed cohort fertility for women born in 1950^a and 1965^b
 Average number of children born to women belonging to the given cohort over the whole of their reproductive lives



a) For Korea and Thailand, women born in 1955 rather than 1950

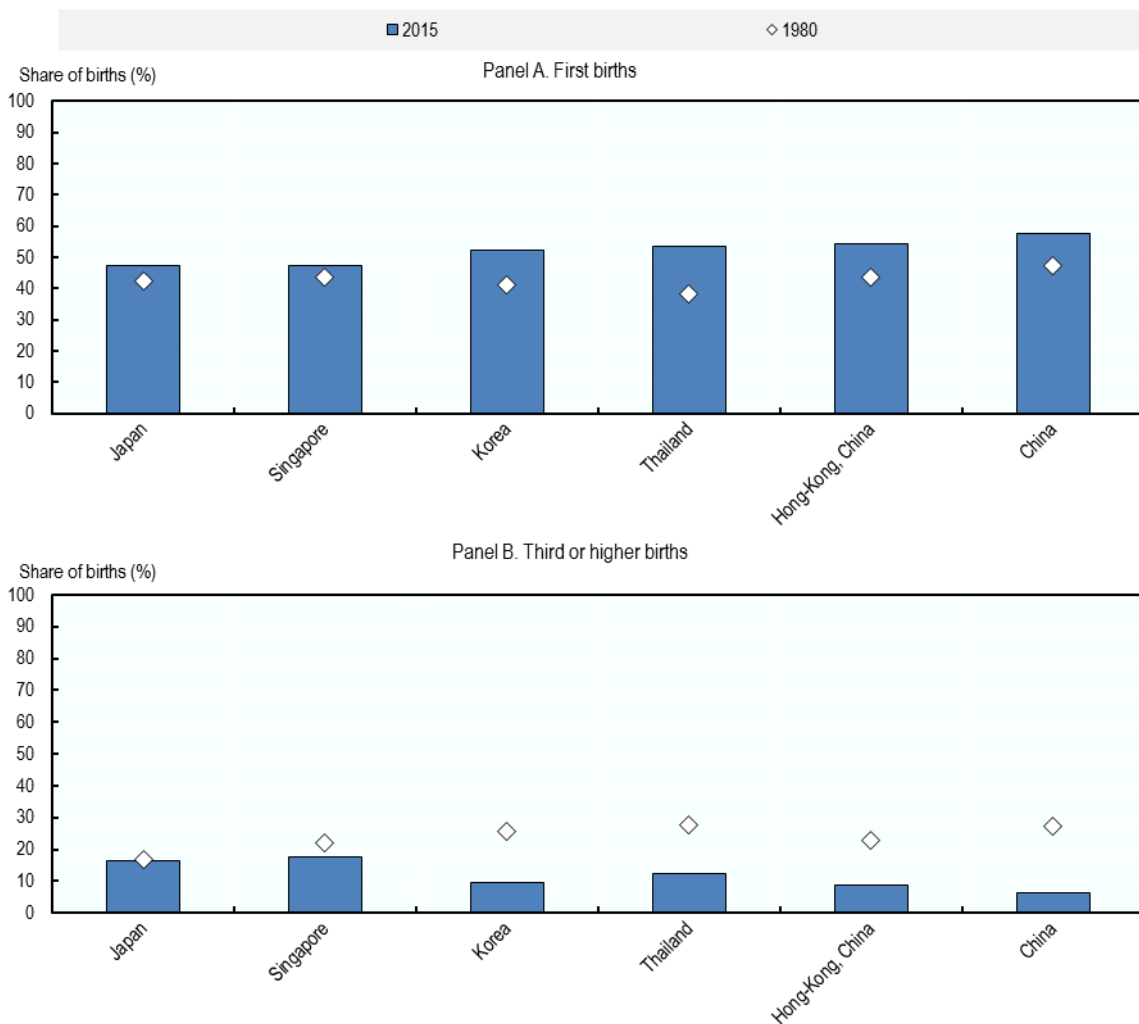
b) For Singapore, women born in 1960 instead of 1965

c) For Hong Kong, the reproductive period of Cohort 1965 has not finished yet. Data reflect the average number of children ever born to mothers born in 1965 at the age of 47

Sources: China: Zhong and Wang (2015); Hong Kong, China: Demographic Trends in Hong Kong 1981-2011, Appendix A8; Japan: National Institute of Population and Social Security Research, Population Statistics, 2016; Korea: Statistics Korea, Population Projection: 2010-2060 (report material); Singapore: Myrskylä et al. (2012); Thailand: National Statistical Office, 2010 Population and Housing Census

Falling fertility rates in Asia/Pacific countries are reflected in declines in the proportion of births that are third or higher births and increases in the share of births that are first births. Chart CF2.1.C shows the share of births that are the mother's first birth (panel A) and third or higher birth (panel B) in 1980 and 2015 (or nearest available). Across Asia/Pacific countries, since 1980, the share of births that are the mother's first birth has increased, while the share that are the mother's third or higher birth has fallen, pointing towards a decrease in the frequency of large families. This is particularly the case in Hong Kong, Korea, and Thailand, where the share of births that are third or higher births has fallen by roughly 15 percentage points since 1980, and China, where it has declined by almost 21 percentage points.

Chart SF2.1.C. Distribution of births by birth order, 1980^a and 2015^b
 Proportion (%) of births that are first and third or higher births



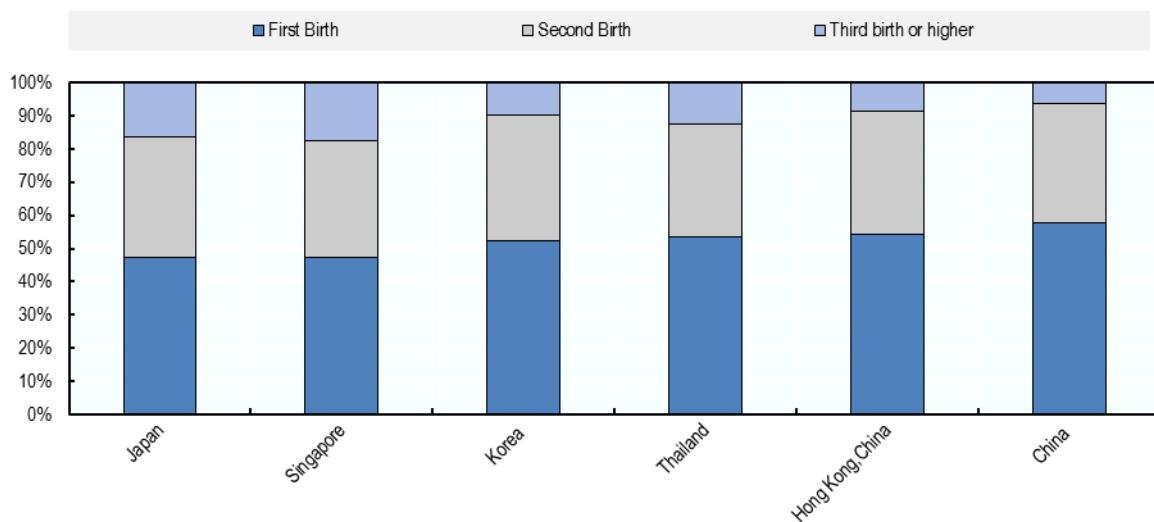
a) Data for Korea and Hong Kong refer to 1981, and for China to 1982

b) Data for Thailand refer to 2010, and for China and Japan to 2014

Sources: China: Census 1982; China Statistical Yearbook 2015; Hong Kong, China: Demographic Trends in Hong Kong 1981-2011; Hong Kong Annual Digest of Statistics 2015; Japan: Ministry of Health, Labour and Welfare, Vital Statistics of Japan; Korea: Statistics Korea, Vital Statistics; Singapore: Registry of Births and Deaths, Singapore Department of Statistics 2016; Thailand: National Statistical Office, 2010 Population and Housing Census

In fact, in some Asia/Pacific countries, the number of second, third or higher order birth has declined to such an extent that first births now make up a majority of all births (Chart SF2.1.D). More than 50% of all births are first births in Korea (52%), Thailand (53%), Hong Kong (54%) and especially China (58%). First births are still a slightly minority of births in Japan and Singapore, though only just – in both countries at least 47% of births are first births.

Chart SF2.1.D. Distribution of births by birth order, 2015^a
 Proportion (%) of births by the rank of the birth



a) Data for Thailand refer to 2010, and for China and Japan to 2014

Sources: China: China Statistical Yearbook 2015; Hong Kong, China: Demographic Trends in Hong Kong 1981-2011; Hong Kong Annual Digest of Statistics 2015; Japan: Ministry of Health, Labour and Welfare, Vital Statistics of Japan; Korea: Statistics Korea, Vital Statistics; Singapore: Registry of Births and Deaths, Singapore Department of Statistics 2016; Thailand: National Statistical Office, 1980 Population and Housing Census and 2010 Population and Housing Census

Comparability and data issues

There are drawbacks to using TFRs to compare trends in fertility as changes in the aggregate can relate to either a change in family size and/or a change in the timing of births. Completed fertility rates can be used to measure the final number of children per women but only when women have reached the end their reproductive life. Changes in the distribution of births by rank of children also illustrate the changes in fertility patterns, since a reduction of family size is associated with a decrease in the share of higher order births. The distribution of births is, however, also sensitive to timing effects. A closer look at the timing of births is needed to obtain a more comprehensive view of fertility behaviour and changes over time (SF2.3).

Sources and further reading: Zhong, F. and Y. Wang (2015), "A Study of Intrinsic Population Growth in China in the Perspective of Cohort: Based on the Comparison of Two Approaches Estimating CFR", *Population and Economics*, 2015, No.2; Myrskylä et al. (2012). *New Cohort Fertility Forecasts for the Developed World*. Germany: Max Plank Institute for Demographic Research, <http://www.demogr.mpg.de/papers/working/wp-2012-014.pdf>